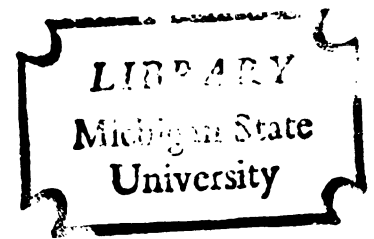


A TYPOLOGICAL APPROACH TO THE
STUDY OF MEN'S RESIDENCE GROUPS

Thesis for the Degree of Ph. D.
MICHIGAN STATE UNIVERSITY
GEORGE ROBERT STANDING
1968



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A TYPOLOGICAL APPROACH TO THE STUDY OF
MEN'S RESIDENCE GROUPS

presented by

George Robert Standing

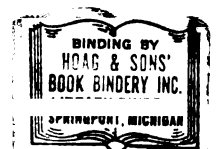
has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Guidance

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Date September 6, 1968



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ABSTRACT

A TYPOLOGICAL APPROACH TO THE STUDY OF MEN'S RESIDENCE GROUPS

by

George Robert Standing

The purpose of this study was to investigate the quality and character of group life within mens' residence halls at Michigan State University, and more explicitly, within the residence hall house--a subdivision within the halls of 40 to 70 students.

The problem was trifold: First, an attempt was made to develop a multivariate description or typology of 27 house groups, three randomly selected in each of nine men's halls. Multiple discriminant analysis was used to extract linear combinations of house characteristics from which the types of houses were developed. Second, the impact on adjusted grade-point-average (gpa) and on the intellectual disposition of freshmen grouped according to the types of houses in which they lived was studied. In addition, by using a 2 x 4 analysis of covariance design, the interaction on the dependent variables between types of residences and four subculture orientations of freshmen

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was also considered. Third, the character and extent of the "climate of learning" within the house were studied. The relationship of climate of learning to freshman academic performance and intellectual disposition was also examined.

Reference group theory, an understanding of the dynamics of small groups, and a theoretical consideration of the nature and origins of student subcultures and peer group influence provided the theoretical framework within which the study was developed. It was suggested that freshmen, in particular, would tend to identify with their house groups in order to cope with the ambiguities and anxieties created by the demands of the college experience. Various characteristics of group life were thought to create inter-house variations in their environments.

A new instrument, the House Analysis Survey, consisting of 128 items, including measures and an operational definition of house climate of learning, was developed to assess house characteristics. Four scales from the Omnibus Personality Inventory were used to measure intellectual disposition. Students also provided self-descriptions of their subculture orientation.

Usable data on the House Analysis Survey was obtained from 884 (60%) of the residents of the 27 houses during the latter part of the Winter quarter. Responses were generally internally consistent in describing house

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characteristics. Sixty-one per cent ($N = 669$) of freshman residents completed both the pre- and post-measures of intellectual disposition. The mean GPA of non-responding freshmen was lower than the respondents, tempering the results somewhat.

Sixteen of the 26 possible roots of the discriminant analysis were significant suggesting extensive variation in the characteristics of house life. Five of the resulting discriminant functions were interpreted. These accounted for 66.7 per cent of inter-house variation across the variables.

The first function, accounting for 28 per cent of the variance, differentiated among the houses primarily on the basis of residents' ratings of house academic performance. The second function seemed to differentiate between the houses primarily on the basis of residents' general ratings of their residence hall. The third was thought to differentiate among the groups on the basis of house reputation which seemed to be based more on social than on academic performance. The fourth function seemed to separate the groups along a continuum of residents' ratings of compliance within the houses with residence hall and University regulations. The fifth function was interpreted as reflecting a general overall performance rating of the houses.

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adjusted by measures of academic ability, of freshmen differentiated according to any of the types of houses in which they lived. Nor were the measures of intellectual disposition apparently influenced by any of the types of houses.

There were limited indications, however, that characteristics of houses may have influenced students depending on what they described to be their subculture orientation. Within certain types of houses "vocationally" and "collegiately" oriented freshmen tended to perform less adequately than "non-conforming" or "collegiately" oriented students and vice versa. The latter pair seemed to be more often positively influenced by houses characterized by academic or intellectual variables, while the former by social and non-intellectual variables.

The climate of learning did vary between the houses. A positive climate was inversely related to the proportion of freshmen in the house and directly to house academic performance and satisfaction. Freshmen and older students tended to perceive their house climate similarly. No evidence was found indicating that the climate of learning did in fact influence freshman adjusted gpa or intellectual disposition.

A TYPOLOGICAL APPROACH TO THE STUDY OF
MEN'S RESIDENCE GROUPS

by

George Robert Standing

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

College of Education

1968

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During the course of the doctoral program, counsel and assistance has been extended from many sources for which I am deeply grateful. May I acknowledge the support and guidance of Dr. Buford Stefflre, chairman of my Guidance Committee, who has given generously of his time and wisdom. A special note of appreciation is extended to Dr. Irvin Lehmann, who, during a critical period in the writing of the thesis, assumed the responsibilities of Co-Chairman in Dr. Stefflre's absence from the campus. Dr. Eldon Nonnamaker and Dr. Sheldon Lowry, as members of the Guidance Committee both encouraged the project and were personally helpful in many ways throughout my program.

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A special measure of appreciation is extended to Dr. Donald Adams, Director of Residence Hall Programs, and to his many colleagues serving as staff in the residence

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halls at Michigan State University who facilitated the collection of the data in so very many ways.

For her love, patience, and sustained encouragement over the several years of the program, I wish to indicate my deep appreciation for my wife, Lawrin and also for our two daughters, Shauna and Lisa.

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CHAPTER I

NATURE OF THE PROBLEM

Introduction

The urgency with which our society has looked to higher education in the wake of world wide competition in technology and ideology, in addition to the sheer weight of numbers of students seeking advanced learning, has provoked a broad introspection into the adequacy and philosophies of our colleges and universities. Even more dramatic in bringing about not only internal but also external examination of institutions of higher learning have been the open, and often hostile confrontations of recent years, between students, faculty, administrators and the community.

It is not sufficient for colleges and universities to be satisfied with only a pedagogic approach to preparing a student to view critically, humanely, and discerningly the external world. These institutions must, in addition, themselves serve as models through their willingness to be subjected to the closest possible examination in order to fully rise to the challenges of this age.

One who has engaged most critically in examining higher education beneath the microscope has written

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If the development of the individual as a whole is the primary aim (of higher education), then colleges should organize all their resources in efforts to achieve it. Such planning of a total educational environment must be guided by a theory of personality-- a theory in the terms of which it is possible to state specific goals for the individual, describe the interrelations of his various psychological processes, and understand the ways in which he₁ changes under the impact of environmental influences.¹

The ability within higher education to analyze students and their college environments has been enhanced not only as a result of increased interest by research-minded academicians, but also as a result of the development of sophisticated instruments and methodologies, relevant theories and high-speed digital computers capable of handling complex statistical analyses. Ralph Tyler, summarizing an early conference on "college influences on personality," remarked on the advanced state of then current descriptions of students and their colleges and noted that changes in their behavior "are now characterized in anthropological, psychological, and sociological terms."² A few years later Robert Pace summarized several ways by which college environments had been assessed,³ and most recently Newcomb and Feldman have authored a thorough

¹Nevitt Sanford, Where Colleges Fail (San Francisco: Jossey-Bass Inc., 1967), p. xv.

²Lloyd Morrisett, Jr., "Research on College Influences on Personality," Social Science Research Council Items, 13: No. 3, 1959.

³C. Robert Pace, "Methods of Describing College Cultures," Teachers College Record, 63, 276, 1962.

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review of the literature relevant to "The Impacts of Colleges Upon Their Students," citing several hundred studies, the large majority of which had been completed within the last ten years.⁴

Of particular interest and apparent significance in assessing the impact upon students of higher education is what has been loosely referred to as the "climate of learning" or "environment for learning" (the terms would generally seem to be synonymous in most contexts in which they appear).⁵ The phrase seems to reflect a broad, often vaguely defined (if defined at all) set of variables suggesting the degree to which students' behavior, values, and/or attitudes are directed toward somewhat intangible intellectual concerns, as opposed to more traditionally collegiate, vocational, social or anti-intellectual orientations. Stereotypes, traditions, the quality and nature of students admitted, faculty, physical facilities, the

⁴Theodore M. Newcomb and Kenneth A. Feldman, The Impacts of Colleges Upon Their Students, A Report to the Carnegie Foundation for the Advancement of Teaching, 1968.

⁵Ordway Tead, The Climate of Learning (New York: Harper & Bros., 1956); Melvane D. Hardee, "Personnel Services for Improving the Campus Climate of Learning," Journal of the National Association of Women Deans and Counselors, 24 (1961), 122-7; Lewis B. Mayhew, "The Intellectual Tone at Any University: Its Progress and Measurement," Journal of the National Association of Women Deans and Counselors, 25 (1962), 156-60; John J. Prior, "Peer-Group Influence on the College Climate for Learning," Journal of College Student Personnel, 5 (1964), 163-7.

community setting and the interaction of these variables all tend to define an atmosphere which, to the degree that it seems to be conducive to learning, represents a gauge against which institutions are subjectively judged.

A helpful definition and example is offered by McCracken:

A climate for learning exists on a campus when all members of the community perceive the reality of the college as a place to learn and where wisdom is valued. On such a campus, "adventure of the mind" would mean the kind of academic freedom that advocates, supports, and defends inquiry, criticism, exploration, and action. A college whose climate furthers learning would be sensitive to and responsive to individuality; it would be unimpressed by needless conformity. There would be a relationship of teacher and student marked by a sense of mutual responsibility for freedom of judgment and responsible action. Above all, such a climate would be perceived by student and teacher as one permitting the individual to reveal his feelings, to act out his ideas, and think as he wishes. Such a freedom to be unique or just to "be" without reprisal--or even fear of reprisal--from peer or teacher is a pre-requisite for "a climate for learning."⁶

Though many, if not most, educators would accept McCracken's description to be a highly desirable state, its attainment is seldom achieved and then, perhaps, only for certain members of the college community under certain circumstances.

Several groups of students subjected to a typical yet unique set of environmental circumstances which were thought to define or relate to a climate of learning were the subjects of this study. The construct, "climate of

⁶C. W. McCracken, "Student Personnel Work and the Climate of Learning," Personnel and Guidance Journal, 42 (1964), 904-7.

learning" did in fact lend itself to statistical description and, as a result, the impact of the climate on these groups of students was assessed.

Background of the Study

Contrary to many stereotypes, recent research indicates that the climate of learning of an institution is not exclusively a product of high standards of academic performance, nor of the faculty, nor of age, nor of tradition. Rather, these variables interact with what have been shown to be other very pervasive determinants--the characteristics and backgrounds of the students admitted, the nature of the relationship they have with one another and with the general environment of the institution, and other characteristics of the student culture (for general summaries of relevant research see Sanford, Newcomb and Wilson, Yamamoto and Newcomb and Feldman).⁷

Let it suffice to say at this point that these variables tend to modify or reinforce whatever impact the college experience might otherwise have upon students.

⁷ Nevitt Sanford (ed.), The American College (New York: John Wiley & Sons, Inc., 1962); Theodore M. Newcomb and Everett K. Wilson (eds.), College Peer Groups (Chicago: Aldine Publishing Co., 1966); Kaoru Yamamoto (ed.), The College Student and His Culture: An Analysis (Boston: Houghton Mifflin Co., 1968); Newcomb and Feldman, loc cit.

Indeed, one might say that a student's integration of and exposure to these variables is the college experience. Newcomb and Feldman are more optimistic than Jacob in considering whether or not the college life has an impact in restructuring students' values and attitudes though they acknowledge that they were led "to pose questions that were at once more specific and more complex" than Jacob's somewhat simpler probe of "the impact of the college experience."⁸ Newcomb and Feldman further indicate:

In spite of the limitations of data on net changes (in students as a result of the college experience), it seems altogether likely that some students in some colleges experience some changes that are attributable to the fact of being in college. And so our inquiry shifts to precisely such questions--from the demonstrations of preponderant trends to the analysis of particular conditions under which particular kinds of impacts can be demonstrated. This shift does not imply an abandoning of our search for generality, but rather the espousal of a different kind of general question: under what conditions--regardless of where those conditions are found, and regardless of preponderant trends in contemporary American colleges in general--are particular kinds of impacts likely to occur?⁹

Thus, it will be assumed for the purposes of this study that a fruitful climate of learning is attributable to and a characteristic of not only the institution as a whole but, within larger institutions at least, differentially to its component parts--individual departments and

⁸Ibid., pp. 3, 297-308; Philip E. Jacob, Changing Values in College: An Exploratory Study of the Impact of College Teaching (New York: Harper Bros., 1957).

⁹Newcomb and Feldman, op. cit., p. 299.

to the non-academic environs of a student's life.

Residence Hall Life and the Climate of Learning

Of interest in examining areas of the college experience which may directly or indirectly influence change and learning is the student's living situation while attending--whether he commutes, resides off campus or in a residence hall.¹⁰ Of particular concern to this study is the quality of residence hall life and the degree to which the climate fostered by the extensive and intensive interpersonal relationships of students within various living units is supportive of the goals of the institution and contributes to the learning process and individual development.

In a broad sense, the study may have fiscal implications when one considers the staggering investment in college related residential facilities across the nation and the monetary needs in order to provide housing to accommodate swelling enrollments. About 1.5 million student spaces valued at \$7.5 billion in 1966 (were they

¹⁰Marjorie M. Lozoff, "Personality Differences and Residential Choice," Growth and Constraint in College Students, Joseph Katz (ed.), U. S. Department of Health, Education, and Welfare Project No. 5-0799 (Stanford, Calif.: Institute for the Study of Human Problems, Stanford University), pp. 294-372; Theodore M. Newcomb, "Student Peer-Group Influence," The American College, Nevitt Sanford (ed.), (New York: John Wiley and Sons, 1962), 469-488; Newcomb and Feldman, op. cit., pp. 197-226.

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to be replaced at current prices) were available in all institutions of higher education in 1965. Projected housing needs for the decade were 1.5 to 1.8 million spaces at an estimated cost, including related facilities and rehabilitation and replacement of existing units, of from \$11 to \$16 billion.¹¹ This study includes a modest look at the impact of certain architectural types of housing in an attempt to assess their relevance to the growth and development of the students. Research of this nature may shed some light in insuring that the overwhelming financial investment in students' residences is directed as accurately as possible toward achieving appropriate goals.

Generally, if conditions conducive to the production of a beneficial climate of learning and, conversely, those which operate in opposition to such a climate could be isolated, those charged with the development and administration of college housing programs might be in a better position to promote growth and learning beyond the classroom. Several years ago Strozier suggested:

If proper recognition of the importance of student housing to higher education ever becomes a universal reality, it will mark not only the greatest change

¹¹Israel Rafkind, The Federal Government's College Housing Loan Program (Washington, D.C.: American Council on Education, 1966), p. 2.

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in student personnel administration in the history of higher education, but also will represent a basic change in American educational philosophy as well.¹²

Though he may have overstated his case, nevertheless, the centrality of residential life to many campuses today is in direct harmony with his proposition. Note the integration of "living" and "learning" at such experimental colleges as the University of California at Santa Cruz, Raymond College at the University of the Pacific, or the Justin Morrill College at Michigan State University. And on a broader scale note the increasing number of institutions deeply concerned with promoting the best possible environmental circumstances in their residence halls and in the process making major commitments to educational innovation such as the incorporation of classrooms and faculty offices into residential centers.

The residence hall program at Michigan State University, perhaps as a result of its size--the largest in the nation--but more importantly because of its programs and innovations, has served as a model to many other institutions. The residence hall program for men at Michigan State University provided the locus for this study.

¹²R. M. Strozier, The Housing of Students (Washington, D. C.: American Council on Education, 1950), p. 1.

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Statement of the Problem

The purpose of this study was to investigate the quality and character of group life within mens' residence halls with particular regard to the perceived climate of learning, and to examine the impact of various characteristics of residence hall and group life on academic performance and certain attitudes and ideologies of freshmen residing in the halls. The problem was trifold.

(1) An attempt was made to develop a multivariate description or typology of student groups according to their characteristics. The groups were defined according to the residence hall house in which they reside. Multiple discriminant analysis, a statistical technique which allows for the empirical study of "the configuration of social groups across multiple criteria..." was employed in developing a typology.¹³

(2) Academic performance and change in certain attitudes of freshmen residing in the houses selected for study was investigated to determine whether or not these were related to residence in different "types" of residence hall houses.

(3) Academic performance and change in certain

¹³Salomon Rettig, "Multiple Discriminant Analysis: An Illustration," American Sociological Review, 29 (1964), 398-402.

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attitudes of freshmen classified according to their self-descriptions of their orientations toward college life were investigated to determine whether or not students so classified were differentially affected by variations in the characteristics of the houses in which they resided.

Several related questions were also considered. For instance, it was assumed that because of the variations in individual characteristics of residents, variations in quality and patterns of interpersonal interaction, differences in house leadership and in physical and administrative features of the residence halls, the resultant group properties of house residents would vary. Of particular importance was the determination of whether or not classification of houses according to the residence hall in which they were found, and/or residence hall complex, or physical features of the hall would parallel to any degree the empirical classification of the houses based on group characteristics.

The multiple discriminant analysis provided an opportunity to investigate relations between certain dimensions of residence hall group life that were of particular concern. For instance, consideration of theory discussed in the following section suggested that group cohesion or satisfaction with life in the house would not necessarily be related to the climate of learning as

perceived by house residents. On the other hand, it was hypothesized that the perceived climate could be related to academic performance within the respective houses.

Specific research hypotheses will be stated in Chapter IV.

Operational Definitions

Several terms used frequently in the study require explanation of the context in which they occur as follows:

House will be used in the study to refer to the administrative and/or physical subdivision within residence halls at Michigan State University under the jurisdiction of a resident assistant. It will also refer to the students housed in such an area when considered as a group. In several of the Michigan State halls, the term "precinct" is used to designate a house. Only the term house will be used here.

Resident Assistant refers to a paid part-time student employee of the University, one of whom lives with the residents of each house. The resident assistant is an official representative of the University and is charged with promoting a positive academic, social and cultural environment in his house, with advising house government, with certain responsibilities related to the promotion of good order within the house and other various duties as may be assigned by his head resident. The resident

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assistant is typically an upper division undergraduate selected by the head resident and/or the Office of Residence Halls Programs, though he may be a sophomore or a graduate student.

The principle student personnel officer in each residence hall is the Head Resident, a full time employee of the University and frequently a doctoral student majoring in student personnel administration or a related field. All resident assistants in the hall are responsible to him.

Residence Hall Complex or simply Complex refers to a geographic grouping of residence halls at Michigan State University. Several such complexes exist. Many of these have certain physical facilities in common such as recreation and dining. Some have consolidated levels of administration and/or associated academic programs. Architectural design in certain complexes is similar. Any or all of these features may be combined in a given complex. A more specific delination of the halls involved in the study and the complexes to which they belong is given in Chapter IV.

Typology will refer to the empirical classification of the residence hall groups based on the statistical interpretation of and placement on combinations of group variables resulting from the multiple discriminant analysis. One of the main purposes of the study was to

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distinguish between groups according to their group properties and interpret the nature of these differences in a meaningful fashion. In Chapter II under the review of literature, the terms "typology," "classification," and "taxonomy" as these have been used in studies relating to the characteristics of social groups will be discussed and compared.

Subculture is defined as "a group of individuals with a normative system, within the context of a larger socio-cultural system, which distinguishes it as a distinctive segment of the total culture," a definition borrowed from Hodgkins whose treatise of student subcultures is significantly related to this study.¹⁴ The term will frequently relate to students' self-report of that "particular ideology toward higher education" to which they individually ascribe.¹⁵ Four such subcultures originally defined by Clark and Trow will be considered.¹⁶

Environment is a rather encompassing term which has taken on added significance through pioneering efforts

¹⁴ Benjamin Joseph Hodgkins, "Student Subcultures--An Analysis of Their Origins and Affects on Student Attitude and Value Change in Higher Education," (Unpublished Ph.D. dissertation, Michigan State University, 1964), p. 73.

¹⁵ Ibid., p. 88.

¹⁶ Burton R. Clark and Martin Trow, "The Organizational Context," College Peer Groups, Theodore M. Newcomb and Everett K. Wilson (eds.), (Chicago: Aldine Publishing Co., 1966), pp. 17-70.

in the social and psychological study of higher education of Pace and Stern, Astin and Holland, and more recently Astin.¹⁷ In general the environment will include any characteristic of the college community which may affect the student, particularly those external conditions and characteristics which may impinge upon the student in the context of the residence hall.

Climate of Learning is considered to be a specific condition or set of conditions and influences within the college environment, the nature of which mediates students' predispositions toward academic, intellectual and cultural growth. An idealized definition of the term was presented on page four. An empirical definition of the term will be presented in Chapter IV.

Theoretical Development

Introduction

The intent of this section is to bring to bear the contributions of theory to the development and interpretation of the problems under consideration. Validating evidence and empirical research suggesting refinements

¹⁷C. Robert Pace and George G. Stern, "An Approach to the Measurement of Psychological Characteristics of College Environments," Journal of Educational Psychology, 49 (1958), 269-277; Alexander W. Astin and John L. Holland, "The Environmental Assessment Technique: A Way to Measure College Environments," Journal of Educational Psychology, 52 (1961), 308-316; Alexander W. Astin, The College Environment (Washington, D. C.: American Council on Education, 1968).

in the development of the problem are presented in Chapter II.

The influence of groups on attitudes and behavior is not a new concept. Indeed, "That men act in a social frame of reference yielded by the groups of which they are a part is a notion undoubtedly ancient and probably sound."¹⁸ Yet as Hyman and Singer point out, awareness of group influence is hardly sufficient in and of itself to explain either deviations from expected behavior patterns within the membership of a given group, or to predict within any degree of assurance the direction of behavior.¹⁹ Thus, in singling out the residence hall house as the object of the study, several theoretical dimensions of group behavior must be probed.

The basic foundation for the study will be laid within the theory of reference groups, a concept first suggested by Hyman²⁰ and given prominence by Merton and Rossi.²¹ The likelihood of, and the conditions under

¹⁸Robert K. Merton and Alice Kitt Rossi, "Contributions to the Theory of Reference Group Behavior," Readings in Reference Group Theory and Research, Herbert H. Hyman and Eleanor Singer (eds.), (New York: Free Press, 1968), p. 35.

¹⁹Herbert H. Hyman and Eleanor Singer (eds.), Readings in Reference Group Theory and Research (New York: Free Press, 1968), p. 3.

²⁰Ibid., p. 5. Hyman and Singer discuss the history and development of reference group theory. The original reference to which they refer is, Herbert H. Hyman, "The Psychology of Status," Archives of Psychology, No. 269, 1942.

²¹Merton and Rossi, op. cit., pp. 28-68.

which a residence hall house might serve as a reference group having significant impact on residents' behavior will be explored. This will be done through analysis of certain characteristics of residents, particularly freshmen and of reference groups themselves. This latter aspect will be reviewed primarily through a brief synopsis of the theoretical literature on small groups. Lastly, some of the characteristics of general student peer groups and student subcultures and their interaction with the residence hall environment will be considered.

Reference Group Theory

Hyman initially used the concept to describe how an individual develops his conception of his status in relationship to others.²² A person's perception of his status depends upon the group or groups of people with whom he compares himself, that is, his reference groups.

As the utility of the concept has grown it has generally come to refer to any group to which an individual's behavior and attitudes are related.

A significant addition to the theory was elaborated by Kelley who distinguished between "comparative"

²²Herbert H. Hyman, "The Psychology of Status," Archives of Psychology, No. 269 (1942). Excerpts from the study are cited in Hyman and Singer, op. cit., pp. 147-165.

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and "normative" reference groups, describing two different sources of influence which groups may have on the individual.²³ He states: "A group functions as a comparison reference group for an individual to the extent that the behavior, attitudes, circumstances, or other characteristics of its members represent standards or comparison points which he uses in making judgments and evaluations."²⁴ Likewise:

A group functions as a normative reference group for a person to the extent that its evaluations of him are based upon the degree of his conformity to certain standards of behavior or attitude and to the extent that the delivery of rewards or punishments is conditional upon these evaluations.²⁵

One group may, though not necessarily, serve both functions. Such a group is most often a membership group or a group in which membership is desired.²⁶ For example, a student might aspire to membership in a certain fraternity. He would modify his behavior both in compliance with his perceptions of the attitudes and characteristics of the members which are attractive to him and in anticipation that his acceptance into the group is conditional upon his compliance to fraternity norms.

²³Harold H. Kelley, "Two Functions of Reference Groups," Readings in Reference Group Theory, Herbert H. Hyman and Eleanor Singer (eds.), (New York: Free Press, 1968), pp. 77-83.

²⁴Ibid., p. 81

²⁵Ibid., pp. 81-82.

²⁶Ibid., p. 81.

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Other dimensions of reference group theory relevant to the problems confronted in this study are reviewed by Hyman and Singer. Though somewhat forgotten in much of the recent use of the theory, stress has been placed from time to time on reference "individuals" a concept analogous to that of "role-model." Hyman and Singer state:

The parenthetical remark by Newcomb that a membership group may be a potent normative reference group "(particularly as symbolized by leaders...)" strongly suggests the role of the reference individual as the carrier of the reference group's norms, but it appears to have been lost inside the parenthesis. It would be greatly to our advantage to reinstate the concept.²⁷

Central to reference group theory is its contribution in explaining the role of non-membership groups in determining or influencing behavior, self-evaluation and the formation of attitudes.²⁸ Thus, when member behavior deviates from the expected direction it can often be accounted for in terms of allegiance to a reference group other than the membership group (the new membership group itself may also be a new membership group).

Lastly, Hyman and Singer cite Newcomb as distinguishing between "positive" and "negative" reference groups.

²⁷Hyman and Singer, op. cit., p. 9.

²⁸Merton and Rossi, op. cit., p. 35.

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In the latter case an individual may reject a group's norms and, as a result, attempt to maximize differences between himself and the group.

Several conditions are cited which may determine whether or not a given group serves as a referent for an individual.²⁹ For instance, an individual may choose as a reference group one which will enhance his self-regard or protect his ego. An individual is not likely to choose as a comparison group one whose standing is either so high or so low as to not be meaningful for the individual. Rather, an individual will tend to choose groups with a roughly comparable level of ability, attitudes, and/or values.

Group Dynamics

Operating from a slightly different context, theory flowing from early research in the dynamics of small groups has been well summarized by Golembiewski. It is presented here in an attempt to draw together concepts describing the internal mechanisms of reference groups as they might operate within residence groups.

1. A common motive(s) conducive to interaction among individuals is the basis of the formation of small groups.
 - a) N.P. Gist and L. A. Halbert make this point,

²⁹Hyman and Singer, op. cit., pp. 13-16.

for example, in commenting on the widely prevalent adolescent gangs. "The gang is a form of adjustment," they note, "that boys, and even girls, make whenever their family or neighborhood do not satisfy their major wishes in a conventional way."

2. Group situations, especially when they are of sufficient duration to permit the development of a status hierarchy and role structure, may significantly affect behavior.
 - a) In the pioneering experiments of Lewin, Lippitt, and White, for example, sharp changes in the behavior of children were induced when they were abruptly transferred from groups characterized by "authoritarian leadership" to those characterized by "democratic leadership," and vice versa. The investigators were apparently successful in creating different "social climates," or "atmospheres"....
 - b) The individual as a group member, in short, becomes a member of a functioning system and is influenced by that system. The individual is not necessarily aware of that influence....
3. In time, a group structure of hierarchical status and clear-cut in-group demarcations develops.
 - a) On the group level, for example, Toki demonstrated the disintegrative effects of removing a small-group leader during most phases of play.
 - b) Also of interest here is the function of such status in influencing the individual's behavior in and beyond the group. Thrasher aptly indicated the importance of an individual's status to himself in this way. "Any standing in the group is better than none, and there is always the possibility of improving one's status. Participation in gang activities means everything to the boy. It not only defines for him his position in the society he is greatly concerned with, but it becomes the basis of his conception of himself.³⁰

³⁰This concept is central to reference theory. Merton and Rossi (op. cit., p. 35) phrase the issue in a question: "...under which conditions are associates within one's own groups taken as a frame of reference for self-evaluation

4. In time, norms and role expectations which regulate intragroup activities are standardized.
 - a) Such norms or role expectations need not be anti-social or criminal. But they are prescriptions of behavior meant to stabilize the group's internal environment and to some extent to control the conditions of its existence in a broader environment. Thus conflict with that broader environment is quite possible.
 - b) In fact, just such conflict with some broader environment--a neighborhood, a formal organization like an army, or "society"--forced the development of the small-group concept to explain theoretically behavior which was both clearly contrary to that normally expected in the broader environment and which was also clearly organized rather than individual behavior....
 - c)The small-group approach...conceives of the group as a collection of individuals and a "plus." As Merei concluded from his study of children's groups: "Thus the group 'plus' is not some substance hovering above the group--it is the hold their customs and habits have on members; it is tradition, the carrier of which is the individual, who, in turn, is strengthened by it...."
 - d) Because the function of norm and role is the control of behavior, the small group is socially relevant....³¹

Hodgkins' Theory

In his excellent thesis on the origins and effects

and attitude-formation, and under which conditions do out-groups or non-membership groups provide the significant frame of reference?"

³¹Robert T. Golembiewski, The Small Group (Chicago: University of Chicago Press, 1962), pp. 19-22.

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of student subcultures on attitude and value change, Hodgkins rejects reference group theory as an adequate model upon which to base his study.³² His concern was upon the emergence of broad general subcultures within the context of the university as a whole. He stated:

...modern American colleges and universities, like American society, no longer require such a specific commitment on the part of their undergraduate student body...

Though he would allow that within the "sociocultural" system of the university a minimal level of compliance to the norms of the system must be met, much latitude is left to the student "as to whether he desires to strive for the other goals supported by the system."³³ He then develops a theory where subcultures emerge as students strain for self-consistency when their educational goals conflict with institutional goals.³⁴

³²Hodgkins, op. cit., p. 70.

³³Ibid., p. 72.

³⁴"Self-consistency" is used in the sense of that construct central to Lecky's theory of personality. He states: "We conceive of the personality as an organization of values which are felt to be consistent with one another. Behavior expresses the effort to maintain the integrity and unity of the organization." (Prescott Lecky, Self-Consistency, The Shoe String Press, Inc., 1961. p. 152.)

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Thus, students could "conform, minimize the inconsistency, or look elsewhere for support for their own goal orientation."³⁵ Hodgkins provided empirical evidence to support his theory. However, he purports to investigate only one avenue of subculture development and peer influence.

The Residence Hall House as a Reference Group

Not inconsistent with Hodgkin's theory but complementary to it is the proposition that students' attitudes and conformity to academic goals of the institution may be modified as a result of the highly personalized and significant interaction occurring in living situations, particularly for freshmen confronting the college environment for the first time.

A basic principle involved in describing the impact of house life is suggested by Newcomb "that individuals who spend a good deal of time together--particularly if they do so without a sense of constraint--jointly create norms, concerning their common interests, by which each of them is influenced."³⁶ In order to maximize the educative outcomes he proposes three applications

³⁵Hodgkins, op. cit., p. 2, Abstract.

³⁶Theodore M. Newcomb, "Student Peer-Group Influence," The American College, Nevitt Sanford (ed.), (New York: Wiley & Sons, 1962), p. 485.

of the principle: (1) promotion of a reference group of such a size that some selectivity of associations is allowed, (2) awareness of the fact that living arrangements provide the greatest single source of interaction for most students, and (3) the overlap of classroom experiences with living-group membership in order to increase the possibility of shared "intellectual excitement."

The theoretical analysis in the classic study by Festinger, Schachter and Back using living situations of married college students supports Newcomb's propositions and provides additional indications as to when a house might function as a significant reference group.³⁷ A cohesive group tends to develop when the group is attractive for any of several reasons. But within an informal social group such as the house, its attractiveness "will be mostly affected by the extent to which one has satisfactory relationships and friendships with other members of the group."³⁸ To the extent that the house and its residents can satisfy such interpersonal needs as status, acceptance, and goal fulfillment, identification with the house will be more pronounced. This

³⁷ Leon Festinger, Stanley Schachter and Kurt Back, Social Pressures in Informal Groups (Stanford, Calif.: Stanford University Press, 1950).

³⁸ Ibid., p. 164.

process is described as "means control" of the group.³⁹ Festinger et al also suggest that in addition to understanding how much change a group can bring about, we should know over what activities of individuals the group has influence, which these authors describe as the "power field."⁴⁰

Cohesion As a Property of House Life

Cohesion and the concept of reference groups are closely related. A reference group depicts the relationship between a group and an individual for whom the group has some degree of attraction, regardless of whether or not the individual is a member of the group. Cohesion, on the other hand, will be used in the study to describe a property of a group. A highly cohesive group would normally serve as a reference group for its individual members, but all reference groups are not necessarily cohesive.

The term "cohesion" has been defined in many ways. Most authors agree, however, that it generally refers "to the degree to which the members of a group desire to remain in the group."⁴¹ Cartwright offers a

³⁹ Ibid., p. 165.

⁴⁰ Ibid., p. 166.

⁴¹ Dorwin Cartwright, "The Nature of Group Cohesiveness," Group Dynamics, Dorwin Cartwright and Alvin Zander eds. (New York: Harper and Row, 1968), p. 91.

more elaborate definition to which he subscribes in his extensive description of its properties. He attributes the definition to Festinger:

...group cohesiveness is "the resultant of all forces acting on members to remain in the group." These forces are determined jointly by certain properties of the group and by certain characteristics of the members which, in conjunction, can be conceived as the immediate determinants of cohesiveness.⁴²

One might be tempted to place a value judgment prematurely on the desirability of creating a highly cohesive house or residence hall. Several significant studies suggest the tenuousness of such a judgment for the norms and other points of attraction of a cohesive group are not necessarily productive or consistent with the goals of some larger social system of which the group may be a part. "This power that groups have," notes Newcomb, "can be applied to educational advantage, to educational detriment, or to neither. Very often in my own university I have seen that the norms of student groups are contra-educational."⁴³ Both Stogdill and Etzioni comment on the ambivalent characteristic of cohesion in their major theoretical treatises of group-dimensionality. Stogdill views both cohesion and productivity as

⁴²Ibid., p. 91.

⁴³Theodore M. Newcomb, "The Contribution of the Inter-Personal Environment of Students Learning," NASPA, Proceedings of 49th Annual Conference. 5: 2 (October 1967), p. 176.

outputs of groups rather than positing a causal relationship between them.⁴⁴ Etzioni, who organizes his conception of complex organizations around the concept of "compliance" with various levels of group induced forces, develops cohesion more or less outside his formal theory noting that cohesion does not determine the orientation of a group to the larger organization of which it may be a part.⁴⁵

Consistent with the possibility of "contra-educational" functioning of group norms, Lozoff concludes that fraternity life for at least some students (those lacking in academic aptitudes and abilities) may have provided them with sufficient security and self-esteem to allow them to survive in the academic milieu.⁴⁶ The extent to which what might normally be considered anti-intellectual behavior might actually serve an adaptive function is suggested in her elaboration of a thought from Deutsch:

⁴⁴R. M. Stogdill, Individual Behavior and Group Achievement (New York: Oxford University Press, 1959), pp. 13, 271-272.

⁴⁵Amitai Etzioni, A Comparative Analysis of Complex Organizations (New York: Free Press of Glencoe, 1961), p. xviii.

⁴⁶Marjorie M. Lozoff, "Personality Differences and Residential Choice," Growth and Constraint in College Students, ed. by Joseph Katz. Quote taken from chapter draft received from the author through personal correspondence.

Dr. Helene Deutsch speaks of group participation among younger adolescents as providing an opportunity for peer-approved regressive behavior in the service of slowing growth so that disintegration can be avoided and progress eventually abetted. Thus, even some of the regressive aspects of fraternity living may have had functional value for students who needed relief from the strains of moving too rapidly toward independence, heterosexual mutuality and confrontation of the differences in the values, ideas and behavior of people.⁴⁷

Thus, highly cohesive student groups may not be too unlike cohesive industrial employee groups which have been found to be effective in maintaining group standards, but these standards may be either high or low regarding productivity.⁴⁸

One could conclude that even though a house gives evidence of being highly attractive to its residents, in and of itself this will not produce an exciting intellectual environment. Rather, it may well help to insulate residents from the rigors of the academic community. Hence it would seem that Chickering may be slightly "off target" in what would seem to be his over emphasis on residences becoming reference groups per se, for their occupants.⁴⁹ There is abundant evidence that

⁴⁷Ibid., p. 28 (of draft copy).

⁴⁸S. E. Seashore, "Group Cohesiveness in the Industrial Group," University of Michigan, Survey Research Center, Pub. No. 14, 1954.

⁴⁹Arthur W. Chickering, "College Residences and Student Development," Educational Record, 48 (1967), 179-186.

fraternities have served this function well for years. Yet several studies likewise indicate the fraternities' ability to insulate their members from the influence of academia. Chickering seems to operate from the premise that within residence halls, student groups seldom serve as reference units, which may in fact be true (though he offers no substantiating evidence). It would seem that his interpretation would be more precise if, in addition, his emphasis were placed on how to work with residence groups toward understanding and possibly modifying existing norms. He does put forth some imaginative proposals toward using reference groups to serve educational ends but these seem secondary to his basic premise. Chickering's article seems to underscore the fact that as of yet, we really have little empirical evidence demonstrating successful experimental modification of group norms in the college context.

The Ambiguous New Situation

The complexity of the university environment as a social system has been pointed out earlier. The student new to the environment, though in many ways having been conditioned to know what to expect, must nevertheless confront many new and perplexing situations,

particularly if he must live away from home.⁵⁰ The extent of his "uprootedness" will, of course, depend upon many variables. He may already have a highly developed set of interpersonal relationships in his new environment through well established friendships, or he may have none. His mental and emotional equipment may be well adapted to cope with the ambiguities and anxieties of his new situation or they may be lacking. Several studies suggest that though students tend to have "some valid idea of the relative strength of various pressures in their new environment...(they) also have a general, stereotyped, and perhaps idealized image of college life which only imperfectly relates to what they are about to find..."⁵¹ Eisenstadt theorizes that a complex, ambiguous situation may give rise to an individual anchoring himself within a reference group and/or to a set of what he describes as "reference norms." He states:

...there exists a multiplicity of reference norms and groups to which an individual may direct himself and that his choice between them is very largely determined by the kind of social situation he is in. These different reference norms are evoked when the impact of the institutional structure on the individual puts him in a somewhat problematic situation from the point of view of his status and

⁵⁰ Ernest A. Andrews, "The Residential College Student: A Study in Identity Crisis" (Paper read at the Annual Meeting of the American Orthopsychiatric Association, Washington, D.C., March, 1967).

⁵¹ Newcomb and Feldman, op. cit., pp. 74-83.

collectivity aspirations. Thus it may be suggested that the kinds of reference orientations and norms that will be evoked in a given situation...will depend on the interplay between the particular social situation in which an individual finds himself and his perception of this situation in terms of his status-image or levels of aspiration.⁵²

By way of application, freshmen entering the college environment confront several conflicts both subtle and direct. As they strive for consistency and goal fulfillment they are inclined toward various groups and subcultures which meet these ends. Within their residence hall and in particular within their house, they tend to make an interpersonal investment in one another through their awareness of their shared predicament and of the interaction that will necessarily persist over several months. If returning students are housed in the hall, new students may be attracted to them for the "old hands" can introduce the new students to the subtleties of the system in terms of the "minimal level of compliance" to the broader system described by Hodgkins,⁵³ but also to other instruments of goal fulfillment in terms of needs for acceptance, social status and prestige.

⁵²S. N. Eisenstadt, "Studies in Reference Group Behavior," Readings in Reference Group Theory, ed. by Herbert H. Hyman and Eleanor Singer (New York: Free Press, 1968), p. 425.

⁵³See pages 22-23 of this thesis.

If the relationships within the house for whatever reasons are positive and goal fulfilling then the likelihood of the house becoming a significant reference group is substantially enhanced.

The above should in no way be construed to suggest that the house will invariably function as a reference group for any or all of its members. What is attempted here is to suggest that the potential is there. A priori the specific conditions that give rise to reference group status of a house in the context of many competing groups and norms within and beyond the institution is speculative. Indeed, rephrasing the purpose of the study would suggest that it is an attempt to determine what conditions do result in a group attaining reference group status and what obtains from such status for the residents who ascribe to it such a role.

Organization of the Study

In the following chapter research relevant to the problems considered in this study will be presented. It will include an empirical development of variables which are thought to be significant in the understanding of residence groups and to describe conditions under which a residence hall house might serve as a reference group.

The major instrument used in this study, the House Analysis Survey, and others used in the research design are presented in Chapter III. The sample, statements of the problem in appropriate research form and the statistical analysis are presented in Chapter IV. The results are presented in Chapter V. In Chapter VI the study is summarized, its limitations considered and the conclusions presented.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

During the past ten years our awareness and understanding of institutional differences between colleges and universities in terms of characteristics of both student bodies and the college environments has been greatly enhanced. Yonge, in his review of research on the college student, glowingly reports that research by Astin, Pace and Stern relating to the college environment "have provided an inestimable contribution to the literature dealing with the student in higher education. Their pioneering studies are truly break-throughs; they have shifted the research emphasis from a descriptive to a dynamic model."¹ Excellent summaries of various works dealing with inter-institutional differences can be found in the chapters by Yonge, Michael and Boyer, and Boyer and Michael respectively in the "Higher Education" edition of the October, 1965

¹George D. Yonge, "Students," Review of Educational Research, 35 1965, 259.

Review of Educational Research.² Other than to note the increasing emphasis on the inclusion of non-intellective predictors in the college selection process³ and the extensive variation in college environments,⁴ no general consideration will be given this important area of research. The reader might, in addition, be referred to four general reference works relating to the interaction of college environments, the psychosocial development of the college student, and peer group influence. Two of these, edited by Yamamoto⁵ and by Newcomb and Wilson,⁶ are collections of both widely quoted theoretical and empirical writings which have generally been printed elsewhere. The American College edited by Nevitt Sanford is a highly important work as a result of Sanford's intensive effort to draw together into a unified whole the divergent strains of research and theory related to higher education. Last, Newcomb

²Ibid., pp. 253-263; William B. Michael and Ernest L. Boyer, "Campus Environments," Chapter II, pp. 264-276; Ernest L. Boyer and William B. Michael, "Outcomes of College," Chapter III, pp. 277-291.

³Yonge, op. cit., pp. 254, 261.

⁴Michael and Boyer, op. cit., pp. 264-276.

⁵Kaoru Yamamota (ed.), The College Student and His Culture: An Analysis (Boston: Houghton Mifflin Co., 1968).

⁶Theodore M. Newcomb and Everett K. Wilson (eds.) College Peer Groups (Chicago: Aldine Publishing Co., 1966).

and Feldman have put together an admirable review of research in their report , The Impacts of Colleges Upon Their Students.⁷ Much of the research reported has been accomplished since The American College was published.

Several avenues of research have relevance for the study at hand, though not all are of equal significance. In the pages that follow, the concept of student subcultures will be further developed with a consideration of relevant research. Next, two highly relevant studies by Nasatir and by Selvin and Hagstrom will be considered in depth. General research on living groups will be considered in two parts: the first will treat reports that provide insights into relevant dimensions of group life having an impact on behavior and attitudes, and hence are to be considered in assessing group differences. The second part considers several studies conducted on college housing groups which, in general, attempt to assess group differences. Housing research at Michigan State University will then be considered and will be followed by a general summary of the chapter.

⁷Theodore M. Newcomb and Kenneth A. Feldman, The Impacts of Colleges Upon Their Students, A Report to the Carnegie Foundation for the Advancement of Teaching, 1968.

Student Subcultures and Peer Groups

Clark and Trow have developed a fruitful method of classifying the orientations of students toward higher education and of studying student subcultures.⁸ They postulate four hypothetical subcultures which are characterized according to students' positive or negative tendency to identify on the one hand with ideas and on the other with their college. The resulting orientations are portrayed below.⁹

		Involved with ideas	
		Much	Little
Identify with their college	Much	Academic	Collegiate
	Little	Non-conformist	Vocational

The characteristics of each are described as follows:

Collegiate Culture

The most widely held stereotype of college life pictures the "collegiate culture," a world of football, fraternities and sororities, dates, cars,

⁸Burton R. Clark and Martin Trow, "The Organizational Context," In Theodore M. Newcomb and Everett K. Wilson, College Peer Groups, Chicago: Aldine Publishing Co., 1966, pp. 17-70.

⁹Ibid., p. 24.

drinking, and campus fun....In content, this system of values and activities is not hostile to the college, to which in fact it generates strong loyalties and attachments. It is, however, indifferent and resistant to serious demands emanating from the faculty for an involvement with ideas and issues over and above that required to gain the diploma.

Vocational Culture

To these students, many of them married, most of them working...college is largely off-the-job training, an organization of courses and credits leading to a diploma and a better job than they could otherwise command....These students have little attachment to the college....these students are also resistant to intellectual demands on them beyond what is required to pass the courses...ideas and scholarship are as much a luxury and distraction as are sports and fraternities.

Academic Culture

The essence of this system of values is its identification with the intellectual concerns of the serious faculty members. The students involved work hard, get the best grades, talk about their coursework outside of class, and let the world of ideas and knowledge reach them....For these students, the attachment to the college...is to the institution which supports intellectual values and opportunities for learning; the emotional tie to the college is through the faculty and through campus friends of similar mind and temper.

Nonconformist Culture

These students are often deeply involved with ideas, both the ideas they encounter in their classrooms and those that are current in the wider society of adult art, literature, and politics. To a much greater degree than their academically oriented classmates, these students use off-campus groups and currents of thought as points of reference, instead of the official college culture....The distinctive quality of this student style is a rather aggressive nonconformism, a critical detachment from the college they attend and from its faculty...and a generalized hostility to the college administration....

these students pursue an identity, not as a by-product, but as the primary and often self-conscious aim of their education.¹⁰

In several studies these four subcultures have been described in brief paragraphs and students asked to characterize themselves according to the one best like himself. In a validation study of a new instrument, the College Student Questionnaires, 13,000 entering freshmen representing 23 different institutions were asked to indicate which of the four best described their attitudes for going to college.¹¹

Fifty-one per cent selected the "collegiate" orientation while only 18.5% subscribed to the "academic." The "vocational" was picked by 26.5% and the non-conformist by only 4%. Institutions varied widely in the proportion of students holding each of the four.

Gottlieb and Hodgkins¹² and Hodgkins¹³ have

¹⁰Ibid., pp. 20-24.

¹¹Henry Chauncey, "Excerpt of Remarks," Annual Meeting of the College Entrance Examination Board, October 28, 1964, New York City, Unpublished report, Educational Testing Service.

¹²David Gottlieb and Benjamin Hodgkins, "College Student Subcultures: Their Structure and Characteristics in Relation to Student Attitude Change," The School Review, 71: 1963, 266-289.

¹³Benjamin J. Hodgkins, Student Subcultures--An Analysis of their Origins and Effects on Student Attitude and Value Change in Higher Education, (Unpublished Doctoral thesis, Michigan State University, 1964).

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subjected the constructs to several tests of empirical validity and have noted their relationship to attitude change. Results generally supported the validity of the subcultures and pointed out their relevance in understanding the influence of higher education on the student.

It is important to note that the majority of studies using the Clark-Trow typology, including those cited above, do not classify students as interacting members of a group sharing a similar orientation. Rather, they are simply typed according to selection of or adherence to similar orientations.¹⁴

Newcomb and Feldman, in a broader context than that limited to the Clark-Trow subcultures, have listed several functions extrapolated from many different sources which peer groups are thought to serve.

