SELECTED AFFECTIVE AND COGNITIVE CHARACTERISTICS OF STUDENTS IN THE LYMAN BRIGGS COLLEGE AND THE COLLEGE OF NATURAL SCIENCE AT MICHIGAN STATE UNIVERSITY

By

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ABSTRACT

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The Problem

The purpose of this study was to describe the kinds of students who elected to enroll in Lyman Briggs College in comparison with students who entered the College of Natural Science during the fall of 1967. More specifically, in an explorative and descriptive way, an attempt was made to:

1. Determine in what ways Briggs College students, compared by sex are similar and/or dissimilar to other freshmen interested in science or mathematics who elected to enroll in the College of Natural Science with regard to selected affective and cognitive characteristics.
2. Determine in what ways Briggs College male students are similar and/or dissimilar to Briggs College female students with regard to selected affective and cognitive characteristics.

Population and Sample

The samples for the study were selected from 224 Lyman Briggs College students and 1,189 College of Natural Science students who were first term freshmen in the fall of 1967. Data was available for 190 Lyman Briggs students, including 136 men and 54 women. For purposes of comparison, a control sample of 190 College of Natural Science freshmen which also included 136 men and 54 women was randomly selected.

Methodology

The data for this study was gathered from a variety of sources. The total score from the College Qualification Test was used to measure students' academic aptitude to do college work and was obtained from the Office of Evaluation Services. Information relevant to the Differential Value Inventory, the Clark and Trow typology and selected personal characteristics were derived from the Data Processing Office. Other background characteristics including father's education, father's occupation, mother's education, and rank in his high school's graduating class were obtained from the Registrar's Office. A questionnaire was administered to second year Briggs students during the 1969 Spring Term to determine what percentage of those students had changed

their occupational plans since the beginning of their freshman year.

The analysis of variance model was used to test for differences in the College Qualification Test means. Similarly, the analysis of variance model was used to test for differences in the Differential Value Inventory means. The chi square (X^2) statistic was used to analyze the remaining information gathered from the Michigan State University Student Inventory as well as the items obtained from the Registrar's Office. The .05 level of confidence was chosen as the level at which differences were considered as a result of factors other than by chance.

Major Findings of the Study

Three basic hypotheses were used to analyze the data relating to academic aptitude to do college work, value orientation, Clark and Trow typology and selected personal characteristics. Stated in null form these are:

1. Lyman Briggs males do not differ from Natural Science males.
2. Lyman Briggs females do not differ from Natural Science females.
3. Lyman Briggs males do not differ from Lyman Briggs females.

The findings of this study were:

1. Differences in academic aptitude to do college work were not present when analyzed according to the study's three basic hypotheses. However, when the two groups of students were compared, without regard to sex differences, Lyman Briggs students had a statistically significant higher College Qualification Test total score.
2. There were no statistically significant differences between the two colleges or between Briggs males and females when the study's hypotheses were investigated in terms of the students value orientation as measured by the Differential Value Inventory.
3. The Clark and Trow typology revealed no statistically significant differences with regard to the students "own" or "desired" personal philosophies of higher education. In other words, student attitudes as depicted by the Clark and Trow "subcultures" revealed little difference between students in Briggs and those in the College of Natural Science.
4. No significant differences were found to exist with respect to any of the null hypotheses on the following variables: size of home community, father's education, mother's education, size of high school graduating class, degree of participation in high

school activities, rank in high school, importance of good grades, and prestige factors among students and faculty.

5. Lyman Briggs males differed from College of Natural Science males in terms of religious preference (fewer Catholics, more Protestants among Briggs males), father's occupation (more professionals, less skilled labor among Briggs male fathers), and mother's occupation (more Briggs mothers worked).
6. Lyman Briggs females differed from College of Natural Science females on the basis of organization of academic work (Briggs females preferred more independent work) and occupational preference (Briggs females expressed less interest in a professional life).
7. Lyman Briggs males differed from Lyman Briggs females with respect to their own educational aspirations), parents' educational aspirations for their child as perceived by the student (higher educational aspirations for Briggs males), organizational preference in which they wish to work (more Briggs females preferred educational institutions), and occupational preference (more Briggs males preferred a professional life style).

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CHAPTER I

THE PROBLEM

Introduction

Within the past decade, which many have called the soaring 60's, college and university enrollments have mushroomed to numbers almost undreamed of by even the most knowledgeable contemporary educational authorities. Among other factors, a rapidly growing post World War II American population, coupled with rising parental educational expectations for their children, have presented many institutions of higher learning with an enrollment "crunch" of almost unmanageable proportions. Moreover, in order to staff, advance, and solve the problems of a technologically oriented society, a well-educated citizenry is required. Therefore, most educators have generally applauded the growing collegiate enrollments. Similarly, they have appreciated the almost universal public confidence and faith placed in education at all levels. However, the challenge of providing a quality undergraduate educational program has been a nightmarish task, particularly for the large institutions which have most recently been called mega-multiversities.

Current trends in higher education have also been influenced by factors beyond population growth, rising parental educational aspirations, and the growing demands of technology. For example, University Curriculum Committee members will recognize that their role has been made most difficult in light of the "knowledge explosion" and the resulting curriculum proliferation dilemma. Also, an increasing number of today's students question the adequacy and effectiveness of their educational experiences. Students seem to be asking, if not in some instances demanding, that their collegiate curriculum be relevant to their needs and times--relevant not only in terms of professorial presentations but also, and perhaps more importantly, that the total educational experience be social-action oriented.

Given the above conditions, change and innovation in higher education appear crucial. The Muscatine Report seems to highlight the situation confronting many institutions of higher learning when it states:

> For in this world of high-powered technology and of sweeping social and economic forces, the promise of the future is not stasis but accelerated change. The universities that survive and prosper will--like all other important institutions--be those which learn to preserve their integrity and stability while accepting change.[1]

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[1] Education at Berkeley, A Report of the Select Committee on Education, University of California (Berkeley, California: University of California Printing Company, 1966), p. 4.

Newcomb and Feldman, in discussing the need for change in higher education, have commented on the requirement for adequate forms of horizontal organizations within the larger universities. It is their belief that "size, in itself, of an institution devoted to higher education matters little providing that its internal organization is appropriate to its size."[2] However, they argue that at any given horizontal level absolute size does matter and further suggest that given the condition of local autonomy "new forms of organization invite, or at least facilitate, significant educational innovation."[3]

In recent years, Michigan State University has experimented with an educational structure new to its campus, the semi-autonomous residential college. Thus far, three such colleges have been organized. One of these is Lyman Briggs College which enrolled 224 students in its first freshman class in September of 1967. Lyman Briggs College was created to serve students interested in a liberal science-based education in the biological and physical sciences and mathematics.