- (1) As part of the intermediate stage between the family and larger post-college world, the college peer group may help the individual student through the crisis of achieving independence from home.
- (2) The peer group offers general emotional support to the students; it fulfills needs not met by the curriculum, the classroom, or the faculty.
- (3) The college peer group can provide for the student an occasion for and practice in getting along with people whose background, interests and orientations are different from his own.
- (4) Through value reinforcement, the peer group can provide support for not changing....Yet, it can

¹⁴Newcomb and Feldman, op. cit., p. 234.

also challenge old values, provide intellectual stimulation and act as a sounding board for new points of view, present new information and new experiences to the student, help to clarify new self-definitions, suggest new career possibilities, and provide emotional support for students who are changing.

- (5) The peer group can offer an alternative source of gratification and of positive self-image, along with rewarding a variety of nonacademic interests, for students who are disappointed or not completely successful academically....Friends and social ties may also serve to discourage voluntary withdrawal from college for other than academic reasons.
- (6) College peer-group relations can be significant to students in their post-college careers--not only because they provide general social training but also because of the development of personal ties that may reappear later in the career of the former student.¹⁵

Contextual Analysis: Two Studies of Residence Groups

The genesis of this thesis lay in part in two research reports which considered the interaction of behavior and the social context in which the subjects lived. Using data from a larger study, Nasatir noted that the failure rate of a group of male students who had begun school at the same time varied between the six dormitories in which they lived from zero to 56%.¹⁶ The residents

¹⁵ Ibid., pp. 236-237. For readers desiring to probe these dimensions more deeply, note that several references are included in the original report supporting each of the above items.

¹⁶ David Nasatir, "A Contextual Analysis of Academic Failure," The School Review, 71 (1963), 290-298.

of these ostensibly homogenous living units were selected to avoid what he had described as "pronounced differences in the social backgrounds of students living in different types of residence groups."¹⁷ Though he cites no evidence he indicates that the backgrounds of hall residents were "roughly comparable." Suggesting that each dormitory had achieved somewhat of a distinctive character, he classified the nature of each hall. This was accomplished simply according to "the proportion of members expressing agreement with a statement that the most important reason for attending college is to obtain a basic general education and appreciation of ideas."¹⁸ Though his report did not include the number per hall responding positively to the statement, Nasatir further dichotomized the six halls according to "those above and those below the mean of the distribution proportions of group members choosing the academic response as the purpose of a college education."

Nasatir reported that the failure rate was greater for students whose personal academic orientation was out of harmony with the academic context of the dormitory in which they lived (personal academic orientation was also determined by the individual's single response

¹⁷Ibid., p. 292.

¹⁸Ibid., p. 293.

to the same questionnaire item). Specifically, failure rate for "non-academic" students living in "academic" halls was somewhat higher (26%) than for "non-academic" students in "non-academic" halls (14%). Likewise, "academic" students living in "non-academic" halls had a higher dropout rate (12%) than their counterparts in "academic" halls (7%). Thus, though academically oriented students generally had a lower drop-out rate than non-academically oriented students, both did poorest when housed "out of context."

Nasatir also investigated the failure rate of students who were considered as not having been "integrated" into the dormitory. These students were defined as those spending little of their time in company with other members of their residence groups--another single item response from a questionnaire.¹⁹ The failure rate of the non-integrated was twice that of the integrated regardless of academic orientation. The "non-integrated," "non-academic" student residing in an "academic" hall experienced the greatest failure rate (29%) while no "integrated" "academic" student in the "academic context" failed. This lead Nasatir to conclude for the high failing group: "These men are not only out of joint with

¹⁹Ibid., p. 295.

their larger surroundings, but also are denied many of the supports that group membership can provide."²⁰

Several methodological problems make Nasatir's data highly suspect. Chi squares were not presented and his classification system, particularly that of the halls where we were not quoted the actual proportions used, makes it difficult to have confidence in his data. Nevertheless, his findings potentially are highly significant if they can be replicated, in demonstrating an important interaction between the individual and his residence. Later in his dissertation he reported "a pronounced effect upon the failure rate of students already predisposed to failure" in the context of residence halls.²¹ Students predisposed to fail living in highly cohesive groups had a lower attrition rate than students with a similar disposition in less cohesive halls. Little interaction was noted between students not predisposed to failure and their living situation. He does not report a replication of the earlier study. Nevertheless, his results do add to the credibility of the former report.

The second study, by Selvin and Hagstrom, can

²⁰Ibid., p. 296.

²¹David Nasatir, "Social Sources of Academic Failure: A Contextual Analysis," (unpublished dissertation, University of California, Berkeley, 1966), p. 86.

best be described as a report of a research methodology, though its relevance to the study herein reported is based equally, if not more, on the research reported to demonstrate the method.²² The authors are primarily concerned with theories of group structure. After noting the immature state of such theories and the gross inconsistency in lists of group properties put forth by theorists, they suggest "the strategic direction for work on group structure is the empirical reduction of the theoretically derived lists of properties to a few underlying dimensions, which can then be the ingredients of different theories of group structure."²³ To demonstrate their point they offer a description of a method which they refer to as a "multivariate typological procedure" for use in field studies involving a large number of groups. Summarizing their procedure they state:

...standardized data on a large number of variables are gathered from a sample of the members in 15 or more groups. These data are aggregated into means, proportions, and other statistical parameters to describe each group. Factor analysis then reduces to a manageable number the dimensions along which each group is classified. This combination of "aggregative group characteristics" and factor analysis results in factors of group structure and

²²Hanan C. Selvin and Warren O. Hagstrom, "The Empirical Classification of Formal Groups," American Sociological Review, 28: 399-411, 1963.

²³Ibid., p. 402.

types of groups that are statistically powerful and easy to interpret.²⁴

Sixty-one characteristics of each of 20 residence groups in their illustrative study were measured and factor analyzed. Five interpretable factors emerged from the analysis, which were labeled in order: "social satisfaction," "sociometric cohesion," "political conservatism," "economic status and lack of achievement orientation," and "school spirit sentiment," the labels being derived from the variables with high loadings on the respective factors.

The factors were viewed as "dimensions in a 'space' of group properties."²⁵ Each of the 20 groups was then "roughly" plotted in the two-dimensional space determined by scores of the groups on the first two factors, resulting in a small number of broad types on the factors. Though certain of the sorority groups in the sample tended to have similar characteristics, the authors were quick to point out that none of the common labels such as sorority, dormitory, or cooperative house corresponded precisely to any one of their empirically determined classes.

Questionnaire item responses of students in the

²⁴Ibid., p. 399.

²⁵Ibid., p. 406.

sample, whose orientation to higher education had been classified in a manner similar to that used by Nasatir, were compared (though in this case "vocational" responses were used rather than "academic"). This was done according to the empirically determined type of housing in which the students lived. The scanty results reported by Selvin and Hagstrom indicate an interaction between students' orientations, the type of housing in which they live and their questionnaire responses.

Selvin and Hagstrom have published a paper, "Criticisms and Afterthoughts," as an appendix to their recently reprinted study.²⁶ Two of the principle criticisms were directed toward what was felt to be the authors' inaccurate interpretation of, in one case, previous research and, in the other, of their results. Both issues are of only passing interest here. Other criticisms were, however, directed toward an important procedural inadequacy in their proposed computation of factor scores for groups under study. The problem resulted from their use of a smaller number of groups than variables. This does no violence to the factor structure but does prevent the "inversion of the matrix of correlations between

²⁶Hanan C. Selvin and Warren O. Hagstrom, "Criticisms and Afterthoughts," College Peer Groups, ed. by Theodore M. Newcomb and Everett K. Wilson (Chicago: Aldine Publishing Co., 1968), pp. 185-189.

the variables" necessary for the computation of group factor scores.²⁷

The interpretation of the first two factors which seem to suggest two different properties of cohesion was also questioned.²⁸ But the authors have quite adequately defended their findings in a more extensive treatment of the issue.²⁹

Nevertheless, these problems coupled with the proposal by Rettig that multiple discriminant analysis could serve similar ends as those described by Selvin and Hagstrom led to the rejection for the study at hand of their "multivariate typological procedure."³⁰

Selvin and Hagstrom take Rettig to task for failing to clearly distinguish between "classification"

²⁷Hanan C. Selvin and Warren O. Hagstrom, "Reply to Davis," American Sociological Review, 28: 814, 1963.

²⁸David Gold, "Some Comments on 'The Empirical Classification of Formal Groups,'" and Selvin and Hagstrom, "Reply to Gold," American Sociological Review, 29: 736-739, 1964.

²⁹Warren O. Hagstrom and Hanan C. Selvin, "Two Dimensions of Cohesiveness in Small Groups," Sociometry, 28: 30-43, 1965.

³⁰Salomon Rettig, "Multiple Discriminant Analysis: An Illustration," American Sociological Review, 29: 398-402, 1964; A note of appreciation is extended to Dr. Joseph Saupe, Associate Director of Institutional Research, Michigan State University, for having initially suggested the multiple discriminant analysis as an alternate method of analysis.

and "discrimination."³¹ But the former authors are perhaps somewhat overly wedded to the use of the term in its numerical taxonomic context in biology. They make reference to Sokal and Sneath's work on numerical taxonomy.³² But these latter authors do not reject the use of multiple discriminant analysis; rather, they note its limitations particularly in regard to its early uses by Rao³³ who clearly was involved in attempts to discriminate between existing classifications. But this does not exhaust possible uses of the statistic and seems to be the point Rettig attempts to make in the context of research on human groups. Perhaps theirs ought not to be an argument between "classification" and "discrimination," but more appropriately an issue over what is to be classified. Selvin and Hagstrom seem to be concerned really with the classification of group properties,³⁴ while Rettig looks to the classification of "configuration" of groups.³⁵ In any event the particular statistical

³¹Selvin and Hagstrom, "Criticisms....," op. cit., p. 186.

³²Robert R. Sokal and Peter H. A. Sneath, Principles of Numerical Taxonomy (San Francisco: W. H. Freeman and Co., 1963).

³³Ibid., p. 38.

³⁴Selvin and Hagstrom, "The Empirical Classification....," op. cit., pp. 400-404.

³⁵Rettig, op. cit., p. 398.

tool selected should be that one best able to treat the problem at hand.

Research on Groups

Selvin's interest, at least in the classification of groups began with earlier research which pointed out methodological problems and inconsistencies regarding the subject. He had introduced his concept of using "aggregative variables" in a study of the leadership climate in military groups.³⁶ Selvin suggested:

There is no reason why the method developed for inferring measures of perceived leadership from the followers individual ratings cannot be extended to other characteristics of organizations as well. Systematic comparative studies of bureaucracies and other formal groups are rare; it is difficult to summarize the characteristics of a complex organization or even to select appropriate variables for describing them.³⁷

Several other reviewers have also called attention to the problems associated with describing groups.³⁸ In the context of reference groups Hyman and Singer have pointed out the necessity of "a large amount of empiricism"

³⁶Hanan C. Selvin, The Effects of Leadership (Glencoe, Ill.: The Free Press of Glencoe, 1960), p. 28.

³⁷Ibid., p. 164.

³⁸Ivan D. Steiner, "Group Dynamics," Annual Review of Psychology, 15: 422, 1964; Selvin and Hagstrom, op. cit., p. 402; and John K. Hemphill and Charles M. Westie, "The Measurement of Group Dimensions," Journal of Psychology, 29: 325-42, 1950.

and "the development of simple instruments to measure a person's reference groups..."³⁹ Forehand and Gilmer have extensively discussed the value of studying variation in what they term "organizational" or "environmental climate."⁴⁰ They selected five variables from thirty group properties extensively subjected to research as good examples for the study of organizational variation.⁴¹ These five are "size, organization structure, systems complexity, leadership pattern, and goal directions," none of which have been consistent determinants of behavior.⁴² More importantly, the first three are inappropriate for inter-group comparison for this thesis because of the general homogeneity of the house groups along these dimensions. And, in the general context in which they have normally been studied, the final two variables have only limited usefulness, for essentially the same reason. Forehand and Gilmer note that the analogy between individual personality and organizational climate has frequently been used, but suggest "more

³⁹ Herbert H. Hyman and Eleanor Singer, Readings in Reference Group Theory and Research (New York: The Free Press, 1968), p. 13.

⁴⁰ Garlie A. Forehand and B. von Haller Gilmer, "Environmental Variation in Studies of Organizational Behavior," Psychological Bulletin, 62: 361-382, 1964.

⁴¹ Ibid., p. 373.

⁴² Ibid., p. 373.

literally, that climate may be treated as a construct, and the 'personality of an organization' identified and dealt with."⁴³

An excellent example of both uses of organizational climate in this fashion and of the study of interaction of the individual in his environmental context was reported by Halpin and Croft.⁴⁴ Using the Organizational Climate Description Questionnaire, they delineated six "climates" of elementary schools. These are seen as falling along "a continuum defined at one end as Open, at the other, as Closed."⁴⁵

Turning from the classification problem, several studies suggest specific variables related to attitude change and behavioral influence within face to face groups. These are considered below.

An oft quoted study and the basis for the development of important segments of theory of small groups is that of Festinger, Schachter and Back.⁴⁶ Sociometric

⁴³Ibid., p. 377.

⁴⁴Andrew W. Halpin and Don B. Croft, The Organizational Climate of Schools, (Chicago: Midwest Administration Center, The University of Chicago, 1963).

⁴⁵Ibid., p. 2.

⁴⁶Leon Festinger, Stanley Schachter, and Kurt Back, Social Pressures in Informal Groups (Stanford, Cal.: Stanford University Press, 1950). Refer also to the "theory" section in Chapter I of this thesis.

interaction and attitudes within two different married housing projects on the same campus were measured.

Their conclusions follow:

In a community of people who are homogeneous with respect to many of the factors which determine the development of friendships, the physical factors arising from the arrangement of houses are major determinants of what friendships will develop and what social groupings will be formed. These social groupings create channels of communication for the flow of information and opinions. Standards for attitudes and behavior relevant to the functioning of the social group develop, with resulting uniformity among the members of the group. Pressures toward conformity to these standards may result in the exclusion of deviates from the social group. Other people deviate because they were never in communication with the group.⁴⁷

Physical distance between housing units in the above study was basic to the pattern of friendship development. A similar finding in both vertical and horizontal types of residence halls was reported by Yarosz and Bradley.⁴⁸

Newcomb, in another classic study, found that interpersonal relationships tended to stabilize within a relatively short period of time.⁴⁹ It is generally necessary, however, in order for this to occur that acquisition of new information about one another cease.

⁴⁷ Ibid., p. 151.

⁴⁸ Edward J. Yarosz and Harry Bradley, "The Relationship Between Physical Distance and Sociometric Choices in Two Residence Halls," International Journal of Sociometry and Sociatry, 3: 42-45, 1963.

⁴⁹ Theodore M. Newcomb, The Acquaintance Process, (New York: Holt, Rinehart and Winston, 1961).

Stabilization tends to lead to an increased relationship between interpersonal attraction and agreement about other residents.⁵⁰ Newcomb found that relationships were generally well established within four months in two different small groups with members having had no previous acquaintance.⁵¹

Newcomb's findings conflict in one respect with an interpretation Jacobson places on his cross-sectional study of 100 committees similarly structured working for a voluntary organization.⁵² These had been divided into four equal groups: very active committees, medium active, low active and inactive. Many differences across several variables led the author to conclude that the groups were "in various stages of development." For instance, "the potential member's self percept" and "his anticipations of the expectations and projected program of the group" accounted for differences between the groups functioning at lower levels of activity. At higher levels "operating group goals, group reward and sanction systems, and group identification" differentiated levels of activity. This research would seem to

⁵⁰Ibid., p. 207.

⁵¹Theodore M. Newcomb, "The Prediction of Interpersonal Attraction," American Psychologist, 11: 582, 1956.

⁵²Eugene Jacobson, "The Growth of Groups in a Voluntary Organization," Journal of Social Issues, 12: 18-23, 1956.

imply an orderly sequence of developmental steps which does not seem justified by his data. An equally plausible explanation would be that the groups differed in their internal make-up and consequently proceeded along different avenues, a proposition more in accord with Newcomb's findings.

Darley, Gross and Martin conducted an extensive year long study of female college students housed in 13 similar rooming houses.⁵³ Though initially residents seemed heterogeniously mixed, by the end of the year they seemed to have changed in such a way "as to produce homogeniety of variance among the 13 houses." The degree of satisfaction experienced was related to the proportion of membership returning from the previous year; to a lower proportion of students leaving the house during the year; to a greater number of paired or reciprocated sociometric choices; and a higher number of friendship choices within the house compared to outside the house. Group productivity seemed to be related to the quality of leadership and cohesiveness of the group.

Rasmussen and Zander found that when a person

⁵³ John G. Darley, Neal Gross, and William E. Martin, "Studies of Group Behavior: the Stability, Change, and Interrelations of Psychometric and Sociometric Variables," Journal of Abnormal and Social Psychology, 46: 565-596, 1946.

is attracted to an organization and certain issues are important to the group, his level of aspiration conforms to standards attributed to the group.⁵⁴ Feelings of failure may occur from non-conformity to these standards in proportion to his attraction to the group and his perception of the importance of the issues to the organization. These results may be related to Nasatir's⁵⁵ findings reported earlier, and to Kidd's finding that students rejected in sociometric ratings in residence halls among other things "rated themselves lower on scholastic effort" than other residents.⁵⁶

In an important study of reference groups using college housing groups Siegel and Siegel found:

When divergent membership groups with disparate attitude norms were socially imposed on the basis of a random event (on subjects who initially shared a common reference group), attitude change in the subjects over time was a function of the normative attitudes of both imposed membership groups and the individuals' reference groups. The greatest attitude change occurred in subjects who came to take the imposed, initially nonpreferred, membership group as their reference group.⁵⁷

⁵⁴Glen Rasmussen and Alvin Zander, "Group Membership and Self-Evaluation," Human Relations, 7: 239-251, 1954.

⁵⁵Nasatir, op. cit., pp. 290-298.

⁵⁶John W. Kidd, "The Students Live," Evaluation in the Basic College at Michigan State University, Paul L. Dressel, (ed.) (New York: Harper, 1958), p. 174.

⁵⁷Alberta Engvall Siegel and Sidney Siegel, "Reference Groups, Membership Groups, and Attitude Change," Journal of Abnormal and Social Psychology, 55: 360-364, 1957.

Leadership as a variable in the influence of groups on behavior has been studied from many perspectives. Given the roles of the resident advisor, head residents and hall officers, Etzioni's consideration of "charisma" in the context of leadership has relevance here.⁵⁸ Charisma "is the ability of an actor," he suggests, "to exercise diffuse and intense influence over the normative orientation of other actors."

Kidd noted that resident assistants who were relatively high in leadership prestige and in friendship ratings seemed to have high morale and cooperation among their residents.⁵⁹ Golembiewski pointed out that "members of small groups...can identify a rank order of powerful individuals."⁶⁰ These individuals in turn are generally aware of their power position within the group. They behave accordingly," And Taylor reported, in his studies at Sarah Lawrence, "that the quality of life within a given residence depended most of all on the qualifications of the house president for holding office."⁶¹

⁵⁸ Amitai Etzioni, A Comparative Analysis of Complex Organizations (New York: The Free Press of Glencoe, 1961), p. 203.

⁵⁹ John W. Kidd, "An Analysis of Social Rejection in A College Men's Residence Hall" (unpublished dissertation, Michigan State University, 1951).

⁶⁰ Robert T. Golembiewski, The Small Group (Chicago: University of Chicago Press, 1962), pp. 100-101.

⁶¹ Harold Taylor, "Freedom and Authority on the Campus," The American College, ed. by Nevitt Sanford (New York: Wiley & Sons, 1962), p. 791.

Research on Residence Halls

A few years ago Anderson made the interesting observation that of ten schools studied only one had formalized in writing a philosophy of residence hall living.⁶² Though more is now known of the dynamics of college life, the finding hints at the frequent gulf between what is known and its application in residence hall administration. Several areas will be considered in this section; normative systems in residence groups, comparisons with other living styles, and the impact of special programs.

Normative Systems

Lidzey and Urdan observed that "even within the homogeneous college community it appears that individual dorms develop their own standards and preferences in terms of which choice is mediated and oriented," an effect which could "conceal relationships" in studies of the larger community.⁶³ Sinnett found several differences "in diverse variables" between randomly assigned,

⁶²Gary Robert Anderson, "An Examination of Residence Hall Counseling Programs for Men in Ten Selected Midwestern Colleges and Universities," (unpublished dissertation, Northwestern University, 1959).

⁶³Gardner Lindzey and James A. Urdan, "Personality and Social Class," Sociometry, 17: 60, 1954.

freshman coed residents of two dormitories.⁶⁴ Clingan was less successful and noted only one minor difference between residents of two halls differing in architectural style in evaluating the effects of an experimental program applied to both halls.⁶⁵ Boyer chronicled the development of "micro-social systems" among groups of students living together in residence hall suites and noted higher academic performance in groups with high mutual acceptance and an emphasis on studying.⁶⁶

The Harvard University Houses represent one of the early major attempts to create a unique educational residential environment. Jencks and Riesman⁶⁷ characterized them according to students' perceptions of the differing "personalities" of the houses. Undergraduates are generally required to live in the houses after their

⁶⁴E. Robert Sinnett, "Socio-Economic Status and the Use of Campus Facilities: A Tale of Two Dormitories," Personnel and Guidance Journal, 43: 993-996, 1965.

⁶⁵Wallace Eugene Clingan, "The Educational Effects of an Accelerated Personnel Program in the Men's Residence Halls at the University of Missouri" (unpublished dissertation, University of Missouri, 1959), Dissertation Abstracts, 20: 3627.

⁶⁶Ronal K. Boyer, "Student Peer Group: Its Effect on College Performance" (unpublished dissertation, Case Institute of Technology, 1965).

⁶⁷Christopher S. Jencks and David Riesman, "Patterns of Residential Education: A Case Study of Harvard," The American College, ed. by Nevitt Sanford (New York: Wiley & Sons, 1962), pp. 731-773.

freshmen year. A senior professor administers each house assisted by several younger faculty members who also live in and act as tutors. Students may request a certain house but selection is somewhat controlled to provide each house with a cross-section of the student body. Vreeland and Bidwell studied values and attitudes of residents, tutors and the faculty house master.⁶⁸ The houses were found to differ along two broad categories of house goals, one centering on an "individual-orientation," that is, centering around respect for individual variations in attitudes and behavior styles. The other, the "collectivity-orientation," emphasized group cohesiveness and loyalty. The extent of change in residents' values was "strongly" related to "peer involvement," a measure of mutual attraction among residents of a given house. Where peer involvement was high, student change was toward peer values and somewhat away from those of the Master's. Where peer involvement was low, however, student change was more toward that of the Master's.

Based on the patterns of interaction between students at Sarah Lawrence, Taylor found some confirmation that "the relationships among students in the residences are the greatest single factor in their general attitude

⁶⁸Rebecca Vreeland and Charles Bidwell, "Organizational Effects on Student Attitudes: A Study of the Harvard Houses," Sociology of Education, 38: 233-250, 1964-65.

toward the college and toward themselves."⁶⁹ Lozoff came to a similar conclusion and offers a partial interpretation:

...the relationship between the social environment of the students and the intellectual receptivity and emotional well-being was frequently noted by students and interviewers over the four years (of the study). In the Interviews, most of the students indicated that much of their mental and psychic energies were involved in developing a sense of their own separatedness and uniqueness and modifying their behavior so that they could relate to others in a gratifying and meaningful way. The residence groups to which they belonged played an important part in defining the patterns of adaptation.⁷⁰

Lehmann and Dressel concur and add another dimension to our understanding of interpersonal relationships in the halls.

The most significant experience in the collegiate lives of these students has been their association with differing personalities in their living unit. Although the peer group, comprised of the total body of students, did not have too much impact upon the behavior of these students, the analysis of interview and questionnaire data strongly suggested that discussions and "bull-sessions" were a potent factor in shaping the attitudes and values of these college students.⁷¹

⁶⁹Taylor, op. cit., pp. 789-790.

⁷⁰Marjorie M. Lozoff, "Personality Differences and Residential Choice," Growth and Constraint in College Students, ed. by Joseph Katz. Quote taken from chapter draft received from the author through personal correspondence.

⁷¹Irvin J. Lehmann and Paul L. Dressel, Critical Thinking, Attitudes, Values in Higher Education (Cooperative Research Project No. 590, Department of Health, Education and Welfare, Michigan State University, 1962), p. 268.

Several studies demonstrate selective differences between the residents of different styles of living accommodations such as Greek units, residence halls, boarding houses, and residences of commuters. Residence hall groups tended to fall between fraternities at the high end and boarding units and commuters at the low on measures of social relationships.⁷² Residence hall students tended to be higher in independent thought than fraternities⁷³ and had a higher proportion of over-achieving males while fraternities had a higher proportion of under-achievers.⁷⁴ Hartnett at Michigan State University found that residence hall living tended to be associated with positive changes in academic achievement in contrast to Greek living which was associated with negative change.⁷⁵

⁷²Robert Dollar, "A Study of Certain Psychological Differences Among Dormitory, Fraternity, and Off-Campus Freshman Men at Oklahoma State University" (unpublished dissertation, Oklahoma State University, 1963); and Roger Jay Fritz, "A Comparison of Attitude Differences and Changes of College Freshman Men Living in Various Types of Housing" (unpublished dissertation, University of Wisconsin, 1956).

⁷³Ibid.

⁷⁴Charles L. Diener, "Similarities and Differences Between Over-Achieving and Under-Achieving Students," Personnel and Guidance Journal, 38: 396-400, 1960.

⁷⁵Rodney T. Hartnett, "Place of Residence as a Factor in Academic Performance Patterns of College Students" (unpublished dissertation, Michigan State University, 1963).

However, the several studies that have investigated differences in academic performance between housing types are generally inconsistent, perhaps in part because internal variations within types have generally not been reported except for fraternities.⁷⁶ In this latter instance regarding fraternities and sororities, several studies indicate important differences in status, influence and academic performance of Greek units.⁷⁷ Parenthetically, it should be pointed out that these groups have been well established in the literature as highly attractive reference groups influencing student behavior along several dimensions. Apparently, with infrequent but important exceptions such as the Harvard Houses, the relative attraction of residence halls is not nearly as great as that of the Greek units. This is not meant to exclude the possibility of a given hall or subgroup within the hall playing a role similar to that of the typical Greek unit. Indeed, the exploration of this possibility is central to this study.

⁷⁶For example see R. E. Prusok and W. B. Walsh, "College Students' Residence and Academic Achievement," Journal of College Student Personnel, 5: 180-184, 1964.

⁷⁷E. F. Gardner and G. G. Thompson, Social Relations and Morale in Small Groups (New York: Appleton-Century-Crofts, 1956); Robert E. Matson, "A Study of the Influence of Fraternity, Residence Hall and Off-Campus Living on Students of High, Average and Low College Potential," Journal of the National Association of Women Deans and Counselors, 26: 24-29, 1963; and William A. Scott, Values and Organizations: The Study of Fraternities and Sororities (Chicago: Rand McNally Co., 1965).

Two other important studies that reflect the interaction between personality, residential choice, and the influence of various types of broad living categories are those of Selvin⁷⁸ and Lozoff.⁷⁹ In a very insightful, though somewhat impressionistic analysis of residence hall life at Berkeley by noted architects, the point is forcefully made that the traditional "dormitory conditions tend to filter out students whose presence adds diversity and a sense of intellectual dialogue to the (university) community."⁸⁰ They are convinced that the halls, at least at Berkeley, cater to the "collegiate" type of student to a large extent because of the failure in the halls to adequately provide for "independence, (and) a diversity of activities and friends...characteristics of successful student living. And yet, it is the search for these conditions that drives many students out of the dormitory."⁸¹

⁷⁸Hanan C. Selvin, "The Impact of University Experiences on Occupational Plans," School Review, 71: 317-329, 1963.

⁷⁹Lozoff, loc. cit.

⁸⁰Sim Van der Ryn and Murray Silverstein, Dorms at Berkeley (Berkeley, Calif.: Center for Planning and Development Research, University of California, 1967), p. 27.

⁸¹Ibid., pp. 27-28.

Impacts of Special Programs

Neither Chesin⁸² nor Herbert⁸³ were able to discern any significant difference in attitude change, academic performance or satisfaction between freshmen living in halls with older students and those living in units without upper-classmen or with only a small proportion. Chesin, however, did find that more freshmen withdrew from units housing upper-classmen than from "freshmen units."⁸⁴ Though Chesin does not consider the possibility, perhaps, were more information available, this finding could be related to Nasatir's provocative results.

A few studies have indicated some positive effect of roommates enrolled together in common courses or curricula and correlation between their academic performance, but the results are not consistent.⁸⁵

Two final studies are included in this section because of their provocative implications as portraying

⁸²Sorrell E. Chesin, "The Differential Effects of Housing on College Freshmen" (unpublished dissertation, Michigan State University, 1967).

⁸³David J. Herbert, "The Relationship Between the Percentage of Freshmen on a Residence Hall Corridor and the Grade Point Averages of the Occupants," College and University, 41: 348-352, 1966.

⁸⁴Chesin, op. cit., p. 101.

⁸⁵Newcomb and Feldman, op. cit., p. 213-216.

significant dimensions of house life. Lozoff, noting that the "self-esteem of most freshman and sophomore students is not very sturdy," described the role frequently played by fraternities in arranging social opportunities and thus facilitating social growth.⁸⁶ To the extent a residence hall group could facilitate the same interaction, one could speculate that its attractiveness to the residents would be enhanced.

In the second study Davis⁸⁷ reported "the proportion of seniors who endorse intellectual values ('true climate of intellectualism') and the proportion who see their classmates as having intellectual values ('perceived climate of intellectualism')." Across 135 colleges and universities on a given campus the proportion of students perceived as having intellectual values consistently lagged behind the proportion endorsing intellectual values.⁸⁸ Though the study does not directly relate to residence halls, it does call into question why this finding occurred. An alternate interpretation to those offered by Davis, would be that contra-intellectual peer group norms impinging on students create a condition

⁸⁶Lozoff, loc. cit.

⁸⁷James A. Davis, "Intellectual Climates in 135 American Colleges and Universities: A Study in 'Social Psychophysics,'" Sociology of Education, 37: 110-128, 1963.

⁸⁸Ibid., pp. 117-119.

where students frequently deny their intellectual inclinations before their peers. Hence, students only infrequently would see other students reflecting similar values. For a positive intellectual environment to emerge these postulated norms would have to be reduced.

Residence Halls At Michigan State University

Several studies in recent years have been directed toward a partial assessment of the Michigan State University housing program. Centra, using Pace's College and University Environment Scales (CUES), compared perceptions of residence hall environment separately for freshmen and upper-classmen grouped according to the design and location of their residence halls.⁸⁹ Differences were noted on what Centra termed "an intellectual-propriety dimension;" that is, certain residence groups "tended to be more academically competitive and esthetically aware, as well as less convention-flouting, than other residence groups." For both men and women the Brody group of halls, fairly modern structures each building housing a single sex somewhat far removed from campus, were perceived as having the least intellectual environment.

⁸⁹John A. Centra, "Student Perceptions of Residence Hall Environments," Office of Institutional Research, Michigan State University, June 13, 1966 (unpublished office report).

At the opposite end of campus and on the opposite end of the ratings were a small group of men's halls (Abbot and Snyder). Women rated the West Circle group of halls highest, somewhat removed from Abbot and Snyder but of the small general physical design. Between these extremes were the "living-learning units" (Case-Wilson-Wonders, Akers-Fee-McDonel) and in addition, for women the East Campus Group (Mason and Phillips). The living-learning units are large structures housing men in one high-rise wing and women in another separated by a commons facility housing residence hall staff, dining and recreation areas, and faculty offices and classrooms. Certain of the units have, in addition, auditoria or branch libraries and laboratories. Some evidence was also found suggesting that students' perceptions of their residence hall environment may color their views of the total university environment.

Adams, in an evaluation of the first of the living-learning units working from the framework of the Clark-Trow subcultures, found that at the beginning of the third year at Michigan State "subculture identity" differentiated a student's residence.⁹⁰ "Collegiate"

⁹⁰ Donald Van Adams, "An Analysis of Student Subcultures at Michigan State University" (unpublished dissertation, Michigan State University, 1965), p. 128.

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students tended to move to fraternities, "academic" students to supervised housing and cooperatives, "vocational" to married or unsupervised housing while the small number of non-conformists tended to remain in the residence halls. In the fourth year the general tendency in all categories was toward unsupervised housing.

Responses of the sample of former residents indicated that 54% found their experiences in their living group to have been the most profitable of their college career. In retrospect they highly favored the coeducational and all-freshmen aspects of the living unit.⁹¹

To what extent their perceptions were distorted through the Hawthorne effect as a result of the special treatment of the hall, or in their not having living elsewhere, or by their having to resort to memory recall some three years after the experience is not known. However, these latter findings to a large extent parallel those found by Olson.⁹²

Over a period of years Olson has assessed the somewhat unique characteristics of the Michigan State University living-learning units and their impact on both students and faculty. Beginning with an open-ended

⁹¹Ibid., pp. 123-125.

⁹²LeRoy A. Olson, "Methods and Results of Research on Living-Learning Residence Halls" (paper read at the annual Forum of the Association for Institutional Research, Boston, Massachusetts, May 3, 1966): several other reports by Olson are available through the Office of Evaluation Services, Michigan State University.

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questionnaire study of residents of Case hall, the living-learning unit studied by Adams, Olson developed various versions of a fixed response questionnaire which was administered to residents of various halls over a period of years. Included were items about several aspects of the intellectual and cultural life of the University. "Attitudes toward class atmosphere, student-instructor contact, advising, study methods and conditions, student inter-relationships, social activities, residence hall conduct, regulations, accommodations and residence hall life were also considered."⁹³

General results indicated differences between the response patterns of male and female residents and between the various types of halls grouped somewhat as they were in Centra's study.⁹⁴ Faculty responses to the living-learning units like those of the students were generally favorable, among other things, indicating more out of class student contacts and a more informal atmosphere.⁹⁵ However, only "inconsistent" results were noted in comparing performance on common final examinations between residents of living-learning halls and other halls.⁹⁶

⁹³Ibid., p. 5.

⁹⁴Centra, loc. cit.

⁹⁵Olson, op. cit., p. 7.

⁹⁶Ibid., pp. 7-8.

Summary and Conclusions

In this chapter several relevant themes have been considered in order to lay a foundation for the further study of the characteristics of small group life in residence halls and the influence of these characteristics on behavior of residents.

Students were able to characterize themselves according to four hypothetical constructs relating to different orientations to college life. These constructs were useful in assessing the manner in which student subcultures mediate the influence of the college environment. They apparently possess a fair amount of construct validity.

There were strong indications of an interaction between the characteristics of various residence groups and of the residents along several dimensions. The methodology for describing the "personality of groups" was not consistent in part because of lack of concurrence as to what are the significant dimensions and in part because of the different methodologies employed. The specific questions asked varied and hence would dictate different statistical approaches and different theoretical or empirical frameworks. However, new applications and multivariate techniques were indicated as new and potentially promising approaches.

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Nevertheless, within the research on small groups several broad categories of variables have consistently demonstrated a relationship to attitude change or have in other ways influenced or mediated the interaction between the larger social system, the group, and the individual. Certainly, under certain circumstances it was evident that a housing unit had the capacity to take on the characteristics of a reference group. Propinquity, a sufficient length of time for a normative system to develop, a capacity within the group to satisfy various needs of residents (particularly those associated with status, acceptance and survival in the academic community), leadership, and group cohesion have each been shown to be related to the attractiveness of housing groups. And they are related to the degree to which housing groups serve more than simply a membership group function.

There were some empirical indications of the development of different normative systems which differentially influenced residents within living units. This was most pronounced in but not limited to fraternities and sororities which do develop strong norms and demand a high degree of compliance. The review of the literature nevertheless revealed no studies, with the possible exception of that of Selvin and Hagstrom, having had as their primary purpose the systematic study of relatively homogenous residence hall groups.

Of the several studies assessing the impact of college living the majority considered differences between, rather than within types of housing which may well have masked the very differences they attempted to uncover.

Studies at Michigan State University with its highly articulated living-learning residence halls, yet with a mixture of traditional units, indicated inter-hall differences in students' perceptions of the University and of their living conditions.

In conclusion, the review underscored the possibility of discerning significant and relevant variations in the "personality" of groups within the Michigan State residence hall program. If, indeed, such differences can be empirically assessed, the findings may enrich our understanding of those conditions best calculated to create an enriching educational environment. The instruments and methodology employed in this attempt at such an assessment are considered in the following two chapters.

CHAPTER III

INSTRUMENTATION

The description of methodology of the study has been subdivided into two chapters. The first of these is devoted to a presentation and discussion of the five instruments used in collecting the data. In the following chapter the population and sample, the hypotheses, and methodology are discussed. The five instruments are, in the order in which they are presented, (1) the College Qualifications Tests, (2) the Michigan State University Reading Test, (3) the Attitude Inventory consisting of four scales from the Omnibus Personality Inventory, (4) a measure of the four Clark-Trow subcultures, and (5) the House Analysis Survey. The latter is an instrument designed for this study to assess characteristics of life within residence hall houses (copies of instruments 4 and 5 appear in the Appendix).

College Qualification Tests (CQT)

The CQT consists of three tests measuring verbal

ability, numerical ability and general information.¹ Their three scores contribute to a total score which the authors indicate to be "highly predictive of first semester grade point average."² Validity coefficients range from .34 to .73.³ The authors also report corrected odd-even score reliability coefficients of .97 for male college freshmen and .96 for female freshmen.⁴ Lehmann and Dressel have reported a split-halves coefficient of .93 on a Michigan State University sample.⁵ Only CQT total scores were used in this study.

Michigan State University Reading Test

This is a 45 item test developed at Michigan State University as a measure of students' ability to comprehend reading material.⁶ Lehmann and Dressel report a .79 reliability coefficient from a group of

¹George Bennett, Marjorie G. Bennett, Winburn L. Wallace, and Alexander G. Wesman, College Qualification Tests, Manual (New York: The Psychological Corporation, Revised, 1961).

²Ibid., p. 45.

³Ibid., p. 46.

⁴Ibid., p. 53.

⁵Irvin J. Lehmann and Paul L. Dressel, Critical Thinking, Attitudes, Values in Higher Education (Cooperative Research Project No. 590, Office of Education, U. S. Department of Health, Education and Welfare, Michigan State University, 1962), p. 24.

⁶"MSU Reading Test" (East Lansing, Michigan: Office of Evaluation Services).

Michigan State Freshmen⁷ and correlations with the CQT Total Score of .70 for male freshmen and .71 for females.⁸

Attitude Inventory (AI)

Four scales from the Omnibus Personality Inventory (OPI) were combined for the study and administered to the sample under the title, Attitude Inventory. The four included were "Thinking Introversion" (TI). "Theoretical Orientation" (TO), "Estheticism" (Es), and "Autonomy" (Au) and are described below.

Thinking Introversion (TI) - 60 items

Persons scoring high on this measure are characterized by a liking for reflective thought and academic activities. They express interests in a broad range of ideas and in a variety of areas, such as literature, art and philosophy. Their thinking is less dominated by objective conditions and generally accepted ideas than that of thinking extroverts (low scorers). Most extroverts show a preference for overt action and tend to evaluate ideas on the basis of their practical, immediate application.

Theoretical Orientation (TO) - 32 items

This scale measures an interest in, or orientation to, a more restricted range of ideas than is true of TI. High scorers are interested in science and in some scientific activities, including a preference for using the scientific method in thinking. They are generally logical, analytical, and critical in their approach to problems.

⁷Lehmann and Dressel, loc. cit.

⁸Ibid., p. 321.

Estheticism (Es) - 24 items

High scorers endorse statements indicating diverse interests in, as well as an appreciation of, artistic matters and activities. The focus of their interests tends to extend beyond painting, sculpture and music and includes interests in literature and dramatics.

Autonomy (Au) - 40 items

The characteristic measured is composed of non-authoritarian attitudes and a need for independence. High scorers are sufficiently independent of authority, as traditionally imposed through social institutions, that they oppose infringements on the rights of individuals. They are tolerant of viewpoints other than their own, and they are nonjudgmental, realistic, and intellectually liberal.⁹

The OPI was originally designed by McConnell and Heist for use in studies of growth and development of students using scales derived from several sources which, for the most part, were thought to measure characteristics of self-actualizing people.¹⁰ Six of the fourteen scales in the current version of the OPI have been used as a "composite index of the degree of intellectual

⁹"Omnibus Personality Inventory (Form F) --- Brief Scale Descriptions," Center for the Study of Higher Education, Berkeley, California, no date (mimeographed).

¹⁰Omnibus Personality Inventory, Research Manual (Berkeley, Calif.: Center for the Study of Higher Education, 1962); Appreciation is extended to Dr. Paul Heist, Director, for granting permission to use portions of the OPI. The OPI was distributed for research purposes only and is copyrighted by the Center for the Study of Higher Education, 1963.

orientation" of students.¹¹ These six include the four scales described above plus two scales, "Complexity" and "Religious Orientation."

Brown, using four of the six, Thinking Introversion, Theoretical Orientation, Estheticism and Complexity, studied relationships between first year freshman grades, self-reports of intellectual activities and the scale scores.¹² Correlation coefficients between the OPI scales and the intellectual activities ranged from .10 to .49, with a median of .24. Only the TO scale differed appreciably from zero (.16) among the OPI scales and the activity measures when correlated with grade point average. In another report Brown also noted that scale scores increased more for students living in a residence hall subjected to an enrichment program of informal contacts with faculty than for a control group not involved in the special program.¹³

¹¹Personal correspondence from Paul Heist, Director, Center for the Study of Higher Education, Berkeley, Calif., Sept. 17, 1964.

¹²Robert D. Brown, "How Compatible are the Intellectual and the Academic Aspects of College Life? An Investigation of the Relationship Between the Intellectual and the Academic Aspects of College Life" (paper read at the American Personnel and Guidance Association Convention, Dallas, Texas, March, 1967).

¹³Robert D. Brown, "Manipulation of the Environmental Press in a College Residence Hall," Personnel and Guidance Journal, 46 (1968), 550-560.

Table 3.1 Reliability coefficients (internal consistency) for four Omnibus Personality Inventory scales^a

Sample	Scales			
	TI	TO	Es	Au
Normative Group* (N=2,390)	.85	.74	.80	.80

*Kuder-Richardson: Formula #21

^aCenter for the Study of Higher Education, Berkeley, Calif., Omnibus Personality Inventory Research Manual, 1962, p. 11 (Since the collection of data for this thesis a later version of the OPI has been published. The scales of the more recent version are very similar to those used in this thesis. The most significant change is the reduction of the TI scale from 60 to 43 items).

In Table 3.1, reliability information concerning the OPI scales included in the Attitude Inventory is presented. The data were obtained from a normative sample representing several colleges and universities and suggest a reasonably high level of internal consistency. Intercorrelations of the four scales, MSU Reading test, CQT, and fall and winter accumulative grade-point-average for the 637 male freshmen investigated in this report are presented in Table 3.2.

These four OPI scales were included in this study for both theoretical and pragmatic reasons. If it were possible to meaningfully discriminate between the

Table 3.2 Product-moment correlation coefficients between four scales from the Omnibus Personality Inventory, MSU Reading Test, CQT total, and accumulative fall and winter quarter grade-point-average, 1964-65, for 637 male Michigan State University freshmen

Variables	1	2	3	4	5	6
1. Thinking Introversion						
2. Theoretical Orientation	.67					
3. Estheticism	.59	.28				
4. Autonomy	.31	.33	.13			
5. MSU Reading Test	.32	.32	.20	.39		
6. CQT total	.29	.34	.20	.40	.77	
7. Two Qtr. G.P.A.	.19	.17	.06	.22	.49	.51

characteristics of the 27 houses included in this study, one might expect a differential impact on freshman attitudes as a result. Particularly, if within a given house or group of houses, peer-norms seemed more in support of academic-intellectual variables than in other houses, one might expect the impact of such an environment to be positively reflected in the attitudes of freshman residents. Likewise, if the environment were anti-intellectual, the reverse might result. The six scales purported to measure intellectual disposition seemed apropos to the question (The reader may wish to review in this regard

the discussion of a "Climate of Learning" presented in Chapter I).

It was felt, however, that the average respondent should be able to complete the test battery within a certain length of time in order to insure maximum student cooperation for both pre- and post-test sessions. It was therefore decided that the total length of the Attitude Inventory should not exceed 150 items, somewhat under the 196 of the six scales. The selection of which four of the six scales to be finally included was not totally arbitrary.

The autonomy scale was of interest over and above its inclusion as one of the six measures of intellectual disposition. The allegation has been made that traditional residence hall life, despite the best of intentions, may inhibit independence and individual growth rather than foster these traits.¹⁴ Though a comparison between types of housing (e.g. residence halls, fraternities, off-campus housing) rather than within types would be necessary to adequately test this proposition, variations in house characteristics might nevertheless differentially influence growth toward autonomy.

¹⁴Sim Van der Ryn and Murray Silverstein, Dorms at Berkeley (Berkeley, California: The Center for Planning and Development Research, University of California), pp. 27-28, 65-68.

The Thinking Introversion, Theoretical Orientation, and Estheticism scales were felt (somewhat arbitrarily) to assess attitudes that might best be subject to change in a positive academic climate. These three scales comprised all but one of those used by Brown in his assessment of intellectual disposition.¹⁵ Heist had also indicated that these were three of the four that were under consideration in other studies of intellectual disposition (the forth being Complexity which was also used by Brown).¹⁶

Student Subcultures

In order to obtain an indication of students' orientations toward higher education and hence of the subculture with which they might individually identify, four descriptive paragraphs paralleling the Clark-Trow postulated subcultures were used in the study.¹⁷ Students were requested to indicate which of the four paragraphs best described the kind of person they considered themselves to be and to respond to other related questions. Thus, the paragraphs constitute operational definitions

¹⁵Brown, loc. cit.

¹⁶Paul Heist, Director, Center for the Study of Higher Education, Berkeley, Calif., Telephone inquiry, August, 1964.

¹⁷See pp. 39-41.

of the subcultures. The paragraphs follow.

Type 1 (Vocational)

This kind of person views education principally as a means of preparing for his professional future. He is not particularly disinterested in the social or purely intellectual phases of campus life, though his participation compared to some may be limited. This person does his homework but tends to do little outside reading or restricts his reading to the light, general entertainment variety. All things considered, this person's primary reason for being in college is to obtain professional training.

Type 2 (Nonconformist)

This person is interested in learning about life in general, but in a manner of his own choosing. He is very interested in the world of ideas and books, and eagerly seeks out these things. Outside of the classroom, this person would attend such activities as the lecture-concert series, Provost lectures, foreign films, etc. This person often pursues his own interests in place of or in addition to mere course requirements and will frequently do extra readings in order to obtain a more complete understanding of the world in which he lives. From a social point-of-view, this person tends to reject activities such as fraternities, sororities, and the social events that many consider a part of campus life. When this person does join, it will usually be one of the more intellectual, academic or political campus organizations. For the most part, this person would consider himself to be someone who is primarily motivated by intellectual curiosity.

Type 3 (Academic)

This person is in some respects like Type 2 noted above. He is concerned with books and the pursuit of knowledge, but is also the kind of person who leads an active social life on campus. He is interested in getting high grades and tries to maintain a high grade-point average. He is the kind of person who will eagerly work with student or hall government, fraternities, committees, and activities of this type. He would feel that both the social side of college life and the academic are important for his general development.

Type 4 (Collegiate)

This is the kind of person who is more concerned with the social phases of college life and learning to get along with individuals. He identifies closely with the college and enjoys attending as many campus social and athletic events as possible. This person may be interested in intellectual kinds of things but will, for the most part, find greater satisfaction in student government, parties, activities, etc. He is concerned about his education but feels that the development of his social and leadership skills are certainly important. Much of his college life will be centered around non-academic type activities such as committees, fraternities or sororities, or resident hall type activities. This person will try to maintain his grades but does not feel that he must necessarily make the highest grades or go out of his way to do extra or non-assigned readings in order to be a success in college.

Gottlieb and Hodgkins originally developed the descriptive paragraphs of the Clark-Trow subcultures from which the above were adapted.¹⁸ After pre-testing the statements they concluded that they "were reasonably valid." The paragraphs were subsequently used in the "Senior-Year Experience Inventory," as a part of an extensive four year study of attitudes and value change at Michigan State University.¹⁹

The "College Student Questionnaire," a relatively new instrument published by the Educational Testing Service also incorporated descriptive paragraphs of the

¹⁸David Gottlieb and Benjamin Hodgkins, "College Student Subcultures: Their Structure and Characteristics in Relation to Student Attitude Change," The School Review, 71 (1963), 266-289.

¹⁹Lehmann and Dressel, op. cit., p. 300.

four subcultures though these were not identical to those authored by Gottlieb and Hodgkins. Adams used the version from ETS in his study of subcultures at Michigan State University.²⁰

The paragraphs used in this study, and quoted previously in this chapter, were modified slightly from those developed by Gottlieb and Hodgkins in order to incorporate part of the phraseology used in the ETS version. The latter seemed more in harmony with the original conceptions of the subcultures postulated by Clark and Trow.

The typology in any of the forms in which it has been used thusfar must be cautiously interpreted for, as Hodgkins indicated, the paragraphs can serve only as "crude" indicators.²¹ Nevertheless it was thought that the paragraph approach, having a sound basis in theory, would be more appropriate for the purposes of this study than the single questionnaire item approach used by Nasatir²² and Selvin and Hagstrom²³ in describing students' orientations to college. Certain salient points have been

²⁰Donald Van Adams, "An Analysis of Student Subcultures at Michigan State University" (unpublished dissertation, MSU, 1965), pp. 46-49.

²¹Benjamin Joseph Hodgkins, "Student Subcultures--An Analysis of their Origins and Affects on Student Attitude and Value Change in Higher Education" (unpublished dissertation, Michigan State University, 1964), p. 113.

²²David Nasatir, "A Contextual Analysis of Academic Failure," The School Review, 71 (1963), 290

²³Hanan C. Selvin and William O. Hagstrom, "The Empirical Classification of Formal Groups," American Sociological Review, 28 (1963), 399-411.

made by Hodgkins concerning the use of the paragraphs and are quoted here.

They (the subcultures) are not mutually exclusive. This is in keeping with the point...that differences between students in educational goal orientation were differences of degree not kind. The intent in developing these statements was not to force the subject into a category which may have distorted his response, but to make the scope of the statement sufficiently broad to allow relatively easy recognition of similarity on the part of the respondent.²⁴

House Analysis Survey (HAS)

Central in the collection of the data was the House Analysis Survey (HAS), a new instrument constructed for this study to assess (1) characteristics of house life in residence halls and (2) related attitudes of residents. It consists of 128 questionnaire items. It also includes the four paragraphs describing the Student Subcultures which were used to obtain a post-test measure of students' orientations to college. The items were divided into two sections to facilitate administration and were designed to be efficiently scored on the IBM 1230 Optical Scanner.

A large number of questionnaire items were created originally for this study having their roots in research and theory related to group life. A review of both the theoretical and empirical literature had suggested several possible avenues for exploration of

²⁴Hodgkins, loc. cit.

relevant dimensions of house life. These have been reviewed in Chapters I and II and include such molar dimensions as group morale and cohesion, individual and group status and prestige, general attractiveness and satisfaction with the group. Others are academic and intellectual climate and leadership, the capacity of group life to satisfy social needs, physical characteristics of the buildings and resulting patterns of interactions, program differences, length of association among residents, group goals and individual characteristics of residents. In addition, head residents, resident assistants, students, and other housing officers were invited to suggest other salient characteristics of house life. Next several research instruments were studied in search of ideas for specific items to measure the above dimensions. These included both the College Characteristics Index and its later version, the College and University Environment Scales, the College Student Questionnaires, and the local instruments developed by Olson for use in assessing attitudes of students in Michigan State University residence halls.²⁵ From these

²⁵C. Robert Pace and George G. Stern, "An Approach to the Measurement of Psychological Characteristics of College Environments," Journal Educational Psychology, 49 (1958), 269-277; C. Robert Pace, College and University Environment Scales (Princeton, N. J.: Educational Testing Service, 1963); Richard E. Peterson, College Student Questionnaires (Princeton, N. J.: Institutional Research Program for Higher Education, Educational Testing Service, 1965); LeRoy A. Olson, "Student Attitudes Inventory" (East

instruments several additional items were adapted for use in the specific context of residence hall and house assessment. In particular, several items were incorporated from Olson's studies which had been shown to discriminate between halls and/or were otherwise of direct interest.

To reduce the number of items, several factors were considered. It was felt that the majority of the items should reflect house or hall characteristics rather than students' general attitudes about the university or themselves. In this sense the questionnaire was patterned after the CCI and CUES where students are asked to serve as "reporters" whose "aggregate judgment provides an opinion poll approach" to the characteristics of a college environment.²⁶ This is not meant to infer, however, that the HAS has the sophistication of the surveys developed by Pace. It was also felt that the items should reflect variables that might logically or theoretically be expected to vary from house to house. And, in general, items sampling as many pertinent characteristics as possible were to be included within the practical

Lansing, Mich.: Office of Evaluation Services, Michigan State University, 1964).

²⁶C. Robert Pace, Preliminary Technical Manual: College and University Environment Scales (Princeton, N. J.: Educational Testing Service, 1963).

limits of the statistical design and time allotted within testing sessions.

As was pointed out in Chapter I, theories of group characteristics are in an early stage of development. Hence no a priori assumptions were made that all or even the most significant measures of group life were finally included.

Several items were eliminated on the basis of apparent irrelevancy, redundancy or inadaptibility to the scoring procedures or general format of the instrument. The remaining items were then submitted to colleagues in the Offices of Residence Hall Programs and Evaluation Services and to the author's thesis committee for reactions. Additional items were deleted or modified. Finally, the resulting preliminary form of the instrument was administered to a group of approximately thirty students, including two resident assistants, representing two different houses which were not to be included in this study. Their impressions and suggestions were received and final modifications were made.

By way of overview the HAS may be subdivided into several parts. The first 14 items provide demographic information about the respondents including length of residence in their house. On items 15 through 34 a nine-point scale is used by the respondents to rate their house or hall on several dimensions of house life

such as "participation in intramural sports" and "Ability to study in the house." Respondents are requested to rank order items 35 through 44, each of which describes a house activity, in the order of the degree of concern which the house has shown for each activity. On items 45 through 54 the same ten activities are reranked in the order of what the respondent would most prefer to be the most important activities of the group.

Questions 55 to 58 treat the climate of learning of the house and residence hall. These questions are preceded by an operational definition of the climate of learning which might exist within a house. Respondents rate their house climate and respond to other related questions.

In Part II of the HAS, students respond on a five-point scale to 63 questions which assess many dimensions of house or hall life. On a few questions, respondents indicate their attitudes toward either personal items or characteristics of the University community. The student subculture descriptive paragraphs follow and students are asked to respond to four questions about these. Two open-ended questions provide sociometric data. These are followed by a final question on which students can react to the questionnaire itself and/or discuss other dimensions of house or hall life inadequately treated in the HAS.

No attempt was made to apply traditional reliability formulas to the questionnaire or to obtain a re-test measure of reliability. It is questionable whether or not appropriate or adaptable reliability measures are available that could be applied to the HAS in toto. A general measure of reliability is implied in the analysis of the data. As was indicated earlier, respondents serve as reporters of house characteristics for the majority of the items, in the questionnaire. In this regard each item is independent; to the extent that residents agree on the item one can then infer that the house characteristic assessed has been reliably measured. To the extent that residents disagree the reliability of their aggregated responses diminishes. Thus reliability is an inverse function of the standard deviations of house means on the items.

Horst has developed a somewhat infrequently used "generalized expression for the reliability of measures."²⁷ It was initially conceived for use in situations where several measures of the same function are obtained for each of a group of persons such as when individuals are rated by several judges. Horst states in his summary:

²⁷Paul Horst, "A Generalized Expression for the Reliability of Measures," Psychometrika, 14 (1949), 21-31.

In general the number and source of the measures may vary from one member of the group to another. We take the mean of the measures for each person as the best estimate of the function for that person. The conventional formulas can not be used to determine the reliability of a set of means so obtained. A formula is developed which provides a unique estimate of the reliability of such a set of means. The formula is more general than some of the well-known reliability formulas, so that these formulas are shown to be special cases of the more general formula.²⁸

His formula was applied to the HAS items where appropriate (demographic and attitude measures were omitted).

In justifying the application the analogy is made between obtaining several measures of the same variable for an individual and obtaining several measures of a variable for a house.

The formula is based on the well-known generalized formula for the reliability coefficient

$$r = 1 - \frac{\sigma_{\epsilon}^2}{\sigma_o^2}$$

where σ_{ϵ}^2 is the error variance and σ_o^2 is the observed variance of the measures."²⁹ The observed variance is the squared standard deviation of the means for a given item. The resulting formula is

²⁸Ibid., p. 21.

²⁹Ibid., p. 24.

$$r = 1 - \frac{\frac{\sum \sigma_i^2}{n_i - 1}}{\sigma_m^2}$$

where

N = the number of houses (27)

n_i = the number of measures (reporters) for house i,

M_i = the mean of these measures for house i,

σ_i = the standard deviation of these measures for house i, and

σ_M = the standard deviation of the means for the N houses.³⁰

Resulting Horst r's are reported in Appendix E. Items assessing house characteristics with low r's were excluded from the multiple discriminant analysis described in the following chapter.

Summary

In this chapter the five instruments used in the collection of data have been reviewed. These include the College Qualifications Tests and the Michigan State University Reading Test, measures of academic aptitude administered to students new to the University when they enroll. The Attitude Inventory used in the study consists of four scales from the Omnibus Personality

³⁰Ibid., p. 23.

Inventory, "Thinking Introversion," "Theoretical Orientation," "Estheticism," and "Autonomy." A fourth measure consists of descriptive paragraphs of the four student subcultures postulated by Clark and Trow and is used by students to indicate their orientation to college life. The last instrument is the House Analysis Survey (HAS) developed to assess characteristics of house and residence hall life across several dimensions. Available reliability and validity information for each instrument was presented.

CHAPTER IV

DESIGN OF THE STUDY

Population and Sample

During the 1964-65 academic year (when the data were collected for this study), Michigan State University operated fourteen relatively large undergraduate residence halls for men grouped in five locations or complexes on campus.¹ These halls differed somewhat from one another in age, architectural style and program (e.g., "living-learning," coeducational). The residents of these fourteen halls (7,370 men, winter quarter, 1965) constituted the population from which the sample was drawn. Each of the halls was subdivided into eight to twelve houses depending on its size and physical characteristics, for a total of 142 houses. From 40 to 80 students lived in a house. The mean number of students in a house during the period of the study was 52.

¹Owen Hall, a large residence for graduate students is not included in these figures nor was it considered for inclusion in the study.

Residents returning for successive quarters had priority in selecting the room, house, and hall in which they desired to live. Freshmen and other new students generally were randomly assigned to hall and house, though they may have specified a preference with no assurance that it would be honored. Roommate requests were honored as far as possible, though preferences had to be mutual between parties. Unmarried freshmen living beyond commuting distance were required to live in University residence halls or in one of the limited number of spaces available in approved off-campus housing. Freshmen were commonly assigned to live with other freshmen, though with some frequency they were also assigned to live with sophomores and upper classmen, depending on roommate preferences and the pattern and number of specific room requests from returning students. It was also a common practice to house, temporarily at least, three students in many of the larger rooms generally designed for two. This was a function both of lack of available space for swelling enrollments and an attempt to maintain a high level of occupancy throughout the year. With normal attrition during the year students so housed could request to move into vacancies occurring elsewhere. As indicated earlier a resident assistant was assigned to each house and was responsible to the head resident advisor of the hall.

Student government organizations within both the house and the hall generally were similar in all houses and halls on campus.

Of the fourteen on-campus halls, nine were selected to be included in the study. The selection was not arbitrary; rather, representative halls from each of the five complexes were included. Care was also taken to pair halls within a given complex, with the exception of one hall where another hall similar in those characteristics used for pairing did not exist. Thus, in studying inter-house differences the design of the research also allowed comparisons to be made between (1) halls differing in architectural and program characteristics, and (2) the complexes in which they were located. Pairing the halls facilitated double-checking correlates of any inter-hall similarities noted.

Descriptions of each hall selected for the study follow in Table 4.1. It may be noted from the table that halls one to four represented the relatively new living-learning, coeducational concept, halls five and six were traditional men's halls, and halls seven through nine represented two additional architectural hall concepts.

It would have been prohibitive to study every house within each of these nine halls. Thus, three houses within each hall were randomly selected by lot prior to

1

Table 4.1 Characteristics of nine Michigan State University residence halls comprising the research sample, Winter Quarter, 1965

Hall No.	Number of Residents	Location	Year Completed	Description
1	613	S.E. Campus Complex	Fall 1964	First year of operation; hi-rise, coeducational, men's wing separated from women's by large 3-story multi-purpose area housing dining and recreation facilities, faculty offices and classrooms, and residence hall staff; room design: 4 man suites composed of 2 bedrooms, study room and bath; Students majoring in social science given preference but not required to live in hall; several classes taught by and faculty officed from the College of Social Sciences; graduate students serving as academic advisors for social science majors lived in the hall.
2	592	S.E. Campus Complex	Fall 1964	First year of operation; Similar to Hall No. 1 in most respects except emphasis on College of Arts and Letters; classes taught and several faculty officed from that area; majors in Arts and Letters given priority but not required to live in the hall.
3	586	S.W. Campus Complex	Fall 1962	Hi-rise, coeducational, generally physically similar to halls 1 and 2 except residents live in two-man rooms with adjoining bath shared by residents of each pair of rooms; several University College faculty housed

Table 4.1 Continued

Hall No.	Number of Residents	Location	Year Completed	Description
				and classes taught in the multi-purpose facilities of all three halls in the complex; residents of the complex may enroll in University College course sections anywhere in the complex or take these courses on campus. ^a
4	584	S.W. Campus Complex	Fall 1963	Generally identical to Hall No. 4; only in its second year of operation.
5	571	Near Center of Campus	Fall 1949	One of two wings of a large somewhat rambling hall; not coeducational; classes not taught in the hall; mainly two, some three man rooms with one large "gang" bath serving each house in the hall; architecture traditional in character.
6	576	Near Center of Campus	Fall 1949	Second of two wings described in Hall No. 5. Similar to Hall No. 5 in all physical characteristics.
7	462	Brody Group N.W. Campus	Fall 1954	One of six buildings in a complex; a large central dining and recreation facility serves all six units; the hall is not coed though two of the six units house coeds; classes not taught in the hall nor in the complex; ^b mainly two- some three-man rooms; one large gang bath located in each house.



Table 4.1 Continued

Hall No.	Number of Residents	Location	Year Completed	Description
8	461	Brody Group N.W. Campus	Fall 1956	Description of hall same as for Hall No. 7.
9	459	N.E. Campus Complex	Fall 1947	"Traditional" architecture; classes not taught in hall; ^c women's hall adjacent but dining and recreation facilities physically separated from Hall No. 9 though students may eat in dining facilities in either building; mainly two- some three-man rooms; one large gang bath located in each house.

^aUniversity College is the administrative and academic subdivision of Michigan State University in which general education courses are taught. These consist of four core courses which, at the time of the study, were required for all freshmen and sophomores. These courses were American Thought and Language, Humanities, Natural Science and Social Science.

^bDuring the academic year following the data collection for this study, the central facility was remodeled and a University College program was initiated similar to that in the S.E. Campus Complex.

^cAlso during the following year, Hall No. 9 was converted and became the first of Michigan State University's experimental residence colleges.

the beginning of the 1964-65 academic year. The resulting sample thus consisted of 27 houses.²

Pre-Test

In order to secure cooperation for the project the author, at the invitation of the Director of Resident Hall Programs, met with head residents to explain the project during their workshop prior to the beginning of the academic year. Resident assistants of the 27 houses involved were personally contacted, and the project explained to them as an attempt to study general characteristics of hall life (the explanation was quite general in order to minimize contamination); their cooperation was requested. An explanatory letter was sent to all residents of the 27 houses during the first week of school inviting them to participate and giving them the date of testing to be held the following week. Though the primary concern was to obtain freshman responses on the four OPI scales of the Attitude Inventory (AI) and on the Subculture descriptions, all residents were asked to participate. This was done (1) in order for the purposes of the test to be less obvious and (2) in

²Two houses in as many halls were deleted from the study and two others from the same halls put in their place to avoid conflicting with the data collection for another research project.

consideration of the possibility of using the additional data in an expanded analysis as part of the Office of Evaluation Services' series of residence hall research projects.

The AI was administered the same evening in a central location in each of the nine halls. After the session resident assistants were given testing materials for distribution to residents who were not in attendance. In the follow-up residents returned the materials by mail.

Table 4.2 describes, in part, the resulting sample.³ Though not indicated in the table, of the 1573 residents of the 27 houses, 1456 (92.5%) completed the AI and subculture descriptions. As may be seen from the table, 733 or 47% of the residents of the 27 houses were first quarter freshmen. Six hundred and ninety-seven of these freshmen (95%) participated.

Post-Test

The purpose of the post-test was two-fold: (1) to obtain a measure of house life from the total sample as assessed by the House Analysis Survey (HAS) and (2) to

³Table 4.2 introduces a two-digit coding system used in designating the 27 houses in the study. The first digit (1 through 9) indicates in which of the nine halls in the study a given house is located. The second digit (1 through 3) differentiates between the three houses within a given hall.

Table 4.2 Description of total and freshmen samples in 27 houses within nine Michigan State University residence halls, including number of residents, and number and per cent tested during post-test, Winter Quarter, 1965.

Total Number of Residents				Freshmen Resident Sample				
House	Fall Wtr. Qtr.	Number tested	Per-centage tested	No.frosh in House	Percent- age total residents	No. moved before post-test	Number remaining in house	No. in post-test Percent- age
11	54	36	72%	33	61%	4	29	25
12	57	42	75	38	67	2	36	28
13	56	37	69	45	80	2	43	33
21	51	31	62	15	29	1	14	8
22	51	35	72	19	37	1	18	13
23	54	29	64	24	44	3	21	14
31	53	36	71	32	60	3	29	21
32	54	31	60	31	57	0	31	22
33	50	26	53	26	52	3	23	14
41	49	39	81	10	20	1	9	6
42	50	26	52	30	60	0	30	17
43	54	39	77	17	32	0	17	15
51	75	34	51	37	49	6	31	9
52	63	48	86	17	27	1	16	13
53	65	45	74	23	35	3	20	14
61	42	22	52	16	38	1	15	8
62	64	34	56	23	36	0	23	7
63	68	48	71	33	49	1	32	25
71	53	31	61	30	57	2	28	19
72	67	14	23	32	48	7	25	6
73	71	30	47	48	68	5	43	17
81	71	42	68	36	51	4	32	20
82	66	32	52	24	36	3	21	13
83	67	25	41	43	64	5	38	14
91	57	35	67	19	33	2	17	9
92	55	29	54	23	42	3	20	12
93	56	20	36	9	16	1	8	4
totals	1573	896*	60%	733	47%	64	669	406
								61%

*Twelve tests were discarded. The actual number of HAS tests used was 884.

obtain a post-test of intellectual attitudes or disposition of freshmen in the houses as measured by the four Omnibus Personality Inventory (OPI) scales of the Attitude Inventory (AI). The instruments were administered during a two-week period beginning in late February through early March. The assumption was made in administering the HAS at this time that patterns of interaction between residents as well as group norms were well established and would vary but little between then and the end of the academic year. This was in accordance with observations expressed by Newcomb.⁴ By this time the residents had lived together for over five months, apparently a sufficient time for the "acquaintance process" to have progressed adequately.

It may be argued that several factors could have intervened either just prior to or after the post-testing within any of the houses which could have dramatically affected residents' perceptions of house life. For instance, in the small but possibly significant turnover of residents between the fall and winter quarters, highly influential residents could have been lost or gained which,

⁴Theodore M. Newcomb, "The Prediction of Interpersonal Attraction," American Psychologist, 11:582, 1956; see also Eugene Jacobson, "The Growth of Groups in a Voluntary Organization," Journal of Social Issues, 12:18-23, 1956. Jacobson argues the merits of cross-sectional studies of large numbers of groups as a means of studying their patterns of growth and characteristics.

theoretically, at least, could have shifted the focus of house life substantially. Or a house could have been very successful or unsuccessful in a particular endeavor, the influence of which would not be directly available for observation through the HAS. Hence, there is no pretense in the study that such contingencies were controlled. All other things being equal the assumption was made as indicated that house life had generally stabilized.

Prior to the second testing a letter was again sent to all residents soliciting their interest and participation. Individual meetings were held with head residents and resident assistants. On this occasion meetings were also held with as many house officers as possible in addition to the resident assistants. Residents were advised that their own AI scores would be made available to them after the data were collected and, likewise, that group means on the HAS items would be given to the resident advisor and/or house officers early spring quarter.

The testing session was held on two consecutive evenings in central locations in each of the nine halls. Initial response was comparatively poor and as a result resident assistants and house officers were asked to assist in securing more returns during the two week period following. Additional letters were mailed to those who did not participate and personal contacts were made. Referring again to Table 4.2, of the 1481 winter quarter

residents in the 27 houses only 60% finally completed the questionnaires. Twelve of the 896 HAS's were unusable leaving 884.

The participants completed both the AI and HAS, though on the AI only scores of freshmen were of immediate interest.

Prior to the post-testing session but subsequent to the initial test, 64 or slightly under 9% of the freshmen living in the houses moved elsewhere or withdrew from the University. Thus, 669 remained and of these, 406 completed the AI a second time, in addition to the HAS. This represented 61% of the potential freshman sample.⁵

Grade point data for both fall and winter quarters for all 669 freshmen residents remaining in the houses both quarters was available for testing several of the hypotheses. Of these 32 (slightly less than 5%) had not completed the AI or the measure of College Types fall quarter. Thus, data for testing hypotheses relating to the interaction of academic performance, place of residence, and college type was available for 637 freshmen.

⁵ It is interesting to note that participation of freshmen in the post-test was at about the same level as that of older students. Perhaps this is in part of reflection of the operation of peer group influences.

The samples may be summarized as follows:

Number of residence halls studied	9
Number of houses studied	27
Total number of residents completing usable House Analysis Surveys winter quarter	884
Number of freshman residents living in the 27 houses both fall and winter quarters	669
Number of freshman residents who completed the College Types measure fall quarter (MSU Reading, CQT, grade point data available)	637
Number of fall and winter quarter fresh- man residents who completed the AI both quarters and the College Types measure fall quarter	406

One may speculate as to reasons behind the comparatively poor participation in the second test period. Students were relatively free of distractions and allegiances during the pre-testing early fall quarter. Several conflicts were evident winter quarter that had not been nearly as pronounced earlier, such as intra-mural and other social activities and academic pressures. The post-testing period was held somewhat late in the quarter in order for the groups to stabilize as much as possible from resident-turnover between quarters. But this may have placed the session unfortunately too close to finals. Not to be overlooked is the fact that participation was voluntary; hence, many students undoubtedly simply ignored the requests.

Of concern was the fact that in several houses the percentage completing the HAS was disappointingly small. After consultation with the thesis committee and members of the Evaluation Services staff, it was decided to proceed with the analysis using data from all 27 groups. It was felt that the study was exploratory in nature and that since students serve as reporters of group life in completing the HAS, their responses would nevertheless give some picture (albeit possibly biased) of house life. The very fact that participation did vary rather dramatically was in and of itself of interest in the study. It raised several questions as to what characteristics of house life might give rise to 86% participation from one house and only 23% in another.

In order to determine the nature of any differences between pre-tested freshmen who participated in the post-test and those who did not participate in the post-test, several t-test comparisons were made. Mean scores of the two groups were compared on the four scales of the AI, on the MSU Reading Test, and on the CQT total. Accumulative mean grade-point-averages for the fall and winter quarters of the two groups were also compared. Results are presented in Table 4.3.

As may be noted in Table 4.3 freshmen who participated in both the pre- and post-testing sessions had a significantly higher CQT total mean score and a

Table 4.3 Comparisons between the means of pre-tested freshmen who did and those who did not participate in the post-testing on the four AI scales, MSU Reading, CQT total, and accumulative fall and winter grade-point-average, 1964-65

Variable	(N=406) Pre- and Post-test Participants		(N=231) Pre-test Only Participants		<u>t</u>
	Mean	S.D.	Mean	S.D.	
TI	31.6	9.84	30.5	8.68	1.33
TO	18.0	5.18	18.0	5.08	.01
Es	9.6	4.62	9.0	4.27	1.63
Au	22.9	6.36	22.8	6.21	.33
MSU Reading	31.7	7.85	30.7	6.61	1.70
CQT total	142.7	27.23	135.0	23.10	3.64*
2 Qtr. GPA	2.43	.73	2.26	.66	2.93**

*Significant beyond the .001 level.

**Significant between the .01 and .001 level.

significantly higher mean grade-point-average over the period of the study. No differences were noted on the four AI scales or the MSU Reading test. Nevertheless, several findings of this study (presented in Chapter V) had to be cautiously interpreted in light of the differences between the two groups.

The distributions of college subculture orientations in the two groups were also compared.

Table 4.4 A comparison of pre-test subculture orientation of freshmen who did and did not participate in the post-testing

Group		Subculture Type*				Total
		I	II	III	IV	
Pre- and Post-test Participants	N	132	71	166	37	406
	%	(33)	(17)	(41)	(9)	(100)
Pre-test only Participants	N	82	22	91	36	231
	%	(36)	(9)	(39)	(16)	(100)
Total		214	93	257	73	637
		(34)	(15)	(40)	(11)	(100)

$\chi^2 = 12.1; P < .01$						

*Subculture Type I, Vocational; II, Nonconformist; III, Academic; IV, Collegiate.

It is evident from Table 4.4 that students who failed to participate in the winter quarter testing differed from those participating during both sessions in the distribution of college subculture orientations. The differences were significant beyond the .01 level in a chi-square analysis. Comparing the proportion of students in each subculture in the total sample (N=637) with those participating only in the pre-test (N=231), it would appear that the pre-test only group was more heavily weighted

toward the collegiate and vocational orientations and had proportionately fewer non-conformists and academics. The group participating in both test sessions was more weighted toward the non-conformist and academic with fewer vocationals and collegiates.⁶

Hypotheses and Methods of Analysis

The hypotheses under consideration and the statistical treatments which were employed in their analyses are presented jointly in the following paragraphs. Thus, some confusion may be avoided in relating each hypothesis to its appropriate method of analysis.

Hypothesis I: It will not be possible to discriminate among the several residence hall houses on the basis of linear combinations of variables describing their group characteristics.

If, however, it were possible to discriminate between the houses, several attendant questions were to be considered as follows:

Question A: What are the interpretations of the linear combinations of variables (discriminant functions) which may result?

⁶In terms of the Clark-Trow theory underlying the four subcultures the pre-test only group contained more students tending away from intellectual activities while the post-test group contained more tending toward such an identification.

Question B: Is it possible to develop a meaningful typology of the residence hall groups according to the description of the discriminant functions and the location of the groups in multi-dimensional space?

Question C: Does the location of houses in the empirically derived multi-dimensional space relate in a meaningful fashion to the classification of houses according to program and/or physical characteristics (such as common location in the same hall and/or complex or construction similarities such as living-learning features)?

As was discussed in Chapter II, the factor analytic approach described by Selvin and Hagstrom for classifying groups played an important role in the development of this study.⁷ The HAS was initially designed as a means to obtain "aggregated" measures of group characteristics. Subsequently the Selvin-Hagstrom method was discarded in light of criticisms directed toward their procedures and the suggestion that multiple discriminant analysis could be appropriately incorporated into the design as a means of differentiating across multiple variables among the several groups in the study. Multiple discriminant analysis was employed to test Hypothesis I and to provide the data directed toward answering Questions A, B, and C.

⁷See pp. 46-52 in Chapter II.

Multiple Discriminant Analysis

Multiple Discriminant Analysis is a statistical procedure for maximizing the ratio of the variability between groups to the variability within groups across several variables simultaneously. Fisher first developed the concept of the discriminant function as a means of classifying an observation into one of two or more groups.⁸ Rao furthered the technique in his studies of twelve Indian castes. Among other contributions he developed a method for representing the centroids of groups in a space having fewer dimensions than the original number of variables.⁹ Subsequently Bryan published a computational routine for obtaining the latent roots and vectors of the matrices involved.¹⁰

Rettig has succinctly summarized the mathematical properties of multiple discriminant analysis as follows:

⁸Ronald A. Fisher, "The Use of Multiple Measurements in Taxonomic Problems," Annals of Eugenics, 7:179-188, 1936; Ronald A. Fisher, "The Statistical Utilization of Multiple Measurements," Annals of Eugenics, 8:376-386, 1938.

⁹Radhakrishna C. Rao, "The Utilization of Multiple Measurements in Problems of Biological Classification," Journal of the Royal Statistical Society, Series B, 10:159-193, 1948; Radhakrishna C. Rao, Advanced Statistical Methods in Biometric Research (New York: John Wiley and Sons, 1952).

¹⁰Joseph G. Bryan, "The Generalized Discriminant Function: Mathematical Foundation and Computational Routine," Harvard Educational Review, 21:90-95, 1951.

The multiple discriminant function is based on two different covariation matrices. One matrix B consists of the covariation among the group judgments across the variates. That is, the mean judgments on a given variate by each group are subtracted from the overall mean judgments of the combined groups. This deviation score is obtained for each variate and the cross-products of these deviation scores constitute the B matrix. The second or error matrix W consists of the cross-products of the deviations of the individual judgments from the group means across all variates. The discriminant function seeks to determine the latent root λ and characteristic vector $\bar{a}$ which maximizes the ratio of the two matrices BW^{-1} . The latent root is found by subtracting a constant λ from the main diagonals of the matrix BW^{-1} so that the determinant of the resulting matrix equals zero. We then solve the equation $\bar{a} (BW^{-1} - \lambda I) = 0$, where I is an identity matrix and $\bar{a}$ is a vector which, when multiplied by the root λ , equals the product of the vector with the matrix. This characteristic vector $\bar{a}$ is the canonical variate and consists of the weights for the variables which linearly maximize the differences between the groups. Each root extracted is directly proportionate to the amount of between-group variance accounted for by the canonical variate. The proportion of explained variance among the groups is obtained by the ratio $\lambda_1 / \Sigma \lambda$, where λ_1 is the root of interest and $\Sigma \lambda$ is the sum of all the non-zero roots. Following the extraction of a root, it is possible to determine the amount of residual variance still to be accounted for. The latter is approximately distributed as a chi-square and can thus be used to determine whether further dimensions should be obtained. The degrees of freedom for the chi-square are obtained by the equation $df = (p-n)(k-n-1)$, where p = the number of variates; n = the number of dimensions extracted, and k = the number of groups. Each dimension thus extracted corresponds to a distinct root; all are uncorrelated or perpendicular to each other.

The dimensions thus obtained, however, do not reflect the relative contribution of each to the variance among the groups. To obtain the latter, it is necessary to scale each vector by dividing each of its weights by the within-group standard deviation of the vector. This standard deviation is obtained by multiplying each weight by the corresponding element in the W matrix. The result of this scaling process is that the between-group variance of the vector is equal to its latent root λ . Thus, the scaled dimension

is now in accord with its relative contribution to the total between-group variance, and its weights reflect the relative contribution of each variate to the dimension.

Following the scaling of each dimension, a composite mean score for each group may be obtained by computing the cumulative product of the weights and original means of the group, across the p variates. These composite means are computed for each group on each dimension. Summing the squared differences between these means for any two groups across all dimensions produces the intergroup distance, or the Mahalanobis D^2 , the square root of which represents a measure of Euclidean distance in n -dimensional space.¹¹

The number of discriminant functions or resulting roots from the matrix solution is the lesser of p and $k-1$, though as Rettig indicated not all will necessarily be significant. It is important to note that in obtaining the roots, each successive discriminate function maximizes the variance among groups after the influence of the previous function(s) has been removed. Each solution is orthogonal (perpendicular) to previously extracted solutions in the multi-dimensional space. This may have a certain confounding effect in interpreting the functions, however, particularly in an analysis with many variables of

¹¹Salomon Rettig, "Multiple Discriminant Analysis: An Illustration," American Sociological Review, 29:398-402, 1964; The reader may also wish to refer to Maurice M. Tatsuoka and David V. Tiedeman, "Discriminant Analysis," Review of Educational Research, 24:402-420, 1954, for a comprehensive overview of the historical development of the statistic.

relatively low reliability and no a priori distinction between groups, such as the one herein reported. As has been pointed out by Jones and Bock, the resulting functions are not necessarily "pure" clusters of variables "in terms of within-sample factor structure."¹² Rather they are likely to be "complex." Important constellations of variates describing significant dimensions of group life in reality may not necessarily be orthogonal to one another. Hence the condition of perpendicularity in discriminant analysis contributes to a somewhat artificial character of the results.¹³

From its conception, discriminant analysis has been used for classifying observations into groups as is well illustrated in the important study by Tiedeman, Bryan, and Rulon.¹⁴ Several authors have, however, described the utility of the statistic as trifold: "(a) the establishment of significant group-differences, (b) the study and 'explanation' of these differences, and

¹²Lyle V. Jones and R. Darrell Bock, "Multiple Discriminant Analysis Applied to 'Ways to Live' Ratings from Six Cultural Groups," Sociometry, 23:162-176, 1960, p. 172.

¹³Ibid., p. 175.

¹⁴David V. Tiedeman, Joseph G. Bryan and Phillip J. Rulon, The Utility of the Airman Classification Battery for Assignment of Airmen to Eight Air Force Specialties (Cambridge, Mass.: Educational Research Corporation, 1951).

finally (c) the utilization of multi-variate information from the samples studied in classifying a future individual known to belong to one of the groups represented."¹⁵ Despite the emphasis on the "classification" or "placement" function, at least one author has indicated his feeling that the statistic "is more useful in understanding the major differences between groups than it is for placing individuals in groups."¹⁶ The focus of this study was on the understanding and explanation of any group differences found to exist.

Thomas¹⁷ has developed a program utilizing the CDC 3600 computer to extract the latent roots in multiple discriminant analysis following the general procedures outlined by Bryan.¹⁸ In addition to the latent roots of the equation, the program also provides group means on the variables, an intercorrelation matrix for both individual groups and the total sample, the per cent of variance accounted for by each function, a chi-square value (as developed by Rao) for testing the significance of

¹⁵Tatsuoka and Tiedeman, op. cit., p. 414; Jum C. Nunnally, Psychometric Theory (New York: McGraw-Hill, 1967), p. 388.

¹⁶Ibid., p. 400.

¹⁷Computer Institute for Social Science Research, Michigan State University, "DISCRIM2," Technical Report No. 33, by Stuart Thomas, July 5, 1968.

¹⁸Bryan, loc. cit.

solutions, degrees of freedom, centroid scores for each group on the functions, vector weights, scaled (standardized) vector weights, and an intercentroid distance matrix. The program was used to obtain the linear combinations of variates and other statistics from the HAS data necessary in order to test Hypothesis I and provide answers to Questions A-C.

Hypothesis IIa: There will be no differences in the (adjusted) academic performance of freshmen differentiated according to the types of houses in which they live (types defined according to clustering of houses along the discriminant functions and/or in the multi-dimensional function space).

Nor will there be an interaction between types of houses and the pre-test subculture orientation of the residents.

Hypothesis IIb: There will be no differences on any of the four post-test (adjusted) measures of intellectual disposition of freshmen differentiated according to the types of houses in which they live.

Nor will there be an interaction between types of houses and the pre-test subculture orientation of the residents.

Before this series of hypotheses could be tested it was necessary to determine the outcome of the test of Hypothesis I. If in fact differences among the groups were ascertained in the discriminant analysis, the group centroid scores (group means on the linear combinations of variables) could then be located on each significant

function and/or in multi-dimensional function space. Differences between groups of houses located according to their clustering on the discriminant functions could then be tested.

Of concern was the differential influence of house life on freshmen. In order to assess differences in academic performance, a series of two-factor analyses of covariance were used. Accumulative grade-point-average of freshmen for the fall and winter quarters, 1964-65, adjusted by CQT total and MSU Reading Test scores, was used as the measure of academic performance. The four OPI scale scores, used as the dependent variables in testing Hypothesis IIb, were each adjusted in the analyses of covariance by pre-test scores on the same scale.

The multi-factor analysis of covariance allows one to test simultaneously for differences on more than one adjusted main effect (independent variable) and for interactions that may be present between the main effects. In testing Hypothesis IIa, and IIb type of house was defined as one main effect and subculture orientation the other. Differences between subcultures were not of major concern in this study (Hodgkins and Adams had already reported differences in academic performance between subcultures).¹⁹

¹⁹Benjamin J. Hodgkins, "Student Subcultures--An Analysis of their Origins and Affects on Student Attitude and Value Change in Higher Education," (unpublished dissertation, Michigan State University, 1964); Donald V. Adams, "An Analysis of Student Subcultures at Michigan State University," (unpublished dissertation, Michigan State University, 1965).

However inclusion of subculture orientation as a main effect provided the opportunity to test for interactions between orientations and types of houses. Thus, if significant interactions resulted, it would suggest that different types of houses affect one or more types of students one way and other types a different way.

Hypothesis IIIa: There will be no differences among the houses in residents' perceptions of their house climate of learning.

Hypothesis IIIb: There will be no relationship between the cohesion of the houses and the perceived climate of learning.

Hypothesis IIIc: There will be no relationship between mean grade-point-averages of the houses and the climate of learning.

Hypothesis IIId: There will no differences in (adjusted) academic performance between freshmen residing in houses having a "high" climate of learning and those living in houses with a "low" climate of learning.

Nor will there be an interaction between the level of the climate of learning and students' subculture orientation.

Hypothesis IIIe: There will be no differences on any of the four (adjusted) post-test measures of intellectual disposition between freshmen residing in houses having a "high" climate of learning and those living in houses with a "low" climate of learning.

Nor will there be an interaction between the level of the climate of learning and students' subculture orientation.

Before this series of hypotheses could be tested, it was necessary to determine the outcome of the test of

Hypothesis IIIa, analogous to the testing of the previous series of hypotheses.

A measure of residents' perceptions of their house climate of learning was included in Part I of the HAS (item 55). After having read the operational description of a climate of learning, students were asked to respond on the nine-point scale to the following question, "Where would you rate the general 'climate of learning' of your house?" Hypothesis IIIa was tested by simple analysis of variance of group-mean scores on the item. The operational definition of the climate and the related questionnaire items are reproduced in Table 4.5.

The measure of climate of learning was also one of the several HAS variables included in the multiple discriminant analysis. It was theoretically possible that on one or more of the linear combinations of HAS variables, the climate item would have high loadings, perhaps to the extent, in combination with other variates, of describing multi-dimensionally the climate of learning. A priori, however, this judgment could not be made and because of the intrinsic interest and significance of the item, it was subjected to independent analysis.²⁰

²⁰The point can be made that differences between groups on any or all of the HAS items may have existed, and, hence, each item could have been tested by analysis of variance. However, the very real advantage of multiple discriminant analysis lies in the fact that the variables

Table 4.5 The operational definition of the climate of learning and related HAS items

Questions 55-58

Climate of Learning

The following paragraphs describe what we will refer to as the "climate of learning" of a house. Read the section carefully and then answer the questions at the end according to your appraisal of your house.

* * * * *

House activities and attitudes on campus vary in the degree which these support or complement the mission of the University of preparing students to understand and deal with the problems and needs of the world in which they live. Think of this degree of support as lying along a line, at one end groups of residents, perhaps entire houses, whose activities strongly support a climate of learning; at the other end, houses or subgroups of residents who are not only uninvolved in such a climate but who also strongly resist its influence.

The descriptions to follow are not meant to imply that social life, athletics, and other activities conflict with a "climate of learning." Such programs may or may not operate effectively regardless of the climate. Also, students may legitimately feel that their life within the residence hall is their own to lead as they see fit and that "learning" is properly confined to the classroom and library.

Here are descriptions:

"High" Climate of Learning

Visualize a group of residents or an entire house where the excitement of learning, experiencing and growing literally abounds. Here exists an almost continual exchange of ideas, attitudes, discussions of art forms, new discoveries in science, political controversy, confrontation and discussion of values. "Bull sessions" are often deep and stimulating. Cultural activities, such as the Lecture-Concert Series and Provost Lectures, are strongly supported. Freshmen in the house rapidly have their intellectual horizons broadened and stimulated. Discussions of classroom topics continues well beyond the walls of the classroom.

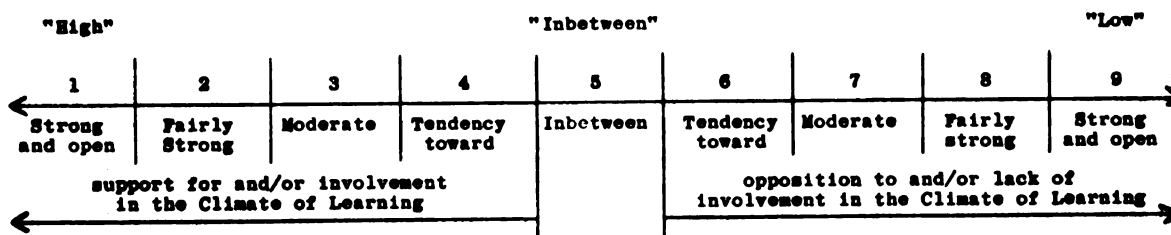
"Low" Climate of Learning

At the other extreme, learning is generally left to the classroom. It is not that residents don't study outside of class or work for their grades. It is just that little, if any, of the intellectual life of the University carries over into the life of the house. "Bull sessions" seldom have intellectual depth or substance. Attempts to stimulate more enlightening activities are seldom supported, and one who does might be regarded as a "highbrow" and out of touch with his housemates. Such a house may be a satisfying place to live because other characteristics of the house or subgroup possess great value for the residents. Social, fraternal or athletic activities may be prominent. But it is almost as though a social norm existed against too much involvement in academic learning. Selection of classes is often based on the ease with which one can get by. Freshmen soon learn the ways of the group and conform. Though they indicate concern over their studies, they are readily distracted from them.

The "Inbetween" Case

Between these two extremes one can visualize a third group or house whose activities and attitudes neither strongly support such learning experiences and intellectual excitement nor oppose them with any consistency. For such a group house life may seem to be independent of the "mission of the University." However, our feeling is that subgroups or entire houses tend to lean more one way than the other, though elements of both sides may exist in any given group at any given moment.

CLIMATE OF LEARNING



Questions

55. Where would you rate the general "climate of learning" of your house?
56. What has been the level of the "climate" which YOU have personally experienced through those with whom you associate the most in the house, regardless of the general climate of the house?
57. Where would you personally like the level of the "climate" to be in your house?
58. Where would you rate the general "climate of learning" of the residence hall in which you live?

* * * * *

Hypothesis IIIb was tested by product-moment correlation analysis of the relationship between group mean scores on the HAS climate of learning item and on each of four HAS items operationally defined to be rough measures of cohesion. The distribution of the group mean scores of the items was assumed to be normal and the mean scores continuous over the population from which the sample was drawn. The four items used were:

- Item 32, Pt. I: "Your level of satisfaction with living in this house" (rated on a nine-point scale)
- Item 9, Pt. II: "When it comes right down to it, I really have little allegiance to either my residence hall or my house" (response on a five-point scale).
- Item 47, Pt. II: "I would prefer to move to a different house" (five-point scale).
- Item 59, Pt. II: "There are 8 to 12 houses in your residence hall. Where would you rate your house generally in contrast to the other houses in the hall?" (five-point scale).

An early intent of the study was to measure cohesion from sociometric data obtained in the final questions on the

are not independent of one another, many of which are likely to be highly correlated. Thus, the discriminant analysis technique allows for the covariation of variables. And, in addition, as Tiedeman points out, "It may well be that only a small number of the variables with significant differences in means are contributing to discrimination among the groups while other variables which by themselves provide no means of discrimination may aid considerably when taken in conjunction with the rest" (David V. Tiedeman, "The Utility of the Discriminant Function in Psychological and Guidance Investigations," Harvard Educational Review, 21:74, 1951.

HAS. However, disappointing returns of the survey precluded this possibility. Thus, in substituting these survey items no tight definition of cohesion was pretended. Rather the items were thought to provide an approximation of "the degree to which the members of a group desire to remain in the group."²¹ The hypothesis was included in order to explore the theoretical conclusion of the discussion in Chapter I that group cohesion and the existence of a positive climate of learning are not necessarily related.²²

Hypothesis IIIc was also tested by a product-moment correlation analysis of the relationship between group means on the measure of house-climate of learning and the mean grade-point-average of the houses. This hypothesis tested the assumption that groups of students who in fact were functioning well academically would perceive a positive climate of learning and, likewise, groups of students performing less adequately would perceive a less positive climate.

Hypotheses IIId and IIIE were tested using the two-factor analysis of covariance model described previously in this Chapter. Freshman accumulative grade-

²¹Dorwin Cartwright, "The Nature of Group Cohesiveness," Group Dynamics in Dorwin Cartwright and Alvin Zander, (eds.) (New York: Harper & Row, 1968), p. 91.

²²See Chapter I, "Cohesion as a Property of House Life," pp. 26-29.

point-average for the fall and winter quarters, adjusted by their MSU Reading and CQT total scores, was the dependent variable in Hypothesis IIIId. Post-test scores on each of the four OPI scales, adjusted by pre-test scores, were the dependent variables for testing Hypothesis IIIe. Level of climate of learning in groups of houses was one main effect and college subculture orientation the other. The latter was again used in order to test for interaction between the two main effects. Of primary concern was whether or not a positive climate of learning within a house or group of houses would have a salutary affect on the academic performance of freshmen over and above what one would expect from their academic ability test scores. Likewise, would a negative climate adversely affect freshman performance? Testing the interaction between the level of the climate of learning and student subculture orientation provided an opportunity to determine if different types of students were differentially affected by the climate in which they lived.

The 5% (.05) level of confidence was specified in testing for the significance of results throughout the study.

Summary

Three houses in each of nine residence halls were randomly selected for study. The nine halls represented

the various types of accommodations and programs for men at Michigan State University in 1964-65. Freshmen were generally randomly assigned to houses, though returning students could express room and hall preference.

During the first weeks of the academic year an Attitude Inventory consisting of four Omnibus Personality Inventory scales and a measure of four student subcultures were administered to residents of the 27 houses. The four Attitude Inventory scales were used as measures of intellectual disposition. Well into the winter quarter residents were again tested on the Attitude Inventory and on the House Analysis Survey, a measure of the characteristics of house life.

In order to more fully understand the sample, comparisons, using the t-test, were made between two groups of freshmen. Though both groups had resided in the houses during the two academic quarters between pre- and post-testing, one group had participated in both pre- and post-tests while the second group participated in only the pre-testing. No differences were found between the groups on the four pre-test scores of the measures of intellectual disposition nor on the MSU reading test. The group participating in both test sessions, however, had a significantly higher mean CQT total score and mean accumulative fall and winter grade-point-average. Differences were also noted between the groups, by a chi-square analysis,

in their distributions of subculture membership of the residents.