Freshmen entering Lyman Briggs during the fall of 1967 were assigned to Holmes Hall, a coeducational residence

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[2]Theodore M. Newcomb and Kenneth A. Feldman, The Impacts of Colleges Upon Their Students, a Report to the Carnegie Foundation for the Advancement of Teaching (January, 1968), p. 309.

[3]Ibid., p. 310.

hall on the Michigan State campus. Briggs students typically roomed with other Briggs students and, in addition to the living arrangement, had the majority of their first year classes and laboratories along with faculty offices and the central administrative unit conveniently located in Holmes Hall.

Lyman Briggs College students were recruited by a self-selection process. Most potential Briggs students first learned about the college purposes and curriculum through brochures distributed to high schools by the Michigan State University Admissions Office. Also, during Summer Orientation, provision was made for students to visit with representatives from their first and second choice of major. Some students who were either completely unaware of the existence of Briggs College, or who were reserving judgment until they had talked to a representative of the College, changed their major at this time. The recruitment process was one, then, where students selected the College, rather than the College attempting to recruit any particular type of student.

Because Lyman Briggs is now only beginning its third year of operation, it would appear to be premature to evaluate its educational effectiveness. However, for the following reasons, it does seem appropriate to undertake an exploratory, descriptive study of the kinds of students who

elected Briggs rather than the traditional path of a major in the College of Natural Science:

1. Michigan State University has been a nationally recognized pioneer in undergraduate education. On July 1, 1944, it established the Basic College (now the University College) which provided a common educational experience for all students.[4] Recently, along with other institutions, Michigan State has made a very real innovation in undergraduate education with the development of residential colleges. However, these colleges may be continued only if they prove that undergraduate education is enhanced for those students who are enrolled in them. Ultimately, comparative studies will be made between Briggs College and the College of Natural Science. The question must be asked, "What kinds of students change in what kinds of ways following what kinds of experiences mediated by what kinds of institutional arrangements?" Comparative studies assume that there are no initial differences between groups so that until we know

   a. that students, in Lyman Briggs College and the College of Natural Science possess essentially similar selected characteristics

   or

   b. possess significantly dissimilar selected characteristics

   any comparative evaluation of the two colleges will be to some degree meaningless.

2. An understanding of student characteristics would seem essential if we are to provide the best possible educational experience. For example, knowing student characteristics should permit us to

   a. structure curricular and co-curricular programs to better meet the needs of our students and

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[4] Thomas H. Hamilton and Edward Blackman (ed.), The Basic College of Michigan State (East Lansing, Michigan: Michigan State College Press, 1955).

b. better provide counsel and advisement, at least in terms of allowing the individual student to determine the appropriateness of Lyman Briggs College for him.

3. During the decade of the 1950's Michigan State University, like many similar coeducational institutions, enrolled a disproportionately large number of males. However, the enrollment differential between men and women in the 1967 freshman class decreased from the earlier 55%-45% split observed in earlier years. Only 51.1% of the freshmen enrollment in the fall of 1967 were men.[5] This suggests that women should receive equal and separate treatment in the analysis of this study. Moreover, with the apparent insatiability of the manpower needs for our burgeoning technologically oriented society, it can reasonably be expected that women will play an increasingly important role. Consequently, an analysis of the Briggs females' affective and cognitive characteristics is appropriate in order to provide a clearer picture of their educational needs.

Statement of the Problem

The purpose of this study is to describe the kinds of students who elected to enroll in Lyman Briggs College during the fall of 1967, the first term of the new college's operation. More specifically, an attempt will be made to:

1. Determine in what ways Lyman Briggs College students are similar and/or dissimilar to other freshmen students interested in science and/or mathematics who elected to enroll in the College of Natural Science with regard to selected affective and cognitive characteristics.

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[5]Data Processing Report Showing Students by Majors (R5301) (Published by the Registrar's Office, Michigan State University, Fall Term, 1967).

2. Determine in what ways Lyman Briggs College male students are similar and/or dissimilar to Lyman Briggs College female students with regard to selected affective and cognitive characteristics.

Hypotheses

The following hypotheses are developed to provide clarity in determining the direction of this investigation:

1. Lyman Briggs College students can be differentiated from other freshmen students enrolled in the College of Natural Science on the basis of academic aptitude to do college work.

2. Lyman Briggs College students can be differentiated from other freshmen students enrolled in the College of Natural Science on the basis of Prince's Differential Value Inventory.

3. Lyman Briggs College students can be differentiated from other freshmen students enrolled in the College of Natural Science on the basis of the Trow and Clark subcultures used to determine student "personal philosophies."

4. Lyman Briggs College students can be differentiated from other freshmen students enrolled in the College of Natural Science on the basis of the following characteristics: (a) size of home community; (b) religious preference; (c) father's occupation; (d) father's education; (e) mother's occupation; (f) mother's education; (g) size of high school graduating class; (h) degree of participation in high school activities; (i) rank in high school; (j) own educational aspirations; (k) parents' educational aspirations; (l) importance of good grades; (m) organization of academic work; (n) prestige factors among students and faculty; (o) organizational preference; and (p) occupational preference.

Another important part of the study, although not stated in hypothesis form, will be to summarize why freshmen

who enrolled in Lyman Briggs College elected to do so. Finally, a questionnaire submitted to the second year students enrolled in Lyman Briggs College during Spring Term of 1969 will attempt to measure to what extent, if any, their occupational plans have changed since Fall Term of their freshman year.

Definition of Terms

Two very important terms used in the hypothesis and throughout the study should be defined.

Lyman Briggs College Student - The term "Lyman Briggs student," as used in this study, refers to those Michigan State University students enrolled in Lyman Briggs College Fall Term of 1967. All of these students were assigned to Holmes Hall which also contains the physical facilities of the College.

College of Natural Science Student - The term "College of Natural Science student," for purposes of this investigation, refers to first term students who had declared a major within the College of Natural Science and who were randomly assigned to residence halls throughout the Michigan State University campus. With the exception of first term freshmen who lived with relatives, were married, or were 21 years or older, all freshmen were living in undergraduate residence halls.

Scope and Limitations of the Study

There are certain limitations which should be identified in this investigation so that inaccurate generalizations may be avoided in the interpretation of the outcomes of this study.

1. The Lyman Briggs College sample used in this investigation is the College's first class. Because the College has not had the time to fully develop and implement its program, the possibility does exist that the selected affective and cognitive characteristics analyzed will not be representative of future Briggs' classes.
2. It is a matter of record that Michigan State University's admission policies have changed significantly within the past ten years. Similarly, the University's admission policies may change within the next ten years in a significant way. Should the admission policies undergo revision, there are obvious implications concerning the kinds of students who would be enrolling in both Lyman Briggs College and the College of Natural Science.
3. The findings of this study would have applicability to Lyman Briggs College only and would, therefore, have limited, if any, value in the investigation of other residential college student populations on the Michigan State campus or in other universities.