Three sets of hypotheses were presented; the methodology used in testing each was discussed. The first hypothesis concerned whether or not the several houses could be differentiated on the basis of their group characteristics. Several questions were raised concerning the possible nature of any differences that might be disclosed. Multiple discriminant analysis, a statistical technique which maximizes the ratio of the variability between groups to the variability within groups was discussed at length as the method employed in testing the first hypothesis.

The second set of hypotheses considered the possible existence of differences in academic performance and in post-test measures of intellectual disposition between freshmen living in different types of houses. Types of houses were defined according to the location of house centroid scores on statistically significant discriminant functions and/or in multi-dimensional function space. Through a two-factor analysis of covariance it was also possible to test for interactions between residence in different types of houses and the subculture orientation of the residents. The measure of academic performance was adjusted by MSU Reading and CQT Test scores; the measures of intellectual disposition were adjusted by pre-test measures on the same scales.

The final set of hypotheses were used to study the climate of learning of the houses. Climate of learning was measured by residents' responses to a questionnaire item in which they were asked to rate the climate of their house. Simple analysis of variance of group mean scores was used to test for differences in climate between the houses. Product-moment correlation was used to study the relationship between climate of learning and (1) house-cohesion and (2) house grade-point-average. Differences in the adjusted academic performance and intellectual disposition of freshmen living in houses with different levels of the climate of learning were considered. Two-factor analyses of covariance were again employed in order that the possible interaction between the level of climate of learning and student subculture orientation could be studied.

The .05 level of confidence was adopted in testing the results.

CHAPTER V

RESULTS

In this chapter the results of the statistical analyses of the data are presented. Each hypothesis is considered in turn and is followed by a discussion of the results of the statistical test of the hypothesis. General observations from a consideration of responses to the House Analysis Survey (HAS) are also presented. Though these are only indirectly related to the hypotheses, they are of general interest in gaining a better understanding of the characteristics of residence hall life for men at Michigan State University.

General Observations from the House Analysis Survey

The mean scores of the 884 respondents on several of the HAS items provide a rough indication of overall characteristics of residence hall and house life. Results from two sections of Part I of the HAS are reported in Tables 5.1 and 5.2 respectively. In Table 5.1 total group means from the 884 residents responding to 20 HAS items are reported. Based on their "observations and opinions of conditions within" their houses, students were asked to rate

1

Table 5.1 Mean scores, standard deviations, and range of house means from 20 "aspects of life" within 27 men's residence hall houses at Michigan State University

Item No.	House Analysis Survey (Part I) Item Description	Mean* (N)**	S.D.	Range of House Means***	
15.	Support for and participation in intramural sports	4.38 (883)	1.96	2.41 -	6.14
16.	Success in intramural sports	4.68 (882)	2.16	1.59 -	8.17
17.	Level of academic performance or scholarship in the house	4.21 (882)	2.00	1.43 -	7.21
18.	The good times we have together	4.33 (880)	2.06	3.13 -	6.39
19.	Reputation of the house within the residence hall	4.21 (883)	1.78	2.28 -	6.00
20.	Contribution of life within the house to your understanding of issues, ideas, philosophies, etc.	5.41 (879)	2.05	4.32 -	6.88
21.	Social life and social program of the house	5.53 (878)	1.95	3.19 -	6.94
22.	Support for and participation in the social program	5.53 (875)	1.88	3.76 -	7.16

Table 5.1 (continued)

Item No.	House Analysis Survey (Part I) Item Description	Mean* (N)**	S.D.	Range of House Means***
23.	The leadership of the Resident Assistant	4.23 (876)	2.13	2.43 - 5.83
24.	The leadership of the elected house officers	4.86 (879)	1.86	3.59 - 6.14
25.	Ability to study in the house	5.11 (881)	2.14	3.50 - 6.73
26.	Intellectual and cultural life of the house	5.74 (879)	1.89	4.26 - 7.09
27.	Friendliness within the house	3.33 (882)	1.76	2.31 - 4.91
28.	Opportunities provided to meet girls	5.59 (879)	2.10	3.06 - 7.30
29.	Value of living in this particular house	4.39 (880)	1.92	2.81 - 5.85
30.	Compliance of residents with residence hall regulations	4.79 (880)	1.78	3.46 - 6.15
31.	Your satisfaction with your roommate(s)	3.41 (877)	2.18	2.44 - 4.12

Table 5.1 (continued)

Item No.	House Analysis Survey (Part I) Item Description	Mean* (N)**	S.D.	Range of House Means***
32.	Your general satisfaction with residence hall accommodations	4.13 (876)	1.98	2.58 - 5.54
33.	Your level of satisfaction with living in this house	3.91 (883)	1.92	2.63 - 5.30
34.	Your level of satisfaction with living in this residence hall	3.83 (882)	1.99	2.50 - 4.97

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*Each item was scored on a 1-9 scale (1 = excellent, 2 = very good, 3 = good, 4 = tends to be good, 5 = satisfactory, 6 = tends to be a little weak, 7 = weak, 8 = poor, and 9 = very poor).

**Total N completing HAS was 884; however, individual respondents occasionally failed to respond to a given item lowering the N for the item.

***These data represent the range of the 27 house means on the items.

their houses on each of these items. Houses were rated from "Excellent" (1) through "Satisfactory" (5) to "Very Poor" (9). A comparative analysis of individual house mean scores on several of the items is the topic of a later section of this chapter. It is sufficient at this point to say that house means on many of the items varied extensively. Items 27 and 31 received the highest ratings (in terms of being the most positive) of this set of items. Both are concerned with interpersonal relationships and would suggest that these tend to be positive within the houses. The next most positively rated items, numbers 33 and 34, suggest an overall general satisfaction with life in both the hall and in the house within the hall. The degree of satisfaction however does vary between the houses as can be noted from the range of house mean scores.

The item receiving the lowest rating (in the sense of tending to be weak or poor) was item 26, relating to the "intellectual and cultural life of the house." Judging from the overall ratings it would appear that, in general, the intellectual dimension of life in the house is not a prime factor in determining general satisfaction. Item 20 also received a comparatively low overall rating, an item which also relates to the intellectual life of the house.

In contrast, academic performance as rated on item 17 was generally considered "to be good." It would seem that within the house academic performance and the intellectual and cultural life of the house differ.

The means of three items relating to the social life of the house also fell slightly below the "Satisfactory" level. Item number 25, "ability to study in the house," also received a relatively low rating, though like most of the others the range of house means on the item was broad. The leadership within the house from the resident assistant and house officers was found to be better than "Satisfactory."

It is significant to note that of all the activities of the houses rated in this set, the one receiving the highest rating was 15, "Support for and participation in intramural sports."

In reflecting on these results the fact that only 60 per cent of the residents responded to the HAS should be kept in mind. It should also be remembered that the freshmen who did not complete the questionnaire tended to have lower CQT total scores and to have lower grade-point-averages than those who did complete the test. Though one can only speculate, it is reasonable to assume that the non-respondents would have tended to agree with the general ordering of the items, particularly noting the placement of the intramural item.

Questions 35-44 of Part I of the HAS listed ten activities or problems which were thought to "require or invite the concern of the house group as a whole." Paraphrasing from the instructions from the section, the resident was asked to rank the statements in the order of the

concern which his group had shown for each of the activities. The rankings were to have been based on the observations of the respondents; the activity considered to have been the most important was to have been assigned rank number one; the next most important, rank number two and so on. Respondents were then asked to re-rank the items in the order or what they would most prefer to be the most important activities of the group. Unfortunately many of the respondents failed to rank one or more of the items. Their responses were consequently omitted in tabulating the data for Table 5.2. The items are presented in the table in the order of the mean rank initially assigned each item.

Item 38, "Sport, intramurals" was considered to be the most important activity concerning the houses during the year, according to the mean rank assigned. Twenty-four of the 27 houses rated the item first or second (according to the mean ranks of the individuals houses). In contrast, of least concern to the houses was item 39, relating to the role of the house life in broadening the cultural and intellectual perspectives of the residents. These findings would seem to be consistent with the ratings assigned to similar items in the section previously discussed in this chapter. Study conditions within the houses were considered to be relatively important (item 37), but only slightly more so than "arranging and participating in

Table 5.2 Mean ranks assigned to 10 house activities or problems by residents. Residents were responding to the request to rank the 10 statements in the order (1) of the concern the respondent's house had shown for the item, and (2) of the respondent's personal preference of what should be the most important activities of the house.*

Item No.**	Activities and Problems of Concern to the House	"House Concern" Mean Ranking***	"Personal Preference" Mean Ranking***
38.	Sport, intramurals	2.71	4.37
37.	Study conditions of the house	4.06	2.27
35.	Arranging and participating in social activities	4.16	4.27
40.	Providing assistance for individuals' problems (study, social, personal)	5.30	4.35
44.	Discussion, enforcement and debate of rules and regulations of the house, hall and university	6.10	6.79
36.	Participation in and/or discussion of student government (hall, AUSG, etc.)	6.20	6.38
42.	Participation as a group or with the Hall in special events, e.g. blood drives, sitting together at games, projects, etc.	6.22	6.48
41.	Except for items ranked higher, the men regard the house as little more than a place to sleep and eat. Activities ranked lower generally do not concern the men.	6.26	8.48
43.	Keeping the house clean and tidy	6.38	6.16
39.	Arranging and participating in activities to deepen residents' understanding of issues, philosophies, the arts, etc.	7.56	5.46

*The mean rankings were based on an N = 789. If an individual responding to the HAS failed to rank one or more of the above items, his responses were not included in the tabulation of the means.

**The items are listed in the order of the total group mean rank assigned the items.

***Rho between the two rankings equalled .59.

1

social activities" (item 35). It is significant to note that for many residents, item 41 (" . . . the men regard the house as little more than a place to sleep. . .") reflected the situation in their houses more than group concerns for either house sponsored intellectual activities or house neatness.

There is a degree of incongruity evident between the two different rankings, one according to observations and the other according to personal preference. A correlation between the rank orders of the mean rankings was computed to determine the extent of the incongruity. The resultant rho equalled .59, suggesting a moderate correlation between the ratings.

Possibly the comparative rankings indicate the operation of an underlying anti-intellectual peer-group norm, a result of which is a general inhibition of residents' involvement in intellectual activities. This may occur even though the personal preferences of many would be to elevate intellectual involvement in the house. Peer norms would seem to be strongly supportive of intramural and social activities. Attainment of good grades may represent a minimal compliance with the imposed norms of the larger social system--those of the University. House norms do seem to support adequate study conditions, perhaps in the pursuit of "grades" necessary to meet the minimal level of compliance demanded by the institution. But the norms

do not support, and perhaps even oppose, group behavior directed toward "intellectual" activities for the sheer sake of learning.

Overall means, house means, and standard deviations for all items in the HAS appear in Appendix D.

The Multiple Discriminant Analysis of House Differences

Hypothesis I: It will not be possible to discriminate among the several residence hall houses on the basis of linear combinations of variables describing their group characteristics (as measured by selected HAS items).

The available computer routine for solving discriminant analyses was capable of handling no more than 50 variables, or in this case, 50 HAS items and/or other measures of house characteristics. Of the 121 HAS items which had been scored on what were assumed to be linear scales, 50 were selected. These represented what was thought to be an optimal combination of the items. The judgment was made on the basis of theoretical and/or intrinsic interest of the items and the consistency of house ratings on the items as measured by Horst's $\underline{r}$ (an internal consistency indicator--see discussion of the HAS in Chapter III). What were thought to be the weaker of pairs or groups of items assessing essentially the same characteristics were also deleted. The multivariate

linear combinations of these items, or discriminant functions, were then obtained.

An item analysis revealed that three of the HAS items selected had distributions of responses that departed substantially from normal. Consequently certain response categories on the items were collapsed into lower categories in order to provide a more normal distribution. Normality of the variables is an assumption of the discriminant analysis. Items 2, 3, and 13 of Part I of the HAS were the variables which were collapsed. This resulted in three categories for items 2 and 3 and only two for item 13. Item 14 (HAS Part I) was also dichotomous. Maxwell has demonstrated that it is acceptable to include dichotomous variables in discriminant analyses.¹

Results of the discriminant analysis are listed in Table 5.3. The maximum number of latent roots (λ) of the discriminant equation was 26 (number of groups minus one). Each of the roots, the amount of total variance accounted for by each root, Rao's chi-square value for testing the significance of each root, degrees of freedom and the level of significance are presented.

¹A. E. Maxwell, "Canonical Variate Analysis When the Variables are Dichotomous," Educational and Psychological Measurement, 21:259-271, 1961.

Table 5.3 Latent roots (λ), explained variance, chi-square values, degrees of freedom, and statistical significance levels for each of the 26 discriminant functions

Disc. Function	λ	Explained Variance (per cent)	χ^2	df	Significance Level
1	1.8709	28.140	891.70	75	<.001
2	.9335	14.040	557.46	73	<.001
3	.7313	10.999	464.08	71	<.001
4	.4660	7.009	323.45	69	<.001
5	.4340	6.527	304.76	67	<.001
6	.3332	5.012	243.17	65	<.001
7	.2721	4.093	203.51	63	<.001
8	.2646	3.979	198.47	61	<.001
9	.2152	3.237	164.81	59	<.001
10	.1590	2.391	124.74	57	<.001
11	.1304	1.961	103.64	55	<.001
12	.1288	1.938	102.47	53	<.001
13	.1069	1.609	85.91	51	<.01>.001
14	.1043	1.569	83.92	49	<.01>.001
15	.0796	1.198	64.78	47	<.05
16	.0756	1.137	61.61	45	<.05
17	.0597	.898	49.04	43	n.s.*
18	.0583	.877	47.93	41	n.s.*
19	.0528	.794	43.48	39	n.s.*
20	.0359	.541	29.86	37	n.s.*

Table 5.3 (continued)

Disc. Function	λ	Explained Variance (per cent)	χ^2	df	Significance Level
21	.0343	.516	28.53	35	n.s.*
22	.0305	.459	25.41	33	n.s.*
23	.0258	.387	21.50	31	n.s.*
24	.0232	.349	19.42	29	n.s.*
25	.0136	.204	11.40	27	n.s.*
26	.0090	.136	7.58	25	n.s.*

*Not significant

Sixteen of the 26 latent roots of the system were significant, 14 of these beyond the .01 level of confidence. The sum of the latent roots provided an estimate of the total variance of dispersion among the 27 houses as defined by the HAS items analyzed. The accumulative variance accounted for by the 16 significant roots amounted to 94.8 per cent of the total. The remaining ten roots accounted for the balance of only 4.3 per cent and this amount apparently represented only chance variation among the houses.

On the basis of these findings Hypothesis I was rejected. It was evident that several linear combinations of variables from the HAS did discriminate among the 27 houses included in the study.

Question A: What are the interpretations of the linear combinations of variables (discriminant functions) which may result?

The discriminant functions may be interpreted by examining the relative contribution of each variable on each of the significant functions. For this purpose the standardized weights of each variable were used rather than the "normed weights" (the original vector coefficients). Tiedeman and Bryan offer the following explanation.

It can be shown that the individual values of the discriminant function are independent of the units of measurement, and origin of coordinates of the initial variates, since the coefficients automatically adjust

themselves (linearly) to the scales employed. On the other hand, the interpretation of separate coefficients does depend on the units of the initial variates.²

Had all the variables had equal units of measurement and approximately equal standard deviations the vector coefficients could have been used. Since this was not the case use of the standardized weights accurately reflected the relative contribution of each variate to the discriminant functions.

The 50 HAS items used in the discriminant analysis and their standardized weights on each of the first five significant discriminant functions are presented in Table 5.4. As can be determined from Table 5.3, these five functions accounted for 66.7 per cent of the total variance among the houses.

In general the interpretation of the significant discriminant functions was difficult; the results are thus speculative. With the possible exception of the first function complex relationships between the variables were abundantly evident. It would appear that the large quantity of non-independent variables represented by the HAS items had a confounding effect on attempts at interpretation at least beyond the fifth function. As may be noted

²David V. Tiedeman and Joseph C. Bryan, "Predictions of College Field of Concentration," Harvard Educational Review, 24, 1954, p. 132.

Table 5.4 Fifty HAS variables included in the discriminant analysis and the standardized weights ($\bar{a}$) of each on the first five discriminant functions^a

Item No.	Item	$\bar{a}_1$	$\bar{a}_2$	$\bar{a}_3$	$\bar{a}_4$	$\bar{a}_5$
PART I HOUSE ANALYSIS SURVEY						
2.	Class in college	-.48	.13	.42	-1.25	-.17
1.	First quarter freshman					
2.	Second quarter freshman					
3.	Third quarter freshman					
4.	Low Sophomore (40 to 62 hrs.)					
5.	High Sophomore (63 to 84 hrs.)					
6.	Junior (85-129 hrs.)					
7.	Low Senior					
8.	High Senior (will graduate this academic year)					
9.	Graduate Student					
10.	Other: special, temporary, etc. ^b					
3.	How many quarters have you lived in this house, including this quarter?	-1.04	-1.45	1.63	-.57	-.11
1.	This quarter only					
2.	Two quarters					
3.	Three quarters					
4.	Four quarters					
5.	Five quarters					
6.	Six quarters					
7.	Seven quarters					
8.	Eight quarters					
9.	Nine quarters					
10.	Ten or more ^b					
13.	Which of the following is correct concerning your present place of residence? ("On-campus" refers to University housing)	-.30	-1.37	.45	-.49	-1.67
1.	The Housing Office made <u>both</u> my current room and hall <u>as-</u> <u>sign</u> ment this year. I <u>have</u> <u>not</u> lived elsewhere on campus <u>this</u> year.					
2.	The Housing Office made my current room assignment, but I <u>requested</u> to live in this hall. I have not lived else- where on campus this year.					
3.	I <u>requested both</u> my current room and hall assignment this year. I have not lived else- where on campus this year.					
4.	I requested to <u>move</u> to this hall <u>after living elsewhere</u> on campus this year. Housing <u>assigned</u> my current house and room.					

Table 5.4 (continued)

Item No.	Item	$\bar{a}_1$	$\bar{a}_2$	$\bar{a}_3$	$\bar{a}_4$	$\bar{a}_5$
5.	I requested to move to this hall and house after having lived elsewhere on campus this year. But Housing assigned my room.					
6.	I requested to move to this hall and room after having lived elsewhere on campus this year.					
7.	I moved to my current room from a different house in this same hall earlier this year.					
8.	I moved to my current room from another room in this same house this year.					
9.	Other ^b					
14.	Did you request to live with any of your present roommates, rather than being assigned together by Housing?	.25	-.16	.98	-.37	.14
1.	Yes					
2.	No					
15.	Support for the participation in intramural sports ^c	-1.51	-.59	-1.57	.15	-4.23
17.	Level of academic performance or scholarship in the house ^c	9.04	.52	2.75	-.61	-1.92
18.	The good times we have together ^c	-.95	.86	1.03	1.19	.33
19.	Reputation of the house within the residence hall ^c	.73	-.93	-3.43	2.02	.10
20.	Contribution of life within the house to your understanding of issues, ideas, philosophies, etc. ^c	-.24	.45	.40	-.70	-.30
21.	Social life and social program of the house ^c	.54	-3.39	-2.18	-2.52	2.16
23.	The leadership of the Resident Assistant ^c	-.50	-.23	-1.53	-2.94	1.30
24.	The leadership of the elected house officers ^c	-.18	-.12	.70	1.40	1.58
25.	Ability to study in the house ^c	.10	.04	1.34	-2.60	.28
26.	Intellectual and cultural life of the house ^c	.11	-1.50	-.21	.50	-1.73
29.	Value of living in this particular house ^c	.81	1.55	1.15	1.14	1.75
30.	Compliance of residents with resident hall regulations ^c	-.03	.41	.42	-2.84	-.40

Table 5.4 (continued)

Item No.	Item	$\bar{a}_1$	$\bar{a}_2$	$\bar{a}_3$	$\bar{a}_4$	$\bar{a}_5$
31.	Your satisfaction with your roommate(s) ^C	.11	-.09	.00	.07	.57
32.	Your general satisfaction with residence hall accommodations ^C	-.43	-2.16	1.48	-1.51	1.24
33.	Your level of satisfaction with living in this house ^C	-.94	-.01	1.59	2.76	-2.85
34.	Your level of satisfaction with living in this residence hall ^C	.39	1.13	-1.35	-.09	1.06
55.	Where would you rate the general "climate of learning" of your house? ^C	.43	-.03	.27	.04	1.20
56.	What has been the level of the "climate" which YOU have personally experienced through those with whom you associate the most in the house, regardless of the general climate of the house? ^C	-.41	-.52	.48	-1.35	-.80
57.	Where would you personally like the level of the "Climate" to be in your house? ^C	.45	.40	.22	1.12	.34
58.	Where would you rate the general "climate of learning" of the residence hall in which you live? ^C	-.40	1.53	-.01	-.40	-3.35
(PART II HOUSE ANALYSIS SURVEY)						
5.	I think I would have done better academically so far this year had I lived in a different house ^C	-.67	.16	.34	-.43	-.91
6.	Residents of the house keep their rooms clean and neat. ^C	-.57	1.18	-.71	-1.98	-.38
7.	I feel that fellows in the house are too involved in cliques. ^C	-.31	-.35	.69	-.77	.63
9.	When it comes right down to it, I really have little allegiance to either my residence hall or my house. ^C	.24	1.20	.46	.61	.82
10.	A number of campus leaders live in the house. ^C	1.18	-.97	1.57	1.85	-.99
14.	I would enjoy having faculty members visit informally with the house occasionally in order to discuss ideas, issues, their interests and work, etc. ^C	-.26	-.03	-.02	-.54	-.92

Table 5.4 (continued)

Item No.	Item	$\bar{a}_1$	$\bar{a}_2$	$\bar{a}_3$	$\bar{a}_4$	$\bar{a}_5$
15.	Comparatively speaking, our house is known for some of its original, novel or creative (though perhaps somewhat questionable) ideas and activities. ^C	-.23	-.11	-.75	1.71	2.54
16.	I feel that I am generally accepted and appreciated by those who live in the house. ^C	-.73	-.11	-.50	-.73	.34
18.	Students in the house exhibit a high degree of concern for the rights of others. ^C	.02	.59	-1.07	1.43	1.73
20.	Living in my house is a major factor in making me feel a part of this university. ^C	-.30	-.70	-.81	-.15	1.17
22.	Many in the house tend to be more concerned about the amount of work required in a course or how easy it is to get a grade rather than the quality of the instructor or the contribution of the course to the individual. ^C	.71	.26	-.26	-1.52	.17
24.	There are a number of traditions in the house. ^C	-.04	2.84	-2.18	1.76	1.20
28.	The "intellectual" enjoys little status in the house in which I live. ^C	-.56	.33	.44	-1.58	-.24
29.	Residents in the house have been involved in an above-average number of disciplinary problems. ^C	-.12	-1.49	1.35	3.78	-.52
37.	Topics of "bull-sessions" in the house are superficial rather than of depth or substance. ^C	.55	.37	-.76	-.93	-1.02
38.	The men in the house would be more likely to compliment someone on a nonacademic (social, athletic, etc.) achievement than on an academic or intellectual achievement. ^C	-.04	-1.80	-.21	.06	.15
41.	Students in the house have high ethical standards with respect to cheating, etc. ^C	.16	-.78	.38	-1.46	-1.65
42.	There's quite a bit of pressure (subtle or otherwise) in the house to participate in house and university activities. ^C	.13	-1.22	-.92	-.82	1.29

Table 5.4 (continued)

Item No.	Item	$\bar{a}_1$	$\bar{a}_2$	$\bar{a}_3$	$\bar{a}_4$	$\bar{a}_5$
44.	There really isn't much interest in international affairs, social issues, or scientific discovery expressed among the residents of the house. ^c	-.69	-.30	-.98	-.56	1.26
46.	My house has effective means of dealing with residents whose behavior isn't acceptable to the group. ^c	.06	.24	.34	.77	.58
47.	I would prefer to move to a different house. ^c	.33	.35	.59	.97	.91
48.	I would prefer to move to a different residence hall. ^c	.81	-.98	-.20	1.39	-.64
58.	What proportion of your closest male friends at MSU live or have lived this year in your residence hall (including your house)?	.48	-.60	-.10	.13	-1.15
	1. Almost all					
	2. Most					
	3. About half					
	4. A few					
	5. Almost none					
59.	There are 8 to 12 houses in your residence hall. Where would you rate your house <u>generally</u> in contrast to the other houses in the hall?	1.93	-3.73	-2.14	-.12	-1.25
	1. One of the best					
	2. Better than average					
	3. About average					
	4. Below average					
	5. One of the worst					
60.	Where would you rate your <u>residence hall</u> compared to the other <u>14 men's halls</u> ?	.43	5.64	-1.84	.90	.41
	1. One of the best					
	2. Better than average					
	3. About average					
	4. Below average					
	5. One of the worst					

Table 5.4 (continued)

Item No.	Item	$\bar{a}_1$	$\bar{a}_2$	$\bar{a}_3$	$\bar{a}_4$	$\bar{a}_5$
63.	What degree of influence have the residents of your house had on you?	.50	-.58	.83	.12	-.13
	1. A very positive influence					
	2. Some positive influence					
	3. Little or no influence					
	4. Some negative influence					
	5. A strong negative influence					

^aAll $\bar{a}$ entries have been multiplied by 10.

^bThe distribution of responses to these items in the discriminant analysis were reduced to two (item 13) and three (items 2 and 3) categories to correct their score distributions which departed excessively from normal. For items 2 and 3, responses 3-10 were combined into one category. For item 13, responses 2-9 were combined into one category.

^cHAS Part I items 15-34 and 55-58 are rated on a nine point scale. A low score indicates a positive rating, a high score a negative rating. HAS Part II items 5-48 are scored on a five point scale. A low score indicates strong agreement with the item and a high score strong disagreement. These scoring procedures should not be confused with the magnitude of the standardized weights ($\bar{a}$).

from Table 5.3, discriminant function six accounted for only 5.01 per cent of the total variance; subsequent significant functions individually accounted for even less. Consequently, no attempt was made to interpret the functions beyond number five. One general interpretation of this dilemma would be that very real differences do exist between the houses on important dimensions of house characteristics. But the variables employed in the measurement of the underlying dimensions by themselves are too microscopic and interrelated to sharply define the differences. Also, and perhaps more importantly, each successive discriminant function extracted in the solution of the latent roots of the system is orthogonal to the preceding function. This results in a somewhat artificial combination of variables when compared to the real world. The underlying dimensions of house structure are not necessarily orthogonal to one another.³ These considerations should be born in mind in the interpretations of the first five discriminant functions which follow.

Interpretation of the First Discriminant Function

The first function accounted for 28 per cent of the total variance (Table 5.3), somewhat more than any of

³These points have been considered more extensively in the section "Multiple Discriminant Analysis," in Chapter IV.

the other functions. Its interpretation would seem to be relatively straight forward. HAS Part I, item 17 (Table 5.4) was the prime operant among the 50 variables in differentiating among the houses on this function. Thus, this linear combination of variables is predominantly one of academic performance and scholarship in the houses (as reported by the residents). Houses with high academic performance tend to have low scores on the function and houses with low ratings have high scores (Table 5.5).⁴

Four other variables seem to have some slight relationship to academic performance in differentiating between the houses. There would seem to be a positive interaction between the rating of academic performance and residents' general ratings of their houses in comparison to other houses in their halls (HAS Pt.II,#59). There is an indication of a negative relationship to the degree of support for and participation in intramural sports (HAS PT.I, #15). There may be a slight tendency for the number of

⁴In attempting to interpret the functions one must take into account not only the sign of the standardized weight of the HAS items on the function, but also the direction of the scoring of the items. Thus on the first function, houses with high scores are those whose residents report poor academic performance. The standardized item weight is positive indicating that a house with a high score on the HAS item (a poor academic performance rating) would have a high house mean score on the function. Item 15,Pt.I, however, has a negative standardized weight; the item is scored the same direction as item 17 (the academic performance item), thus suggesting a negative relationship between the two items in differentiating between houses on the function.

Table 5.5 Mean discriminant scores of the 27 houses on the first five discriminant functions

House No.	First Function	Second Function	Third Function	Forth Function	Fifth Function
11	2.431	-1.124	-2.976	.867	-.303
12	3.524	.201	-.393	-.725	.559
13	1.109	-.494	-3.744	-.691	1.008
21	1.580	-.935	-.512	-.157	.790
22	1.565	-1.349	-2.723	.245	.625
23	5.179	-1.976	-2.168	.008	-.756
31	3.841	-2.092	-1.675	-.243	.767
32	2.409	-1.436	-2.120	.830	.362
33	3.433	-2.190	-1.808	-.352	-.136
41	-.246	-1.423	-1.979	-2.156	-1.108
42	1.740	-1.479	-.587	.993	.223
43	.724	-2.072	-.608	-.073	.486
51	2.575	-2.668	-1.986	-1.048	.390
52	2.851	-2.535	-2.225	.172	-.533
53	-.199	-1.842	-1.116	-.619	.084
61	1.613	-2.806	-1.614	.779	-.204
62	1.762	-3.332	-.617	-.085	-.437
63	2.091	-2.613	-1.222	-.674	1.324
71	3.769	-2.019	-.001	-.216	-.403
72	1.776	-1.352	-1.905	.418	-1.088
73	4.806	-1.677	-1.340	-1.470	.199
81	3.884	-1.199	-.825	-.446	.875
82	1.452	-1.130	.115	.316	-1.091
83	2.671	-1.639	-3.164	-.009	.354
91	-.190	-2.268	-1.305	.429	.900
92	2.128	-2.901	-1.996	-1.677	.315
93	3.199	-2.948	-2.392	-.083	.035

campus leaders in the house to be associated with the level of academic performance (HAS Pt.II,#10). And the average length of residence would seem to have some small positive association on the first function with perceived academic performance in the house.

The Michigan State University Office of Residence Hall Programs provided information each quarter to each house as to house standing within the hall in mean grade-point-average (gpa). Of the six houses with the lowest mean scores on function one (Table 5.5), five had the highest mean gpa fall quarter, 1964 within their respective halls. The sixth house was second in its hall. At the other end of the continuum the two houses with the highest mean scores on the function had the lowest mean gpa within their halls.

Summarizing the function, it would seem that it differentiated among the houses on the basis of residents' ratings of house academic performance. Their ratings of academic performance, in turn, seem to have been based on data reported to them by the Residence Hall Programs Office. A high level of academic performance in a house would seem to have some slight relationship to (1) a positive comparative rating of the house within the hall, (2) a tendency toward poorer support for intramural activities, (3) the number of campus leaders in the house, and (4) a proportionately larger number of returning students.

(In this last regard the relationship is probably a function of the tendency for mean gpa's of older students to be higher than those of freshmen.)

Interpretation of the
Second Discriminant Function

The second function accounted for 14 per cent of the variance and represents that combination of the variables best discriminating among the houses after the effects of the first function have been removed. This function seemed to separate the houses along a complex measure of satisfaction with both the residence hall and house. The function has a relatively heavy but not exclusive emphasis on the social life of the house. The principle contribution comes from a rating of the residence hall compared to other men's halls (HAS Pt.II,#60). Paired with this item is a rating of the house in comparison to other houses in the hall (HAS Pt.II,#59). It would seem that the two variables in combination differentiate between certain poorly rated houses located in relatively highly rated halls and better rated houses located in less satisfactory halls.

The higher rated houses would seem to be those with a more satisfactory social life and program (Pt.I, #21), even though satisfaction with the hall was low. There would seem to be few traditions in the houses of

the halls receiving low ratings (Pt.II,#24). It is interesting to note the inverse relationship of satisfaction with residence hall accommodations (Pt.I,#32) and ratings of the hall. Apparently a negative hall rating does not necessarily reflect dissatisfaction with the physical accommodations.

Suggestions of additional subtle characteristics of houses differentiated by this function can be noted by observing the other variables with slightly elevated weights. Mean length of residence in houses located in poorly rated halls tended to be shorter (Pt.I,#3); residents were more often assigned their rooms by chance as opposed to being granted a preference (Pt.I,#13). The house intellectual and cultural life tended to be positive however (Pt.I,#26), though residents were apparently inclined to question the value of living within their particular house (Pt.I,#29). The poorly rated halls tended to have correspondingly low ratings on the measure of the climate of learning of the hall (Pt.I,#58). Residents also seemed to feel that their houses in these halls had an above average number of disciplinary problems (Pt.II,#29). They also indicated that their fellow residents would be more inclined to compliment one another for a nonacademic achievement as opposed to an academic achievement (Pt.II,#38).

Interpretation of the
Third Discriminant Function

Eleven per cent of the variance was explained by the third function. Variables receiving high weightings on this function suggest that it discriminates among the groups according to their reputation in the hall (Pt.I, #19). It also explains some of the elements that may comprise the reputation of a house. Houses with poor reputations had low mean scores on the function; those tending toward good reputations had high mean scores.

Further analysis suggests that reputation (as defined by the function) is not based on academic performance (Pt.I, #17), which may even be inversely related to a good reputation in some of the houses. On the other hand, houses with good reputations tend to have a well regarded social life and program (Pt.I, #21) and have a number of traditions (Pt.II, #22). Both the halls in which houses with high scores on the function are located, and houses with high scores received favorable ratings when compared to other halls and houses (Pt.II, #59 and #60). To a lesser extent, houses with good reputations tended to give support to intramural sports (Pt.I, #15); the leadership exhibited by the resident assistant was positive (Pt.I, #23); and there were campus leaders living in the house (Pt.II, #10). Curiously though the level of satisfaction would seem to be inversely related to reputation

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in at least some of the houses (Pt.I,#33). This may have been a reflection of the significant interaction between college type and houses classified according to their group mean score (high vs. low means) on the function. As will be seen later in this chapter, non-conforming students seemed to perform more adequately in at least one house having a poor "social" reputation as defined by the function. The same house was well regarded academically.

Interpretation of the Fourth Discriminant Function

Though function four accounted for only seven per cent of the remaining variance, it did differentiate between the groups in an interesting fashion. It seems to be primarily characterized by variations in the residents' conduct and degree of compliance with hall and university regulations. The most heavily weighted item on the function differentiated between the groups according to whether or not residents tended to be involved in an above average number of disciplinary problems (Pt.II,#29). A high mean score on the function indicated a tendency toward few discipline problems, and relatively high compliance with regulations; a low mean score indicated the reverse. The leadership of the resident assistant (Pt.I,#23) seemed to be positively related to a lower incidence of disciplinary problems and to residents' compliance with hall regulations

(Pt.I,#30). Nevertheless, a greater number of disciplinary problems was curiously associated to some extent with satisfaction in some of the houses (Pt.I,#33). The ability to study within the house (Pt.I,#25) and good social programs (Pt.I,#21) were characteristic of houses with fewer disciplinary problems. Residents were more likely to keep their rooms clean and neat (Pt.II,#6).

In the other direction more campus leaders tended to live in what might be termed the low compliance houses (Pt.II,#10). Such houses were more likely to be known for their original, novel or creative (though perhaps somewhat questionable) ideas and activities (Pt.II,#15), and were likely to have a number of traditions (Pt.II,#24). The "intellectual" more often had status in these houses (Pt.II,#28). Likewise, residents in their selection of courses were perhaps more interested in the quality of the course rather than how easy it was to get a grade (Pt.II,#22).

From these last results there would seem to be a hint of intellectual rebellion in at least some of the houses characterized by a relatively low order of compliance with regulations. This of course, would not necessarily be the case in all such houses.

Interpretation of the Fifth Discriminant Function

Only 6.5 per cent of the variance was accounted for by the fifth function. The underlying characteristic

of this function is perhaps a little more confusing. The houses are primarily differentiated according to their level of support for and participation in intramural sports (Pt.I,#15). Houses supporting intramurals also perceive a more positive climate of learning within the hall (Pt.I,#58) and tend to be satisfied with the house (Pt.I,#33). The social life of the house, however, is weighted in the other direction suggesting that the function differentiated between some houses supporting intramurals as opposed to those having a strong social program. This curious relationship may to some extent be a function of the degree of variance already accounted for by previous discriminant functions. There would also seem to be an inverse relationship between the support given intramurals and certain houses being known for their novel or creative ideas (Pt.II,#15).

This function may reflect a general performance factor primarily weighted toward intramural sports, but also including the discriminating ability of remaining variance of variables reflecting other house programs.

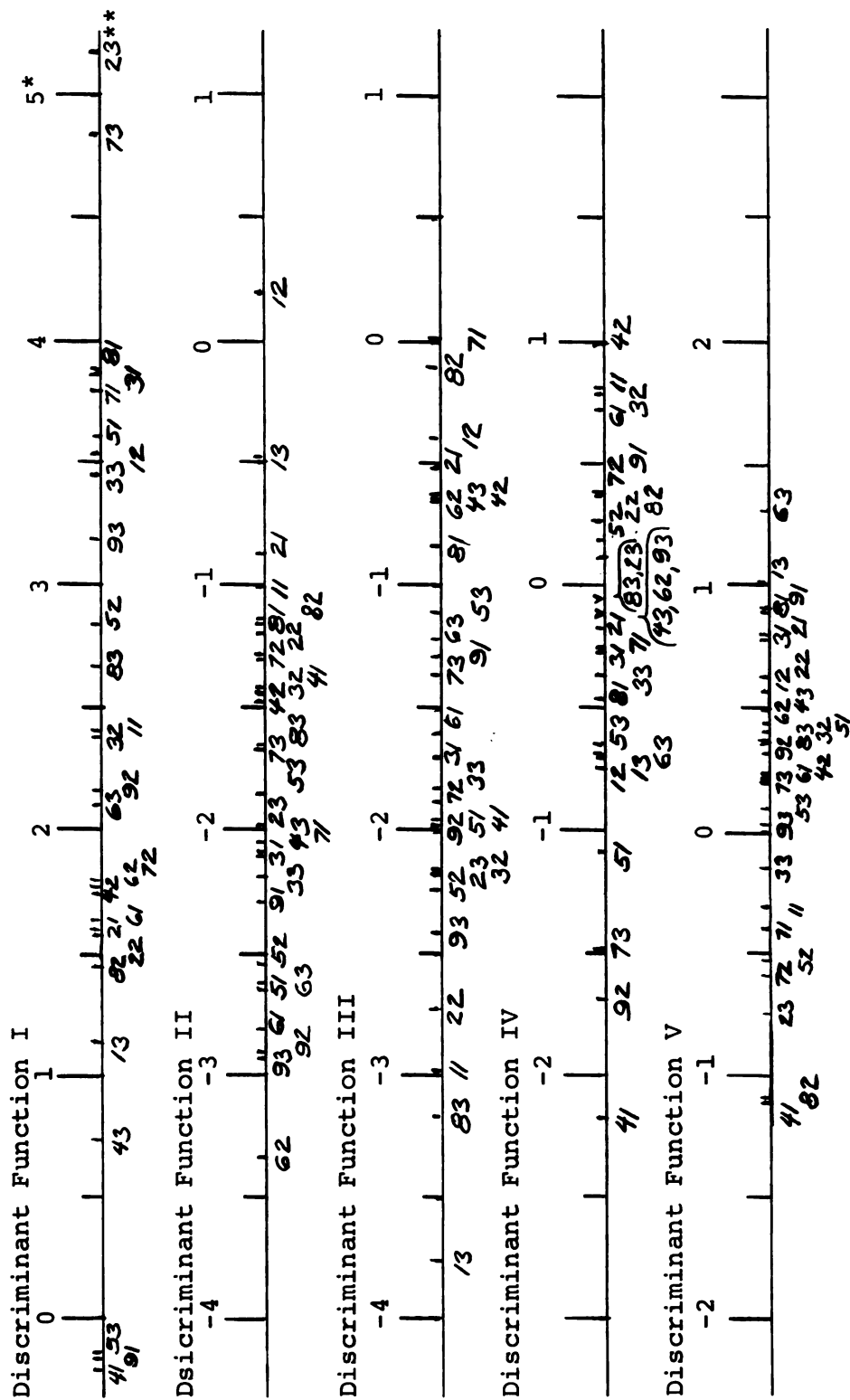
Question B: Is it possible to develop a meaningful typology of the residence hall groups according to the description of the discriminant functions and the location of the groups in multi-dimensional space?

To a large extent an answer to Question B has been provided by the presentation and interpretation of the

five discriminant functions. In Table 5.5 the mean (centroid) scores of the 27 houses on the five discriminant functions previously described are listed. These same mean scores have been graphically portrayed in Figure 5.1. In that figure the position of each house on each of the five functions can be seen. Houses with a low score on a given function are located to the left and those with high scores to the right. The house mean scores on the 50 HAS items included in the discriminant analysis are listed with mean scores on the other HAS items in Appendix D. These mean scores should not be confused with the house mean (or centroid) scores on the discriminant functions. An examination of house means on the HAS variables aids in the interpretation of the functions.

An interpretation of the nature of the differences between the houses becomes most lucid at the extremes of the continua. Toward the center of the distributions of houses on the five functions, the relationship between the variables is clouded. This is in part a function of the discriminant analysis itself in that scores tend to be normally distributed on each function. Thus they do tend to be more heavily distributed toward the center. Typically, in interpreting a discriminant function a priori distinctions exist between the groups compared, from which one could predict differences or at least interpret them when they are found. The a priori homogeneity of the houses as a type

Figure 5.1 Location of mean discriminant scores of the 27 houses on the first five discriminant functions



* Numbers above the lines indicate the values of the discriminant function.

**Numbers below the lines represent each of the 27 houses and their locations on the function.

of living unit did not provide that lever in this study. Nevertheless, houses at the extremes of the five functions do tend to differ from one another along the lines described in the descriptions of the functions. Hence the answer to Question B is a qualified yes.

The direction of differences between the houses along the five continua will now be briefly considered.

Houses with low scores on function one (e.g., houses 41, 91, and 53) tended to have high ratings of their level of academic performance. All three had the highest mean gpa of their respective halls fall quarter, 1964--a fact of which the residents were undoubtedly aware when they completed the HAS. The two houses with the highest scores on function one (73 and 23) had both had the lowest mean gpa for their respective halls.

Houses falling at the low end of function two tended to have high ratings of their halls compared to other campus halls, though the houses did not necessarily receive such a high rating. At the other end, the houses tended to be rated high but the halls in which they were located tended to receive poor ratings.

At the low end of function three residents' responses suggested that their house reputation left something to be desired. At the opposite end, the reputation of houses so located tended to be more positive.

Compliance with hall and institutional regulations tended to be poorer in houses located at the lower end of function four in contrast to houses receiving high scores on the function.

Houses with low scores on function five were those whose support for intramural sports tended to be comparatively weak, while those at the opposite end were likely to have stronger programs. From Figure 5.1 the close clustering of houses on function five can be observed. This may in part account for the ambiguity of this function, where relationships between highly weighted variables were not distinct.

Question C: Does the location of houses in the empirically derived multi-dimensional space relate in a meaningful fashion to the classification of houses according to program and/or physical characteristics (such as common location in the same hall and/or complex or construction similarities such as living-learning features)?

In light of the large number of significant functions and the relatively low percentage of the total variance accounted for by any single function, no attempt was made to depict the houses in multi-dimensional space. A three-dimensional portrayal is visually possible. However, the first three functions accounted for only 53 per cent of the total variance, and thus left 47 per cent of inter-house variation unexplained. Consequently, no attempt was made to portray the distribution of houses in more than one dimension as represented in Figure 5.1.

Only on the distribution of house means on function two would there appear to be any consistent patterning of houses according to physical characteristics of the halls. As was indicated in the preceding section, houses with low scores on the function tended to be rated as better than average or best among the men's residence halls at Michigan State University. At the other end of the continuum, houses so located tended to be rated by residents below average among the halls. A more complete interpretation of the function was given in a previous section of this chapter. It would appear that Hall 1 was consistently given a low rating by its residents. Hall 2, designed similarly, also tended toward the same end of the continuum though the mean score of one of its three houses fell in the middle of the distribution. These two halls were both in their first year of operation which would explain, at least, why houses with high scores on the function tended not to have well established traditions. Also, residents were more often randomly assigned to the hall.

Additional explanations were suggested from some of the responses from residents of these halls to an open-ended item on the HAS (Pt.II,#70). Several residents had indicated a level of dissatisfaction with the four man suite concept employed in these new halls. The poor ratings may simply have been a function of the newness of the halls.

With the exception of one house in Hall 5, all the houses of Halls 5, 6 and 9 were located at the low end of discriminant function two. Halls 5 and 6 are the East and West wings of a large, older, somewhat traditional men's residence unit. Hall 9 is also an older facility having a traditional character. It would appear that residents of these halls tend to regard them quite highly. It is also significant to note that none of the houses of the living-learning units (Halls 1-4) were included among the eight houses having the lowest mean scores on the function (though Hall 4 did receive comparable good ratings on the item asking residents to rate their hall--HAS, Pt.II,#60).

In general, it is important to note that differences between houses seem to predominate much more than any observable inter-hall differences on the five functions, with the single exception noted above. This would in part at least be a function of the variables considered, most of which were designed to assess inter-house differences. Nevertheless, it would seem that the houses do depict an important level of interpersonal interaction within the university milieu. Likewise it is obvious that the differences between the groups are extensive.

The Impact of Types of Houses on the
Academic Performance of Freshmen

Hypothesis IIa ₁	There will be no differences in the (adjusted) academic performance of freshmen differentiated according to
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the types of houses in which they live (types defined according to clustering of houses along the discriminant functions and/or in the multi-dimensional function space).

Hypothesis IIa₂ Nor will there be an interaction between types of houses and the pre-test sub-culture orientation of the residents.

In order to test Hypothesis IIa₁, houses with mean scores located at each of the two extremes of each of the five discriminant functions were grouped together. Two groups of houses were thus created depending on the location of the mean scores of the houses on each of the five discriminant functions previously analyzed. The distribution of houses on each of the functions was portrayed in Figure 5.1. On each of the five functions an attempt was made to select those houses at the extremes that were somewhat separated from houses clustering toward the center of the continuum. The numbers of students in each of the five high and five low groups are presented in Table 5.6. Each of the "high" and "low" groups is subdivided according to the numbers of freshmen in each of the four sub-culture orientations.

Hypothesis IIa₁

Using the groups so created five two-factor (2 x 4) analyses of covariance were computed, one for each of the five discriminant functions. Type of house (high vs. low

Table 5.6 The number of freshman residents grouped by subculture orientation in houses (1) with high mean scores and (2) with low mean scores on five discriminant functions*

Subculture Orientation	High Mean Score Houses	Low Mean Score Houses	Totals
Discriminant Function I			
Vocational	72	58	130
Non-conformist	32	25	57
Academic	100	70	170
Collegiate	33	16	49
Totals	237	169	406
(Houses Included)	(73,23,81,31,71,51,12,33,93)	(61,21,22,82,13,43,91,53,41)	
Discriminant Function II			
Vocational	42	55	97
Non-conformist	26	18	44
Academic	83	41	124
Collegiate	20	19	39
Totals	171	133	304
(Houses Included)	(12,13,21,11,82,81)	(52,63,51,61,92,93,62)	
Discriminant Function III			
Vocational	50	63	113
Non-conformist	34	29	63
Academic	79	80	159
Collegiate	30	20	50
Totals	113	192	385
(Houses Included)	(71,82,12,21,42,43,62,81)	(32,23,52,93,22,11,83,13)	

Table 5.6 (continued)

Subculture Orientation	High Mean Score Houses	Low Mean Score Houses	Totals
Discriminant Function IV			
Vocational	64	80	144
Non-conformist	37	31	68
Academic	75	88	163
Collegiate	16	25	41
Totals	192	224	416
(Houses Included)	(42,11,32,61, 91,72,82,22,52)	(53,63,13,12, 51,73,92,41)	
Discriminant Function V			
Vocational	56	44	100
Non-conformist	14	33	47
Academic	76	73	149
Collegiate	18	16	34
Totals	164	166	330
(Houses Included)	(63,13,91, 81,21,31)	(33,11,71,52, 72,23,82,41)	

*All 27 houses are plotted on each discriminant function in Figure 5.1.

houses) constituted one main effect; subculture orientation the other; the dependent variable was adjusted freshman gpa. The results of the analyses are presented in Tables 5.7-5.16.

As may be noted from the five covariance tables (Tables 5.7, 9, 11, 13, and 15), the main effect difference on gpa's between the four college types (subculture orientations) was consistently significant as was expected. This study did not directly concern itself with subculture differences (these have been extensively covered elsewhere).⁵ But it was necessary to include them in order to study the interaction between subculture orientation and type of house.

No significant differences in adjusted freshman gpa were noted between types of houses (the other main effect) on any of the five analyses of covariance. Consequently the null hypothesis was not rejected for Hypothesis IIa₁.

Hypothesis IIa₂

In testing Hypothesis IIa₂, the interaction between type of house and subculture orientation on the third

⁵ Benjamin Joseph Hodgkins, "Student Subcultures-- An Analysis of their origins and affects on student attitude and value change in higher education" (unpublished dissertation, Michigan State University, 1964).

Table 5.7 Analysis of covariance of two-quarter accumulative grade-point-average of freshman residents, adjusted by MSU Reading and CQT total scores, for high and low house groups on Discriminant Function I

Source of Variance	SS	df	V	F
Between House Groups	.1158	1	.1158	.3266
Between College Types	5.5443	3	1.8481	5.2131*
House Groups x College Types	1.0852	3	.3617	1.0203
Error	140.3866	396	.3545	

*Significance level $<.01>.001$

Table 5.8 Mean two-quarter accumulative grade-point-averages, adjusted by MSU Reading and CQT total scores, for groups of freshman residents classified according to subculture orientation and type of house on Discriminant Function I

Subculture Orientation	High Mean Score Houses	Low Mean Score Houses	Totals
Vocational	2.41	2.48	2.45
Non-conformist	2.38	2.36	2.37
Academic	2.29	2.50	2.39
Collegiate	2.08	1.99	2.04
Totals	2.29	2.33	

Table 5.9 Analysis of covariance of two-quarter accumulative grade-point-average of freshman residents, adjusted by MSU Reading and CQT total scores, for high and low house groups on Discriminant Function II

Source of Variance	SS	df	V	F
Between House Groups	1.0200	1	1.0200	2.9198
Between College Types	3.6418	3	1.2139	3.4750*
House Groups x College Types	2.3710	3	.7903	2.2624
Error	102.7038	294	.3493	

*Significance level <.05

Table 5.10 Mean two-quarter accumulative grade-point-averages, adjusted by MSU Reading and CQT total scores, for groups of freshman residents classified according to subculture orientation and type of house on Discriminant Function II

Subculture Orientation	High Mean Score Houses	Low Mean Score Houses	Totals
Vocational	2.40	2.46	2.43
Non-conformist	2.22	2.75	2.48
Academic	2.28	2.35	2.32
Collegiate	2.15	2.05	2.10
Totals	2.27	2.40	

Table 5.11 Analysis of covariance of two-quarter accumulative grade-point-average of freshman residents, adjusted by MSU Reading and CQT total scores, for high and low house groups on Discriminant Function III

Source of Variance	SS	df	V	F
Between House Groups	.0036	1	.0036	.0100
Between College Types	4.8025	3	1.6012	4.4127*
House Groups x College Types	3.0071	3	1.0024	2.7624**
Error	136.0698	375	.3629	

* Significance level $<.01>.001$

** Significance level $<.05$

Table 5.12 Mean two-quarter accumulative grade-point-averages, adjusted by MSU Reading and CQT total scores, for groups of freshman residents classified according to subculture orientation and type of house on Discriminant Function III

Subculture Orientation	High Mean Score Houses	Low Mean Score Houses	Totals
Vocational	2.53	2.34	2.43
Non-conformist	2.35	2.69	2.52
Academic	2.35	2.33	2.34
Collegiate	2.18	2.02	2.10
Totals	2.35	2.35	

Table 5.13 Analysis of covariance of two-quarter accumulative grade-point-average of freshman residents, adjusted by MSU Reading and CQT total scores, for high and low house groups on Discriminant Function IV

Source of Variance	SS	df	V	F
Between House Groups	.1388	1	.1388	.3994
Between College Types	4.3069	3	1.4356	4.1317*
House Groups x College Types	.3387	3	.1129	.3249
Error	141.0745	406	.3475	

*Significance level <.01

Table 5.14 Mean two-quarter accumulative grade-point-averages, adjusted by MSU Reading and CQT total scores, for groups of freshman residents classified according to subculture orientation and type of house on Discriminant Function IV

Subculture orientation	High Mean Score Houses	Low Mean Score Houses	Totals
Occupational	2.39	2.39	2.39
Non-conformist	2.49	2.34	2.42
Academic	2.46	2.47	2.46
Collegiate	2.11	2.07	2.09
Totals	2.36	2.32	

Table 5.15 Analysis of covariance of two-quarter accumulative grade-point-average of freshman residents, adjusted by MSU Reading and CQT total scores, for high and low house groups on Discriminant Function V

Source of Variance	SS	df	V	F
Between House Groups	.9039	1	.9039	2.4987
Between College Types	4.1203	3	1.3734	3.7968*
House Groups x College Types	1.0079	3	.3360	.9288
Error	115.7541	320	.3617	

*Significance level <.05

Table 5.16 Mean two-quarter accumulative grade-point-averages, adjusted by MSU Reading and CQT total scores, for groups of freshman residents classified according to subculture orientation and type of house on Discriminant Function V

Subculture Orientation	High Mean Score Houses	Low Mean Score Houses	Totals
Vocational	2.41	2.45	2.43
Non-conformist	2.49	2.40	2.44
Academic	2.34	2.17	2.25
Collegiate	2.23	1.94	2.08
Totals	2.37	2.24	

iminant function was significant beyond the .01 level. frequently the null hypothesis for this interaction on as rejected. The null hypothesis was not rejected any of the other four interactions.

The five tables of adjusted category mean gpa's (Tables 5.8, 10, 12, 14, and 16) indicate the predicted values of the dependent variables when the effects of the Reading Test and CQT total scores have been removed. These adjusted gpa's are of interest in noting the direction of differences between the types of houses and substructure orientations. The direction and magnitude of the differences in adjusted gpa's between the categories listed in the tables also help one interpret the nature of significant interactions between the two main effects.

Discussion

A problem encountered in testing all of the hypotheses requiring the analysis of covariance test was sample size. A sufficient number of houses had to be selected at both ends of the distribution of mean scores to insure a large enough sample such that if differences did exist, the test would be sufficiently sensitive to be significant. This was particularly crucial in testing the hypotheses concerning the measures of intellectual disposition (Hypotheses IIb and IIe). For these hypotheses

the sample was already diminished because a large number of freshmen had not completed the post-test intellectual disposition measure. The power of the statistical test is usually increased by making the sample size larger, and the likelihood of committing a type II error is decreased. With smaller samples power is decreased.

Yet in this study, given the available houses from which to draw, to increase sample size by adding more houses to the high and low groups would also tend to decrease power. This paradox lies in the fact that power is inversely related to the heterogeneity of the population.⁶ If the number of freshman residents of each of the 27 houses already included in the research sample could have been increased, power of the tests would have risen accordingly. That was not an open alternative. The only option available was to add additional house groups from the available 27 with mean scores nearer the center of the distributions on the functions. As has already been noted, characteristics of houses near the center of the distribution were not clearly differentiated. Perhaps the best solution of the problem lies in a future replication of the study with tighter controls and a larger sample. Keeping these problems in mind the results of the analysis of covariance tests are considered next.

⁶William S. Ray, An Introduction to Experimental Psychology (New York: Macmillan Co., 1960), p. 68.

Despite the fact that the first discriminant function differentiated between houses primarily on the basis of residents' ratings of house academic performance, no differences in gpa's were noted between the groups of houses when the effects of academic ability were removed. It is a common practice of housing administrators to compare living groups on the basis of their unadjusted mean gpa's. It would seem, however, that in this case mean gpa did not reflect any differences in, at least, freshman residents when academic ability was controlled. Frequently, when housing types are compared on the basis of academic performance by analysis of covariance, observed differences turn out to be a function of academic ability, rather than of the type of housing.⁷

With reference to Table 5.10, the pattern of adjusted mean gpa's is interesting. Though the null hypothesis was not rejected, differences between the two groups of houses approached significance (.085 level). Function had discriminated between groups primarily on the basis of residents' ratings of their halls. The low mean scores had relatively high mean ratings; houses at the other end of the continuum were less well regarded. And it was the only function upon which one could observe a ranking of houses according to the halls in which they

⁷For example see Ralph E. Prusck and Bruce Walsh, "College Students Residence and Academic Achievement," Journal of College Student Personnel, 5:180-184, 1964.

1. The first part of the document is a list of the names of the persons who have been appointed to the various positions of the Board of Directors of the Corporation.

were located. Though the results are clearly inconclusive, the adjusted mean gpa's of three of the four subtypes are in the direction of the more positively regarded halls.

The interaction term of the third analysis of covariance was significant (in the test of Hypothesis IIa_2). Group mean scores high on the third function tended to reflect houses with good reputations though apparently not with regard to academic performance. Residents of houses with low mean scores on the function rated their house reputation somewhat lower than residents of houses with high mean scores. Through observation of adjusted group means in Table 5.12, the significant interaction seems to be a function of higher mean scores of vocationally and collegiately oriented freshmen in houses with good reputations (and/or lower mean scores in houses with poorer reputations). The reverse would seem to be true for non-conforming students. An explanation may be that the vocationally and collegiately oriented students derive more inter-group support and reinforcement for their orientations within their apparently well-regarded houses with relatively strong social programs and traditions. On the other hand non-conforming students seemed to perform better in houses where the house reputation, based on non-academic values, was not as good. One could speculate that there were other

elements in these houses supporting the value systems of the non-conformists. And conversely perhaps non-conforming students in the milieu of the houses with the positive (but apparently non-academically oriented) reputation did not receive support for their system of values and needs.

Three considerations should be kept in mind. First, no cause and effect relationship should be assumed in these analyses. Secondly, the interpretations are speculative. Thirdly, there is the possibility that the significant interaction discussed above was itself a product of chance. Inasmuch as a series of analyses were computed, the possibility of committing a type I error is increased through the laws of probability. Given the fact that the confidence level of the one significant interaction was well beyond the .01 level, the likelihood of this being a chance difference is diminished.

To recapitulate, the test of Hypothesis IIa₂ produced no significant differences in adjusted gpa's between types of houses. Only one of the five interactions between types of houses and subculture orientations was significant. Collegiate and vocational students seemed to perform better academically in houses with good social reputations. Non-conformists apparently did better in houses with poorer reputations, but with a better academic sphere.

The Impact of Types of Houses on the Intellectual
Disposition of Freshmen

Hypothesis IIb₁: There will be no differences on any of the four post-test (adjusted) measures of intellectual disposition (as measured by the four OPI scales) of freshmen differentiated according to the types of houses in which they live.

IIb₂: Nor will there be an interaction between types of houses and the pre-test sub-culture orientation of the residents.

Hypothesis IIb was tested in a manner similar to that used in testing Hypothesis IIa, with the exception that the dependent variables were the four post-test measures of the same variables. The results are reported in Tables 5.18 to 5.22. Table 5.17 lists the number of residents in each category. Though the houses were grouped in a fashion identical to the groupings employed in testing the previous hypothesis, the category n's were slightly smaller. Usable data from the pre- and post-test measures of intellectual disposition were available for only 60 percent of freshman residents.

Hypothesis IIb₁

A review of Tables 5.18 through 5.22 provides the following information. No significant differences were noted between any of the five groups of high and low houses (first main effect) for any of the four intellectual disposition measures. The null hypothesis was therefore not rejected for Hypothesis IIb₁.

Table 5.17 The number of freshman residents who completed pre- and post-measures of intellectual disposition (four OPI scales on the Attitude Inventory). The residents are grouped by subculture orientation in houses (1) with high mean scores and (2) with low mean scores on five discriminant functions*

Subculture Orientation	High Mean Score Houses	Low Mean Score Houses	Totals
Discriminant Function I			
Vocational	45	42	87
Non-conformist	22	22	44
Academic	59	50	109
Collegiate	20	5	25
Totals	146	119	265
(Houses Included)	(73,23,81,31,71,51,12,33,93)	(61,21,22,82,13,43,91,53,41)	
Discriminant Function II			
Vocational	30	33	63
Non-conformist	22	11	33
Academic	65	25	90
Collegiate	10	9	19
Totals	127	78	205
(Houses Included)	(12,13,21,11,82,81)	(52,63,51,61,92,93,62)	
Discriminant Function III			
Vocational	32	41	73
Non-conformist	26	24	50
Academic	54	63	117
Collegiate	15	10	25
Totals	127	138	265
(Houses Included)	(71,82,12,21,42,43,62,81)	(32,23,52,93,22,11,83,13)	

Table 5.17 (continued)

Subculture Orientation	High Mean Score Houses	Low Mean Score Houses	Totals
Discriminant Function IV			
Vocational	35	52	87
Non-conformist	32	22	54
Academic	52	55	107
Collegiate	7	15	22
Totals	126	144	270
(Houses Included)	(42,11,32,61, 91,72,82,22,52)	(53,63,13,12, 51,73,92,41)	
Discriminant Function V			
Vocational	42	27	69
Non-conformist	13	25	38
Academic	52	48	100
Collegiate	9	10	19
Totals	116	110	226
(Houses Included)	(63,13,91, 81,21,31)	(33,11,71,52, 72,23,82,41)	

*All 27 houses are plotted on each discriminant function in Figure 5.1.

Table 5.18 Analyses of covariance of freshman post-test scores on the four OPI scales, adjusted by pre-test scores on the same scales, for high and low house groups on Discriminant Function I

Source of Variance	SS	df	V	F
Thinking Introversion				
Between House Groups	2.992	1	2.992	.0821
Between College Types	351.856	3	117.285	3.2174*
House Groups x College Types	68.480	3	22.827	.6262
Error	9332.173	256	36.454	
Theoretical Orientation				
Between House Groups	2.859	1	2.859	.2539
Between College Types	71.243	3	23.747	2.1091
House Groups x College Types	115.356	3	38.452	3.4150*
Error	2882.498	256	11.260	
Estheticism				
Between House Groups	2.909	1	2.909	.3381
Between College Types	34.218	3	11.406	1.3258
House Groups x College Types	12.498	3	4.166	.4842
Error	2202.394	256	8.603	
Autonomy				
Between House Groups	9.637	1	9.637	.5154
Between College Types	96.058	3	32.019	1.7125
House Groups x College Types	28.473	3	9.491	.5076
Error	4786.641	256	18.698	

*Significance level <.05

Table 5.19 Analyses of covariance of freshman post-test scores on the four OPI scales, adjusted by pre-test scores on the same scales, for high and low house groups on Discriminant Function II

Source of Variance	SS	df	V	F
	Thinking Introversion			
Between House Groups	.246	1	.246	.0074
Between College Types	93.238	3	31.079	.9317
House Groups x College Types	39.181	3	13.060	.3915
Error	6537.866	196	33.356	
	Theoretical Orientation			
Between House Groups	2.141	1	2.141	.1818
Between College Types	43.721	3	14.574	1.2374
House Groups x College Types	23.732	3	7.911	.6716
Error	2308.439	196	11.778	
	Estheticism			
Between House Groups	1.729	1	1.729	.1848
Between College Types	23.153	3	7.718	.8249
House Groups x College Types	46.106	3	15.369	1.6426
Error	1833.868	196	9.356	
	Autonomy			
Between House Groups	6.419	1	6.419	.3861
Between College Types	61.624	3	20.541	1.2354
House Groups x College Types	28.379	3	9.460	.5689
Error	3258.889	196	16.627	

Table 5.20 Analyses of covariance of freshman post-test scores on the four OPI scales, adjusted by pre-test scores on the same scales, for high and low house groups on Discriminant Function III

Source of Variance	SS	df	V	F
Thinking Introversion				
Between House Groups	.063	1	.063	.0018
Between College Types	240.864	3	80.288	2.2556
House Groups x College Types	9.345	3	3.115	.0875
Error	9112.166	256	35.594	

Theoretical Orientation				
Between House Groups	.049	1	.049	.0041
Between College Types	35.301	3	11.767	.9807
House Groups x College Types	5.036	3	1.679	.1399
Error	3071.493	256	11.998	

Estheticism				
Between House Groups	.831	1	.831	.0981
Between College Types	51.714	3	17.238	2.0334
House Groups x College Types	20.154	3	6.718	.7924
Error	2170.226	256	8.477	

Autonomy				
Between House Groups	.296	1	.296	.0184
Between College Types	113.429	3	37.810	2.3405
House Groups x College Types	27.864	3	9.288	.5750
Error	4135.554	256	16.155	

Table 5.21 Analyses of covariance of freshman post-test scores on the four OPI scales, adjusted by pre-test scores on the same scales, for high and low house groups on Discriminant Function IV

Source of Variance	SS	df	V	F
	<u>Thinking Introversion</u>			
Between House Groups	13.077	1	13.077	.3893
Between College Types	272.792	3	90.931	2.7073*
House Groups x College Types	129.377	3	43.126	1.2840
Error	8766.122	261	33.587	
	<u>Theoretical Orientation</u>			
Between House Groups	9.116	1	9.116	.8096
Between College Types	62.328	3	20.776	1.8453
House Groups x College Types	3.236	3	1.079	.0958
Error	2938.537	261	11.259	
	<u>Estheticism</u>			
Between House Groups	25.405	1	25.405	2.8443
Between College Types	37.896	3	12.632	1.4143
House Groups x College Types	25.400	3	8.467	.9479
Error	2331.211	261	8.932	
	<u>Autonomy</u>			
Between House Groups	39.988	1	39.988	2.3139
Between College Types	82.855	3	27.618	1.5981
House Groups x College Types	35.614	3	11.871	.6869
Error	4510.482	261	17.282	

*Significance level <.05

Table 5.22 Analyses of covariance of freshman post-test scores on the four OPI scales, adjusted by pre-test scores on the same scales, for high and low house groups on Discriminant Function V

Source of Variance	SS	df	V	F
	Thinking Introversion			
Between House Groups	79.289	1	79.289	1.9643
Between College Types	204.794	3	68.265	1.6912
House Groups x College Types	232.030	3	77.343	1.9161
Error	8759.018	217	40.364	
	Theoretical Orientation			
Between House Groups	20.434	1	20.434	1.8569
Between College Types	95.694	3	31.898	2.8987*
House Groups x College Types	102.553	3	34.184	3.1065*
Error	2387.895	217	11.004	
	Estheticism			
Between House Groups	2.173	1	2.173	.2484
Between College Types	41.202	3	13.734	1.5695
House Groups x College Types	11.268	3	3.756	.4292
Error	1898.850	217	8.750	
	Autonomy			
Between House Groups	13.496	1	13.496	.9252
Between College Types	121.154	3	40.385	2.7687*
House Groups x College Types	45.138	3	15.046	1.0315
Error	3165.193	217	14.586	

*Significance level <.05

Significant differences in Thinking Introversion were noted between college types (the second main effect) on two of the five Thinking Introversion measures (Tables 5.18 and 5.21). One other significant F between college types was noted (Table 5.22) on the Theoretical Orientation scale. But it is most likely that all of the significant F's were the result of chance sampling fluctuations, given the large number of comparisons made in testing Hypothesis IIb. And again differences between college types are not of immediate significance to this study.

Hypothesis IIb₂

The interactions between type of house and sub-culture orientation were significant on two of the five tests for differences on the Theoretical Orientation scale (Tables 5.18 and 5.22). The types of houses involved were those differentiated by Discriminant functions I and V. These differences may well have been a function of a chance variation in the samples drawn from the population. Nevertheless, because the observed differences were consistent with theory the null hypothesis for Hypothesis IIb₂ is qualifiedly rejected for the interaction term in the two instances cited.

discussion

In Table 5.23 adjusted Theoretical Orientation core means of freshmen are presented for the interaction tests which were significant (test of the Hypothesis IIb₂). The students are classified by college type and by types of houses differentiated on discriminant functions I and V.

It would appear from the table that in both cases described, the non-conforming and academic residents are influenced in one direction according to type of house, and the vocational and collegiate students in the other direction. According to the theory upon which the subcultures are derived, the vocational and collegiate orientations differ from the non-conforming and academic in the degree of affinity of each pair for ideas and the academic life. The latter pair, of course, are more interested in the intellectual domain. Though the observed differences in the means between the groups are not profound, the direction of differences does seem to coincide somewhat with those observed by Nasatir.⁸ He had noted that "vocationally" oriented students were more likely to succeed when they resided in halls with a less intense academic climate.

The group of houses with high mean scores on function I were generally those whose ratings of academic

⁸David Nasatir, "A Contextual Analysis of Academic Failure," The School Review, 71:290-298, 1963.

Table 5.23 Mean Theoretical Orientation post-test scores, adjusted by pre-test scores, for groups of freshman residents classified according to subculture orientation and type of house on Discriminant Functions I and V*

Subculture Orientation	High Mean Score Houses	Low Mean Score Houses	Totals
Discriminant Function I			
Vocational	19.20	17.66	18.43
Non-conformist	19.26	20.03	19.64
Academic	17.75	19.08	18.41
Collegiate	18.11	16.45	17.28
Totals	18.58	18.30	
Discriminant Function V			
Vocational	17.86	18.50	18.18
Non-conformist	19.91	19.67	19.79
Academic	18.34	17.23	17.79
Collegiate	16.16	19.85	18.01
Totals	18.07	18.81	

*These two tests of interaction between subcultures and types of houses were significant beyond the .05 level of confidence in the analyses of covariance (see Tables 5.18 and 5.22).

performance of the house were somewhat negative. The houses with low mean scores on the function enjoyed more favorable academic performance ratings. Thus, one explanation of the results would be that students valuing intellectual activities found more support in houses with a high level of academic performance resulting in higher Theoretical Orientation scores. Or they may have found less support in houses with poor academic performance. Either or both propositions could be true. The situation would be reversed for students not identifying with the intellectual life.

A parallel situation may pertain in considering the character of houses dichotomized by discriminant function V. The variable contributing the most to the function related to support for intramural activities. It is hard to integrate that dimension into the interpretation. But, in addition, the rating of the climate of learning of the hall also had a high weight on the function, as did an item relating to the intellectual and cultural life of the house. Houses with high mean scores on these three items tended to have high mean scores on the function. Likewise houses with low scores on the items tended to have low scores on the function. Thus, one could again postulate that vocationally and collegiately oriented students may have found more reinforcement for their value system within houses having a less intense academic orientation. Conversely, residence in more academically oriented houses

may have been detrimental to vocationally and collegiately oriented students. One could postulate the reverse effects for non-conforming and academically oriented students.

The Theoretical Orientation and Thinking Introversion scales are quite highly correlated. One would thus expect the results of the analyses of covariance to be similar for both scales. But where the Theoretical Orientation interaction terms had been significant on tests on the first and fifth discriminant functions, the Thinking Introversion was significant on neither. Thus, the plausibility of the above interpretations is weakened. Further exploration of the significant differences noted is clearly in order.

The point should be made that in general, the four measures of intellectual disposition failed to differentiate with any consistency between groups of students regardless of how they were classified. The types of houses as defined by the discriminant functions made little difference. Nor did students' orientations to higher education, except as noted previously. Perhaps more time would be required for differences, should they exist, to emerge. The fact that respondents completing the four scales in both the pre- and post-testing differed from those who did not complete the instrument the second time may also have been a factor. Perhaps any existing differences would have been more sharply defined had the non-responding students, who tended

to have lower gpa's and CQT total scores, been included in the sample.

Summarizing, there were no significant differences between the types of houses (described by the five discriminant functions) on any of the four measures of intellectual disposition (Hypothesis IIB₁). Two of the interaction terms (between college types and types of houses) were significant--both on the tests of adjusted Theoretical Orientation scores (Hypothesis IIB₂). Though the direction of differences seemed consistent with theory, the differences may nevertheless have been a product of chance sampling fluctuations. The null hypothesis was not rejected for any other interaction in testing Hypothesis IIB₂.

The Climate of Learning

Hypothesis IIIa: There will be no differences among the houses in residents' perceptions of their house climate of learning.

Hypothesis IIIa was tested by a simple analysis of variance for differences between the mean scores of the 27 houses on the measure of the climate of Learning. On item 5 of Part I of the HAS, residents were asked to "rate the general 'climate of learning'" of their houses on a nine point scale. Low scores on the item indicated that there was "support for and/or involvement in the Climate of Learning" in the house. High scores suggested "opposition and/or lack of involvement in the Climate of Learning."

Group mean scores on the item are found in Table A.1 in Appendix D and are graphically portrayed in Figure 5.2. Results of the test appear in Table 5.24.

Table 5.24. An analysis of variance of 27 houses on a measure of the climate of learning of the houses (HAS Part I, item 55)

Source of Variance	SS	df	V	F
Between House Groups	385.764	26	14.837	5.198*
Within House Groups	2446.236	857	2.854	
Total	2832.000	883		

*Significance level $< .01$

The test was significant well beyond the .01 level. Thus the null hypothesis was rejected and it was concluded that there were differences between the 27 houses in residents' ratings of house climate of learning.

Differences ranged between the groups from a low mean of 3.86 in house 91 to a high mean score of 6.18 in house 23. House 91's score falls between "Moderate" and "Tendency toward" "support for and/or involvement in the Climate of Learning" on the nine-point scale. House 23's score indicates that there was a "Tendency toward . . . position to and/or lack of involvement in the Climate of Learning" within the house. The mean, 5.007, of the total sample of 884 residents of the 27 houses fell at the 4-point of the nine-point scale.

Though not directly related to the hypotheses considered in this section, the distributions of the 27 houses on the measure of the climate of learning reveal certain interesting relationships. These may be observed in Figure 5.2.

All three of the houses in hall 4 were rated by their residents as having high climates of learning. Conversely, the mean ratings of all three houses of hall 3, the sister hall to hall 4, indicated a low climate of learning. The two halls are of very similar design, are located within the same complex, and host similar academic programs. Hall 4 at the time of the study was only in its second year of operation while hall 3 was in its third. Though data are not available, it would have been of interest to know whether or not these differences tended to persist had more houses been sampled from the halls. Perhaps the differences reflected the influence of a staff member(s), the class level composition of residents, or simply the effect of one additional year of operation.

House 91 received the most positive climate of learning rating. The other two houses within hall 9 fell at or above the median of houses on the distribution. House 23 had the poorest rating, though the other two houses sampled in hall 2 were given relatively positive ratings. The ratings of hall 1 tended to be negative, though one of its three houses fell at the median of the

CLIMATE OF LEARNING

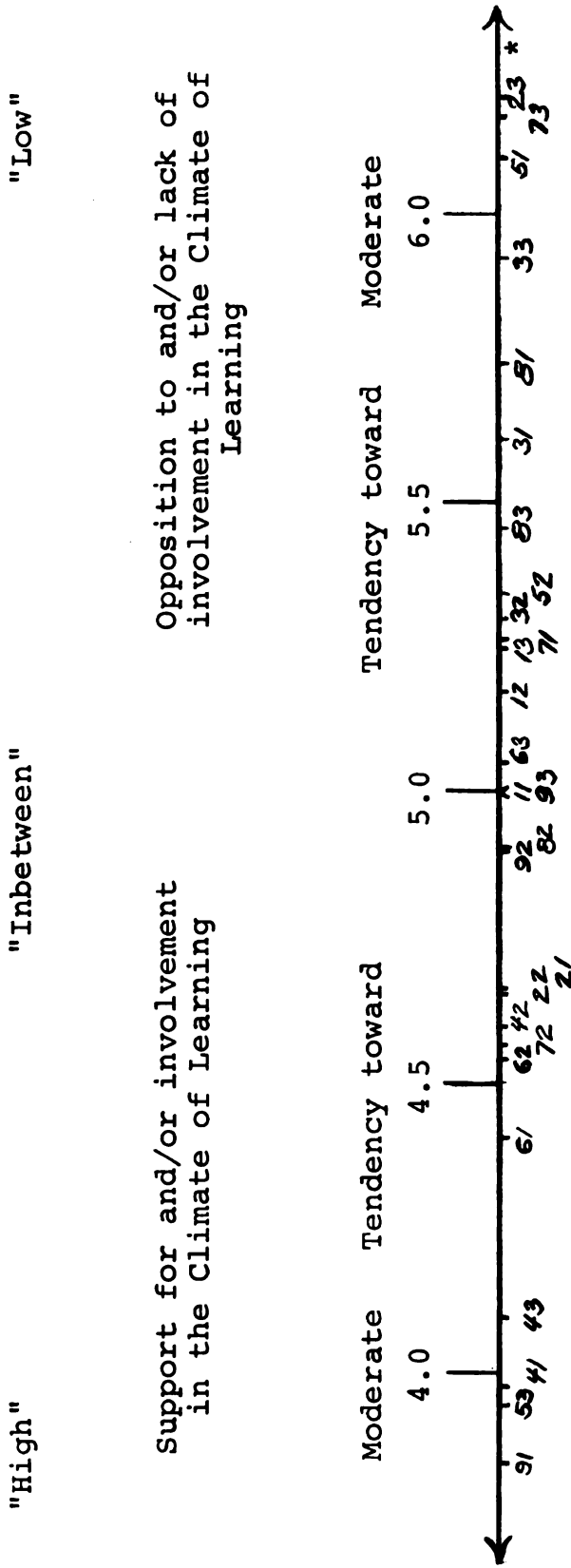


Figure 5.2 The location of mean scores of 27 houses on a measure of the climate of learning of residence hall houses (HAS Part 1, item 55)

*Houses



distribution of houses (which incidentally coincided with the mean of the total sample). The houses of hall 1, and to a lesser extent of hall 2, had high mean scores on discriminant function II. A high score on that function was interpreted to indicate a low level of satisfaction with the hall compared to other halls.

The ratings of houses within the other halls in the sample on the climate of learning measure fell on both the high and low sides of the continuum.

It would appear that house climate of learning is primarily a function of the house rather than a function of a more pervasive climate permeating the hall (though in some halls, such as 2 and 4, the reverse may have been true). It is also significant to note that the climate-of-learning halls (halls 1-4) did not emerge as a group having more positive climates of learning than the other halls. In fact the most sharply defined difference was noted between two climate-of-learning halls (3 and 4) located within the same complex.

The interpretation must of course be qualified in that the ratings were based on residents' responses to a single questionnaire item of unproven validity (though responses were generally consistent within a given house). Likewise within each hall a limited number of houses was sampled, though the selection was random.

Certain other observations should be interjected at this point though they do not directly relate to the stated hypotheses. Residents were asked to respond to the question (HAS Pt. I, #56): "What has been the level of the 'climate' which YOU have personally experienced through those with whom you associate the most in the house, regardless of the general climate of the house?" The total group mean on the item was 4.114, indicating that their experience tended toward some "involvement in the Climate of Learning." It would also suggest that their personal experiences were more positively directed toward a climate of learning than their group experiences, as was indicated by their ratings of the house climate ($M=5.007$). One interpretation is that the discrepancy in the responses to the two items was a function of peer group norms. As has been suggested, these norms tend to be anti-intellectual and would dictate that group behavior coincide with the norms. But such an atmosphere would not necessarily govern an individual's posture in more intimate relationships. An alternate explanation would be that residents tended not to reveal themselves to others as being in opposition to intellectual involvement. To do so would probably be inconsistent with their self-concept.

Residents were also asked where they would "personally like the level of the 'climate' to be in" their house (HAS Pt. I, #57). The mean of the responses was

2.752 indicating a "tendency toward" or "moderate" "support for and/or involvement in the Climate of Learning." Unless there were other factors operating, it would seem that residents were generally willing to support a climate of learning somewhat more intense than that which they indicated to exist in their houses. But apparently their willingness did not reflect a level of motivation sufficiently strong to overcome the situation, or to lead them to move from the house during the year. The disparity between the ratings would suggest however one possible reason why the annual attrition from the halls is relatively high.

Hypothesis IIIb: There will be no relationship between the cohesion of the houses and the perceived climate of learning.

Product-moment correlations between the four measures of cohesion and the climate of learning are listed in Table 5.25. Climate of learning was significantly correlated with each item. Positive ratings of the climate were likely to be associated with more cohesive houses (negative correlations in Table 5.25 are a function of the directionality of scoring of the items). The null hypothesis was therefore rejected.

The four items which by definition were considered to be measures of house cohesion were all moderately inter-correlated in the expected direction. No causal relationship between climate and cohesion can be assumed however. Both could be a function of another set of conditions

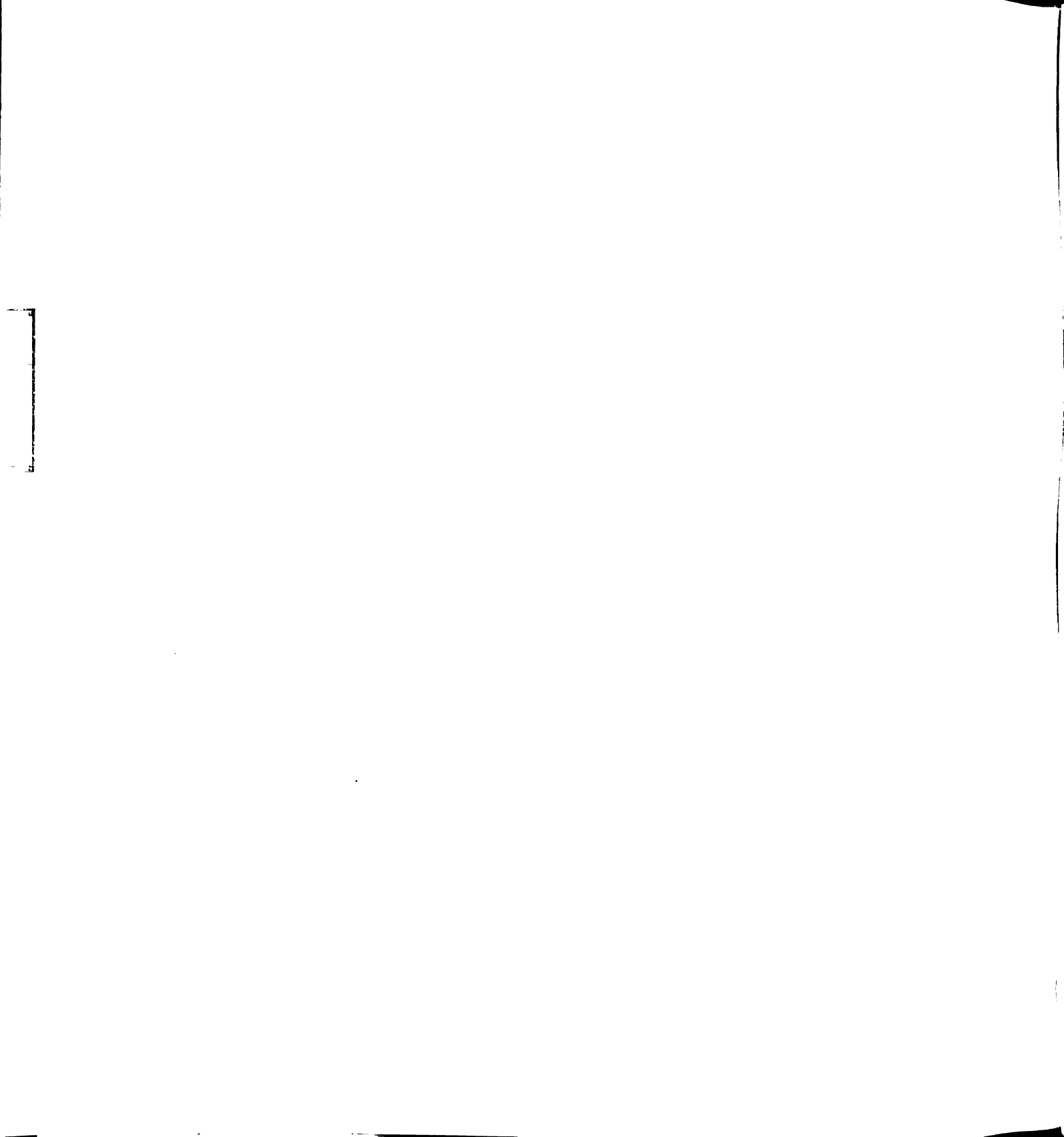


Table 5.25 Intercorrelations of house mean scores on a measure of the climate of learning and on four measures of house cohesion*

Variable	2	3	4	5
1. Where would you rate the general "climate of learning" of your house?	.46	-.54	-.73	.75
2. Your level of satisfaction with living in this house.		-.50	-.48	.51
3. When it comes right down to it, I really have little allegiance to either my residence hall or my house.			.85	-.75
4. I would prefer to move to a different house.				
5. There are 8 to 12 houses in your residence hall. Where would you rate your house <u>generally</u> in contrast to the other houses in the hall?				

*All of the product-moment correlations are significant beyond the .05 level.

which determined the magnitude of each. Correlations of the magnitude indicated in the table would suggest that though a clear relationship existed between climate of learning and cohesion, there was still much latitude for variation. Apparently certain cohesive houses may not have had a relatively high climate. Nor were all houses with a relatively positive climate of learning necessarily highly cohesive.

Perhaps the level of cohesion of a house could best be described by examining houses' responses on items three, four and five as listed in the Table. All are highly inter-correlated. It would be interesting to know the attrition rate in low cohesion houses at the end of the academic year.

Hypothesis IIIc: There will be no relationship between mean grade-point-averages of the houses and the climate of learning.

The mean accumulative gpa's for the fall and winter quarters for each house were correlated with house mean scores on the measure of climate of learning. The resulting product-moment correlation coefficient was .69 suggesting a fairly high relationship between the two variables. Therefore, the null hypothesis was rejected.

The relationship would suggest that to some degree residents' perceptions of the climate of learning may have been a reflection of the level of academic performance in the house. As was indicated earlier residents were generally aware of the mean gpa's of their houses. Whether or

not this knowledge biased their responses to the climate question is unknown. Neither can one ascertain whether or not the relationship would have persisted had affects of academic ability been removed. No test was made of this contingency for the total sample. A test was made, however, of the nature of the relationship for freshmen residents. The results are presented in the discussion of Hypothesis IIId.

Hypothesis IIId₁: There will be no differences in (adjusted) academic performance between freshmen residing in houses having a "high" climate of learning and those living in houses with a "low" climate of learning.

Hypothesis IIId₂: Nor will there be an interaction between the level of the climate of learning and students' subculture orientation.

The ten houses with the highest ratings on the climate of learning measure and the eight houses with the lowest ratings on the measure were formed into two separate groups for the purpose of testing the hypothesis. Houses omitted from the test were those with mean scores on the item located near the center of the distribution of houses. Factors entering into the selection of houses were considered in the "Discussion" section following the presentation of the results of the test of Hypothesis IIa. Table 5.26 describes the resulting sample broken down by subculture membership.

Mean gpa's of freshman residents of high and low climate houses were compared in an analysis of covariance .

Table 5.26 The number of freshman residents grouped by subculture orientation in (1) houses with a high academic climate of learning and (2) houses with a low climate of learning

Subculture Orientation	High Climate Houses*	Low Climate Houses**	Total
Vocational	61	83	144
Non-conformist	27	21	48
Academic	70	84	154
Collegiate	20	31	51
Totals	178	219	397

*High climate houses included houses 41,43,53,61,91,21, 22,42,62,72.

**Low climate houses included houses 23,31,33,51,73, 81,52, and 83.

Table 5.27 The number of freshman residents who completed pre- and post-measures of intellectual disposition (four OPI scales on the Attitude Inventory) grouped by subculture orientation in (1) high climate of learning houses and (2) low climate of learning houses

Subculture Orientation	High Climate Houses*	Low Climate Houses**	Total
Vocational	33	48	81
Non-conformist	22	12	34
Academic	42	44	86
Collegiate	6	18	24
Totals	103	122	225

*High climate houses included houses 41,42,53,61,91,21, 22,42,62,72.

**Low climate houses included houses 23,31,33,51,73, 81,52, and 83.

in order to test Hypothesis IIIId. MSU Reading Test and CQT total scores were again used as covariates. The results of the test appear in Table 5.28. The adjusted category mean gpa's are listed in Table 5.29.

As was expected differences between mean gpa's of college types were significant. Mean gpa's between the group of high climate houses and the low climate houses did not differ significantly, (Hypothesis IIIId₁) nor was the interaction between the two groups of houses and the four college types significant (Hypothesis IIIId₂). Consequently, the null hypothesis was not rejected for either Hypothesis IIIId₁ or IIIId₂.

Discussion

Residents' responses to the measure of house climate of learning were not totally independent of the measure of freshman academic performance. These same freshmen whose gpa's were compared in testing Hypothesis IIIId constituted a large proportion of the respondents on the HAS. Thus, in testing the hypothesis the possible ramifications of this contingency had to be considered.

For instance it was possible that freshmen generally perceived the climate of learning across the houses differently than older students. If this were the case the mean report of the climate of learning would be biased because of the disproportionately large number of freshmen in

Table 5.28 Analysis of covariance of two-quarter accumulative grade-point-averages of freshman residents, adjusted by MSU Reading and CQT total scores, for high and low rated houses on the climate of learning

Source of Variance	SS	df	V	F
Between House Groups	1.0637	1	1.0637	3.0306
Between College Types	7.6212	3	2.5404	7.2378*
House Groups x College Types	.7164	3	.2388	.6804
Error	135.8328	387	.3510	

*Significance level <.001

Table 5.29 Mean two-quarter accumulative grade-point-averages, adjusted by MSU Reading and CQT total scores, for groups of freshman residents classified according to subculture orientation and the climate of learning of their houses

Subculture Orientation	High Climate Houses	Low Climate Houses	Totals
Vocational	2.50	2.35	2.43
Non-conformist	2.50	2.51	2.51
Academic	2.55	2.30	2.42
Collegiate	2.06	1.96	2.01
Totals	2.40	2.28	

several of the houses. Other hypothetical biasing influences could also be postulated.

The product-moment correlation coefficient between house mean responses on the climate of learning measure and the proportion of freshman residents in each of the houses was computed. The resultant $-.52 \text{ } r$ indicated a moderate inverse relationship between the two variables. It was therefore necessary to explore whether or not the relationship was a function of the differential perceptions of freshmen compared to older students or of something else.

Three comparisons were made. The responses of freshmen on the climate of learning item were compared to those of older students through a simple analysis of variance test. Likewise responses of freshmen in the houses with high climates of learning were compared to those of older students in the same houses. And a similar test was made between freshmen and older students in the low climate of learning houses. Results are presented in Table 5.30.

Results of the analyses indicated that in none of the three cases did significant differences exist. It would therefore seem that the responses of freshmen on the measure of climate of learning were at least consistent with the responses of older students. This would be a further indication of the reliability of the climate of learning construct in noting the agreement between the observations of freshmen and older students.

Table 5.30 Three analyses of variance of responses to the measure of house climate of learning between freshmen and older residents

Source of Variance	SS	df	V	F
<u>Comparison Using the Total Sample</u>				
Between Groups	.215	1	.216	.067
Within Groups	2825.744	882	3.204	
Total	2825.959	883		

$(N_{\text{frosh}}=427, M_{\text{frosh}}=4.99; N_{\text{older grp.}}=457, M_{\text{older grp.}}=5.02)^*$				
<u>Residents of High Climate Houses</u>				
Between Groups	2.008	1	2.008	.749
Within Groups	836.438	312	2.681	
Total	838.446	313		

$(N_{\text{frosh}}=113, M_{\text{frosh}}=4.38; N_{\text{older grp.}}=201, M_{\text{older grp.}}=4.21)^*$				
<u>Residents of Low Climate Houses</u>				
Between Groups	8.005	1	8.005	2.778
Within Groups	763.598	265	2.882	
Total	771.603	266		

$(N_{\text{frosh}}=133, M_{\text{frosh}}=5.59; N_{\text{older grp.}}=134, M_{\text{older grp.}}=5.94)^*$				

*"M" represents the mean of the group, "N" the number in the group.

Most importantly these results would suggest that in fact where there was a relatively higher proportion of freshman residents in a house, mean ratings of the climate of learning of the house tended to be lower. These findings suggest that the nature of the climate of learning within a house is in part dependent on the number of freshman residents. One could surmise that in this respect the influence of older students in the house tends to be positive.

The product-moment correlation between the mean of freshmen by house and the proportion of freshmen in the house was not significant ($-.09$). Thus there was no indication that a larger number of older students in the house influenced the level of freshman academic performance, even though the climate may have been enhanced.

In the test of Hypothesis IIIId₁ the resultant F between house groups in the analysis of covariance (Table 5.28) reached a confidence level of $.079$. Though this did not achieve the specified level ($.05$) which would have lead to rejection of the null hypothesis, its closeness warranted further analysis of the results.

The differences in the adjusted gpa's of the groups, even though not significant, were in the expected direction (Table 5.29). High climate houses had an adjusted gpa of 2.40 and low climate houses, 2.28 . Likewise, the gpa's of three of the four subculture groups were in the

expected direction. Little difference was noted in the non-conformist group adjusted gpa (2.50 vs. 2.51). Perhaps this could be interpreted in light of the hypothesized independence of the institution of this group. Inasmuch as these differences were not significant even though the direction of differences fits a theoretical interpretation it may well be that even their direction was a chance sampling fluctuation.

There is an intriguing comparison between these results and those of the earlier analysis of covariance test of gpa differences between houses differentiated on the first discriminant function (Hypothesis IIa₁). In the former test the two compared groups of houses reflected residents' ratings of the academic performance of their houses. But in the analysis of covariance test the differences were not apparent and the null hypothesis was not rejected. A comparison of category adjusted group means revealed no consistent direction in the mean gpa's.

In contrast, in this last test, though again the differences were not significant, the direction of differences was as expected and was consistent with theory. This may suggest that had the latter test been more powerful significance would have been achieved; and the climate of learning found to influence academic performance.

The failure of the interaction term to obtain significance in the test of the effects of college types and

house climate of learning on gpa does not lend much support to Nasatir's findings.⁹ His results indicated that the more vocationally oriented students performed less adequately in what he had defined as "academically" oriented housing groups.

Hypothesis IIIe₁: There will be no differences on any of the four (adjusted) post-test measures of intellectual disposition between freshmen residing in houses having a "high" climate of learning and those living in houses with a "low" climate of learning.

Hypothesis IIIe₂: Nor will there be an interaction between the level of the climate of learning and students' subculture orientation.

In Table 5.3 are presented the results of the four analyses of covariance computed to test Hypothesis IIIe. The four analyses test for differences on the two main effects and on the interaction term for each of the measures of intellectual disposition. Only one significant difference, unrelated to the stated hypotheses, was noted. The subcultures differed on their Thinking Introversion scores.¹⁰ However, even this difference was probably a product of chance fluctuation in the sampling distribution.

⁹Nasatir, op. cit., pp. 292-293.