Overview of the Thesis

Chapter II is a review of the literature relevant to this study. The design and methodology is presented in Chapter III. The research findings are reported in Chapter IV; and Chapter V contains the summary, conclusions, and implications of the study.

CHAPTER II

REVIEW OF LITERATURE

The purpose of Chapter Two is threefold. First of all, certain characteristics of entering University freshmen and their relevance to the differential selection which occurs between students and institutions of higher learning are discussed. Secondly, the apparently growing cluster college and residential college concepts are reviewed; and finally, the chronological development of Lyman Briggs College is presented.

Variables Affecting the Self-Selection Process

It was suggested in Chapter I that Lyman Briggs College did not make a concerted effort to select a certain kind of student for admission to its program. Moreover, it was emphasized that the procedure for admission to the College, after having been accepted by Michigan State University, was essentially one of self-selection. However, as Reisman has indicated, student self-selection should not be viewed as involving a totally rational and fully informed

consideration of well-formulated alternatives.[1] Nevertheless, students and colleges do differentially select each other; and as Newcomb and Feldman have clearly stated, two important aspects of this selectivity are the intellectual ability and socioeconomic background of the student.[2]

A third variable worthy of at least equal attention to that given academic aptitude and socioeconomic factors is the affective behavior which a student brings to the University. Although he acknowledges that affective behaviors lack well-established meanings, Dressel lists five frequently used terms in defining affective behaviors. These terms are appreciation, attitudes, beliefs, interests, and values.[3] Although institutions of higher learning do not typically differentially select their student body on the basis of values and attitudes, they can influence the student's decision in determining which institution will be most appropriate for him.

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[1]D. Riesman, College Subcultures and College Outcomes in Selection and Educational Differentiation (Berkeley, California: Field Service Center and Center for the Study of Higher Education, University of California, 1959).

[2]Theodore M. Newcomb and Kenneth A Feldman, The Impacts of Colleges Upon Their Students, A Report to the Carnegie Foundation for the Advancement of Teaching (January, 1968), p. 105.

[3]Paul L. Dressel, Evaluation in Higher Education (Boston: Houghton Mifflin Company, 1961), p. 42.

Academic Aptitude

Ebel defines an aptitude test as "one given to determine the potential of an individual for development along a special line or the extent to which he is likely to profit from instruction along that line."[4] This definition is likely to be acceptable to most measurement experts. Increasingly, however, this definition seems to be useful only as a current measurement rather than as a genetically determined potential.

Freedman states that most psychologists who are interested in cognitive and intellectual development have regarded mental ability as relatively fixed by about age sixteen.[5] However, Freedman does not support this view and, on the basis of recent research, argues that intellectual ability "cannot be assumed to be fixed by the time of college entrance."[6]

Brookover and Gottlieb acknowledge that tests of intelligence and aptitude have been useful in distinguishing between individuals who learn certain types of behavior at varying rates. Nevertheless, they seem to support Freedman's claim that intellectual ability is not fixed by the time of

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[4]Robert L. Ebel, Measuring Educational Achievement (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1965), p. 445.

[5]Mervin B. Freedman, The College Experience (San Francisco: Jossey-Bass, Inc., 1967), p. 23.

[6]Ibid., p. 24.

college entrance when they state, "Scientific evidence does not support a common lay belief that elaborate patterns of behavior are rigidly fixed in the organism."[7]

Considerable attention has been properly devoted to the limitations of standardized tests. Nevertheless, it is quite reasonable to assume that the greater the high school student's abilities and aptitudes the greater the probability is for him to enroll and ultimately graduate from a university. Accordingly, it seems quite relevant to this study to investigate the cognitive differences, if any, between entering students in the College of Natural Science and Lyman Briggs College.

Socioeconomic Status

In addition to academic aptitude, socioeconomic status also contributes to college aspirations and attendance. Newcomb and Feldman, in reporting the results of several studies, reveal "that although intelligence and socioeconomic status are themselves partially correlated, each still makes an independent contribution to college aspirations and behavior."[8] Apparently, the various studies are somewhat inconsistent in identifying whether academic

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[7]Wilbur B. Brookover and David Gottlieb, A Sociology of Education (New York: American Book Company, 1964), p. 21.

[8]Newcomb, op. cit., p. 106.

aptitude or socioeconomic status makes the greatest contribution to a student's desire for higher education. However, Newcomb and Feldman report "that the higher the student's economic level as measured by father's occupation, the education level of one or both parents, and family income, or some combination of these the greater the likelihood is that the student will enroll in an institution of higher learning."[9]

There seems to be general agreement that certain other background characteristics have an impact upon the educational experience in some manner. Some of these variables which also relate to college plans include size of hometown, religious preference, race, size of high school graduating class, and size of family.

Because one of the purposes of this study is to investigate sex differences between students in Lyman Briggs College and the College of Natural Science and within Briggs College, it should be noted that a larger percentage of males than females in high school anticipate enrollment in colleges and universities. A number of studies reveal, however, that the differential between men and women planning for college narrows considerably as socioeconomic levels become higher.[10] This suggests that not only can daughters of

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[9] Ibid.

[10] Ibid., p. 107.

parents in the higher social and economic status afford a higher education but that it is expected by their parents and friends that they attend college.

A discussion of academic aptitude and socioeconomic status and their relevance to the decision to attend a given institution would be incomplete without reference to a theoretical model designed by Herriott to determine a given student's level of education aspiration.[11] The Herriott model proposes two factors--self-assessment and expectation--and each influences the level of educational aspirations within diverse socioeconomic contexts. In the Herriott model self-assessment refers to a student's perception of his own abilities and aptitudes and how they compare with other students in relevant reference groups. Expectation alludes to that behavior which is expected of the student by his significant others. Significant others refers to other persons who are in close contact with the student such as parents, friends, counselors, and teachers.

Herriott's model enables observers to explain the differential levels of educational aspiration in high ability students in terms of differential self-assessments. These self-assessments include such relevant characteristics as intelligence and financial ability. The model also helps

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[11]Robert E. Herriott, "Some Social Determinants of Educational Aspiration," The College Student and His Culture: An Analysis (Boston: Houghton Mifflin Company, 1968), pp. 105-120.

to explain the perceived differential expectations from significant others such as parents and friends that in turn affect a given student's decision to attend college. In other words, if parents and friends "expect" a student to attend college, this can be an important factor in determining whether or not a student will elect to enroll in an institution of higher education.

Affective Behaviors

As students differ in terms of their academic aptitudes and socioeconomic background, so do they differ with respect to their attitudes, values, appreciations, beliefs, and interests. Certain personality characteristics apparently are associated in varying degrees with socioeconomic status and intelligence. However, Newcomb and Feldman caution that it is unlikely that "differences in intelligence and socioeconomic background (or both) explain totally all differences in personality characteristics of entering student bodies."[12] Although college and university admission offices do not measure such individual affective or non-cognitive traits, they can influence the student's decision to enroll at a particular institution and his subsequent educational experiences. According to Stern, Stein, and Bloom, there is evidence that different types of colleges

[12]Newcomb, op. cit., p. 118.

and universities appeal to students with particular personality characteristics. Using the Activities Index (a measure of personality needs), they determined that colleges similar in nature (size, origin of support, and type of curriculum) seemed to have students with similar profiles.[13] It seems appropriate in this investigation to measure what differences exist, if any, between certain non-intellectual characteristics possessed by Briggs College students and students in the College of Natural Science who entered Michigan State University in the fall of 1967.