¹⁰It may be of interest to the reader to note that similar differences were noted on two of the five tests of Hypothesis IIb₁ on the Thinking Introversion scale (Tables 5.18 and 5.21):

Table 5.31 Analyses of covariance of freshman post-test scores on the four OPI scales, adjusted by pre-test scores on the same scales, for high and low rated houses on the climate of learning

Source of Variance	SS	df	V	F
Thinking Introversion				
Between House Groups	.2813	1	.2813	.0083
Between College Types	394.9858	3	131.6619	3.8764*
House Groups x College Types	47.3860	3	15.7953	.4650
Error	7336.5248	216	33.9654	
Theoretical Orientation				
Between House Groups	6.1857	1	6.1857	.5274
Between College Types	74.0348	3	24.6783	2.1042
House Groups x College Types	61.5253	3	20.5085	1.7487
Error	2533.2645	216	11.7281	
Estheticism				
Between House Groups	1.2289	1	1.2289	.1404
Between College Types	63.5789	3	21.1930	2.4206
House Groups x College Types	2.0864	3	.6955	.0794
Error	1891.0978	216	8.7551	
Autonomy				
Between House Groups	13.1128	1	13.1128	.7115
Between College Types	120.0463	3	40.0154	2.1711
House Groups x College Types	11.0877	3	3.6959	.2005
Error	3981.1134	216	18.4311	

*Significance level = .01

The null hypothesis for both parts of Hypothesis IIIe was not rejected. Apparently residence in houses with positive climates of learning as opposed to somewhat negative climates had no discernible affect on the intellectual disposition of freshmen. Nor was there any apparent interaction between the level of the climate of learning of the houses and subculture orientation of residents. This finding is generally consistent with what was noted in the tests of Hypothesis IIb.

Summary

The results of the statistical analyses have been presented and discussed in this chapter. Each of the hypotheses and related findings are restated below. In addition general observations of the data are summarized.

Residents' responses on selected items from the House Analysis Survey indicated that most experienced satisfying interpersonal relationships within their residence hall houses. The level of satisfaction with both residents' houses and halls was favorable. But the intellectual and cultural life of the houses "tended to be a little weak" as perceived by the residents. And house social programs received relatively poor ratings. The principle concern of house life was most often the intramural program. The next most important concern was study conditions within the house. Of ten items ranked the



least important concern noted was most often house-arranged intellectual and cultural activities. Residents did tend to indicate a willingness to alter the concerns of their houses if they could realize their personal preferences. If this were the case, study conditions would most often be of principle concern. Arranging cultural and intellectual activities would rise to fifth place in the order of preference.

Hypothesis I: It will not be possible to discriminate among the several residence hall houses on the basis of linear combinations of variables describing their group characteristics.

The null hypothesis was rejected. Sixteen of the 26 possible roots of the discriminant analysis were significant. These accounted for 94.8 per cent of the total variance between the 27 house groups. Fifty HAS items were entered into the discriminant analysis. Five of the resulting discriminant functions were interpreted through a study of the variables with high standardized weights. No attempt was made to interpret more of the functions because of their complex and apparently somewhat artificial character, and because of the relatively small amount of the total variance for which they accounted.

The first interpreted function differentiated among the groups primarily on the basis of residents' ratings of the academic performance of their house. The second was depicted as a function of satisfaction differentiating

between highly rated houses in poorly rated halls and houses in highly rated halls. Residents' ratings of house social life seemed to be related to the level of satisfaction along with several other variables. The third function differentiated primarily on the basis of the general reputation of the houses. Reputation seemed to have been based on many factors. The fourth function separated the groups along a continuum of compliance with residence hall and University regulations. At least some houses tending to be less compliant seemed to have a distinct intellectual focus in certain aspects of their house life. The fifth function may have reflected a general performance rating of the houses, primarily weighted toward intramural activities.

Only a limited typology of the houses could be constructed. The relationships between the variables on the discriminant functions interpreted were not always clear. In addition the functions differentiated primarily between the houses at the extremes of the continua.

Little indication was found suggesting that the houses differed from one another on the five functions on the basis of some distinguishing physical or program characteristic of the halls in which they were located. There was one exception; on the second function two new living-learning halls tended to have mean scores at one end of the continuum and three traditional mens' halls at the other.

The two living-learning units were not as highly rated by residents as were the traditional halls.

Hypothesis IIa₁: There will be no differences in the (adjusted) academic performance of freshmen differentiated according to the types of houses in which they live (types defined according to clustering of houses along the discriminant functions and/or in the multi-dimensional function space).

Hypothesis IIa₂: Nor will there be an interaction between types of houses and the pre-test subculture orientation of the residents.

The null hypothesis was accepted for Hypothesis IIa₁. There were no significant grade-point-average differences between groups of freshmen classified according to the position of their houses on each of the five discriminant functions. Even though the first function had differentiated between the houses on the basis of house academic performance, the differences were not evident for freshmen when the effects of ability were removed.

The null hypothesis was rejected on only one of the five tests of Hypothesis IIa₂. When houses were differentiated on the basis of their mean scores on the third discriminant function, a significant interaction between the subculture orientations of residents and type of house was noted. Vocationally and collegiately oriented students seemed to perform better in houses with positive social reputations and/or more poorly in houses with somewhat negative reputations. The reverse seemed to be true for non-conforming and academic students. Though the significant

interaction may have been the result of a chance sampling fluctuation, the direction of differences seemed consistent with previous research and theory.

Hypothesis IIb₁: There will be no differences on any of the four post-test (adjusted) measures of intellectual disposition of freshmen differentiated according to the types of houses in which they live.

Hypothesis IIb₂: Nor will there be an interaction between types of houses and the pre-test subculture orientation of the residents.

The null hypothesis was not rejected for Hypothesis IIb₁. There were no differences in the intellectual disposition of freshman residents of houses grouped according to the house mean scores on each of the five functions.

Neither was the null hypothesis rejected for Hypothesis IIb₂, with two conditional exceptions. Out of twenty analyses of the interaction between type of house and residents' subculture orientation, only two were significant. Both were tests for interaction on the Theoretical Orientation scale, one when houses were differentiated on the first function (reflecting house academic performance) and the other on the fifth function (general house performance).

Hypothesis IIIa: There will be no differences among the houses in residents' perceptions of their house climate of learning.

The null hypothesis was rejected. The houses did differ in residents' perceptions of the climate of their houses. There was some indication that the climate of

learning was consistent throughout certain of the halls. But generally, the climate of the houses seemed to be dependent upon conditions within the house rather than the hall. The climate of learning within houses in the living-learning residence halls considered as a group did not seem to differ from other types of halls. Residents indicated that they personally tended to experience a more positive climate of learning than that of their houses. They also seemed willing to support a more dynamic learning climate in their houses.

Hypothesis IIIb: There will be no relationship between the cohesion of the houses and the perceived climate of learning.

The null hypothesis was rejected. Climate of learning and house cohesion were moderately correlated.

Hypothesis IIIc: There will be no relationship between mean grade-point-averages of the houses and the climate of learning.

The null hypothesis was rejected. Climate of learning and mean grade-point-averages of the houses were moderately correlated.

Hypothesis IIId₁: There will be no differences in (adjusted) academic performance between freshmen residing in houses having a "high" climate of learning and those living in houses with a "low" climate of learning.

Hypothesis IIId₂: Nor will there be an interaction between the level of the climate of learning and students' subculture orientation.

Hypothesis IIIe₁: There will be no differences on any of the four (adjusted) post-test measures

of intellectual disposition between freshmen residing in houses having a high climate of learning and those living in houses with a low climate of learning.

Hypothesis IIIe₂: Nor will there be an interaction between the level of the climate of learning and students' subculture orientation.

The null hypothesis was not rejected for both parts of Hypothesis IIIId and IIIe. There were no significant differences in either grade-point-average or the measures of intellectual disposition between freshmen residents of high and low climate houses.

Freshman residents' perceptions of the climate did not seem to differ from the perceptions of older students. This was the case for not only the total sample, but also for the two groups of residents living in high climate houses and in low climate houses. The climate of learning was inversely related to the proportion of freshmen living in a house. But the mean grade-point-average of freshmen grouped by house was not related to the proportion of freshmen in the house. Freshman grade-point-average was correlated with the climate of learning. But as noted above the differences seemed to disappear when the influence of academic ability was removed.

CHAPTER VI

SUMMARY AND CONCLUSIONS

Background and Theory

That the influence of the college experience emanates from more than just the classroom and library has become a well recognized, but not completely understood fact. More and more have we come to realize that many variables operate in determining not only the content of what the student learns, but also the degree and direction of his personal growth and development. This study sought to examine one such facet of the learning environment to which college students are frequently exposed.

The general purpose of the study was to investigate the quality and character of group life within mens' residence halls at Michigan State University, and more explicitly, within the residence hall house. A house is the major administrative subdivision within a hall, normally housing about 50 students. The house was viewed as a basic context in which students, particularly freshmen, interact and in which they are introduced to peer group expectations and influence.



The theoretical framework indicated that the houses would vary in their characteristics including their climates of learning, despite, what, on the surface, would appear to be their homogeneity. Evidence was presented indicating that the nature of the houses may differentially influence students when classified according to their orientation to college life. These orientations were thought to reflect the subcultures with which students identify.

The research problem was trifold: First, an attempt was made to develop a multivariate description or typology of 27 houses, three in each of nine men's halls at Michigan State University. Second, grade-point-averages and measures of intellectual disposition of freshmen residing in different types of houses were compared. The intent was to determine whether or not the types of houses defined in the typology influenced academic performance and/or attitudes toward the academic experience. Also of concern was whether or not different types of houses and subculture orientations interacted in differentially influencing students.

Thirdly, the character and extent of the climate of learning within the houses was studied. Its influence on the academic performance and attitudes of freshmen was examined.

Reference group theory, an understanding of the

dynamics of small groups, and a theoretical development of the nature and origins of student subcultures and peer group influence provided the theoretical framework within which the study was conducted. Conditions determining whether or not a house might function as a reference group were proposed. Propinquity, positive interpersonal relationships, a sufficient length of time for a normative system to develop, a capacity within the group to satisfy various needs of residents (particularly those associated with status, acceptance and survival in the academic community), leadership, and group cohesion, among others were indicated. Each was shown to be theoretically related to the attractiveness of informal groups and to the degree to which houses might in fact function as reference groups.

An integration of the theories suggested that freshmen, in particular, would tend to identify with their houses in order to cope with the ambiguities and anxieties created by the demands of the college experience. Freshmen's need to quickly adapt to their new circumstance was seen as reinforcing the normal emergence of group structure. However, there was no theoretical basis for assuming that the outcomes of interaction within a house, even over extended periods of time, would necessarily produce a dynamic climate of learning. On the contrary, there were indications that the result could be contra-educational,

that house life might serve an adaptive function in insulating younger students from a too rapid advance into the rigors of academic life and from advancing too rapidly into maturity.

The review of the literature suggested several specific dimensions of small groups that were to be considered in order to understand the nature of house life. Research was also cited suggesting that college housing groups could in fact develop a group normative structure which could differentially influence residents. Research at Michigan State University indicated that differences existed between residents of different halls in their attitudes and perceptions of university and resident hall life.

Instrumentation and Sample

Five different instruments were employed in the collection of the data for the study. These included the Michigan State University Reading Test and the College Qualifications Test, both of which had been administered to new students prior to the beginning of the academic year. Both are measures of academic aptitude.

Pre- and post-test measures were obtained from the research sample on the Attitude Inventory which consisted of four scales from the Omnibus Personality Inventory (OPI). The OPI was originally designed to assess



the growth and development of college students. The four scales selected for inclusion in the Attitude Inventory were thought to measure the intellectual disposition of students. These scales were Thinking Introversion, Theoretical Orientation, Estheticism, and Autonomy. Their significance lay in the consideration of the influence house life might have in altering intellectual attitudes of freshmen.

The forth measure used consisted of descriptive paragraphs of four hypothetical student subcultures postulated by Clark and Trow.¹ Each of the subcultures reflected a different orientation to college. These were the vocational, non-conformist, academic, and the collegiate. Freshmen's pre-test self-descriptions on the paragraphs were used in testing several hypotheses in the study.

The final and most important instrument, the House Analysis Survey (HAS), was locally developed as a means of assessing the salient characteristics of house and, to a lesser extent, residence hall life. It contained 128 items of various types, including a post-test measure of students' subculture orientations. The

¹Burton R. Clark and Martin Trow, "The Organizational Context," In Theodore M. Newcomb and Everett K. Wilson, College Peer Groups, Chicago: Aldine Publishing Co., 1966.

majority of items were used to obtain residents' ratings of various dimensions of house life. As part of the instrument, "climate of learning" was operationally defined and several questions were directed toward its assessment.

Available reliability and validity for each instrument was reported. Reliability coefficients for the CQT were in the .90's and validity coefficients in the .70's. Reliability of the MSU Reading Test was in the .70's and was correlated with the CQT at .70. Reliability coefficients in the .70's and .80's were reported for the four OPI scales, though little validity information was available. Indications of construct validity of the four subculture orientations were in evidence. The HAS items were found generally to be internally consistent measures of house characteristics.

The nine resident halls included in the study represented the various types of accommodations and programs for men at Michigan State University in the 1964-65 academic year. The three houses included in the study from each of the nine halls had been randomly selected. Freshmen were generally randomly assigned to houses, though returning students could express a room, hall, and roommate preference.

During the first weeks of the academic year the Attitude Inventory and the measure of student subcultures were administered to the residents of the 27 houses.

Ninety-five per cent of the freshman residents participated.

Well into the winter quarter residents were again tested on the Attitude Inventory and also on the House Analysis Survey. Unfortunately usable HAS responses were obtained from only 60% (N=884) of the total number of residents (1481) then living in the 27 houses. Sixty-one per cent of the total number of freshmen (669) living in the halls participated, providing 406 usable pre- and post-test measures on the Attitude Inventory. Freshmen who failed to participate in the post-test were compared to those who completed the Attitude Inventory in the post-test session through a series of t-tests. No differences were found between the means of the two groups on the four pre-test measures of intellectual disposition, nor on the MSU Reading Test. The group participating in both test sessions, however, scored significantly higher on the CQT total and in their mean accumulative fall and winter grade-point-average. Differences were also noted between the groups, in a chi-square analysis, in the distribution of subculture orientations of the residents. It was evident from the findings that results, particularly those employing the measures of intellectual disposition where the sample was greatly reduced, would have to be cautiously interpreted.

Methodology and Results

Three sets of hypotheses were developed in order to probe the nature and impact on freshmen of differences between residence hall houses. Each hypothesis was an extension of theory and/or previous research on the nature of groups and the college student and environment.

Hypothesis I--Results

According to the first hypothesis, it would not be possible to discriminate among the houses on the basis of linear combinations of variables describing house characteristics. Multiple discriminate analysis, a statistical technique which maximizes the ratio of the variability between groups to the variability within groups was used in testing the hypothesis. Rettig had suggested the potentially fruitful use of the technique in studying the covariation among social groups on several characteristics.² The technique produces multiple solutions or roots equal in number to the lesser of the number of variables included or the number of groups compared minus one. Each root is proportional to the total amount of between-group variance accounted for in the analysis.³

²Salomon Rettig, "Multiple Discriminant Analysis: An Illustration," American Sociological Review, 29:398-402, 1964.

³Ibid., p. 399.

Sixteen of the 26 possible roots of the discriminant analysis were significant. These accounted for 94.8 per cent of the total variance between the 27 house groups. Fifty items from the House Analysis Survey (HAS) were entered into the discriminant analysis. These items were thought to represent an optimal combination of the variables assessing group characteristics in the HAS (the capacity of the computer program treating multiple discriminant analysis was limited to 50 variables).

Question A.--Three questions were raised as extensions of the first hypothesis. The first (Question A) was an inquiry into the interpretations of the linear combinations of variables (discriminant functions) resulting from the discriminant analysis. Each discriminant function corresponds to one of the roots of the solution of the analysis; each successively extracted function is perpendicular to the others in the multi-dimensional function space. The standardized weights indicate the relative contribution of each variable on each function. These weights were thus used in interpreting the nature of five of the sixteen significant functions. These five accounted for 66.7 per cent of the variance between the 27 houses. No attempt was made to interpret more of the functions because of their complex and apparently somewhat artificial character.

In addition, the uninterpreted functions individually accounted for relatively small amounts of the total variance.

The first function accounted for 28 per cent of the variance. It differentiated among the houses primarily on the basis of residents' ratings of the academic performance of their houses. Residents' perceptions of their house academic performance seemed to be based on the comparative quarterly standing of the house within the hall in mean grade-point-average. House standings were reported to each group quarterly by the Residence Hall Programs Office.

The second function was depicted as an indication of satisfaction with one's residence hall and house. It accounted for 14 per cent of the variance. Relatively highly rated houses in poorly rated halls were differentiated from houses in highly rated halls. Satisfaction with the social life and program of the house was associated with hall satisfaction.

The third function differentiated between the groups primarily on the basis of general house reputation. Reputation was apparently based on many factors. A good reputation particularly seemed more a product of non-academic variables, such as the social program of the house and traditions, than of academic performance. In some houses having a poor reputation the rating of academic performance was high. The latter finding may have been a manifestation

of an anti-intellectual normative tendency of the student culture. The function accounted for 11 per cent of the variance.

The fourth function seemed to separate the groups along a continuum of compliance with residence hall and University regulations. At least some houses tending to comply less seemed to have a distinct intellectual focus within certain aspects of their house life. The function accounted for seven per cent of the variance.

The fifth function was more ambiguous and accounted for only 6.5 per cent of the variance. It was interpreted as reflecting a general performance rating of the houses, primarily, though not exclusively, weighted toward intramural activities.

Question B.--The question raised was whether or not it was possible to develop a meaningful typology of the residence hall groups according to the results described above. Only a limited typology of the houses could be constructed following the lines of the above descriptions of the functions. The relationships between the variables on the interpreted functions were not always clear. In addition the functions differentiated primarily between the houses at the extremes of the continua.

Question C.--The question was raised as to whether or not the position of houses on the discriminant functions

would relate in a meaningful fashion to any distinguishable physical or program characteristic of the halls in which they were located.

The mean (centroid) scores of each house on the five functions determined the relative location of the house on each function.

The results were generally negative with the exception of the distribution of houses on the second function. Houses within two new living-learning halls tended to have mean scores on the continuum indicating a relatively poor residents' rating.

Houses within three traditional mens' halls tended to cluster at the opposite end of the second function. These halls received more positive ratings by their residents.

Hypotheses IIa and IIb--Results

The second set of hypotheses considered the possible existence of differences in academic performance (Hypothesis IIa) and in post-test measures of intellectual disposition (Hypothesis IIb) between freshmen living in houses of different types. House types were defined according to the location of house means on each of the five significant discriminant functions. Five pairs of houses had thus been created consisting of those houses falling, respectively, at the polar ends of the continua.

Using a 2 x 4 analysis of covariance design the effects of types of houses and subculture orientations on the dependent variables could be studied. The design also provided for an analysis of the interaction between house types and orientations. The dependent variable in Hypothesis IIb was freshman gpa adjusted by MSU Reading Test and CQT total scores. The dependent variables in Hypothesis IIb were freshman post-test scores on the four measures of intellectual disposition, each considered separately. These measures were each adjusted by pre-test scores of the same scale.

Hypothesis IIa₁.--There were no significant gpa differences between the groups of freshmen classified according to the position of their houses on each of the five discriminant functions. Even though the first function had differentiated between houses on the basis of their academic performance, the differences were not evident for freshmen when the effects of ability were removed.

Hypothesis IIa₂.--Only one of the five tests for interaction on freshman gpa between subculture orientation and type of house was significant. In the one significant interaction found, houses, differentiated primarily on the basis of their social reputation (Function III), apparently influenced residents in different ways according to their subculture orientation. Vocationally and collegiately

oriented students had higher mean adjusted gpa's in houses with good reputations and/or lower mean gpa's in houses with poorer reputations. The results were reversed for academically oriented and non-conforming freshmen, perhaps related to the fact that in some houses residents' rating of house academic performance was inversely related to house reputation.

Hypothesis IIb₁.--There were no significant differences in the intellectual disposition of freshman residents of houses grouped according to types of houses.

Hypothesis IIb₂.--There were no differences in the tests for interactions between types of houses and subculture orientations on the measures of intellectual disposition--with two conditional exceptions. Of the twenty analyses of the interaction, only two were significant. Both were tests of differences on the Theoretical Orientation scale. One difference was noted in the test between houses which were differentiated on function one (primarily a function of academic performance); the other in the test between houses differing in their scores on the general performance function (V). In both cases adjusted mean Theoretical Orientation scores of "collegiates" and "vocationals" were higher in houses which tended to have low academic performance ratings. Their scores tended to be lower in houses which residents rated as having a higher

level of academic performance. The situation was reversed in considering the scores of academically oriented and non-conforming students.

Hypotheses IIIa-IIIe, The Climate of Learning--Results

Hypothesis IIIa.--Residents' perceptions of the climate of learning of their houses were significantly different. The results were based on a simple analysis of variance between house mean scores on an HAS item rating the climate.

Generally, the climate of learning within the houses was apparently a function of conditions within the house rather than within the hall, though there was some indication that the climate of houses in certain halls was consistent throughout those halls. Responses to another HAS item indicated that residents tended to personally experience a more positive climate of learning through their personal associations in their houses than would be indicated by their general rating of house climate. In addition, residents seemed willing to support a more dynamic learning climate in their houses, though apparently their level of motivation was not sufficient to bring about change.

Hypothesis IIIb.--House mean scores on the measure of climate of learning were moderately correlated with measures of house cohesion.

Hypothesis IIIc.--Climate of learning and the mean gpa's of the houses were moderately correlated.

Hypothesis IIId and IIIe.--Hypotheses IIId and IIIe were similar to Hypotheses IIa and IIb in that the same statistical model (analysis of covariance) was employed in the tests for differences. But in IIId and IIIe the house groups (first main effect) were delineated according to whether their climate of learning received high or low ratings. The possibility of differences in freshman academic performance and in post-test measures of intellectual disposition, respectively, between houses with high climates of learning as opposed to houses with low climates was treated in Hypotheses IIId and IIIe. The interaction between house climate and subculture orientation was investigated.

No significant differences were found in either adjusted gpa or in any of the four measures of intellectual disposition between the two groups. Nor were any of the interactions between house climate and subculture orientation significant.

Freshmen gpa's were found to correlate with house mean scores on the climate of learning. Also, the climate was inversely related to the proportion of freshmen in the house. In order to determine whether responses to the climate of learning were a reflection of perceptual differences between freshmen and older students several

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comparisons were made with results as follows. Considering the total sample, freshman perceptions were not significantly different from those of older students. Neither did the perceptions of freshmen and older students living only in the high climate houses differ. Nor did the two groups differ when only residents of low climate houses were considered. It was concluded that the climate of learning of a house was in part a function of the proportion of freshmen in the house; but that the perceptions of freshmen and older students were consistent with one another. Finally, though freshman gpa was correlated with the climate, as was noted in the test of Hypothesis IIId, those differences seemed to disappear when the influence of academic ability was removed.

Limitations of the Study

Several limitations of the research design have been implied or explicitly stated in this report. The most important of these are here recapitulated.

1. Results should not be generalized beyond the men's residence halls, their residents and programs at Michigan State University for the 1964-65 academic year. The general environment, student bodies, and residence hall programs vary extensively among institutions of higher education. Even at Michigan State University since the period when the data were collected, significant changes have

been introduced in the residence program, including the establishment of residential colleges and modifications in the student government structure within the halls.

2. With the exceptions of the College Qualifications Test and the Michigan State University Reading Test, all the instruments employed in the study were experimental in nature. Their validity in assessing that for which they were designed has yet to be fully substantiated in each case. For example, the descriptive paragraphs of student subcultures are thought to describe hypothetical constructs which have been shown to have a degree of construct validity. But they call only for a single response from the student whereby he classifies himself. In addition, the specific paragraphs used in this study were modifications of two earlier versions of the test. There were some indications that students' responses on the version used in this study would not be completely consistent with the versions used in previous research. Thus results from the assessment of college types reported herein must be caustiously compared to other research.

The four scales from the Omnibus Personality Inventory have been revised since the collection of data.

The House Analysis Survey, though data obtained from its incorporation in this study proved highly useful, is in its infancy.

The question may also be raised as to whether or not the instruments in general measured with a sufficient degree of sensitivity the variables under consideration.

3. The interpretations of the five significant discriminant functions are tentative. As was discussed previously there is a certain artificial element in considering the functions as descriptions of the real world. Likewise, the large number of interrelated variables and several groups included added to the difficulty in interpretation.

4. Freshman responses on the measure of house climate of learning may not have been totally independent of their grade-point-averages or of their responses on the measures of intellectual disposition. Several comparisons suggested that they were independent, but the possibility of some contamination can not be discounted. In testing the hypotheses related to the discriminant functions or to the house types differentiated by the discriminant functions, the question of independence should not be at issue. Class level was included as one of the variables analyzed in the discriminant analysis.

5. The interpretation of all findings in the study must be qualified to the extent that they were based wholly or in part on data gathered directly from house residents. Only 60 per cent of the residents completed the House Analysis Survey. And though the items included in the discriminant analysis generally seemed to have a relatively high

level of internal consistency, it is not known what differences would have been recorded if a more complete response were available. Similarly, only 61 per cent of the freshman sample completed the pre- and post-test measures of intellectual disposition.

Conclusions

The results of specific tests of the hypotheses plus insights gained in considering the data as a whole have led the author to several conclusions. These are presented in the following paragraphs and, where appropriate, are related to theory and the research discussed in Chapters I and II.

General Observations

1. Residence hall houses differ extensively in their group characteristics along several dimensions.
2. Residence halls also differ extensively, though not necessarily along the same dimensions as the houses.
3. The nature and extent of differences in residence halls and houses strongly argues for a multi-variate statistical approach as was proposed by Selvin and Hagstrom and by Rettig and such as that incorporated in this study.⁴

⁴Hanan C. Selvin and Warren O. Hagstrom, "The Empirical Classification of Formal Groups," American Sociological Review, 28:399-411, 1963; Rettig, op. cit., p. 398.

4. The House Analysis Survey and/or similar approaches to the assessment of inter-house and hall differences appear to be highly useful technique for studying the characteristics and impact of residence hall life. The many limitations of the instrument and its need for refinement are recognized. In its current form the variables measured among other things are too molecular. Items can be refined and scales developed in order to more accurately assess molar characteristics of house life. Parsimony in the results derived from the instrument as it now stands is lacking.

Peer Group Norms and Influences

5. Obvious undertones of a pervasive anti- or at least non-intellectual behavioral norm impinging on students generally were observed in the study. When students were directed to rank several concerns or house activities, participation in intra-mural sports was ranked first. Sponsorship of intellectual activities within the house was tenth and last. In contrast, the second place ranking, given to a concern for study conditions within the house, was probably a reflection of what Hodgkins described as a necessity in order to meet the minimal level of compliance demanded by the institution.⁵ Thus, whether he liked

⁵Benjamin H. Hodgkins, "Student Subcultures--An Analysis of Their Origins and Affects on Student Attitude and Value Change in Higher Education," (unpublished dissertation, Michigan State University, 1964), p. 72.

it or not, in order for a student to remain in the institution, he had to achieve at least to a specified level or be withdrawn from the environment. The environment itself offered many more enticing rewards (at least for some) than the attainment of grades.

In the description of the third discriminant function there were indications that house reputation is a function of social and other non-intellectual variables.

Individuals and even significant proportions of the residents of a given house could elect not to comply with the norm with various outcomes as will be reviewed later. The degree of compliance with the norm was probably consistent with one's subculture orientation. In fact compliance with such a norm may be a tangential way of viewing the subcultures. Consistent with the theory postulated by Clark and Trow, vocationally and collegiately oriented students are those inclined toward non-intellectual values.⁶ Non-conforming and academically oriented students are more likely to violate the norm through their acceptance of academic values and participation in intellectual endeavors. The degree of departure would be more pronounced in the non-conforming subculture. The academics, who in addition identify with the institution, would tend to depart from the norm to a smaller degree.

⁶Clark and Trow, loc. cit.

How Do Houses Differ?

6. Indications from the location of houses on the discriminant functions suggest that house differences are primarily products of forces within, and characteristics of, the house groups rather than of the halls. Otherwise, relationships between houses within a given hall would have been more consistent. As it was, on several of the measures in the study two houses within the same hall seemed to be polar opposites. Thus, it is concluded that house life represents an important level of interaction to be considered in the study of college environments.

7. Houses differ from one another as described in the interpretations of the discriminant functions. Distinguishing characteristics of several houses were portrayed. But like factor analysis, the differences that were evident could reflect no more than the relationships between the specific variables analyzed. Nevertheless, on an a priori basis it was concluded that the variables investigated represented significant dimensions of house life (with certain limitations heretofore noted).

8. Houses differ along a function related to the academic performance of their residents. But the differences in academic performance primarily reflected the mean input of academic ability into a house; not the influence per se of house environment.

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9. A tentative conclusion is reached that some houses with relatively high levels of academic performance de-emphasize intra-mural sports. Likewise certain houses with lower academic performance ratings seem to place a heavier emphasis on intra-mural activities. At least some houses with a more positive academic performance rating have a comparatively poor reputation. Both conclusions are consistent with that reached in conclusion 5 above.

10. Students are more satisfied with some types of halls than with others. Those halls receiving more favorable ratings tend to have more established traditions and positive social programs. They also tend to be similar in their physical characteristics, being older and somewhat traditional structures.

11. Halls receiving a less favorable rating were both of the same type and were in their first year of operation. The reasons for the dissatisfaction are obscure, though it may relate to a physical characteristic such as the particular suite arrangement in the low rated halls; it may relate to the programs of the halls which differed from other halls studied (the programs centered around course offerings in two different academic divisions of the University); it may be a function of the hall staffs and their philosophies; and/or it may simply be a function of the newness of the halls. In the event that the latter is a factor, student personnel administrators may wish to consider the impact

of dissatisfaction on residents during the first year of operation.

12. Houses differ in the degree of residents' compliance with institutionally and hall imposed regulations. Negative compliance seems to be related, in part only, to a more predominant intellectual influence in one or more houses.

Deviant behavior within the halls probably takes many forms. At one end of the continuum might be behavior characterized as intellectual rebellion and would represent a considered infraction of regulations distantly analogous to civil disobedience. Students ascribing to intellectual values, particularly the non-conformist, theoretically would be more inclined to disregard rules viewed as infringing upon his personal freedom. At the opposite end of the hypothetical continuum would be behavior motivated by immaturity and would tend more toward prankishness and occasionally maliciousness. Less mature students and particularly those tending to reject the intellectual life would be more inclined in this direction. If this hypothesis is valid it may explain why certain houses (where less compliant behavior is tolerated) have a strong intellectual orientation.

The leadership of the resident advisor is seen to be a factor in more compliant houses, though no indication of the nature of his leadership is available for analysis.

13. Houses differ in their climates of learning as rated by residents. This point will be discussed more extensively later in the chapter.

14. Houses differ in their level of cohesiveness.

Why Do the Houses Differ?

The underlying reasons behind differences observed between the houses are more obscure than the fact that the houses do differ. The study was meant to be descriptive; and conclusions reached as to why they differ are made cautiously and tentatively.

15. Houses, with a few notable exceptions, do not differ as a function of hall characteristics on the variables assessed in the study.

16. There are only inconsistent indications that the programs of the living-learning residence halls produce differences on the variables studied. This is not totally consistent with Olson's findings in his comparative studies of Michigan State University residence halls.⁷ The inconsistency may be a function of the level of analysis and the variables considered.

⁷LeRoy A. Olson, "Methods and Results of Research on Living-Learning Residence Halls," (paper read at the annual forum of the Association for Institutional Research, Boston, Mass., May 3, 1966).

17. Houses differ, at least in their levels of academic performance, from one another as a function of the academic ability of residents. However as was pointed out academic ability must be regarded as an input variable and generally does not reflect student growth and development as a product of house life.

18. The leadership of the resident assistant is a positive factor in determining the level of compliance with institutional regulations within a house.

19. Physical characteristics, age and tradition seem to result in variations in some of the variables assessed, though the results are inconsistent. It is quite possible that what is reflected represents to some degree a general hall gestalt developed over the years. Though the indications of a pervasive hall "personality" are slight, the possibility is consistent with the situation in the Harvard houses, as described by Vreeland and Bidwell, which were characterized as each having a "personality."⁸

20. One finding leads to the conclusion that the proportion of freshman (or conversely upper-division) students is one determinant of the climate of learning as perceived by residents. The higher the proportion of freshmen, the lower the climate of learning. This would argue against

⁸Rebecca Vreeland and Charles Bidwell, "Organizational Effects on Student Attitudes: A Study of the Harvard Houses," Sociology of Education, 38:233-250, 1964-65.

all-freshman houses or halls to the extent that climate of learning, as assessed in this study, represents a desirable condition.

Chesin reported no differences in freshman attitudes and performance related to the proportion of freshmen in a house.⁹ His results do not necessarily contradict the findings of this study. The current research represents a very different approach to the issue.

21. The data are insufficient to thoroughly probe underlying bases for differences. Theory would however indicate that many other variables are in part determinants of house characteristics. Since no evidence to the contrary is available, one would assume that houses are influenced by variables such as the informal leadership emerging within a house (whether or not that leadership coincides with the formal leadership such as house officers and the resident assistant). Houses are influenced by other input characteristics of the residents themselves, such as the fortuitous distribution of residents' subculture orientations, or of specific skills and abilities (e.g., athletic prowess or academic ability, which has already been considered).

⁹Sorrell E. Chesin, "The Differential Effects of Housing on College Freshmen," (unpublished dissertation, Michigan State University, 1967).

The patterns of interaction between residents may vary as a result of both residents' characteristics and the somewhat fortuitous pattern of room assignments, and so on.

What Is the Impact of These Differences?

22. There is no evidence that differences in the types of houses defined by the discriminant functions influence the academic performance of freshmen when the effects of ability are removed.

23. There is no evidence that differences between types of houses influence the intellectual disposition of freshmen.

24. The adjusted academic performance of academically oriented freshmen may be better in houses with a comparatively poor social reputation but a higher level of academic performance. Their performance may be worse in houses with a lower academic performance but strong social programs. The reverse may be true for collegiately and vocationally oriented students. The conclusion lends some support to the findings of Nasatir and of Selvin and Hagstrom that living units may differentially influence residents.¹⁰

¹⁰David Nasatir, "A Contextual Analysis of Academic Failure," The Social Review, 71:290-298, 1963; Selvin and Hagstrom, loc. cit.

The Climate of Learning

25. The climate of learning does vary significantly among houses, but the differences to some extent reflect the ability level of the residents. Nevertheless, residents did agree with some consistency as to the level of the climate within their houses.

26. The climate of learning has no demonstrable effect on freshman academic performance when the influence of ability is removed.

27. The climate of learning has no demonstrable effect on freshman intellectual disposition.

28. Nor is any interaction between subculture orientation and the level of the climate indicated. The differences in the climate of learning between the houses, though significant, were not large. It may well be that the differences are not sufficiently pronounced to produce change in the variables studied. It may also be that the impact of the climate of learning lies in dimensions other than those investigated.

29. The climate of learning is related to house cohesion though, as suggested by Stogdill, both cohesion and the climate of learning (as a measure of group productivity --in Stogdill's terms) are products of the input-characteristics of the residents, rather than functions of one another.¹¹

¹¹R. M. Stogdill, Individual Behavior and Group Achievement (New York: Oxford University Press, 1959), pp. 13, 271-272.

Houses as Reference Groups

30. The variation in residents' levels of satisfaction and their degree of identification with their houses suggest that the houses do function as reference groups for some but not for all residents.

Within a house conditions may be such that a general level of cohesion, satisfaction, and group identification may be very high, indicating that the house has become a reference group for at least the majority of its residents. In other houses conditions may be such that the house is literally little more than a place where residents sleep.

31. The houses generally seem to foster positive interpersonal relationships between residents. As indicated by Festinger, Schachter and Back, this is a prerequisite in order for an informal group to influence members' behavior and, thus, function as a reference group.¹² But need satisfaction was not complete within the houses. Residents indicated dissatisfaction with the social programs and life of their houses (though a given house may have received a high rating). There were indications that many residents were interested in a better

¹² Leon Festinger, Stanley Schachter and Kurt Back, Social Pressures in Informal Groups (Stanford, Calif.: Stanford University Press, 1950), p. 164. .

intellectual climate within the houses, though they apparently did not oppose the more prevalent non-intellectual norms of the student subculture in any overt fashion.

An inability to fully meet the social needs of residents may explain why fraternities seem to succeed in demanding and getting a higher level of compliance with their standards of behavior than is the case in the residence halls (at least for the collegiately inclined student who by definition values social norms to a higher degree than many of his peers).

Likewise an inability to fully satisfy intellectual needs, even though residents acquiesce to the social norms of the house, may account for part of the yearly turnover of residents. It would also echo the conclusions of Van der Ryn and Silverstein who felt that too frequently conditions within residence halls alienate the very students whose presence in the hall (were they to remain) would positively influence the climate.¹³

32. The above conclusions argue for diversity in programs and opportunities within the houses and residence hall program generally. Rigidity, forced conformity and

¹³Sim Van der Ryn and Murray Silverstein, Dorms at Berkeley (Berkeley, Calif.: Center for Planning and Development Research, University of California, 1967), p. 27.

narrowness of program may result in the exclusion of many students from an identification with the hall. And the impact of positive house and hall programs would be deluded.

33. The results do not demonstrate any profound outcomes of the residence hall experience in terms of discernible academic and intellectual influence. There were some suggestions that need satisfaction within the house is related to personal growth and development, in addition to general satisfaction with residence hall life. The preceding is not in any way intended to disparage other outcomes of residence hall and house life. But it does underscore the need to more carefully evaluate both the assumed relationship of various hall and house programs to desired outcomes and the philosophical and empirical bases of residence hall operations.

Perhaps the secret of improving the residence hall experience and capitalizing on its strengths lies in four areas: (1) emphasis on existing strengths in terms of promoting and improving programs found to satisfy needs of residents, (2) providing relatively unstructured diversity of opportunity for varied experiences as part of the hall programs, (3) legitimizing intellectual behavior to the students as an alternative model to the often insulating influence of peer groups, and (4) making explicit to the residents, particularly the freshmen, the subtle norms that do seem to influence their behavior.

Suggestions for Future Research

In this final section of the study, several avenues for future research are collated. These may help refine the inadequacies of the present study and extend and/or challenge its conclusions.

1. The House Analysis Survey merits further development and refinement. The items may be combined into scales through a factor analytic approach.

2. Similar studies could be extended to women's residence halls and to programs on other campuses. A replication at Michigan State using refined instruments would help establish the characteristics of house life.

3. The reasons behind differences between houses should be carefully probed in order to both gain a better understanding of the differences and to learn how characteristics such as house norms might be altered or reinforced.

4. The dimensions along which houses and halls differ should be considered more extensively. The techniques employed in this study were gross and lacked the level of sensitivity probably called for.

5. The determinants of the climate of learning in the houses should be explored more carefully and completely.

6. It would be of interest to know how residents who adopt their house as a reference group differ from those who have little identity with it. A corollary question

would be whether or not the impact on residents who identify with the hall is more pronounced than was generally noted in this study.

7. Sociometric measures could be employed in future studies as a refinement of the assessment of several of the variables considered to be important in understanding house differences.

8. Lastly, an instrument such as the House Analysis Survey could perhaps be fruitfully employed in action research with house residents. The explication of house differences, norms, and values reflected in inter-house and hall comparisons may assist residents in better understanding the influence of subtle environmental forces on their behavior. Such awareness may be the forerunner of change.

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APPENDIX A

FALL QUARTER LETTER OF INFORMATION

SENT TO THE SAMPLE

APPENDIX A

MICHIGAN STATE UNIVERSITY - East Lansing

University College - Office of Evaluation Services

October 1, 1964

Dear Student:

The Resident Assistant in your house or precinct will soon be contacting you, if he has not already done so, regarding a special research project in which your house or precinct and two others in your residence hall have been asked to participate.

Because it is impossible to contact you individually I am writing this letter to give you information regarding what we are asking of you with respect to your time and involvement and, likewise, to explain generally the aims and nature of the experiment.

Considering the many millions of dollars expended in construction of residence halls at MSU we have very little information, other than "hunches", as to whether one type of hall has any real advantages or disadvantages over another. There are many possible variables which could enter into giving a hall unique characteristics that really make a difference as far as students are concerned. Also, it is very likely that what may be beneficial for one student may be detrimental for another. It is factors such as these that we hope to consider this year. Thus the main purpose of the study is to explore the variations in living patterns, in likes and dislikes of residents, and in other house or precinct characteristics that may evolve as a product of living in one type of residence hall at MSU as opposed to another. This will be possible only with your assistance.

Here is what we ask of you: All of the men in your house will be asked to give about three hours of their time during the year divided into two separate sessions. The first

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will last less than one hour and will be held this coming Monday, October 5, at 7:00 p.m., unless your R.A. has made arrangements with you for a different time. He will inform you of the location which will either be in your own house or precinct or in one of the meeting rooms in your residence hall.

The second session will be held Winter Quarter at a time yet to be set. This second session will last a little longer than the first, but no longer than two hours. We will meet with your house officers in order to keep you informed of arrangements.

Let me stress a few points: 1) The houses selected for the study were picked randomly within 9 MSU residence halls. These 9 represent each of the major types of halls and special programs at MSU. Perhaps this will explain why your house was selected and not another. 2) The special analytic technique we are using and the fact that our interest is with your house as a group make it vital that every resident of your house including the R.A. participate.

Otherwise the time, effort, and expense entering into the study may be in vain. The responses and attitudes of a minority could dictate the future programs of a majority. 3) Though you will be asked to put your name on your questionnaire, your responses will be guaranteed complete confidentiality. No one on the housing staff will be allowed to see your responses. The research staff will treat them as part of the house group they represent. However, any individual who may wish to discuss the results is cordially invited to contact me Spring Quarter at the conclusion of the study. 4) We urge you to take the matter seriously and give your honest opinions. If you are one of those who will complete the questionnaire in his own house or precinct rather than in a group, you must do your own work and not discuss the questions or your responses with anyone. 5) If special circumstances absolutely prevent you from completing the questionnaire at the time set by your R. A., please contact him to make special arrangements.

We are trying to take the attitude that just as the University tries to teach us objectivity, it must also lead the

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way by not being afraid to look critically at itself and its programs. As far as this study is concerned this can be done only with your cooperation. I sincerely look forward to your participation. We have attempted to make this as painless for you as possible. Please accept my thanks.

Sincerely yours,

Robert Standing
Project Director

RS:sja

APPENDIX B

WINTER QUARTER LETTER OF INFORMATION
SENT TO THE SAMPLE

APPENDIX B

MICHIGAN STATE UNIVERSITY - East Lansing

University College - Office of Evaluation Services

February 20, 1965

Dear Student:

Last week a group of your house or precinct officers and your Resident Assistant participated in a brief discussion of the second phase of the MSU residence hall research program in which your house was involved earlier this year. I am now writing to request your participation in this second and last phase of the study in order that the project may be successfully completed.

You may recall that your house plus two others in your hall were randomly selected, along with three houses in each of eight other men's halls for participation in the study. The general purpose of the research is to explore the nature and effects of variations in living patterns, in likes, dislikes and preferences of residents, and in other house or precinct characteristics that may result as a product of living in one type of residence hall or house at MSU as opposed to another. We have three goals in mind for the study: (1) to provide information as to the value of a wide variety of aspects of hall living as a basis for change and improvement of the programs; (2) the general advancement of the understanding of the dynamics of group living; and (3) immediate feedback of information to the houses and individual participants in the study for their consideration and benefit.

Let me clarify the last goal as to how it pertains to you and your house. First, the most important questionnaire you will be asked to complete this week related almost exclusively to your observations and opinions about the nature of house life as you have experienced it this year--including everything from the athletic program to study conditions. About the first week of Spring Quarter we will provide a tabulation of the responses of your house to your house officers. This hopefully will be used as a basis of consideration of strengths and weaknesses of your house programs. No information will be made available which could in anyway be used to evaluate, embarrass or identify any individual.

Secondly, an explanation of the questionnaire used last Fall and again this week, plus one's own results, will be available to those who wish to check with me sometime

February 20, 1965
Page 2

Spring Quarter. I will be available most Monday through Thursday afternoons in 294 Bessey Hall. Though some of you may not find this second questionnaire as interesting as the housing questionnaire, I believe at the completion of the study you will see its value.

The two questionnaires will take you about an hour and a half to complete. Though we recognize that this is somewhat demanding of your time, we were at least successful in cutting it down from the two hours we indicated to you last Fall. The session will begin at 7:00 p.m. Please be prompt.

Below is a list of the times and locations of each testing center for each hall involved in the study. Check the time and place for your hall.

Feb. 24			Feb. 25		
E. Wilson	Wed.	Wilson Aud.	W. Fee	Thur.	137 Fee
E. Shaw	"	East Lower	E. Akers	"	137 Akers
		Lounge	Emmons	"	151 Brody
W. Shaw	"	West Lower	N. Wonders	"	Won. Kiva
		Lounge	Snyder	"	Dining Ro.
Bryan	"	151 Brody			Snyder

With the exception of Snyder, test materials will be available from 6:30 p.m. to 8:30 p.m. in case you would need to begin either earlier or later than 7:00. In Snyder, materials will be available from 7:00 p.m. to 8:30 p.m. Check with your house president or R.A. if you are unable to attend your scheduled session. You could possibly attend one of the other sessions on a different night. There will also be a make-up session during the day Saturday, though we strongly hope you can attend with your own group as scheduled.

If for some reason you did not participate in the first part of the study last Fall, we urge you to nevertheless participate this time. In order for the results to be meaningful and of full value to your house, as well as to the study, we need virtually 100 per cent participation.

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We sincerely solicit your interest and participation. We urge you to take the matter seriously and respond accurately and honestly. Again, we will try to make it as painless yet as profitable to you and your house as possible. Please accept our thanks.

Sincerely yours,

Robert Standing
Project Director

RS:gs

APPENDIX C

HOUSE ANALYSIS SURVEY

APPENDIX C

HOUSE ANALYSIS SURVEY

Office of Evaluation Services
Michigan State University, 1965

This survey is designed to provide a broad description of the characteristics of life within residence hall houses and precincts. It asks for your observations, opinions, and preferences with regard to house and residence hall living. The information obtained will be used to provide an image of house life--how it differs from house to house and hall to hall--and insight into some of the factors which produce the particular characteristics of each house.

Hopefully, the research will provide clues to the strengths and weaknesses of the Michigan State University housing program, what students like and dislike, and the type of influence one type of residence hall exerts on student life compared to another.

In no case will the data be used in anyway to evaluate any individual or group of individuals. The study is made for research purposes only. All names provided will be coded by the project director and will be known only to him. All data will be treated on a group basis. No information will be revealed to any individual which will indicate his, or anyone else's, status within his group.

There are no right or wrong answers. However, the usefulness of the survey is entirely dependent upon the truthfulness with which the questions are answered. We urge you to make each answer an accurate reflection of your real feelings.

Throughout the questionnaire the word "house" is used to refer to both houses and precincts within the residence halls.

Directions

1. There are two parts to the Survey requiring two separate answer sheets which are labeled "Part I" and "Part II" on the top.

In addition, an Attitude Questionnaire will also be given. Many of you completed this test earlier this year. It is repeated as an important part of the study in order to provide indications of your current attitudes after having completed part of the school year.

2. Use only the special pencil provided. If you erase do so completely. Complete the information called for at the top of each answer sheet: Name, date, student number, name of your residence hall, and room number.
3. Also write your student number in the vertical column of blank boxes under the heavy arrow. Then MARK ONE SPACE in each of the six rows of ten spaces that corresponds to each digit of your student number.
4. MARK ONE ANSWER ONLY for each item, except where indicated. Be sure to answer each item. The responses listed may not coincide exactly with your point of view. In such cases, choose the alternative that is nearest your point of view. Work rapidly.
5. When you have finished both parts of the House Analysis Survey go on to the Attitude Inventory.

* * * * *

PART I

1. Age at last birthday:

1. 16 or under	6. 21
2. 17	7. 22
3. 18	8. 23
4. 19	9. 24
5. 20	10. 25 or older

2. Class in college:

1. First quarter freshman
2. Second quarter freshman
3. Third quarter freshman
4. Low Sophomore (40 to 62 hrs.)
5. High Sophomore (63 to 84 hrs.)
6. Junior (85-129 hrs.)
7. Low Senior
8. High Senior (will graduate this academic year)
9. Graduate Student
10. Other: special, temporary, etc.