In recent years, several researchers have completed useful longitudinal studies with respect to students' personality characteristics. Lehmann and Dressel completed a study involving "the relationship between amount of college education and the degree and direction of change in stereotypic beliefs, dogmatism, and traditional value orientation."[14] The research was also directed at determining the differential role of sex in producing changes in the students' critical thinking ability, attitudes, and values. Their findings concluded that during the four years of college, and particularly the first two years, "students improved

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[13]George C. Stern, M. I. Stein, and B. S. Bloom, Methods in Personality Assessment (Glencoe, Illinois: Free Press, 1956).

[14]Irvin J. Lehmann and Paul L. Dressel, Changes in Critical Thinking Ability, Attitudes, and Values Associated with College Attendance (East Lansing, Michigan: Michigan State University, 1963), p. 39.

in critical thinking ability, possessed fewer stereotypic beliefs, and experienced a movement away from the traditional value orientation toward a more emergent value orientation."[15] The results of their study were considerably different from the widely distributed Jacobs Report which reported that the formal college experience did little to alter or form student values.[16]

Another well-known longitudinal study is that conducted by Trent and Medsker.[17] The primary means of gathering data for this investigation, in addition to questionnaires, was administering various scales of the Omnibus Personality Scale (OPI), a personality inventory, to students who had completed high school in 1959. The scales were administered to college bound youth as well as youth who were non-college bound. Five additional scales of the OPI were administered in 1963, but repetition of identical questionnaire items and personality scales made possible direct assessment of opinion and attitude changes between 1959 and 1963. A major finding of the study was that "young people not in college showed little or no personality

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[15] Ibid., p. 148.

[16] Philip E. Jacob, Changing Values in College: An Exploratory Study on the Impact of College Teaching (New York: Harper and Brothers, 1957), p. 11.

[17] James W. Trent and Leland L. Medsker, Beyond High School (San Francisco: Jossey-Bass, Inc., 1968).

development as measured by the instruments used."[18] The least flexible, tolerant, and intellectually disposed individuals were found among high school graduates who never attended college followed by college withdrawals.

In 1961 a Student Development Study was initiated by Katz and Associates.[19] This research was similar to the Lehmann and Dressel project in that it involved only entering freshmen students (at Stanford and the University of California). However, Katz and Associates used similar methodology to that employed by Medsker and Trent in terms of their utilization of selected scales of the Omnibus Personality Inventory.

In addition to selected scales from the Omnibus Personality Inventory, an experimental 54 item Attitudes to Drinking Scale was administered to freshmen at Stanford and Berkeley in 1961. These scales were readministered early in 1965 to over half the students who had taken the tests as freshmen and were still in school. Also, a 19 page Senior Questionnaire was administered to seniors at Berkeley and Stanford early in 1965.

The results of the OPI administered to the seniors include "a movement toward greater openmindedness and

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[18] Ibid., p. 36.

[19] Joseph Katz and Associates, No Time for Youth (San Francisco: Jossey-Bass, Inc., 1968).

tolerance with a corresponding rejection of a restricted view of life and humanization of conscience."[20]

However, as Korn emphasizes, the findings of personality scales should be viewed with caution, "while at the same time attempting to interpret and understand our own results."[21] The methodological issues involved in accounting for behavior change are indeed complex, yet crucial questions need to be answered to have a complete understanding of the impact of the collegiate experience upon divergent types of entering students and their development.

It would appear that increasingly colleges and universities are administering psychological inventories to entering freshmen and repeating the same testing at later points in the students' college careers. And while it seems the importance of studying the interrelationships between personality characteristics and the college experience is growing, considerable concern must be expressed over the methods of study employed by the researchers and the subsequent interpretations of the investigations.

The Residential College

In Chapter I the need for adequate forms of new horizontal organizations on large university campuses was

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[20] Ibid., p. 168.

[21] Ibid., p. 184.

discussed. Included within the new organizational patterns found on some campuses today is that of the residential college. However, the residential college concept is not a new one. Rather, it represents a pattern that was established seven centuries ago in Great Britain. It has been suggested by Lord Redcliffe-Maud that the first residential college was located at University College, Oxford in 1249.[22] Lord Maud, who is presently serving as the Master of University College at Oxford, reports this occurred when a group of English scholars whom the French king had expelled from the University of Paris took up residence in the Magna Aula Universitatis, the Great Hall of the University.[23] The close relationship which developed in the academic community between the "dons" who taught ten Masters of Arts students exemplified the personal interaction desired between students and teachers in the medieval universities. Shafer and Ferber in their analysis of residential college concepts also allude to the close relationships which were found "in the

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[22]Lord Redcliffe-Maud, "Oxford and the Collegiate University Idea," "The Conference on the Cluster College Concept," Journal of Higher Education, Vol. XXXVIII (October, 1967), p. 377.

[23]Ibid.

fourteenth century between student instructional and living experiences."[24]

Factors Influencing the Development of Residential Colleges

Within this century, and particularly during the decade of the 1960's, the development of residential colleges has been influenced by two related trends. First, a rather remarkable evolution regarding the housing of students on university campuses has found dormitories moving successively to residence halls to living learning centers and now to residential colleges. The housing of students has grown, according to Shaffer and Ferber to "places where living and academic learning experiences have been systematically fused by application of learning theory, of research in the behavioral sciences, and of advances in administrative organization."[25] The economic efficiencies which have been introduced have also helped to popularize the development of residence halls as learning centers which include classrooms, laboratories, and faculty offices.

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[24]Robert H. Shaffer and Daniel A. Ferber, The Residential College Concept: Campus Organizational Patterns for Quality With Quantity (Bloomington, Indiana: Bulletin of the School of Education, Indiana University), XLIV, No. 3 (May, 1965), p. 5. Authors quote Hastings Rashdall, The University of Europe in the Middle Ages, III, pp. 511-529.

[25]Paul Woodring, "The Idea of Cluster Colleges," Saturday Review (January 21, 1967), p. 81.

The second trend seems to evolve from the decentralization of academic administration which has occurred on large multi-purpose campuses. This trend has in part been influenced by the subcultures which have been found at large universities. Kafer has reported "that college or academic major and residence halls are two of the prominent reference points within which subcultures form on the college campus."[26] The residential college located in a given residence hall emphasizing related academic majors represents a pattern of organization which can more fully utilize the influence and potential of the student subculture in providing for a more efficient educational process.