3. How many quarters have you lived in this house, including this quarter?

1. This quarter only	6. Six quarters
2. Two quarters	7. Seven quarters
3. Three quarters	8. Eight quarters
4. Four quarters	9. Nine quarters
5. Five quarters	10. Ten or more

4. How many quarters have you lived in this residence hall?

1. This quarter only	6. Six quarters
2. Two quarters	7. Seven quarters
3. Three quarters	8. Eight quarters
4. Four quarters	9. Nine quarters
5. Five quarters	10. Ten quarters

5. In which College are you currently enrolled?

1. University College	6. Education
2. Arts & Letters	7. Engineering
3. Agriculture	8. Natural Science or
4. Business	Home Economics
5. Communication	9. Social Science
Arts	10. Veterinary Medicine

6. How much education do you tentatively plan to obtain?
1. One year of college
 2. Two years of college
 3. Three years of college
 4. Bachelor's degree
 5. Master's degree
 6. Professional degree (M.D., Lawyer, etc.)
 7. Ed.D or Ph.D
 8. Other
7. Which of the following categories comes closest to your father's occupation? If your father is retired, deceased, or unemployed, indicate his former or customary occupation. Mark only one.
1. Unskilled worker, laborer, farm worker
 2. Semiskilled worker (e.g., machine operator)
 3. Service worker (policeman, fireman, barber, military noncommissioned officer, etc.)
 4. Skilled worker or craftsman (carpenter, electrician, plumber, etc.)
 5. Salesman, bookkeeper, secretary, office worker, etc.
 6. Semiprofessional or technician (laboratory or medical technician, draftsman, etc.)
 7. Owner, manager, partner small business, farm or lower level governmental official; also military commissioned officer
 8. Profession requiring a bachelor's degree (engineer, elementary or secondary teacher, etc.)
 9. Owner, high level executive--large business or high level government agency
 10. Professional requiring an advanced college degree (doctor, lawyer, college professor, etc.)
8. How much formal education does (did) your father have? Indicate only the highest level (i.e., mark only one of the ten alternatives.)
1. No formal schooling
 2. Some grade school
 3. Finished grade school
 4. Some high (secondary) school
 5. Finished high school
 6. Business or trade school
 7. Some college
 8. Finished college (four years)
 9. Attended graduate or professional school (e.g., law or medical school) but did not attain a graduate or professional degree
 10. Attained a graduate or professional degree (e.g., MA, PhD, MD)
9. Indicate the extent of your mother's formal education. Use the alternatives in the preceding question. Mark only one.
10. Which best describes your position in your family?
1. I am an only child.
 2. I am the oldest of the children in the family.
 3. I am the youngest of the children.
 4. I have both older and younger brothers and/or sisters.
11. Which of the following best describes the community which you think of as your home town during your high school days?
1. Suburb in a metropolitan area of more than 2,000,000 population
 2. Suburb in a metropolitan area of 500,000 to 2,000,000
 3. Suburb in a metropolitan area of 100,000 to 500,000
 4. In a city (not a suburb) of more than two million
 5. In a city of 500,000 to 2,000,000
 6. In a city of 100,000 to 500,000
 7. In a city of 50,000 to 100,000
 8. City or two of 10,000 to 50,000
 9. Community of less than 10,000
 10. Farm, ranch or other open country
12. How many different positions of leadership, elective or appointive, do you hold in campus organizations (e.g. house, dorm, social, religious, etc.)?
1. None
 2. One
 3. Two
 4. Three
 5. Four or more
13. Which of the following is correct concerning your present place of residence? ("On-campus" refers to University housing)
1. The Housing Office made both my current room and hall assignment this year. I have not lived elsewhere on campus this year.
 2. The Housing Office made my current room assignment, but I requested to live in this hall. I have not lived elsewhere on campus this year.
 3. I requested both my current room and hall assignment this year. I have not lived elsewhere on campus this year.
 4. I requested to move to this hall after living elsewhere on campus this year. Housing assigned my current house and room.
 5. I requested to move to this hall and house after having lived elsewhere on campus this year. But Housing assigned my room.
 6. I requested to move to this hall and room after having lived elsewhere on campus this year.
 7. I moved to my current room from a different house in this same hall earlier this year.
 8. I moved to my current room from another room in this same house this year.
 9. Other
14. Did you request to live with any of your present roommates, rather than being assigned together by Housing?
1. Yes
 2. No

Questions 15-34

Questions 15 through 34 list aspects of life within the house or precinct in which you live. Based on your observations and opinions of conditions within the house during the year, rate your house on each of the items, using the 9-point scale described below:

1	2	3	4	5	6	7	8	9
Excellent	Very Good	Good	Tends to be good	Satisfactory	Tends to be a little weak	Weak	Poor	Very Poor

Thus, for question 15, if you feel that "support for and participation in intramural sports" "Tends to be a little weak," you would darken space #6 on your answer sheet. Try to think of point "5" on the scale as the midpoint between conditions tending to be satisfactory and those tending to be unsatisfactory.

- | | |
|--|---|
| 15. Support for and participation in intramural sports | 25. Ability to study in the house |
| 16. Success in intramural sports | 26. Intellectual and cultural life of the house |
| 17. Level of academic performance or scholarship in the house | 27. Friendliness within the house |
| 18. The good times we have together | 28. Opportunities provided to meet girls |
| 19. Reputation of the house within the residence hall | 29. Value of living in this particular house |
| 20. Contribution of life within the house to your understanding of issues, ideas, philosophies, etc. | 30. Compliance of residents with resident hall regulations |
| 21. Social life and social program of the house | 31. Your satisfaction with your roommate(s) |
| 22. Support for and participation in the social program | 32. Your general satisfaction with residence hall accommodations |
| 23. The leadership of the Resident Assistant | 33. Your level of satisfaction with living in this house |
| 24. The leadership of the elected house officers | 34. Your level of satisfaction with living in this residence hall |

* * * * *

Questions 35-44

Below are listed 10 activities which generally require or invite the concern of the house GROUP AS A WHOLE. Based on what you have observed in your house this year, rank the 10 statements in the order of the concern which the group has shown, formally or informally, for each of the activities.

Indicate the rank assigned to each of the activities on the answer sheet. The activity considered to have been MOST IMPORTANT is assigned rank #1, and you should darken the first space opposite the number of that activity on the answer sheet. The activity which you feel has been LEAST IMPORTANT to the house should be assigned rank #10 and the tenth space opposite the number of that activity would be darkened.

Be sure to assign one rank to each of the 10 activities, even though you may find it difficult. You may wish to use the margin of your test booklet to determine your rankings before you transfer them to the answer sheet. Remember, rank according to your observations of the concerns of the group.

Activities and Problems Which Have Concerned the House

- | | |
|---|---|
| 35. Arranging and participating in social activities (45) | 40. Providing assistance for individuals' problems (study, social, personal) (50) |
| 36. Participation in and/or discussion of student government (hall, AUSEG, etc.) (46) | 41. Except for items ranked higher, the men regard the house as little more than a place to sleep and eat. Activities ranked lower generally do not concern the men. (51) |
| 37. Study conditions of the house (47) | 42. Participation as a group or with the Hall in special events, e.g. blood drives, sitting together at games, projects, etc. (52) |
| 38. Sport, intramurals (48) | 43. Keeping the house clean and tidy (53) |
| 39. Arranging and participating in activities to deepen residents' understanding of issues, philosophies, the arts, etc. (49) | 44. Discussion, enforcement and debate of rules and regulations of the house, hall and university (54) |

Questions 45-54

Now, re-rank the ten activities above, this time in the order of what YOU WOULD MOST PREFER to be the most important activities of the group.

Follow the same instructions as above. Consider the activities to be numbered from 45 to 54, as indicated to the right of the items. Use these spaces on your answer sheet and assign ranks accordingly.

* * * * *

Climate of Learning

The following paragraphs describe what we will refer to as the "climate of learning" of a house. Read the section carefully and then answer the questions at the end according to your appraisal of your house.

* * * * *

House activities and attitudes on campus vary in the degree which these support or complement the mission of the University of preparing students to understand and deal with the problems and needs of the world in which they live. Think of this degree of support as lying along a line, at one end groups of residents, perhaps entire houses, whose activities strongly support a climate of learning; at the other end, houses or subgroups of residents who are not only uninvolved in such a climate but who also strongly resist its influence.

The descriptions to follow are not meant to imply that social life, athletics, and other activities conflict with a "climate of learning." Such programs may or may not operate effectively regardless of the climate. Also, students may legitimately feel that their life within the residence hall is their own to lead as they see fit and that "learning" is properly confined to the classroom and library.

Here are descriptions:

"High" Climate of Learning

Visualize a group of residents or an entire house where the excitement of learning, experiencing and growing literally abounds. Here exists an almost continual exchange of ideas, attitudes, discussions of art forms, new discoveries in science, political controversy, confrontation and discussion of values. "Bull sessions" are often deep and stimulating. Cultural activities, such as the Lecture-Concert Series and Provost Lectures, are strongly supported. Freshmen in the house rapidly have their intellectual horizons broadened and stimulated. Discussions of classroom topics continues well beyond the walls of the classroom.

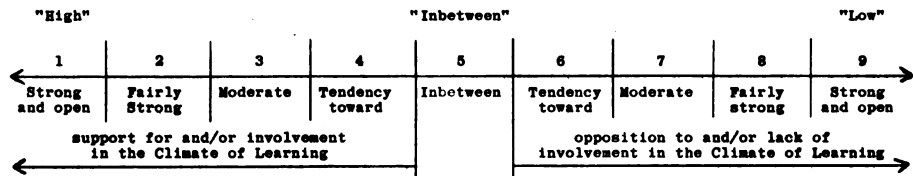
"Low" Climate of Learning

At the other extreme, learning is generally left to the classroom. It is not that residents don't study outside of class or work for their grades. It is just that little, if any, of the intellectual life of the University carries over into the life of the house. "Bull sessions" seldom have intellectual depth or substance. Attempts to stimulate more enlightening activities are seldom supported, and one who does might be regarded as a "highbrow" and out of touch with his housemates. Such a house may be a satisfying place to live because other characteristics of the house or subgroup possess great value for the residents. Social, fraternal or athletic activities may be prominent. But it is almost as though a social norm existed against too much involvement in academic learning. Selection of classes is often based on the ease with which one can get by. Freshmen soon learn the ways of the group and conform. Though they indicate concern over their studies, they are readily distracted from them.

The "Inbetween" Case

Between these two extremes one can visualize a third group or house whose activities and attitudes neither strongly support such learning experiences and intellectual excitement nor oppose them with any consistency. For such a group house life may seem to be independent of the "mission of the University." However, our feeling is that subgroups or entire houses tend to lean more one way than the other, though elements of both sides may exist in any given group at any given moment.

CLIMATE OF LEARNING

Questions

55. Where would you rate the general "climate of learning" of your house?
56. What has been the level of the "climate" which YOU have personally experienced through those with whom you associate the most in the house, regardless of the general climate of the house?
57. Where would you personally like the level of the "climate" to be in your house?
58. Where would you rate the general "climate of learning" of the residence hall in which you live?

* * * * *

PART II

Now begin use of the second answer sheet for the House Analysis Survey. Be sure you have filled in all the information called for at the top of the sheet: name, date, student number, name of your residence hall, and room number.

Except where indicated, answer the questions according to the following scale.

1. Agree strongly
2. Agree, but not strongly
3. Uncertain
4. Disagree, but not strongly
5. Disagree strongly

1. I feel like I've gotten to know the men in the house fairly well.
2. Life in the residence hall or residence hall complex detracts from my interest in the total university.
3. I find it difficult to feel a part of such a large university.
4. Residents' behavior in the house is not a problem.
5. I think I would have done better academically so far this year had I lived in a different house.
6. Residents of the house keep their rooms clean and neat.
7. I feel that fellows in the house are too involved in cliques.
8. More efforts should be made to increase school spirit at Michigan State.
9. When it comes right down to it, I really have little allegiance to either my residence hall or my house.
10. A number of campus leaders live in the house.
11. When I go to an activity such as a show, concert, ball game, etc., I usually go with or doubledate with guys from the house.
12. My room is generally quiet enough for effective study.
13. I am active in one or more extra-curricular activities.
14. I would enjoy having faculty members visit informally with the house occasionally in order to discuss ideas, issues, their interests and work, etc.
15. Comparatively speaking, our house is known for some of its original, novel or creative (though perhaps somewhat questionable) ideas and activities.
16. I feel that I am generally accepted and appreciated by those who live in the house.
17. I often get together with other students in the house to discuss issues raised in classes.
18. Students in the house exhibit a high degree of concern for the rights of others.
19. There isn't anyone in the house with whom I would particularly want to discuss a personal problem.
20. Living in my house is a major factor in making me feel a part of this university.
21. It is important for the house as a group to participate in and support all-campus competition and activities such as homecoming, water carnival, blood drive, etc.
22. Many in the house tend to be more concerned about the amount of work required in a course or how easy it is to get a grade rather than the quality of the instructor or the contribution of the course to the individual.
23. I have learned to enjoy one or more cultural activities this year that I had not really appreciated before.
24. There are a number of traditions in the house.
25. Students are entitled to have a stronger voice in the determination of university policy than they now have.
26. Facilities such as grills and lounges are major sources of distraction from my studying.
27. Maintenance of college traditions is an important aspect of college life.
28. The "intellectual" enjoys little status in the house in which I live.
29. Residents in the house have been involved in an above-average number of disciplinary problems.
30. I think of myself more as a member or resident of the residence hall, than as a member or resident of the house.
31. Every one living in the house would be welcome to all house activities.
32. The most important think I can get out of college is training for a vocation.
33. The most important think I can get out of college is an exposure to ideas, people, social problems, philosophies, etc.
34. Residents in the house are expected to participate in all house sponsored activities.
35. There aren't many fellows in the house who would be willing and interested to talk about issues, ideas, etc.
36. The university should be concerned about the moral behavior of its students.
37. Topics of "bull-sessions" in the house are superficial rather than of depth or substance.
38. The men in the house would be more likely to compliment someone on a nonacademic (social, athletic, etc.) achievement than on an academic or intellectual achievement.
39. House meetings are of little value.
40. The social program of the house provides good opportunities to meet some of the "sharper" girls on campus.
41. Students in the house have high ethical standards with respect to cheating, etc.
42. There's quite a bit of pressure (subtle or otherwise) in the house to participate in house and university activities.

- KEY: 1. Agree strongly
2. Agree, but not strongly
3. Uncertain
4. Disagree, but not strongly
5. Disagree strongly

43. Residence hall regulations are generally reasonable.
44. There really isn't much interest in international affairs, social issues, or scientific discovery expressed among the residents of the house.
45. Residence hall regulations allow students ample freedom.
46. My house has effective means of dealing with residents whose behavior isn't acceptable to the group.
47. I would prefer to move to a different house.
48. I would prefer to move to a different residence hall.
49. I would prefer to move off campus.

* * * * *

50. How many MSU football games did you attend this fall?

1. None 2. One 3. Two
4. Three 5. Four

51. I vote or intend to vote in various campus elections.
1. Very often
2. Often
3. Occasionally
4. Seldom
5. Almost never

52. Do you hope to join or are you now a member or pledge of a fraternity?
1. Yes
2. Not sure
3. No

53. My free time is spent with fellows from the house.
1. Almost always
2. About 3/4 of the time
3. About 1/2 of the time
4. About 1/4 of the time
5. Almost never

54. How often have you attended special lectures and seminars this year, such as the Provost Lecture series, programs of different political groups, departmental seminars and colloquia, etc.?
1. Very often
2. Often
3. Occasionally
4. Seldom
5. Almost never

55. How often have you attended concerts, plays, series, travelogues, etc., this year?
1. Very often
2. Often
3. Occasionally
4. Seldom
5. Almost never

56. I participate in "bull-sessions" in the house.
1. Very often
2. Often
3. Occasionally
4. Seldom
5. Almost never

57. What proportion of your closest male friends at MSU live or have lived this year in your house?
1. Almost all
2. Most
3. About half
4. A few
5. Almost none

58. What proportion of your closest male friends at MSU live or have lived this year in your residence hall (including your house)?
1. Almost all
2. Most
3. About half
4. A few
5. Almost none

59. There are 8 to 12 houses in your residence hall. Where would you rate your house generally in contrast to the other houses in the hall?
1. One of the best
2. Better than average
3. About average
4. Below average
5. One of the worst

60. Where would you rate your residence hall compared to the other 14 men's halls?
1. One of the best
2. Better than average
3. About average
4. Below average
5. One of the worst

61. What degree of influence has the Resident Advisor had on the men of your house?
1. A very positive influence
2. Some positive influence
3. Little or no influence
4. Some negative influence
5. A strong negative influence

62. What degree of influence has the Resident Advisor had on you?
1. A very positive influence
2. Some positive influence
3. Little or no influence
4. Some negative influence
5. A strong negative influence

63. What degree of influence have the residents of your house had on you?
1. A very positive influence
2. Some positive influence
3. Little or no influence
4. Some negative influence
5. A strong negative influence

PLEASE GO ON TO THE FOLLOWING PAGE

Questions 64-67

In every college that we know of, there are different kinds of students who enjoy doing different kinds of things. Listed below are some comments or descriptions about the kinds of students you might find in any American college. Read each of these over and then answer the questions which follow as best you can. We know that it is difficult to "peg" yourself in some slot but please make a choice for each of the four questions.

- TYPE 1:** This kind of person views education principally as a means of preparing for his professional future. He is not particularly disinterested in the social or purely intellectual phases of campus life, though his participation compared to some may be limited. This person does his homework but tends to do little outside reading or restricts his reading to the light, general entertainment variety. All things considered, this person's primary reason for being in college is to obtain professional training.
- TYPE 2:** This person is interested in learning about life in general, but in a manner of his own choosing. He is very interested in the world of ideas and books, and eagerly seeks out these things. Outside of the classroom, this person would attend such activities as the lecture-concert series, Provost lectures, foreign films, etc. This person often pursues his own interests in place of or in addition to mere course requirements and will frequently do extra readings in order to obtain a more complete understanding of the world in which he lives. From a social point-of-view, this person tends to reject activities such as fraternities, sororities, and the social events that many consider a part of campus life. When this person does join, it will usually be one of the more intellectual, academic or political campus organizations. For the most part, this person would consider himself to be someone who is primarily motivated by intellectual curiosity.
- TYPE 3:** This person is in some respects like Type 2 noted above. He is concerned with books and the pursuit of knowledge, but is also the kind of person who leads an active social life on campus. He is interested in getting high grades and tries to maintain a high grade-point average. He is the kind of person who will eagerly work with student or hall government, fraternities, committees, and activities of this type. He would feel that both the social side of college life and the academic are important for his general development.
- TYPE 4:** This is the kind of person who is more concerned with the social phases of college life and learning to get along with individuals. He identifies closely with the college and enjoys attending as many campus social and athletic events as possible. This person may be interested in intellectual kinds of things but will, for the most part, find greater satisfaction in student government, parties, activities, etc. He is concerned about his education but feels that the development of his social and leadership skills are certainly important. Much of his college life will be centered around non-academic type activities such as committees, fraternities or sororities, or resident hall type activities. This person will try to maintain his grades but does not feel that he must necessarily make the highest grades or go out of his way to do extra or non-assigned readings in order to be a success in college.

Now that you have read each of the four descriptions, answer the following questions. Indicate your answers by darkening the space by the number of the type on your answer sheet.

64. Which of the above types comes closest to describing the kind of person you consider yourself to be?
65. Which of the above is least descriptive of the kind of person you consider yourself to be?
66. Which of the above types comes closest to describing the kind of person you would like to be if you had a choice?
67. Which of the types is most descriptive of the majority of men in your house?

* * * * *

68. List the residents in the house whom you would most enjoy having as your roommate. Name as few or as many as you like. (This information will be kept in strictest confidence by the director of the project and will be coded for purposes of analysis.) Please use first and last names.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

PLEASE GO ON TO THE NEXT PAGE

69. Whom do you consider to be the real leaders of the house? Name as many as necessary.

_____	_____
_____	_____
_____	_____

70. Please comment briefly on any other aspects of house and/or residence hall life which you feel have been inadequately treated in the questionnaire.

Go on to the Attitude Inventory.

APPENDIX D

TABLES OF HOUSE AND TOTAL MEAN SCORES AND
STANDARD DEVIATIONS ON HOUSE ANALYSIS
SURVEY ITEMS

APPENDIX D

Table A.1 Means and standard deviations of responses to items from Part I of the House Analysis Survey for each of the 27 Houses

HOUSE																													
ITEM No.*	11	12	13	21	22	23	31	32	33	41	42	43	51	52	53	61	62	63	71	72	73	81	82	83	91	92	93	TOT	GRP
	N=36	N=42	N=36	N=29	N=33	N=28	N=35	N=31	N=26	N=39	N=26	N=39	N=33	N=48	N=43	N=22	N=34	N=46	N=31	N=14	N=30	N=42	N=32	N=25	N=35	N=29	N=20	N=894	
1	MN	3.97	3.69	3.25	4.17	4.39	4.14	3.80	3.74	4.46	3.97	3.46	3.77	4.58	4.46	4.60	4.36	5.12	3.94	4.42	4.00	4.47	3.88	4.75	4.12	4.54	3.90	5.30	4.175
	SD	1.19	1.10	.76	1.18	1.57	1.66	1.06	1.63	1.22	.62	.63	.89	1.50	1.22	1.37	1.26	1.62	1.44	1.70	1.31	1.98	.88	1.60	1.61	1.34	1.32	1.31	1.396
2	MN	3.06	3.21	2.44	4.41	4.03	3.86	3.37	2.81	3.88	4.28	2.73	3.72	4.42	4.31	4.74	4.23	5.12	3.46	3.60	3.86	3.27	3.52	4.81	3.68	4.83	3.83	5.65	3.877
	SD	1.78	1.71	1.17	2.04	2.08	2.34	1.99	1.55	2.29	1.20	1.26	1.77	1.98	1.90	2.19	2.21	2.28	1.86	2.26	2.42	1.93	1.83	2.54	2.33	2.05	2.00	2.08	2.094
3	MN	2.14	1.98	2.00	2.03	1.88	2.00	2.74	2.45	3.42	3.61	2.58	3.62	3.09	3.52	4.23	3.36	4.00	3.20	3.19	2.36	2.03	2.50	2.81	2.44	3.31	2.93	2.25	2.855
	SD	1.00	0.27	.00	.32	.33	.00	1.68	1.24	2.53	1.53	1.18	1.66	1.54	2.77	2.85	2.29	2.22	2.19	2.43	1.63	.61	1.55	1.57	1.67	1.58	1.64	.94	1.836
4	MN	1.99	2.05	2.00	2.10	2.36	2.39	3.17	2.58	3.77	4.17	2.96	3.77	3.36	4.08	4.74	3.86	5.21	3.37	3.58	2.64	2.10	2.81	3.81	3.04	3.46	3.04	2.75	3.200
	SD	.23	.65	.00	.55	1.43	1.26	2.07	1.48	2.47	1.30	1.37	1.64	1.98	2.80	3.02	2.63	2.87	2.40	2.56	1.63	.70	1.82	2.47	1.87	1.58	1.63	1.45	2.096
6	MN	5.33	5.12	5.33	5.17	5.58	4.64	4.83	5.16	4.89	4.87	5.35	5.23	5.03	4.56	4.98	4.95	4.82	5.11	4.74	4.79	4.80	4.93	5.13	4.96	5.34	5.31	5.05	5.039
	SD	1.20	1.01	1.15	1.23	1.23	1.28	1.03	1.22	1.12	.97	1.18	1.05	1.06	.89	1.11	1.11	.89	1.29	.92	1.42	.98	1.18	1.13	1.40	1.09	1.18	1.07	1.146
7	MN	5.72	5.71	5.69	6.14	6.42	5.71	5.51	6.61	5.77	5.72	5.69	6.18	6.52	5.54	6.05	5.36	5.21	5.63	6.16	6.00	6.27	5.69	5.72	6.40	5.74	5.93	6.20	5.880
	SD	2.68	2.65	2.33	2.46	2.32	2.25	2.52	2.31	2.68	2.33	2.82	2.44	2.08	2.26	2.43	2.12	2.74	2.83	2.27	2.42	2.35	2.62	2.82	2.51	2.53	2.99	2.11	2.523
8	MN	5.69	5.55	6.14	6.21	6.36	6.00	5.63	6.87	6.35	6.05	5.85	5.85	6.64	5.88	5.60	5.36	5.53	5.59	6.16	5.86	5.83	5.98	6.34	6.16	5.71	6.31	6.15	5.967
	SD	2.23	2.40	2.11	2.11	2.57	1.77	2.00	2.18	2.20	1.81	1.85	1.98	1.90	1.89	2.01	1.75	2.05	2.16	1.89	1.77	2.02	2.24	2.60	2.39	2.08	2.37	1.80	2.136
9	MN	5.39	5.69	6.19	5.76	6.08	5.36	5.09	6.32	5.77	5.97	5.31	5.56	6.24	5.71	5.54	5.82	5.71	5.56	5.55	4.64	5.97	5.69	5.88	5.84	6.34	5.65	5.85	5.739
	SD	1.75	1.75	1.94	1.43	1.63	1.63	1.34	1.47	1.67	1.67	1.66	1.52	1.41	1.57	1.80	1.53	1.77	1.33	1.54	1.63	1.68	1.92	1.62	1.80	1.76	1.75	1.80	1.684

Table A.1 (continued)

ITEM NO.		House																											Tot Gr
		11	12	13	21	22	23	31	32	33	41	42	43	51	52	53	61	62	63	71	72	73	81	82	83	91	92	93	
12	MN	1.64	1.71	1.53	1.38	2.03	1.32	1.23	1.42	1.54	1.67	1.42	1.59	1.42	1.49	1.61	1.73	1.65	1.41	1.68	1.57	1.24	1.36	1.44	1.68	1.29	1.62	1.42	1.520
	SD	1.06	1.06	.83	.81	1.29	.54	.48	.66	.93	.92	.74	.81	.82	.82	.94	.75	.94	.87	.89	.62	.63	.75	.86	1.01	.61	.96	.75	.872
14	MN	1.53	1.59	1.61	1.48	1.49	1.61	1.63	1.71	1.38	1.31	1.60	1.40	1.30	1.38	1.60	1.18	1.38	1.67	1.57	1.79	1.67	1.66	1.52	1.56	1.43	1.43	1.40	1.513
	SD	.50	.49	.49	.50	.50	.49	.48	.45	.49	.46	.49	.49	.46	.49	.49	.39	.49	.41	.50	.41	.47	.47	.50	.40	.50	.50	.49	.500
15	MN	6.14	2.52	5.50	2.41	5.27	5.68	4.63	5.19	4.58	5.51	2.81	3.20	5.00	5.55	4.54	4.55	3.41	3.61	3.42	5.50	4.10	3.17	3.50	5.60	3.86	5.21	5.45	4.385
	SD	1.92	1.59	1.30	1.19	1.64	1.34	1.76	1.49	1.52	1.80	1.59	1.59	1.48	1.43	2.02	1.12	1.67	1.71	1.21	2.20	1.58	2.15	1.80	1.65	1.59	1.67	1.36	1.964
16	MN	8.17	1.59	6.19	2.76	4.46	6.36	5.29	4.29	5.27	7.00	3.58	4.46	4.76	5.54	5.53	4.14	3.71	4.02	3.74	5.50	4.03	2.31	3.38	6.28	3.40	5.97	6.10	4.676
	SD	1.34	1.18	1.73	1.33	.92	1.47	1.38	1.63	1.89	1.88	1.60	1.65	1.33	1.49	1.86	1.01	1.47	1.57	1.32	1.68	1.54	1.34	1.73	1.95	1.02	1.59	1.95	2.155
17	MN	4.14	5.79	2.89	3.14	3.76	7.21	5.89	4.23	5.42	1.90	3.42	2.28	5.73	4.88	2.12	3.27	3.68	3.85	5.81	3.62	7.07	5.93	3.50	4.38	1.43	4.94	5.25	4.207
	SD	1.44	1.34	1.31	1.14	1.37	1.50	1.09	1.38	1.52	1.08	1.08	1.04	1.44	.99	1.12	1.09	1.21	1.77	1.42	1.27	1.63	1.26	1.44	1.35	.55	1.22	1.22	1.996
18	MN	4.20	3.91	4.53	3.55	6.39	5.11	4.85	4.42	4.35	3.23	3.96	3.13	5.24	5.15	4.02	4.41	4.21	3.96	3.90	4.23	4.17	4.43	3.63	4.92	4.06	4.69	5.15	4.335
	SD	2.45	3.86	1.28	1.35	2.07	2.23	2.06	1.39	1.75	2.01	1.89	2.08	1.83	1.85	1.90	1.64	1.75	2.27	1.99	1.89	1.55	2.00	2.10	2.27	1.59	2.56	1.85	2.062
19	MN	5.11	2.95	5.11	3.79	4.06	6.00	4.88	4.61	4.85	3.67	3.61	3.28	5.39	5.31	2.65	4.32	4.06	4.26	3.42	4.00	4.67	4.60	2.28	5.16	2.97	4.59	5.00	4.205
	SD	1.41	1.31	1.49	1.71	1.18	1.73	1.28	1.52	1.46	1.98	1.11	1.43	1.61	1.60	1.36	1.02	1.51	1.63	1.31	1.65	1.27	1.72	1.30	1.59	1.34	2.14	1.61	1.777
20	MN	5.20	4.88	6.03	4.83	6.15	6.18	5.62	4.48	6.08	4.32	4.84	4.98	6.88	6.10	4.77	5.27	5.62	5.07	5.45	5.14	6.27	5.81	4.69	5.62	4.97	5.21	6.20	5.412
	SD	2.49	1.93	1.82	1.80	2.18	1.74	1.85	1.74	1.69	2.07	2.00	2.14	2.00	1.71	1.80	2.14	2.28	1.66	1.64	1.77	1.79	1.73	2.36	2.10	2.01	2.28	1.44	2.051

Table A.1 (continued)

House

ITEM No. *	11	12	13	21	22	23	31	32	33	41	42	43	51	52	53	61	62	63	71	72	73	81	82	83	91	92	93	TOT ONP
N=36 N=42 N=36 N=29 N=33 N=28 N=35 N=31 N=26 N=39 N=26 N=39 N=33 N=48 N=43 N=22 N=34 N=46 N=31 N=14 N=30 N=42 N=32 N=25 N=35 N=29 N=20 N=684																												
21 MW	5.11	3.83	6.53	4.97	5.94	6.04	6.15	4.84	6.69	4.64	3.69	5.00	6.94	6.31	3.93	5.57	6.50	5.93	5.52	5.00	6.50	5.76	3.19	6.04	5.89	6.72	6.85	5.527
SD	1.97	1.45	1.54	1.61	1.83	1.72	1.48	1.19	1.64	1.69	1.83	1.88	1.58	1.62	1.63	1.33	1.52	1.89	1.67	1.20	1.75	1.81	1.59	1.66	1.53	2.07	1.46	1.952
22 MW	5.34	3.76	6.71	4.97	6.09	5.82	6.17	5.13	6.52	4.51	6.00	4.39	7.16	6.52	4.45	4.82	5.42	5.80	5.24	4.79	6.03	5.64	3.87	5.68	5.66	7.00	6.45	5.531
SD	1.67	1.38	1.16	1.77	2.03	1.58	1.58	1.34	1.65	1.71	1.94	1.85	1.48	1.58	1.65	1.03	1.81	1.64	1.83	1.32	1.76	1.77	1.74	1.52	1.47	2.02	1.32	1.877
23 MW	3.83	3.67	5.11	2.90	4.21	4.11	5.76	4.68	3.77	3.79	2.84	3.90	5.54	4.04	4.65	3.50	3.65	5.04	3.20	2.43	5.76	5.00	2.52	5.83	2.89	5.17	5.10	4.227
SD	1.89	1.83	1.70	1.90	1.97	2.19	1.97	1.65	1.80	1.73	1.57	2.01	2.27	1.87	1.90	1.75	1.47	2.41	1.38	.90	2.36	2.09	1.48	2.34	1.41	2.39	1.61	2.129
24 MW	4.94	3.71	5.33	4.72	5.03	5.50	5.68	5.36	4.69	3.59	3.85	3.82	5.67	4.94	4.21	4.10	4.91	5.50	4.61	5.15	5.45	6.14	3.78	5.20	4.43	5.66	5.60	4.856
SD	1.58	1.42	1.70	1.91	1.90	2.01	1.73	1.66	1.54	1.29	1.70	1.41	1.98	1.61	1.66	1.15	1.62	1.83	1.86	2.11	1.63	1.55	1.87	1.83	1.87	2.20	1.69	1.863
25 MW	5.42	5.71	5.43	5.17	4.36	5.82	6.57	4.74	5.96	5.51	4.72	4.92	6.73	4.74	4.28	3.50	4.53	5.76	5.06	3.79	6.37	5.38	3.84	4.60	3.66	5.62	3.95	5.107
SD	2.36	2.00	1.81	1.89	2.46	1.91	1.83	2.05	1.93	2.10	1.51	2.12	1.65	2.12	1.96	2.11	1.63	2.01	2.05	1.74	2.15	2.04	1.77	1.41	1.94	2.14	1.69	2.144
26 MW	5.89	5.36	6.06	5.21	4.85	6.71	6.34	5.39	6.69	4.26	6.48	5.08	7.09	6.57	5.09	5.18	6.06	6.04	5.77	5.36	6.90	5.85	4.97	6.76	4.66	5.79	5.90	5.738
SD	1.84	1.54	1.51	1.88	1.79	1.69	1.90	1.62	1.49	1.72	1.90	1.93	1.44	1.47	1.72	1.19	1.48	1.94	1.74	1.54	1.62	1.80	1.84	2.05	1.79	2.32	1.64	1.886
27 MW	3.89	3.46	3.64	2.59	4.91	3.97	3.49	3.42	3.12	2.59	2.58	2.72	3.82	4.58	3.21	3.33	3.12	3.17	2.58	3.64	3.50	3.17	2.31	4.04	2.57	2.93	3.25	3.327
SD	2.34	2.00	1.73	1.22	1.93	1.84	1.64	1.39	1.25	1.53	1.24	1.99	1.83	1.45	1.29	1.46	1.49	1.82	1.39	1.54	1.39	1.63	1.33	1.56	1.15	1.86	1.92	1.759
28 MW	4.86	4.55	5.33	5.34	5.12	6.14	5.91	4.67	5.77	4.68	4.69	5.69	7.30	6.23	4.79	5.62	6.15	6.28	5.48	4.43	3.06	6.17	3.59	5.68	5.14	6.86	5.65	5.485
SD	2.04	1.92	2.03	2.19	1.87	2.10	1.95	1.89	2.21	1.93	1.92	2.17	1.61	1.94	2.05	1.00	1.73	1.92	1.98	1.24	4.53	1.90	1.82	1.93	2.10	2.22	1.93	2.105

Table A.1 (continued)

ITEM No.	*	House																											TOT GRP
		11	12	13	21	22	23	31	32	33	41	42	43	51	52	53	61	62	63	71	72	73	81	82	83	91	92	93	
		N=36	N=42	N=36	N=29	N=33	N=28	N=35	N=31	N=26	N=39	N=26	N=39	N=33	N=48	N=43	N=22	N=34	N=46	N=31	N=14	N=30	N=42	N=32	N=25	N=35	N=29	N=20	N=884
29	M	4.64	4.21	5.08	3.72	4.72	5.46	5.11	4.52	4.65	3.03	3.50	3.56	5.85	5.19	3.53	3.71	3.79	4.52	4.00	4.21	5.53	5.32	2.81	5.68	3.29	4.21	4.85	4.392
	S	1.90	1.88	1.74	1.53	1.52	2.06	1.80	1.48	1.90	1.61	1.82	2.05	1.95	1.30	1.83	1.61	1.57	1.73	1.80	.94	1.91	1.80	1.38	1.83	1.63	1.97	1.62	1.923
30	M	4.22	4.73	5.19	5.28	3.97	5.63	4.74	4.82	5.08	3.61	3.92	6.15	4.67	4.07	3.86	4.50	5.26	4.42	4.36	6.10	5.41	4.09	5.64	3.46	5.72	4.55	4.793	
	S	1.70	1.50	1.37	1.98	1.57	1.64	1.74	2.05	1.52	1.54	1.11	1.49	1.84	1.30	1.52	1.60	1.75	1.80	1.84	1.49	1.87	1.72	1.76	1.65	1.25	1.66	.97	1.781
31	M	3.64	3.76	3.86	3.76	3.94	3.79	3.97	4.03	3.11	3.13	3.31	3.74	4.12	3.41	2.81	2.68	2.94	3.54	3.60	3.00	3.65	3.07	2.65	2.44	3.23	3.21	2.75	3.409
	S	2.15	1.82	1.65	2.03	2.52	2.21	2.43	2.52	2.22	2.07	1.95	2.16	2.52	2.06	1.70	1.74	2.11	2.08	2.39	1.89	2.17	2.26	1.62	2.04	2.23	2.63	1.81	2.178
32	M	3.91	4.71	4.11	3.79	4.39	4.18	4.17	4.03	3.65	3.67	2.58	3.44	5.55	4.67	4.05	3.82	4.76	4.83	3.73	3.64	4.41	4.46	3.19	4.44	3.43	4.72	3.95	4.134
	S	1.79	2.24	1.70	1.88	1.89	1.91	1.80	1.77	1.57	1.71	1.34	1.79	2.10	1.81	2.30	1.75	1.86	1.82	1.41	1.23	2.03	2.36	1.67	2.08	1.79	2.07	2.13	1.978
33	M	4.17	3.88	4.36	3.14	4.18	4.68	4.69	4.00	4.38	2.87	3.00	3.13	5.30	4.56	3.51	3.23	3.73	3.98	3.81	3.79	4.67	4.43	2.81	4.96	2.62	3.48	4.25	3.914
	S	1.87	2.05	1.62	1.74	1.51	1.97	1.95	1.63	1.78	1.57	1.86	1.70	2.02	1.83	1.81	1.62	1.40	1.93	2.07	1.42	1.78	2.16	1.47	1.84	1.46	1.69	1.84	1.917
34	M	4.14	4.69	4.83	4.00	4.97	4.57	4.14	4.16	3.48	3.56	2.50	3.10	4.88	4.17	3.14	2.77	3.03	3.59	3.32	3.50	4.40	4.50	3.37	4.64	2.57	3.14	3.30	3.831
	S	2.10	2.18	2.03	2.10	1.83	1.93	1.82	1.85	1.60	1.30	1.34	1.72	2.31	1.90	2.01	1.57	1.51	2.09	1.78	1.18	1.74	2.27	1.70	1.76	1.54	1.78	1.38	1.986



Table A.1 (continued)

ITEM No.	HOUSE																										Tot Grp		
	11 N=36	12 N=42	13 N=36	21 N=29	22 N=33	23 N=28	31 N=35	32 N=31	33 N=26	41 N=39	42 N=26	43 N=39	51 N=33	52 N=42	53 N=43	61 N=22	62 N=34	63 N=46	71 N=31	72 N=14	73 N=30	81 N=42	82 N=32	83 N=25	91 N=35	92 N=29		93 N=20	
55	MN	5.00	5.17	5.25	4.65	4.64	6.18	5.60	5.29	5.92	3.97	4.60	4.10	6.09	5.33	3.93	4.41	4.53	5.04	5.26	4.57	6.17	5.74	4.91	5.45	3.86	4.90	5.00	5.007
	SD	1.49	1.70	1.82	1.56	1.57	1.47	1.63	1.71	1.36	1.70	1.65	1.71	1.75	1.57	1.61	1.95	1.33	1.80	1.46	1.50	1.98	2.01	1.81	1.31	1.46	1.94	1.52	1.791
56	MN	4.00	4.50	4.22	3.97	4.06	5.30	4.31	3.81	4.00	4.00	3.64	3.90	4.91	4.25	3.65	3.54	3.62	4.15	4.55	3.50	4.31	4.43	4.56	3.86	3.74	3.76	3.80	4.114
	SD	1.84	1.75	2.07	1.61	1.98	2.07	1.82	1.82	1.49	1.55	1.67	1.71	1.60	1.68	1.67	1.67	1.42	1.67	1.79	1.24	2.31	1.67	2.12	1.74	1.56	2.08	1.54	1.825
57	MN	2.65	2.73	2.78	2.72	2.06	2.89	2.71	3.06	2.77	2.51	2.84	2.62	3.09	2.74	2.79	2.73	2.73	2.86	3.00	2.71	2.66	2.95	3.16	3.09	2.60	2.17	2.75	2.752
	SD	1.29	1.21	1.13	1.20	1.18	1.55	1.21	1.87	1.19	1.24	1.49	1.55	1.62	.86	1.27	1.48	.95	1.21	1.27	1.22	1.47	1.41	1.95	1.51	1.38	.95	1.14	1.350
58	MN	5.21	4.77	5.36	4.10	4.45	4.56	4.35	5.00	4.58	5.44	4.38	4.46	4.81	4.79	4.41	3.48	3.61	3.53	4.77	5.38	5.07	5.00	5.12	4.93	3.77	4.34	4.05	4.580
	SD	1.32	1.56	1.57	.96	1.65	1.20	1.33	1.18	.97	1.37	1.52	1.55	1.47	1.38	1.36	1.22	1.10	1.24	1.31	1.00	1.53	1.48	1.27	1.71	1.27	1.67	1.20	1.490

* HAS Part I items 5, 10, 11, and 13 are omitted. These items were not assumed to have been scored on a continuous scale. Hence, it would have been inappropriate to compute their means and standard deviations.