Rationale for Residential Colleges

The decentralization of academic administration has also been influenced by the apparent need to offer students a more "personalized" educational experience. Ideally, a sense of community between students and faculty will emerge in which the members can know each other as whole persons. Baker Brownell observes that members of such communities will have lives which "are not fragmented or anonymous."[27]

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[26]Lowell Gene Kafer, "An Analysis of Selected Characteristics and Experiences of Freshman Students in the Michigan State University Justin Morrill College" (unpublished Ph.D. dissertation, Michigan State University, 1966), p. 128.

[27]Baker Brownell, "Higher Education and the Community: The Identification of Learning with Living," Journal of Higher Education, XXX (December, 1959), p. 475.

Paul Woodring also feels residential colleges offer the potential for restoring a "sense of community" within the institutions of higher learning. Moreover, he contends that much needed status will be returned to those who teach undergraduates. Woodring believes that residential colleges will:

> refocus the emphasis on undergraduates and the men and women who teach them. At a time when the status symbols of academia are rigged against teaching, it again makes the teaching of undergraduates an honored vocation for scholars.[28]

A somewhat different, but nevertheless interesting, rationale offered for the development of residential colleges is that proposed by the Educational Policies Committee of Michigan State University. In identifying the rationale for the advent of Lyman Briggs College, the Educational Policies Committee emphasized the curriculum implications of such a program when it stated:

> Although the major argument for the formation of small colleges within a large land grant University is a growing need for social identity among the undergraduate student body, EPC feels that the major justification for a science-oriented college is need for a particular kind of academic program. Although it is conceivable that existing departments could provide an equivalent program, the committee feels a new, small, science-oriented college could provide an excellent program in minimal time and more efficiently than through existing structures.[29]

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[28]Woodring, op. cit., p. 81.

[29]"Some Comments, Guidelines and Recommendations for the Proposed Science Oriented College II," written by the Educational Policies Committee of Michigan State University, April 21, 1966, p. 4.

Although other explanations can be found, current literature seems to suggest three primary reasons for the development of residential colleges:

1. The opportunity to provide a more "personalized" educational experience wherein students and faculty can together share in the establishment of a climate of learning which is within, yet extends beyond, the college's classrooms and laboratories.

2. An obvious indication that a given institution not only values undergraduate education but moreover is willing to allocate considerable human and physical resources to the undergraduate program.

3. It provides a structure which is more conducive to academic innovation than might otherwise be found in the traditional departmental heirarchy with its compartmentalization of knowledge and specializations.

Organizational Patterns of Cluster Colleges and Residential Colleges

In addition to a variety of reasons offered for the establishment of residential colleges, considerable diversity of organization patterns also exists in these small colleges. Clearly, the literature relevant to this topic suggests that any attempt to operationally define a residential college will encounter considerable difficulty. This should not be surprising for it has often been observed that higher education is an enterprise blessed and plagued by problems of definition.

One source of confusion seems to occur because the term "residential college" is often used interchangeably with the term "cluster college." For purposes of this study,

the "cluster college" concept will refer to those institutions which are located within close proximity of each other and which share various physical and human resources for economic and educational purposes. The term "residential college" will be used to describe a new collegiate program within an already existing university. The program will typically be under the direction of a Dean, enroll a relatively small number of students (500-1200), concern itself with the liberal arts or related academic majors, and will be located in a given residence hall or residence hall complex. The faculty will typically be on joint appointment from their parent department.

Kells and Stewart suggest three organizational patterns for starting a new college or unit in a cluster.[30] They are:

1. One independent college produces a second
2. A university builds by collegiate units
3. A university adds units

Although these organizational patterns are obviously incomplete, they do provide a useful reference point for further discussion of "cluster colleges" and "residential colleges."

The first organizational pattern suggested by Kells and Stewart provides a means of identifying the Claremont Colleges, the American pioneer of the cluster college concept.

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[30]Herbert R. Kells and Clifford T. Stewart, "A Summary of the Working Sessions," "The Conference on the Cluster College Concept," Journal of Higher Education, XXXVII (October, 1967), p. 359.

Although there was more than one independent college involved, a newly created superstructure came into existence. The Claremont group of colleges in Claremont, California, were consolidated in 1925 and patterned after the well known Oxford University group. They organized as "a group of independent but cooperating colleges" which would "share a library and other central facilities and services."[31]

Another example of an independent college being joined by a second is illustrated by the emergence of the "Hamilton Group." Hamilton College, located in Clinton, New York, has been joined by Kirkland College which serves as a four year liberal arts college for women.[32] This alliance has been initiated, among other reasons, as a result of economic considerations and to promote educational innovation which could not otherwise occur if each institution were separated geographically.

An example of how a university expands by the addition of collegiate units is the Rutgers Federated Colleges Plan. Three medium-sized colleges enrolling approximately 3500 students will ultimately be built adjacent to and in federation with Rutgers College and Douglas College. These colleges will be coeducational and will feature interdisciplinary curriculums.[33]

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[31] Ibid.

[32] Ibid., p. 361.

[33] Ibid., p. 362.

Perhaps the most widely publicized university effort to be structured by the addition of collegiate units is the University of California at Santa Cruz. Included within the basic plan at Santa Cruz is a distribution of fifteen to twenty residential colleges located within a fifteen minute walking circle. The central campus contains a main library, science facilities, and an audio visual aids center. Jarrett reports:

> The Santa Cruz answer is to provide collegiate units in which every student is known to every other student and to every member of the faculty . . . the monolith is combatted not by the multilith but by the provision of quasi-autonomous colleges each with its distinctive architectural and academic style.[34]

Another interesting development is the Connecticut River Valley co-operative project which has culminated in the establishment of Hampshire College.[35] This project would seem to fit in either category one or two of the Kells and Stewart model. Members of the Connecticut River Valley Project include Smith College, Amherst College, Mt. Holyoke College, and the University of Massachusetts. This cluster college movement is motivated by the belief that Hampshire College provides a rich opportunity for curricular innovation and that smaller units provide better educational experiences for students.

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[34]James L. Jarrett, "Santa Cruz After One Year," Saturday Review (January 21, 1967), p. 67.

[35]Kells, op. cit., p. 362.

The third organizational pattern of cluster college development identified by Kells and Stewart wherein a university adds units within the existing structure of its campus seems appropriate for broadly describing the development of residential colleges on large multi-purpose universities. However, the use of the term "cluster colleges" loses much of its significance when describing the development of residential colleges on university campuses. In the types of cluster college development previously discussed it was apparent that one of the most impressive characteristics was the close cooperation between the sponsoring institution or association of colleges and the newly established program. Although residential colleges located on the same university campus have many similar concerns, rarely do they engage in the kinds of cooperative practices found in the Hamilton Group, the Rutgers Federated Colleges Plan, or other examples given as cluster colleges.

In addition to the residential colleges at Michigan State University, other institutions within Michigan experimenting with one or more residential colleges are the University of Michigan, Wayne State, and Oakland University.[36]

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[36] The University of Michigan, The Residential College 1969-70 Official Publication, a supplement to the announcement of the College of Literature, Science, and the Arts, Vol. 70, No. 22 (Sept. 9, 1968); The Charter College of Oakland University (a brochure); and W. Hugh Stickler (ed.), Experimental Colleges (Tallahassee: Florida State University, 1964), pp. 145-156.

The University of Michigan opened its first residential college in August, 1967, and has plans for establishing several more in the coming years. Wayne State University, through the financial assistance of the Ford Foundation, developed Monteith College, a semi-autonomous unit within the urban institution. Oakland University has introduced two residential programs to its campus, Charter College and New College.

Some other institutions which have experimented with new forms of horizontal organizations involving residential colleges include Florida State University, the University of Virginia, University of Massachusetts, and Southern Illinois University.[37] While these experimental programs vary in terms of curriculum emphasis, they are alike in that each has considerable autonomy in planning and administering the internal affairs of the college. Other similar characteristics of each program include a relatively small number of students compared to the larger university with the residence hall serving as the focal point for blending the curricular program with co-curricular activities.

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[37] Stickler, ibid., pp. 157-171; Victor J. Donilov, "Exciting Experiments in Higher Education," Phi Delta Kappan, Vol. 41 (February, 1960), pp. 221-224; H. Leland Varley, "A Small College Within a University: Orchard Hill Residence College," Christian Scholar, L (Summer, 1967), p. 102; and Brownell, op. cit., p. 480.

Michigan State University Residential Colleges

Michigan State University introduced its first residential college to its campus in the fall of 1965. The new experimental program was named Justin S. Morrill College in honor of the father of the Land-Grant Act. The purpose of Justin Morrill was to provide for a liberal education in the humanities, social sciences, and the sciences with the integrating theme of International Understanding and Service.

The Justin Morrill venture led to the establishment of two other residential colleges on the Michigan State campus. James Madison and Lyman Briggs each enrolled its first class in September of 1967. James Madison provides a four year liberal arts program leading to a Bachelor of Arts degree in the social sciences. Lyman Briggs College offers a four year program culminating in the Bachelor of Science degree in the sciences and mathematics.

The three residential colleges enjoy administrative and budgetary autonomy. However, because most faculty associated with the residential colleges hold joint appointments with their parent department, the colleges should be properly referred to as semi-autonomous in terms of their relationship to the larger University.

Lyman Briggs College

Lyman Briggs College was approved by the Board of Trustees as an official component of Michigan State University on October 20, 1966. However, it was not until February 16, 1967, that College II, as it was initially designated by the Provost on May 28, 1965, became Lyman Briggs College. Lyman Briggs was a distinguished alumnus of Michigan State University who had been a long time Director of the National Bureau of Standards and served as the first Chief of the Manhattan Project. It seems appropriate in this study to in some detail chronologically develop the planning involved in the creation of the College. Attention will be primarily given to the guidelines and recommendations prepared by two University committees responsible for assisting in the structuring of the College. Discussion will also be directed to the College faculty, curriculum, and physical plant. Formalized peer group learning, another aspect of the College, while not a new concept in higher education is also worthy of inclusion in this chapter. The following discussion has been prepared from several publications which are available in the College files.[38]

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[38]"Byerrun Ad Hoc Committee Guidelines for College II"; "Some Comments, Guidelines and Recommendations for the Proposed Science Oriented College II," written by the Educational Policies Committee of Michigan State University, April 21, 1966; "Proposed Curriculum for Lyman Briggs College," submitted by Lyman Briggs College Planning Committee to the University Curriculum Committee, April 6, 1967; "Lyman Briggs

The Planning of Lyman Briggs College

On May 28, 1965, Provost Dr. Howard R. Neville announced plans for a second small college on the Michigan State University campus. In the fall of 1965, Dr. Richard U. Byerrum, Dean of the College of Natural Science was appointed Chairman of an ad hoc committee which was responsible for preparing guidelines for the development of the small college organized to serve students interested in science and mathematics. On December 15, 1965, the Byerrum Committee presented the following guidelines to Provost Neville, who in turn distributed them throughout the University for faculty reaction.[39]

Byerrum Committee Guidelines for College II

1. The basic purpose of College II is to provide a rigorous liberal education in the humanities, the social sciences and mathematics and the natural sciences, with mathematics and the Natural Sciences to be emphasized.

2. Liberal education should be insured by requiring the students to undertake studies organized to lead to some depth of understanding of a few significant ideas rather than a superficial acquaintance with many elementary concepts. There should be a

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College Program Planning Handbook," Second Edition, Fall, 1969; and "Lyman Briggs College Annual Report, 1967-68 and 1968-69."

[39]Verbatim Report of the 1965 "Byerrum Ad Hoc Committee Guidelines for College II."

systematic program of courses in the humanities and social sciences. To the end that it be related to the scientific curriculum of the college, this program should include courses dealing with such matters as the logic and philosophy of science, the history of science, and the interactions of science and society.

3. Liberal education should include a sequence of studies leading in orderly fashion to depth of understanding of a specific field of concentration. Such sequences can be found in departmental major programs and other programs involving work in several related disciplines.

4. The total program should include provision for free selection by the student of a substantial amount of course work, as well as a required core curriculum and a "concentration" sequence.

5. An important goal of College II is to facilitate excellent preparation for certification as a secondary school teacher, especially of scientific subjects.

6. College II should be housed in a living-learning unit in close association with the faculty of the college. It is hoped that this arrangement and a program of co-curricular activities (e.g., dramatics, popular lectures, athletics) to be devised by the College will foster growth among the students and faculty of a strong sense of community. The number of students enrolled in the College will affect the development of this sense of community and the quality of the total educational experience the College provides. For this reason efforts should be made by the administration and faculty of College II to determine the optimum figures for enrollment and to adjust the yearly influx of students so that this optimum is approached. It is suggested that the first few freshmen classes be limited to 250-400 students. In academic ability and in the ratio of men to women, the student body of College II should be representative of the total student population of the University. To maximize their involvement in the College II community, students should be encouraged to live in the College during all four years of their undergraduate studies. Consideration should be given to providing within the college living-learning unit: library facilities, certain kinds of counseling

services, and some core-course laboratories--again with a view to strengthening the community spirit of the students.

7. College II is to innovate and to "learn by doing" in the areas of curriculum, teaching, and administration.

8. The program of College II is to complement rather than duplicate existing University programs.

9. This committee suggests that federal agencies, such as the National Science Foundation, and certain private foundations, might be interested in providing funds for College II because of the importance, relevance, and novelty of some of its goals and programs.

Factors Influencing Implementation of the Guidelines

Concerning Instructional Methods

1. A major responsibility of the faculty of College II will be the development of new materials and means for facilitating student learning as well as the incorporation in their teaching of the best existing materials and means to achieve this goal.