Table A.2 Means and standard deviations of responses to items from Part II of the House
Analysis Survey for each of the 27 houses

ITEM No.	HOUSE																										
	11	12	13	21	22	23	31	32	33	41	42	43	51	52	53	61	62	63	71	72	73	81	82	83	91	92	93
	N=36 N=42 N=36 N=29 N=33 N=20 N=33 N=26 N=39 N=33 N=48 N=43 N=22 N=34 N=46 N=31 N=14 N=30 N=42 N=32 N=25 N=35 N=29 N=20 N=804																										
1 M	2.61	2.09	2.11	1.97	3.76	2.61	2.11	2.36	2.11	1.80	1.92	1.77	2.45	2.73	2.42	2.09	2.24	2.33	1.87	2.50	2.20	2.21	1.97	2.32	2.34	2.24	2.45
SD	1.46	.92	.94	1.00	1.21	1.37	1.33	1.09	1.09	1.14	1.03	1.07	.99	1.16	1.24	.95	1.11	1.22	1.10	.98	1.19	1.25	.98	1.16	1.04	1.10	1.36
2 M	4.00	3.64	3.64	3.86	3.73	3.64	3.34	3.74	3.58	3.64	3.96	3.51	3.67	3.94	3.91	4.09	4.00	3.83	3.77	4.14	3.03	3.50	3.88	3.72	4.37	4.14	3.95
SD	.97	1.27	1.08	1.04	1.31	1.04	1.24	1.22	1.12	.92	1.13	1.06	1.15	.99	1.18	.95	.91	1.05	1.10	1.13	1.17	1.26	1.14	1.00	.83	.86	.92
3 M	3.92	3.41	3.53	3.75	3.79	3.46	3.49	3.65	3.58	3.49	3.69	3.56	3.09	3.73	3.63	3.82	3.77	3.33	3.61	3.64	3.37	3.17	3.48	3.48	3.60	3.76	3.25
SD	1.14	1.42	1.14	.90	1.34	1.32	1.13	1.58	1.15	1.22	1.32	1.24	1.40	1.13	1.28	1.07	1.17	1.22	1.29	1.29	1.28	1.49	1.41	1.39	1.33	1.28	1.41
4 M	2.69	2.52	2.64	2.90	2.06	3.25	3.19	2.52	3.32	2.59	2.27	2.62	3.46	2.73	2.43	2.50	2.77	3.06	2.68	3.50	3.53	3.05	2.41	3.44	2.31	2.66	2.90
SD	1.22	1.01	1.06	1.24	1.01	1.24	1.25	1.19	1.19	1.13	.98	1.19	1.26	1.29	1.22	1.16	1.29	1.27	1.25	1.40	1.18	1.36	1.25	1.39	1.33	1.21	1.26
5 M	3.61	3.43	3.56	3.90	3.47	3.43	3.43	3.97	3.54	4.18	3.73	3.35	3.06	3.79	4.35	4.36	4.35	3.50	3.64	4.00	3.10	3.43	4.16	3.52	4.51	3.72	3.85
SD	1.32	1.16	1.21	1.32	1.12	1.15	1.32	.83	1.18	1.06	.98	1.14	1.23	1.20	.89	.83	.76	1.14	1.21	1.19	1.35	1.42	1.18	1.24	.87	1.36	1.24
6 M	2.39	3.27	3.94	3.41	3.28	3.36	3.18	3.03	3.35	4.03	3.23	2.68	3.42	3.44	2.81	2.55	2.62	3.28	2.97	3.29	3.20	3.19	2.65	3.28	2.71	3.10	3.14
SD	.96	1.04	.85	1.00	1.01	1.11	1.10	1.12	1.21	.73	1.25	1.03	1.16	1.06	1.08	.89	.94	.99	1.15	1.10	1.05	.98	1.02	.96	1.03	1.09	.83
7 M	3.11	3.45	3.64	4.03	2.38	3.36	3.60	3.10	3.15	3.54	3.23	3.85	3.21	2.96	3.49	3.86	3.47	3.26	3.90	3.07	3.20	3.50	3.25	3.00	3.46	3.59	3.60
SD	1.15	1.20	1.15	1.03	1.22	1.01	1.02	1.06	.95	1.03	1.15	1.08	1.25	1.06	1.15	.92	1.14	1.07	.82	.80	1.19	1.01	1.12	1.23	1.05	1.30	1.11
8 M	2.58	2.33	2.17	2.83	2.56	3.00	2.43	2.26	2.58	2.95	2.77	2.82	2.54	2.40	2.47	2.41	2.73	2.67	2.58	3.21	2.83	2.41	2.50	2.64	3.00	3.24	2.85
SD	1.38	1.13	1.08	.99	1.32	1.39	1.23	1.29	.97	1.22	.89	1.32	1.10	.95	1.09	1.03	1.20	1.22	1.18	1.08	.97	1.18	1.23	1.23	1.24	1.36	1.46

Table A.2 (continued)

ITEM No.		HOUSE																										Tot GRP	
		11	12	13	21	22	23	31	32	33	41	42	43	51	52	53	61	62	63	71	72	73	81	82	83	91	92		93
		N=36	N=42	N=36	N=29	N=33	N=28	N=35	N=31	N=26	N=39	N=26	N=39	N=33	N=48	N=43	N=22	N=34	N=46	N=31	N=14	N=30	N=42	N=32	N=25	N=35	N=29	N=20	N=884
9	M	2.94	3.57	2.92	4.10	2.58	2.46	3.06	3.29	3.38	3.78	3.77	3.74	2.79	2.75	3.51	4.23	3.56	3.11	3.90	3.07	3.07	3.29	3.78	2.72	3.54	3.38	2.85	3.300
	S	1.51	1.45	1.14	1.03	1.56	1.40	1.51	1.37	1.27	1.52	1.22	1.39	1.37	1.36	1.39	1.04	1.22	1.59	1.38	1.33	1.37	1.28	1.27	1.31	1.36	1.19	1.24	1.430
10	M	3.67	2.93	2.58	4.00	3.30	4.43	3.77	4.19	3.23	3.15	3.77	3.82	4.12	3.73	2.33	4.00	3.50	3.54	4.10	3.93	2.93	4.00	3.47	3.68	3.63	3.48	3.75	3.560
	S	1.35	1.37	1.23	.95	1.09	.78	1.20	.78	1.39	1.25	1.25	1.21	1.15	1.00	1.22	1.31	1.12	1.10	1.06	1.16	1.09	.94	1.20	1.16	1.17	1.19	1.04	1.254
11	M	3.25	2.81	2.50	2.83	3.52	2.93	2.97	3.48	2.85	2.74	3.08	2.41	2.85	2.90	3.12	2.96	2.79	2.85	2.74	2.86	3.17	2.75	2.53	2.92	2.63	3.52	3.90	2.935
	S	1.55	1.35	1.57	1.53	1.54	1.60	1.61	1.37	1.46	1.56	1.29	1.45	1.54	1.57	1.42	1.58	1.39	1.41	1.50	1.64	1.46	1.51	1.44	1.55	1.51	1.30	1.18	1.515
12	M	2.81	3.43	3.33	2.59	2.76	2.93	3.34	2.93	2.73	2.90	2.48	2.90	3.09	2.41	2.40	2.41	2.50	3.00	3.27	2.00	3.13	2.71	2.53	2.58	2.14	3.21	1.95	2.793
	S	1.22	1.29	1.49	1.19	1.54	1.39	1.60	1.32	1.32	1.46	.99	1.26	1.40	1.23	1.33	1.23	1.29	1.37	1.44	1.00	1.48	1.42	1.2	1.23	1.40	1.47	.87	1.393
13	M	2.22	2.17	2.86	2.31	2.06	2.39	2.63	2.29	2.39	2.56	2.38	2.10	2.24	2.77	2.54	2.36	2.50	2.78	2.47	2.14	3.27	3.00	2.81	2.78	2.71	2.66	2.80	2.537
	S	1.47	1.38	1.47	1.37	1.41	1.50	1.67	1.46	1.44	1.48	1.39	1.22	1.41	1.58	1.63	1.52	1.56	1.43	1.48	1.68	1.59	1.58	1.47	1.68	1.54	1.65	1.44	1.528
14	M	1.83	2.24	2.33	2.21	1.64	2.21	1.54	1.81	1.77	2.28	1.98	1.82	2.15	2.23	2.23	2.09	2.21	2.00	1.93	2.57	2.13	2.29	1.97	2.04	2.29	2.24	1.90	2.082
	S	.83	1.13	1.27	1.00	.98	.82	.87	1.23	.97	1.06	1.09	.74	1.13	1.08	1.10	.90	1.07	.89	1.08	1.05	.96	1.16	1.05	.92	1.16	1.19	1.09	1.067
15	M	3.14	2.57	3.14	2.66	3.12	2.25	3.49	3.23	2.61	1.54	3.15	2.69	3.15	3.31	2.42	2.82	2.68	2.87	2.20	3.07	2.83	3.24	1.75	3.68	3.09	2.41	3.75	2.828
	S	1.13	1.12	1.13	1.03	1.39	1.24	1.08	1.29	1.30	.87	1.06	1.24	1.42	1.21	1.08	1.30	1.16	1.06	.70	1.39	1.24	1.27	.97	1.05	1.08	1.59	1.14	1.280
16	M	2.11	2.12	2.28	2.00	2.64	2.07	2.29	2.16	2.08	1.90	2.19	1.87	2.52	2.33	2.21	2.04	2.00	2.13	2.07	2.07	2.23	2.10	1.91	2.44	2.09	2.14	2.10	2.153
	S	.96	.76	.69	.70	.88	.88	.74	.68	.73	.81	.56	.65	.89	.77	.88	.82	.65	.91	.84	.80	.99	.78	.80	.75	.81	.97	.70	.830

Table A.2 (continued)

ITEM No.		HOUSE																												Tot Grp
		11	12	13	21	22	23	31	32	33	41	42	43	51	52	53	61	62	63	71	72	73	81	82	83	91	92	93		
		N=36 N=42 N=36 N=29 N=33 N=28 N=35 N=31 N=26 N=39 N=26 N=39 N=33 N=48 N=43 N=22 N=34 N=46 N=31 N=14 N=30 N=42 N=32 N=25 N=35 N=29 N=20 N=884																												
17	M	3.33	2.86	3.36	3.35	3.70	3.61	3.46	3.39	3.15	2.84	3.54	2.97	3.39	3.34	2.53	2.86	2.91	3.26	3.10	3.14	3.13	3.41	3.25	3.36	3.23	3.24	3.45	3.215	
	S	1.27	1.36	1.06	1.32	1.19	1.20	1.20	1.34	1.20	1.20	1.01	1.41	1.32	1.17	1.32	1.22	1.07	1.19	1.30	1.30	1.26	1.18	1.46	1.26	1.37	1.48	1.32	1.290	
18	M	2.89	3.15	3.50	3.10	3.39	3.54	3.51	3.13	3.58	2.69	2.65	2.62	3.91	3.42	2.91	2.73	2.85	3.02	2.74	2.71	3.33	3.41	2.31	3.64	2.80	2.93	2.85	3.096	
	S	1.17	1.26	1.09	1.13	1.18	1.18	1.27	1.13	1.11	.94	1.30	1.08	1.08	1.04	1.31	1.13	1.14	1.29	1.22	1.28	1.11	1.16	1.07	1.05	.98	1.29	1.15	1.216	
19	M	3.22	3.50	3.64	3.79	3.24	3.39	3.31	3.48	3.81	3.67	3.46	3.41	3.12	2.88	3.56	3.73	3.65	3.41	3.55	3.36	2.93	3.76	3.56	2.96	3.43	3.31	3.15	3.419	
	S	1.40	1.61	1.23	1.32	1.60	1.29	1.60	1.68	1.41	1.49	1.42	1.43	1.55	1.47	1.51	1.21	1.26	1.47	1.43	1.39	1.48	1.36	1.32	1.59	1.59	1.29	1.42	1.473	
20	M	3.00	2.84	3.08	2.59	3.91	3.18	3.14	3.13	3.15	2.41	2.54	2.44	3.79	3.25	2.88	2.55	3.03	3.17	2.77	3.14	3.33	3.05	2.06	4.00	2.74	3.17	3.20	3.001	
	S	1.45	1.39	1.32	1.19	1.36	1.39	1.31	1.31	1.29	1.37	1.25	1.17	1.01	1.22	1.28	.99	1.22	1.27	1.34	1.41	1.11	1.36	1.22	.98	1.27	1.34	1.29	1.845	
21	M	2.36	2.29	2.40	2.69	3.00	2.93	2.51	2.64	2.62	3.05	2.81	2.84	2.67	2.73	2.42	2.27	2.71	2.78	2.16	2.14	2.33	2.43	2.28	2.76	2.23	2.97	2.70	2.590	
	S	1.42	1.28	1.29	1.15	1.37	1.28	1.05	1.43	1.15	1.26	1.04	1.23	1.36	1.25	1.28	.96	1.20	1.30	1.11	1.25	1.14	1.18	1.28	1.24	1.22	1.50	1.27	1.277	
22	M	2.44	2.26	2.11	2.45	2.45	2.43	2.49	2.65	2.00	2.87	1.77	2.44	2.48	2.15	2.51	2.41	2.21	2.35	2.48	1.93	2.30	2.74	2.34	2.36	2.77	2.83	2.25	2.408	
	S	1.23	1.11	.85	1.35	.92	1.12	.94	1.40	.73	1.16	.80	1.19	1.18	1.08	1.11	.83	1.12	.84	1.16	1.10	1.24	1.13	.89	1.09	1.12	1.18	.99	1.117	
23	M	2.64	2.76	2.69	2.93	2.94	2.57	3.17	2.65	3.12	2.77	3.15	2.56	3.27	2.83	3.00	2.86	3.06	3.33	3.39	2.50	2.93	2.83	2.87	3.20	2.83	3.17	2.95	2.927	
	S	1.27	1.31	1.24	1.34	1.32	1.29	1.23	1.28	1.19	1.19	1.41	1.30	1.26	1.26	1.20	1.29	1.25	1.22	1.29	1.30	1.24	1.31	1.32	1.17	1.48	1.34	1.50	1.306	
24	M	4.08	3.76	4.34	3.79	4.36	4.00	3.80	3.94	3.81	2.77	3.81	2.77	3.73	3.52	2.86	3.59	2.94	3.56	2.77	3.36	3.20	3.60	2.87	4.04	3.57	2.69	3.40	3.505	
	S	1.04	1.21	.75	.89	1.07	1.16	1.06	1.11	.96	1.05	1.00	1.19	1.21	1.15	1.19	1.11	1.00	1.26	1.29	1.04	1.22	1.09	1.26	1.08	1.20	1.21	1.07	1.226	

Table A.2 (continued)

ITEM No.		HOUSE																											TCT GR*
		11	12	13	21	22	23	31	32	33	41	42	43	51	52	53	61	62	63	71	72	73	81	82	83	91	92	93	
		N=36 N=42 N=36 N=29 N=33 N=28 N=35 N=31 N=26 N=33 N=26 N=39 N=33 N=48 N=43 N=22 N=34 N=46 N=31 N=14 N=30 N=42 N=32 N=25 N=35 N=29 N=20 N=884																											
25	M	2.19	2.05	1.92	2.31	2.15	2.21	2.66	1.94	2.27	1.72	2.46	2.00	2.09	2.12	1.77	1.82	2.21	2.28	2.00	2.36	2.27	2.24	1.97	2.00	2.51	1.41	2.60	2.119
	S	1.20	1.21	1.21	1.21	1.35	1.42	1.33	1.05	1.16	.78	1.25	1.13	1.11	1.22	.96	.89	1.21	1.26	.88	1.04	1.18	1.19	1.10	1.23	1.18	.72	1.20	1.182
26	M	4.11	3.90	3.94	4.10	3.79	3.64	3.63	4.13	4.06	3.87	3.81	4.08	4.49	4.00	4.05	4.18	4.41	4.15	3.87	4.29	3.97	4.21	4.06	3.92	4.34	4.48	4.20	4.052
	S	1.10	1.31	1.25	.96	1.23	1.31	1.31	1.07	1.21	1.15	1.14	1.07	.66	1.12	1.06	.80	.77	1.06	1.26	1.33	1.31	.96	1.14	1.06	.83	.72	.93	1.112
27	M	2.50	2.29	2.56	2.69	2.67	2.78	2.43	2.56	2.65	2.39	2.73	2.69	2.27	2.54	2.63	2.64	2.71	2.72	2.23	2.21	2.57	2.71	2.56	2.40	2.57	2.79	2.80	2.573
	S	1.24	1.37	1.17	1.23	1.39	1.23	1.13	1.39	1.00	.98	1.40	1.32	1.19	1.04	1.10	1.11	1.18	1.25	1.07	1.01	.92	1.22	1.37	1.20	1.20	1.21	1.21	1.211
28	M	2.94	2.90	3.00	3.86	3.58	2.68	2.83	3.19	2.69	4.08	3.04	3.39	3.09	2.44	3.56	3.23	2.88	3.15	3.05	3.36	2.63	2.91	3.56	2.72	3.53	3.79	3.00	3.149
	S	1.25	1.11	1.37	1.11	1.13	1.14	1.23	1.31	1.20	1.00	1.16	1.17	1.19	1.17	1.04	1.00	1.17	1.18	1.29	1.17	1.20	1.34	1.22	1.00	1.09	.96	1.00	1.237
29	M	3.82	2.86	2.81	3.97	4.36	3.54	3.51	4.16	3.58	2.97	4.15	4.10	3.24	3.81	3.86	4.32	4.35	3.61	3.90	3.50	3.07	2.98	4.53	3.08	4.47	3.31	3.70	3.891
	S	1.04	1.04	1.13	1.13	.81	1.09	.91	.85	1.15	1.00	.82	.96	1.10	.91	.98	.97	.97	.99	1.01	.82	1.00	1.32	.66	1.00	.78	1.32	.90	1.131
30	M	2.92	3.79	2.76	3.69	2.21	3.21	3.23	3.45	2.89	3.82	3.54	3.79	2.06	2.54	2.86	2.77	3.03	2.98	3.48	3.14	3.03	3.29	3.84	2.88	3.73	3.21	3.00	3.161
	S	1.36	1.06	1.46	1.18	1.34	1.37	1.35	1.52	1.37	1.24	1.39	1.02	.89	1.21	1.29	1.20	1.20	1.31	1.41	1.36	1.40	1.37	1.18	1.27	1.29	1.32	1.30	1.370
31	M	2.06	2.07	2.42	1.90	2.49	2.54	1.77	2.03	2.23	1.79	1.23	2.23	2.30	2.50	1.95	1.82	2.18	2.26	1.58	2.00	2.00	2.12	2.09	2.71	2.00	2.03	2.50	2.110
	S	1.25	1.33	1.32	1.18	1.13	1.24	.99	1.18	1.15	.97	.42	1.27	1.27	1.10	1.08	.89	1.15	1.34	.79	1.25	.93	1.13	1.18	1.27	1.24	1.30	1.16	1.191
32	M	3.44	3.21	3.72	3.90	3.64	3.11	3.66	3.45	3.50	3.64	3.31	3.72	3.44	3.48	3.28	3.59	3.27	3.30	3.64	3.64	3.10	3.29	3.41	3.58	3.49	2.97	3.40	3.445
	S	1.42	1.26	1.19	1.16	1.49	1.37	1.37	1.36	1.19	1.02	1.35	1.36	1.20	1.29	1.30	1.27	1.31	1.41	1.23	1.17	1.30	1.24	1.39	1.26	1.23	1.47	1.46	1.321

Table A.2 (Continued)

ITEM No.	House																												Tot Grp N=884
	11 N=36	12 N=42	13 N=36	21 N=29	22 N=33	23 N=28	31 N=35	32 N=31	33 N=26	41 N=39	42 N=26	43 N=39	51 N=33	52 N=48	53 N=43	61 N=22	62 N=34	63 N=46	71 N=31	72 N=14	73 N=30	81 N=42	82 N=32	83 N=25	91 N=35	92 N=29	93 N=20		
33	M	1.98	1.95	1.69	2.07	1.79	2.25	2.09	1.90	2.19	1.87	2.08	2.00	1.91	2.40	2.35	2.45	2.00	2.50	1.97	2.07	2.20	2.00	1.78	2.00	2.51	2.34	1.70	2.085
	S	1.04	1.07	.88	.74	1.07	.87	1.08	.93	1.14	1.02	.96	1.04	.79	1.20	1.20	1.23	1.00	1.23	1.06	.70	.98	.93	.78	.94	1.30	1.15	.64	1.057
34	M	3.14	2.83	3.39	3.17	3.33	3.64	3.40	3.13	3.35	3.54	3.69	3.33	4.00	3.35	3.42	3.50	3.77	3.76	3.52	3.64	3.73	3.45	3.25	3.44	3.71	3.97	3.45	3.466
	S	1.00	1.19	1.21	1.23	1.17	1.14	1.22	1.10	.92	1.13	1.17	1.16	.78	1.09	1.04	.99	.94	1.03	1.01	1.04	.89	1.24	1.12	1.10	1.19	.89	1.12	1.122
35	M	2.72	3.31	2.94	3.72	3.00	3.29	3.17	3.42	3.39	3.82	3.58	3.72	2.73	2.87	3.56	3.54	3.32	3.30	3.19	3.29	3.03	3.19	2.94	2.72	3.47	3.48	3.20	3.254
	S	1.14	1.18	1.05	1.01	1.10	.96	1.05	1.26	1.15	1.03	1.11	1.11	1.16	.97	1.21	1.12	.99	1.16	1.09	.70	1.05	1.05	1.20	1.15	1.09	1.13	1.03	1.140
36	M	2.72	3.02	3.17	3.41	3.00	3.54	2.94	2.90	2.88	3.62	2.88	3.23	3.42	2.90	3.14	2.59	2.82	3.20	3.06	2.93	2.60	3.17	3.06	3.40	2.63	3.21	3.05	3.065
	S	1.41	1.41	1.30	1.16	1.28	1.45	1.37	1.30	1.19	1.29	1.45	1.29	1.23	1.31	1.32	1.40	1.29	1.38	1.11	1.39	1.33	1.27	1.45	1.26	1.17	1.54	1.43	1.352
37	M	2.78	2.79	2.25	2.76	2.79	2.50	2.80	2.74	2.88	3.61	2.77	2.87	2.42	2.29	2.91	3.09	2.91	2.61	2.23	2.57	2.47	2.33	2.66	2.36	2.8	3.29	2.95	2.715
	S	1.16	1.19	1.12	1.04	1.30	1.12	1.21	1.24	1.19	1.17	1.34	1.20	1.18	1.15	1.25	1.28	1.07	1.19	.91	.82	.99	1.02	1.24	1.09	1.07	1.19	1.07	1.196
38	M	2.50	2.46	2.67	2.65	2.91	2.64	2.46	3.03	2.54	3.00	2.89	2.92	2.70	2.33	3.19	3.18	3.24	2.98	2.84	2.93	2.40	2.43	3.03	2.40	3.43	3.28	3.25	2.810
	S	.87	.99	1.05	1.21	1.14	.90	1.05	1.26	.84	1.11	1.37	1.12	1.03	1.07	1.04	.98	.91	1.13	1.19	1.28	.92	1.16	1.13	.89	.90	.98	.99	1.109
39	M	2.78	2.68	2.47	2.69	2.73	2.54	2.09	2.48	2.46	2.72	2.92	3.00	2.42	2.31	3.07	3.09	2.18	2.15	3.29	2.57	2.83	2.57	2.91	2.36	2.53	2.62	2.11	2.611
	S	1.20	1.30	1.24	1.34	1.42	1.38	1.34	1.48	1.01	1.13	1.30	1.30	1.23	1.23	1.21	1.04	1.25	1.23	1.27	1.55	1.34	1.29	1.18	1.26	1.12	1.45	1.12	1.305
40	M	3.42	3.48	3.86	3.93	4.24	4.04	4.03	3.77	4.12	3.72	3.31	4.15	4.46	4.08	3.47	3.55	4.06	4.07	4.00	3.29	3.80	3.93	2.56	4.16	4.41	4.38	4.10	3.875
	S	1.14	1.31	.95	1.02	.85	.94	1.11	1.04	1.12	.99	1.07	1.10	.86	.94	1.19	1.03	.97	1.01	.92	.88	1.11	.96	1.17	.88	.77	.96	.99	1.100

Table A.2 (continued)

ITEM No.	HOUSE																Tot	GP																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
	11	12	13	21	22	23	31	32	33	41	42	43	51	52	53	61	62	63	71	72	73	81	82	83	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231	1232	1233	1234	1235	1236	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275	1276	1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298	1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320	1321	1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342	1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361	1362	1363	1364	1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1386	1387	1388	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406	1407	1408	1409	1410	1411	1412	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425	1426	1427	1428	1429	1430	1431	1432	1433	1434	1435	1436	1437	1438	1439	1440	1441	1442	1443	1444	1445	1446	1447	1448	1449	1450	1451	1452	1453	1454	1455	1456	1457	1458	1459	1460	1461	1462	1463	1464	1465	1466	1467	1468	1469	1470	1471	1472	1473	1474	1475	1476	1477	1478	1479	1480	1481	1482	1483	1484	1485	1486	1487	1488	1489	1490	1491	1492	1493	1494	1495	1496	1497	1498	1499	1500	1501	1502	1503	1504	1505	1506	1507	1508	1509	1510	1511	1512	1513	1514	1515

Table A.2 (continued)

ITEM No.		House																												Tot GP
		11 N=36	12 N=42	13 N=36	21 N=29	22 N=33	23 N=28	31 N=35	32 N=31	33 N=26	41 N=39	42 N=26	43 N=39	51 N=33	52 N=48	53 N=43	61 N=22	62 N=34	63 N=46	71 N=31	72 N=14	73 N=30	81 N=42	82 N=32	83 N=25	91 N=35	92 N=29	93 N=20		
49	M	2.78	2.33	2.53	3.10	2.30	2.46	2.57	2.77	3.08	2.87	3.04	2.97	2.03	2.32	2.56	3.36	2.86	2.35	3.07	3.07	2.53	2.48	3.00	2.40	3.14	2.28	2.70	2.668	
	S	1.49	1.23	1.50	1.18	1.45	1.37	1.40	1.48	1.44	1.36	1.50	1.58	1.19	1.43	1.42	1.43	1.52	1.40	1.50	1.67	1.36	1.40	1.35	1.44	1.53	1.44	1.31	1.458	
50	M	4.47	4.17	4.17	3.86	4.49	3.89	4.20	4.52	4.42	4.15	4.35	4.33	4.55	4.04	3.93	4.04	4.38	4.13	4.55	4.00	4.10	3.95	3.78	3.68	3.81	3.65	3.50	4.133	
	S	.87	1.15	.87	1.31	.78	1.15	.86	.71	.79	1.21	1.04	1.16	.61	1.08	1.23	1.07	.84	1.23	.61	1.46	1.17	1.34	1.45	1.41	1.46	1.32	1.24	1.145	
51	M	1.58	1.64	1.83	2.07	2.30	2.54	2.43	1.93	2.35	2.13	2.35	2.25	2.47	2.21	2.05	2.09	1.79	2.22	1.90	2.64	2.37	2.57	2.50	2.40	2.06	2.21	3.00	2.186	
	S	.89	.78	.86	.87	1.22	1.24	1.02	1.11	.92	1.30	1.00	1.25	1.12	1.00	1.03	1.12	.99	1.37	.93	1.34	1.38	1.22	1.25	.98	1.26	1.00	1.18	1.151	
52	M	1.94	1.83	2.17	2.52	2.39	2.30	2.26	2.36	2.50	2.66	2.23	2.47	2.06	2.38	2.44	2.27	2.62	2.35	2.16	2.36	2.54	2.15	2.55	2.44	2.54	2.48	2.42	2.431	
	S	.91	.84	.77	.77	.85	.85	.87	.79	.75	.70	.60	.75	.92	.79	.79	.86	.64	.84	.85	.90	.68	.89	.71	.80	.73	.73	.82	.828	
53	M	2.94	2.60	2.47	2.93	3.03	2.93	2.74	3.10	2.77	2.80	2.50	2.72	2.73	2.56	3.00	2.23	3.09	2.50	2.71	3.14	2.57	2.50	2.50	2.68	2.74	2.86	3.50	2.751	
	S	1.53	1.09	1.21	1.23	1.40	1.31	1.46	1.20	1.42	1.30	1.31	1.18	1.38	1.35	1.18	1.08	1.10	1.46	1.44	1.25	1.38	1.26	1.17	1.43	1.23	1.36	1.16	1.322	
54	M	3.44	3.43	3.69	3.90	3.58	3.78	4.26	3.74	4.04	4.10	3.92	3.64	4.09	3.83	3.67	4.18	4.00	4.00	4.23	3.64	3.73	4.07	3.84	3.92	3.46	3.72	3.75	3.836	
	S	1.19	1.05	1.20	.92	1.18	1.03	.81	1.08	1.06	.78	1.17	1.10	.83	1.12	1.31	1.11	.87	1.04	.97	1.17	1.21	.96	.80	1.13	1.20	1.08	.99	1.085	
55	M	3.19	3.48	3.44	3.31	3.03	3.19	3.77	3.48	3.73	3.72	3.54	3.23	3.76	3.31	3.77	3.36	3.74	3.54	4.10	3.21	3.57	3.52	3.68	3.60	3.23	3.79	3.40	3.512	
	S	1.20	1.07	1.38	1.02	1.55	1.28	1.17	1.24	1.23	.86	1.08	1.37	1.05	1.19	1.12	1.26	1.24	1.28	1.15	1.15	1.33	1.24	1.23	1.41	1.42	1.06	1.11	1.246	
56	M	2.64	2.41	2.60	2.93	2.85	2.64	2.66	2.64	2.42	2.51	2.69	2.59	2.88	2.75	2.79	2.55	2.68	2.67	2.74	3.14	2.83	3.12	2.81	2.92	2.94	2.76	3.10	2.737	
	S	1.25	1.00	.96	.98	1.21	1.31	1.09	1.06	.97	1.04	1.17	1.15	.85	1.01	1.13	1.08	1.05	1.02	1.16	1.41	1.37	1.01	1.26	1.13	1.31	1.01	.89	1.124	

Table A.2 (continued)

ITEM No.	HOUSE																										TOT GRP	
	11	12	13	21	22	23	31	32	33	41	42	43	51	52	53	61	62	63	71	72	73	81	82	83	91	92		93
	N=36	N=42	N=36	N=29	N=33	N=28	N=35	N=31	N=26	N=39	N=26	N=39	N=33	N=48	N=43	N=22	N=34	N=46	N=31	N=14	N=30	N=42	N=32	N=25	N=35	N=29	N=20	N=884
57 M	3.00	2.59	2.72	3.21	2.97	2.86	3.00	2.48	2.50	2.36	2.27	2.44	3.12	3.38	2.50	2.64	2.50	2.36	2.94	3.29	2.83	2.88	2.59	2.72	2.49	2.69	3.35	2.748
Sd	1.39	1.31	1.48	1.16	1.47	1.41	1.22	.98	1.22	1.37	1.26	1.24	1.12	1.35	1.30	1.26	1.12	1.34	1.24	1.33	1.34	1.33	1.37	1.43	1.11	1.21	1.11	1.323
58 M	2.50	2.00	2.22	2.69	2.54	2.59	2.74	2.26	2.04	2.05	1.77	2.10	2.64	2.77	2.02	2.23	2.18	2.00	2.52	3.29	2.63	2.54	2.38	2.56	2.26	2.21	2.75	2.359
Sd	1.36	1.13	1.29	.99	1.35	1.16	1.30	.95	1.09	1.26	.93	1.11	1.12	1.30	1.02	1.08	1.10	1.00	1.27	1.33	1.33	1.38	1.29	1.27	1.13	1.10	1.34	1.228
59 M	2.67	1.69	2.33	1.35	2.21	3.22	2.74	2.19	2.54	1.36	1.65	1.62	3.12	2.75	1.33	2.27	1.94	2.28	2.10	1.93	2.63	2.00	1.38	3.20	1.23	2.31	2.95	2.153
Sd	.94	1.01	1.08	.54	.91	1.13	.69	.74	1.18	.62	.92	.74	1.12	.85	.60	.81	.97	1.04	1.12	.88	1.02	.95	.55	1.02	.54	1.09	1.02	1.000
60 M	2.75	3.00	3.25	2.21	2.42	2.32	1.86	2.19	1.69	1.69	1.35	1.54	1.94	1.65	1.35	1.05	1.06	1.28	1.81	2.28	2.17	2.21	1.84	2.52	1.51	1.48	1.60	1.926
Sd	.89	.99	1.14	.89	.85	.80	.83	1.00	.77	.72	.62	.84	1.18	.75	.68	.21	.24	.54	1.03	1.03	1.09	1.08	.71	.81	.81	.82	.80	1.020
61 M	2.36	2.33	2.67	1.86	2.42	2.44	2.51	2.90	1.96	2.21	1.96	2.39	2.61	2.36	2.61	1.86	2.09	3.04	1.93	1.86	2.83	2.64	1.91	3.00	1.84	2.34	2.70	2.389
Sd	.71	1.03	.82	.73	.95	.86	.97	.89	.81	.91	.98	.90	.81	.78	.84	.69	.70	1.02	.63	.52	.97	.87	.72	1.02	.67	.80	.56	.922
62 M	2.36	2.30	2.58	2.17	2.46	2.54	2.71	2.55	2.27	2.44	1.86	2.51	2.38	2.51	2.58	1.91	2.18	2.78	2.17	1.79	2.83	2.74	2.31	2.92	2.20	2.38	2.85	2.447
Sd	.86	1.00	1.01	.70	1.05	1.15	.97	.95	.86	.90	1.06	.84	.78	.80	.87	.73	.71	1.00	.75	.77	.69	.93	.77	1.09	.75	.85	.35	.917
63 M	2.31	2.38	2.36	2.41	2.64	2.78	2.57	2.29	2.69	2.13	2.27	2.23	2.76	2.85	2.37	2.27	2.41	2.59	2.83	2.50	2.70	2.41	2.13	2.44	2.34	2.38	2.55	2.458
Sd	.81	.73	.82	.67	.73	.96	.87	.63	.82	.76	.86	.70	.85	.84	.81	.75	.77	.97	1.06	.82	.74	.95	.70	.94	.92	.89	.50	.846
64 M	2.49	2.48	2.53	2.38	2.52	2.26	2.29	2.13	2.23	2.00	2.39	2.26	2.36	2.10	2.33	1.95	2.29	2.20	2.43	1.93	1.90	2.29	2.13	1.88	2.09	1.97	2.05	2.234
Sd	1.00	.95	.96	1.03	.93	.93	1.03	.88	1.01	1.06	1.04	1.04	1.04	1.01	1.01	1.09	1.04	1.01	1.02	.96	1.08	1.11	1.05	.86	.98	1.00	1.02	1.026

Table A.2 (continued)

ITEM No.	HOUSE																											TOT GAP	
	11 N=36	12 N=42	13 N=36	21 N=29	22 N=33	23 N=28	31 N=35	32 N=31	33 N=26	41 N=39	42 N=26	43 N=39	51 N=33	52 N=48	53 N=43	61 N=22	62 N=34	63 N=46	71 N=31	72 N=14	73 N=30	81 N=42	82 N=32	83 N=25	91 N=35	92 N=29	93 N=20		
65	MN	2.34	2.22	2.36	2.79	2.84	2.78	2.29	3.17	2.73	3.18	2.85	2.49	2.24	2.85	2.79	3.10	2.59	2.96	2.37	2.92	2.90	2.63	3.19	2.72	3.17	3.14	3.10	2.746
	SO	1.33	1.22	1.27	1.24	1.28	1.23	1.28	1.18	1.35	1.10	1.20	1.32	1.21	1.28	1.34	1.19	1.19	1.19	1.22	1.27	1.08	1.28	1.16	1.28	1.21	1.22	1.18	1.275
66	MN	2.71	2.81	2.69	2.90	2.61	2.62	2.83	2.60	2.50	2.46	2.69	2.59	2.73	2.63	2.72	2.62	2.68	2.57	2.53	2.64	2.60	2.66	2.81	2.63	2.77	2.56	2.25	2.652
	SO	.75	.63	.66	.55	.78	.88	.65	.66	.80	.75	.72	.74	.71	.75	.76	.72	.58	.65	.76	.61	.84	.69	.73	.63	.68	.74	.70	.722
67	MN	2.94	3.03	2.47	3.17	2.58	2.77	3.09	2.55	2.88	2.54	2.89	2.64	2.91	2.24	2.44	1.75	2.77	2.66	2.70	3.29	3.13	3.02	2.74	2.96	1.86	2.61	3.00	2.709
	SO	1.06	1.07	1.26	1.02	1.26	1.40	1.05	1.27	1.20	1.01	1.15	1.14	1.26	1.29	1.04	1.04	1.06	1.19	1.22	1.03	1.26	1.14	1.32	1.28	1.08	1.29	1.23	1.221
																													290

Table A.3 Means and standard deviations of ranks assigned by residents of each of the 27 houses to item 35 to 44 of Part I of the House Analysis Survey

ITEM NO.		HOUSE																											TOT GRP N=782	
		11 N=32	12 N=38	13 N=33	21 N=29	22 N=32	23 N=25	31 N=26	32 N=26	33 N=25	41 N=33	42 N=25	43 N=33	51 N=31	52 N=40	53 N=39	61 N=19	62 N=32	63 N=39	71 N=26	72 N=11	73 N=25	81 N=39	82 N=29	83 N=21	91 N=34	92 N=23	93 N=17		
35	M	3.09	2.74	5.39	3.34	3.69	4.12	4.19	2.89	4.68	3.45	3.56	4.00	5.87	4.50	3.56	3.42	5.16	4.56	3.81	4.55	4.72	4.05	2.35	4.00	5.82	6.22	5.24	4.157	
	SD	1.86	1.70	2.24	1.83	2.05	2.06	2.62	1.87	2.51	2.05	1.53	2.61	2.82	2.45	2.36	1.87	2.53	2.82	2.27	3.11	2.51	2.29	1.73	2.23	2.37	2.70	3.23	2.510	
	RANK	1	2	5	2	3	2	2	2	2	2	2	2	6	3	2	2	3	2	2	2	2.5	2	2	1	3	6	8	4.5	
36	M	6.37	5.76	5.49	6.69	6.13	6.04	6.96	6.38	6.76	3.24	6.80	7.06	6.55	6.72	5.56	5.43	6.09	4.90	7.27	6.91	7.20	6.59	7.10	6.48	6.38	5.48	6.53	6.196	
	SD	2.77	2.31	2.40	1.98	2.16	1.99	2.21	2.22	2.25	2.31	2.23	2.01	2.42	2.50	2.48	2.46	2.86	2.57	1.58	2.68	2.40	2.17	2.22	2.11	2.61	2.64	2.12	2.501	
	RANK	7	5	7	6	6.5	7	9	8	9	1	6	9	9	9	6	5	7	3	9	9	9	7	7	8	7	5	8	6	
37	M	4.19	4.71	2.73	3.76	3.28	4.84	4.11	3.65	4.80	5.06	4.00	4.27	4.97	4.35	3.18	3.74	3.63	5.03	3.92	3.36	5.04	4.72	4.24	3.38	2.53	3.83	3.24	4.060	
	SD	2.47	2.23	1.83	1.91	2.21	2.84	2.24	1.66	2.88	2.82	1.98	2.74	2.43	2.92	2.62	2.57	2.26	2.71	2.43	2.53	2.52	2.81	2.03	2.17	1.70	2.62	2.41	2.536	
	RANK	3	3	1	3	2	3.5	2	3	3	4	3	3	4	2	1	3	2	4	3	1	3	3	4	1	2	2	1	2	
38	M	3.87	1.61	3.85	1.21	2.88	2.60	2.08	2.69	2.24	4.55	1.64	2.24	2.65	2.52	4.26	2.74	2.03	2.18	2.69	5.27	2.52	1.59	2.59	3.86	2.44	3.04	3.88	2.721	
	SD	2.51	1.27	1.99	.48	1.96	1.72	1.47	2.03	1.56	1.86	.89	1.60	1.91	1.99	2.44	1.65	1.29	1.97	1.96	2.00	2.16	1.89	1.73	2.66	1.74	1.88	2.14	2.071	
	RANK	2	1	2	1	1	1	1	1	1	3	1	1	1	1	3	1	1	1	1	5	1	1	2	2	1	1	2	1	
39	M	7.47	7.24	7.73	7.03	6.28	7.60	7.15	6.88	7.84	6.79	6.92	6.15	8.36	8.25	8.23	8.84	8.50	7.95	8.42	7.64	7.80	7.56	7.69	7.24	7.94	7.30	7.29	7.564	
	SD	2.24	2.28	1.97	2.54	2.65	2.47	2.46	2.15	2.01	2.24	2.65	2.69	1.98	2.07	1.82	1.27	2.19	2.17	2.13	2.06	2.30	2.58	2.00	2.31	2.50	2.54	2.44	2.366	
	RANK	10	9	10	8	8	9.5	10	9	10	8	9	8	10	10	10	10	10	10	10	10	10	10	9	9	10	10	10	10	
40	M	4.44	5.03	4.27	5.31	6.13	5.48	6.11	6.23	5.68	5.64	4.84	5.52	5.23	5.60	5.33	4.63	5.19	5.64	5.31	5.36	5.36	4.77	4.93	4.81	5.32	5.96	5.12	5.303	
	SD	2.00	1.94	2.57	1.82	2.81	2.55	2.36	2.49	2.36	2.82	2.59	2.12	2.45	2.32	2.67	2.18	2.24	2.35	2.76	2.42	2.65	1.79	1.89	2.11	2.59	2.85	2.87	2.444	
	RANK	4	4	3	4	6.5	6	5	6	5	6	4	4	5	6	5	4	4	4	6	5	6	4	5	4	4	4	6.5	3	4
41	M	6.13	7.32	4.97	6.83	5.03	5.40	6.54	5.73	5.96	7.39	7.56	7.67	3.93	5.08	7.23	5.84	6.47	6.00	7.04	6.09	6.20	6.41	7.72	5.19	7.06	5.26	5.59	6.256	
	SD	3.15	2.50	3.22	2.62	2.80	3.02	2.76	2.86	3.24	3.33	2.30	2.52	2.56	3.00	2.95	2.76	2.65	2.36	2.72	3.29	2.08	2.51	2.68	2.99	2.41	3.08	3.01	2.962	
	RANK	6	10	4	7	4	5	7	4	7.5	9	10	10	2	4	9	6	9	7	8	7	8	6	10	5	8	4	6	8	
42	M	7.41	7.03	7.58	6.00	8.62	7.60	6.82	8.08	5.92	6.06	6.84	5.85	4.87	5.95	5.10	7.42	5.69	6.41	4.19	5.00	5.08	5.36	4.21	8.19	4.41	7.04	6.18	6.225	
	SD	2.16	2.44	2.16	2.32	1.43	2.37	2.20	1.82	2.95	2.41	2.63	2.77	2.43	2.05	2.33	2.01	2.50	2.46	2.40	3.04	2.90	1.99	2.09	2.15	2.17	2.48	2.59	2.630	
	RANK	9	8	9	5	10	9.5	8	10	7.5	7	7	5	3	7	4	9	5	8	4	4	4	5	3	10	3	9	7	7	
43	M	5.41	6.74	7.46	7.59	6.09	6.48	6.46	6.23	5.76	7.73	6.88	6.12	6.32	6.43	6.15	6.47	5.91	6.80	5.89	6.27	5.44	6.95	6.65	6.10	5.62	5.96	5.24	6.384	
	SD	2.41	2.14	2.26	1.97	2.18	2.52	2.53	2.65	2.16	2.29	1.99	2.40	2.78	2.40	2.25	2.14	2.24	2.37	2.15	2.38	2.52	2.46	2.07	2.78	1.81	2.48	2.78	2.415	
	RANK	5	6	8	10	5	8	6	6	8	10	8	8.5	8	8	7	7.5	6	9	6	8	6.5	9	6	7	5	6.5	4.5	9	
44	M	6.62	6.82	5.42	7.14	6.88	4.84	4.38	6.23	5.36	5.09	5.96	6.12	6.26	5.48	6.38	6.47	6.25	5.54	6.46	4.55	5.44	6.85	7.59	5.76	7.47	4.91	6.71	5.101	
	SD	2.80	2.49	2.91	2.49	2.45	2.89	2.62	2.96	2.74	2.33	2.72	2.71	2.65	2.85	2.41	2.89	2.41	2.83	2.24	2.27	3.06	2.61	1.99	2.94	2.20	2.39	2.29	2.743	
	RANK	8	7	6	9	9	3.5	4	6	4	5	5	6.5	7	5	8	7.5	8	5	7	2.5	6.5	8	8	6	9	3	9	5	

Table A.4 Means and standard deviations of ranks assigned by residents of each of the 27 houses to items 45 to 54 of Part I of the House Analysis Survey

Item No.	House																											Tot Grp N=789
	11 N=34	12 N=37	13 N=31	21 N=28	22 N=30	23 N=26	27 N=29	31 N=25	32 N=25	33 N=31	41 N=31	42 N=25	43 N=33	51 N=42	52 N=39	53 N=19	61 N=32	62 N=39	63 N=28	71 N=11	72 N=24	73 N=39	81 N=30	82 N=22	83 N=34	91 N=26	92 N=17	
45	M 4.71	3.81	4.23	3.71	4.30	4.15	3.22	3.76	5.32	3.55	4.40	4.12	3.90	4.00	4.31	4.10	4.44	4.67	4.86	3.73	4.62	4.59	3.43	3.96	5.32	5.11	5.00	4.275
	SD 2.57	1.97	2.04	1.85	2.27	2.12	1.79	1.81	2.26	2.46	2.32	2.38	2.29	2.41	1.92	1.80	2.08	2.53	2.03	1.91	2.29	2.28	2.42	2.23	2.19	2.49	1.97	2.272
	RANK 4	3	3	3	3	3	2	2	6	2	4	3	2	2	3	3	4	4	4	2	5	2	3	2	4	5	4	2
46	M 6.47	6.19	6.55	7.29	6.23	7.08	6.74	6.10	6.80	4.52	6.88	6.42	7.23	6.29	5.87	5.74	5.78	5.74	6.71	8.00	6.67	6.51	6.90	6.36	6.09	5.42	6.82	6.357
	SD 2.34	2.54	2.26	1.83	2.11	2.00	2.32	2.01	1.86	2.69	1.88	2.20	1.81	2.52	2.52	2.22	2.70	2.58	2.12	1.48	2.87	2.05	2.21	1.90	2.25	2.39	2.33	2.359
	RANK 7	7	6.5	8	6	7.5	8	7	9	4	8	7	9	8	6	5	5	5	9	9	9	8	7.5	8	7	6	8	7
47	M 2.29	2.40	1.74	2.18	1.93	2.04	2.44	2.10	2.32	3.39	3.08	2.88	1.87	2.31	1.74	1.84	2.09	2.36	2.11	1.36	2.96	2.36	2.80	2.32	1.88	2.15	1.71	2.274
	SD 1.79	1.88	1.10	1.34	1.18	1.32	1.93	1.63	2.09	2.18	2.33	2.45	1.41	1.90	1.70	.93	1.53	1.87	1.84	.48	2.48	2.07	2.07	1.61	1.47	1.59	1.32	1.831
	RANK 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
48	M 4.44	3.59	5.07	3.11	4.70	4.42	3.83	4.17	4.48	4.42	4.20	3.97	4.94	4.81	4.87	4.58	4.34	4.28	4.32	5.36	5.00	3.61	3.57	5.05	3.68	5.08	5.65	4.368
	SD 2.00	2.40	2.34	2.14	2.85	2.37	2.34	2.55	2.67	1.60	2.37	2.39	2.11	2.57	2.24	2.01	2.27	2.21	2.30	2.35	2.35	2.58	1.91	2.25	2.25	2.24	2.45	2.394
	RANK 3	2	5	2	4	4	3	3	3	3	3	2	4	4	4	4	3	2	3	5	4	2	3	4	2	4	5	4
49	M 5.94	6.03	4.90	5.54	4.03	4.81	5.00	4.76	4.68	5.55	5.08	4.94	6.00	5.48	6.08	6.42	6.44	6.05	6.39	5.18	5.46	5.18	6.07	5.46	6.38	4.11	4.12	4.465
	SD 3.34	2.60	2.77	2.77	2.46	2.81	2.92	2.28	2.96	2.70	3.26	2.41	3.04	2.66	2.49	3.10	3.18	2.91	2.54	2.12	3.08	2.57	2.59	3.46	3.02	2.26	1.94	2.868
	RANK 6	5	4	5	2	5	5	5	4	6	5	5	6	6	7	6	8	7	7	4	5	5	6	5	8	2	3	5
50	M 3.97	4.51	3.48	4.18	4.77	4.11	4.82	4.55	4.28	5.39	3.64	4.73	4.10	4.64	4.15	3.32	4.13	4.38	3.68	3.73	4.87	4.69	4.53	4.55	4.53	4.69	3.94	4.351
	SD 2.33	2.36	2.09	2.07	2.53	2.04	2.43	2.06	2.52	2.61	1.92	2.15	2.31	2.56	2.51	2.45	2.09	2.14	2.38	2.45	2.33	2.28	2.19	2.89	2.44	3.06	2.58	2.406
	RANK 2	4	2	4	5	2	4	4	2	5	2	4	3	3	2	2	2	3	2	2	5	3	4	4	3	3	2	3
51	M 8.27	8.46	8.77	8.68	8.07	8.23	8.89	8.38	9.44	8.58	8.16	7.91	8.10	8.91	8.61	8.74	8.63	8.05	8.89	9.09	7.88	8.54	8.40	8.14	8.35	8.04	7.88	8.479
	SD 2.19	2.09	1.93	1.51	2.36	2.55	1.81	1.24	1.30	2.15	2.63	2.86	2.69	1.80	2.20	1.82	2.20	2.55	2.23	1.38	2.79	2.33	2.54	2.24	2.53	2.52	2.74	2.284
	RANK 10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
52	M 7.32	6.81	6.55	6.07	6.70	7.08	7.00	7.21	6.32	6.36	6.92	6.21	6.45	6.76	5.67	6.58	6.13	7.10	5.93	6.82	5.71	6.15	5.23	7.23	5.82	6.96	6.35	6.482
	SD 1.84	1.86	2.31	1.89	2.34	1.93	1.93	2.28	2.34	2.40	2.54	2.57	2.06	1.99	2.07	2.11	2.12	2.22	2.51	1.64	2.75	2.23	2.35	1.98	2.20	2.64	2.30	2.280
	RANK 9	8	6.5	6	7	7.5	9	8	7.5	7	9	6	7	9	5	8	6	9	6	8	7	7	5	9	5	8	7	8
53	M 4.97	6.14	6.68	6.54	6.73	5.81	6.33	6.07	5.04	6.97	6.32	6.51	5.68	5.67	6.51	6.53	6.19	5.97	5.50	6.09	6.38	5.92	6.90	6.23	5.85	7.04	6.29	6.182
	SD 2.13	2.26	2.13	2.40	2.13	2.80	1.83	2.29	2.01	2.71	1.87	2.31	2.66	2.40	2.32	1.98	2.48	2.61	2.44	2.31	2.32	2.38	2.05	2.33	2.07	1.95	2.44	2.363
	RANK 5	6	8	7	8	6	6	6	5	9	6.5	8	5	5	8	7	7	6	5	7	8	6	7.5	7	6	9	6	6
54	M 6.82	7.08	7.00	7.71	7.53	7.27	6.63	6.90	6.32	6.42	6.32	7.55	6.58	6.12	7.18	7.16	6.81	6.41	6.61	5.64	5.50	7.39	7.17	5.73	7.09	6.38	7.24	6.785
	SD 2.41	2.52	2.05	2.12	1.91	1.81	2.23	2.50	1.99	2.66	2.57	2.24	2.24	2.37	2.38	2.37	2.08	2.45	2.02	2.38	2.50	2.16	2.08	2.60	2.32	2.39	2.34	2.357
	RANK 8	9	9	9	9	9	7	8	7.5	8	6.5	9	8	7	9	9	9	8	8	6	6	9	9	6	9	7	9	9

APPENDIX E

TABLE OF HORST'S MEASURES OF RELIABILITY ON
HOUSE ANALYSIS SURVEY ITEMS

APPENDIX E

Table A.5 Values of Horst's $\underline{r}$, a generalized measure of reliability, for House Analysis Survey items*

Item** (HAS Pt. I)	r_H	Item (HAS Pt. II)	r_H	Item (HAS Pt. II)	r_H
15	.92	1	.90	33	.38
16	.97	2	.46	34	.40
17	.97	3	-.44	35	.58
18	.72	4	.68	36	.16
19	.91	5	.67	37	.55
20	.68	6	.74	38	.60
21	.91	7	.67	39	.40
22	.88	8	.34	40	.79
23	.89	9	.72	41	.68
24	.79	10	.81	42	.71
25	.83	11	.33	43	.27
26	.81	12	.63	44	.66
27	.77	13	.09	45	.15
28	.83	14	.38	46	.67
29	.86	15	.82	47	.70
30	.84	16	.29	48	.81
31	.30	17	.19	49	.38
32	.67	18	.69	50	.46
33	.78	19	-.09	51	.56
34	.81	20	.72	52	.42
55	.79	21	.26	53	.19
56	.40	22	.40	54	.28
57	-.04	23	.00	55	.15
58	.79	24	.83	56	.31
		25	.41	57	.43
		26	.22	58	.54
		27	-.48	59	.92
		28	.72	60	.92
		29	.87	61	.83
		30	.73	62	.71
		31	.54	63	.40
		32	-.22		

*An explanation of Horst's $\underline{r}$ is presented on pp. 93-95.

**Horst's $\underline{r}$'s were not computed for items not scored on a continuous scale.

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