2. The college should emphasize independent study and investigation and the preparation of oral and written reports.

3. A comprehensive and thorough advising system is to be developed.

4. College II should give careful thought to procedures used for examining students and evaluating their work.

University Requirements

5. The minimum number of credits required for graduation is to conform with the requirements of the University.

6. The core courses in College II shall give evidence of special concern for general and/or liberal

education. The college should give careful consideration to adopting existing general education courses. In particular, if the college should decide to omit or modify some or all of these courses, it should insure that the expressed goals of these courses are realized equally well.

Other Relationships with the University

7. The curriculum is to be developed by the faculty of College II and submitted through the usual University channels. This committee recommends that the curriculum reviewing agencies of the University faculty be approached in advance of the organization of College II in order to establish procedures which will facilitate curricular experimentation by the college.

8. In general, members of the faculty of College II are to be appointed jointly by the college and by a department of the University. The fractions entering into each such appointment are to be approved by the faculty member in question, the Chairman of his Department, and the Dean of College II.

Curriculum Structure and Organization

Core Courses

1. Core courses should comprise a significant portion of the curriculum and should be required of all students. Circumstances under which advanced placement may be arranged should be specified.

2. Independent work of some kind, to be described in a senior essay, should be initiated as early as possible in the student's undergraduate program.

3. In the senior year, every student should participate in a capstone course or seminar which will assist him to organize what he has learned and to appreciate how much there is yet to be learned.

Foreign Languages

4. This committee strongly recommends that every College II student be required to study one modern foreign language for at least two years at the University level. We believe that acquiring some degree of mastery of a foreign language is an important part of liberal education and preparation for responsible citizenship. Mastery of a language implies the ability to read, write, speak, and understand the language, and we doubt the advisability of emphasizing one of these skills at the expense of another. Mastery of one foreign language is better than superficial acquaintance with two.

   Students of College II who have studied a foreign language should be encouraged to perfect their knowledge of that language, not to undertake a new language to satisfy the College II requirement. In the event that the College II Curriculum Planning Committee finds that requiring two years of a foreign language would force them to eliminate from the curriculum studies they deem more important, they are not bound by our recommendation. We believe that requiring one year of foreign language study is better than requiring none, and that whatever requirement may be established, College II students should be advised to continue their studies of at least one foreign language until they have some degree of mastery of that language.

English Language

5. Throughout the College II program, speaking and writing English well should be emphasized. Insofar as practical, the grammar and style of every paper written by a student should be criticized.

6. Every student of College II should be required to demonstrate his competence in writing and speaking English before he is awarded a degree.

After the Provost had received and compiled reactions to this report, they were presented along with the College II Guidelines proposed by the Byerrum Committee to the University's Educational Policies Committee in March, 1966.

The Provost requested that members of the Educational Policies Committee make further suggestions regarding the development of College II. On April 21, 1966, the Educational Policies Committee adopted and approved the following recommendations:[40]

Educational Policy Committee Recommendations

The EPC agrees that three essential steps should be taken before it can make final recommendations about College II. These steps involve at least two important aspects: additional planning and controlled experimentation to assure quality. We recommend, therefore, that the following steps be considered before a small science-oriented college is created. We recognize also that the recommendations for College II could serve as a general procedure for further semi-autonomous colleges which may be developed.

Procedural Recommendations

Step 1. EPC recommends that the Provost immediately appoint a small planning committee for College II. The chairman should report and be responsible to the Dean of the College of Natural Science during this intermediate planning period. The remaining committee members should be faculty who would anticipate teaching in College II. If at all possible, this small group should be allowed to devote full time to their deliberations concerning the future academic program and structure of College II.

Step 2. Since College II should possess an experimental aspect, the Planning Committee should delineate the kinds of experiments that would be pursued and propose methods for their analysis. In short, EPC feels that experimentation implies careful control that permits growth in new ways but with a definitive direction.

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[40]Verbatim Report of the 1966 Educational Policies Committee of Michigan State University, "Some Comments, Guidelines and Recommendations for the Proposed Science Oriented College II."

Step 3. The Planning Committee should determine how College II could provide a science curriculum whose quality is equivalent to courses currently offered in the professionally-oriented science departments.

Additional Guidelines for College II

The EPC feels that the College II Guidelines are insufficient in certain aspects, and a rationale for College II has not been documented. In the following paragraphs we provide what appears to be the best rationale for College II and some constructive guidelines based upon the total feedback to the Committee.

Rationale

Although the major argument for the formation of small colleges within a large land grant university is a growing need for social identity among the undergraduate student body, EPC feels that the major justification for a science-oriented college is need for a particular kind of academic program. Although it is conceivable that existing departments could provide an equivalent program, the committee feels a new, small, science-oriented college could provide an excellent program in minimal time and more efficiently than through existing structures.

This college could have a preliminary or preparatory program for students who desire to specialize in areas such as law, business, political science, and provide a terminal preparation for scientific occupations at the junior scientist level. In addition, it is suggested that the program could be suitable for the preparation of secondary school science teachers. EPC believes that the courses should be presented at the same level of excellence as existing science courses but should have a broader and less specialized goal in mind. Those students who plan specialized careers in chemistry, physics, mathematics, biology, etc., should be advised to pursue the particular departmental program available in these areas.

College II could provide the faculty with an opportunity for controlled experimentation in the development of science-oriented curricula and in the methods of teaching science.

Although it is not a major rationale, the potential for improved identity of the student is inherent in the structure of College II.

The Faculty

EPC recommends that the faculty for College II hold joint appointments in the faculties of the existing departments. The objective is to insure maximum coordination and communication with existing departments and excellence in the College II staff. Better opportunities for research could be provided by this association and involvement of the departments during the intermediate planning and could improve the existing attitudes towards College II. It is recommended that first appointments be from tenured staff in the departments of the College of Natural Science.

Since teacher education is to be an important function of College II, the College of Education, and in particular the Science and Math Teaching Center, should be consulted by the Planning Committee in the development of the College and its program.

The Chairman of the Planning Committee and an initial faculty should be identified immediately and charged with the responsibility of delineating the purposes, programs, and curricular organization of College II and present the results of their deliberations to EPC for a final recommendation.

Curriculum

A four-year curriculum should be developed and approved through regular university channels before students are accepted. The faculty should be encouraged to plan and perform controlled experiments in the science and science-education parts of the curricula but should use the University College and existing University courses in areas outside of science.

Selected scientific areas should be explored in sufficient depth to educate the student in the methods of scientific thought, analysis, and investigation.

Experimentation should be directed toward the curriculum and the methods of teaching but the established rationale and purposes of the College should be maintained.

Students

Realistic and rational entrance requirements based on the science curriculum should be set and students selected on this basis.

Guidelines for student transfer in and out of College II should be determined in the initial planning.

Schedule

In view of inherent difficulties in establishing a laboratory program and to provide time for a well conceived and thoughtfully prepared plan, the EPC recommends that College II not be put into operation before the fall of 1967.

College II Planning Committee

In accordance with the first procedural recommendation made by the Educational Policies Committee, Provost Neville appointed a small planning committee for College II. Dr. Frederic B. Dutton, Director of the Science and Mathematics Teaching Center was appointed the Committee's chairman. Other members of the committee consisted of senior faculty members and included John E. Cantlon of Botany, James L. Fairley of Biochemistry, Emanuel Hackel of Natural Science, Michael Harrison of Physics, Frederick Horne of Chemistry, Gerald Massey of Philosophy, Lee Shulman of Education, William Stellwagen of Psychology, and Marvin Tomber of Mathematics. Many of these faculty members had served on the Byerrum Ad Hoc Committee and had brought to the Planning

Committee a sense of dedication and thoughtfulness which was of great value in the launching of Briggs College.

On December 6, 1966, the Planning Committee, whose chief responsibility was to develop the academic program, held its first meeting. Throughout the next six months Dr. Dutton kept the University community well informed regarding the committee's efforts to structure College II's academic program. Formal progress reports were given to and approved by the following University groups:

March 9, 1967 Educational Policies Committee

April 6, 1967 University Curriculum Committee

May 24, 1967 University Senate

College II officially became Lyman Briggs College on February 16, 1967, and Dr. Dutton was officially appointed by the Board of Trustees as the College's Dean effective July 1, 1967.

The Planning Committee under the direction of Dr. Dutton had by the middle of the summer in 1967 determined the College's objectives and adopted an initial curriculum. The curriculum proposal, as indicated earlier, had received approval from the EPC and University Curriculum Committee in detail for the first year and in principle for subsequent years. Dean Dutton requested that each member of the Planning Committee remain affiliated with the College as a Lyman Briggs Fellow, and each indicated his willingness to serve in this capacity. Whatever success the College may have enjoyed

during its first two years of operation has been, in part, due to the efforts of the Fellows of Lyman Briggs College whose affiliation with the development of the program initially began with their appointment to the Byerrum Ad Hoc Committee. As a result of these faculty members' personal commitment to this experimental program, considerable continuity was achieved in the planning for and implementation of Briggs College.

Curriculum

The Lyman Briggs College Planning Committee, under the direction of Dean Dutton, followed the curriculum recommendations of the Educational Policies Committee and the Byerrum Committee quite closely. The EPC encouraged Briggs College to develop a four-year curriculum which would be approved by the University Curriculum Committee prior to the enrollment of the College's first class. Although one major sequence, the coordinated physics-chemistry program, has been added to the College's present curriculum structure, few modifications have been made from the initial proposal approved by the University.

The Byerrum Committee suggested that the courses comprising the core program (courses taken by all Briggs students dependent upon placement examination results and advanced placement credit) give special concern for general and/or liberal education. Accordingly, one of the objectives

of Briggs is to provide its students with an education in the sciences characterized by excellence and balanced by the inclusion of an unusually large segment of the components of a liberal education. The College's present core program is listed below.

Course Area	Quarter Credits
Mathematics (thru LBC 113)	15
Computer Science	3
Chemistry	8-12
Physics	12
Biology	10
Social Sciences	12
Humanities	12
History of Science, Logic and Philosophy of Science	12
Third Culture Rhetoric	6
Senior Seminar	6
Total	96 - 100

Michigan State University requires that each undergraduate complete 180 credit hours plus three credit hours of health and physical education course work. Students who are enrolled in Lyman Briggs College may complete an academic major from any department within the College of Natural Science with the exception of Nursing. However, students may also graduate from Briggs by completing a field of concentration which differs from a traditional departmental major in that it requires only 32 credit hours. In effect, this expands the number of elective credits available to students who graduate with a field of concentration. Elective credits may be used to achieve balance between science and

non-science course work or to provide greater depth in one or more science areas. The illustration below demonstrates the distinction between the departmental major and the field of concentration.

Dept. Major (B.S.)		Field of Concentration (B.S.)	
Briggs Core Program	96	Briggs Core Program	96
*Dept. Major	45-60	Field of Concentration	32
HPR	3	HPR	3
Elective Credit	39-24	Elective Credit	52
Total	183	Total	183

*Departmental major requirements of Bachelor of Science degrees typically range between 45 and 60 hours. Interdepartmental majors earning the Bachelor of Science degree must complete 70 credit hours. Students earning Bachelor of Arts degrees in the sciences will have fewer credits in their major, typically ranging between 40 and 45 credits. Students graduating from Briggs will all earn a Bachelor of Science degree.

The six fields of concentration available in Briggs College, accompanied by a brief description, are listed below:

1. Biology - Thirty-two credits in biological science courses in addition to the core curriculum with at least one course from each of the following areas: genetics, developmental biology, comparative physiology, and ecology or population biology.

2. Earth Sciences - Meteorology (IDC 432-433), Astronomy 217 or 319, Physical Geology 201, Historical Geology 202, and 16 additional credits from 300 and 400 numbered courses in geology, oceanography, and soil science.

3. Environmental Sciences - Mathematics through the calculus sequence (LBC 215), a course in probability and statistics. Biological Science 212, and a minimum of 20 credits in 300 and 400 numbered courses selected by the student in consultation and with the approval of his advisor from biology, geology, meteorology, or engineering.

4. History and Philosophy of Science - Thirty-two credits in the philosophy and history of science in addition to the core program and approved by the academic advisor. When appropriate, a portion or all of the six (6) seminar credits may be counted. Physics 294 and 395 or completion of 10 hours in biological science (beyond the core program) are required. A course in astronomy is recommended.

5. Mathematical Sciences - Mathematics through the calculus sequence (LBC 215) and 30 credits from 300 and 400 numbered courses. Some substitutions may be permitted from philosophy, statistics, and physics courses.

6. Physical Sciences - Mathematics through the calculus sequence (LBC 215) and a minimum of 22 credits at the 300 and 400 level chosen from courses offered in the departments of chemistry, methematics, and physics.

Students who have indicated an interest in completing only a field of concentration have been primarily interested in professional schools such as law, medicine, and dentistry. Also, other students who have opted for just the field of concentration have expressed interest in securing a Master of Business Administration degree. Those students interested in secondary teaching, as well as those who are committed to careers as professional scientists, have selected majors available in the College of Natural Science. Students who have elected majors will, by virtue of the number of credits required for a major, automatically complete a field of concentration.

Faculty

Dean Dutton organized his faculty recruitment efforts along the lines suggested by the Byerrum Committee and the

Educational Policies Committee. Therefore, with the exception of the Dean and one other administrator, all other faculty appointments were joint appointments made by Briggs College and by a department of the University. Briggs College, during its first year of operation, was served by twenty-eight different faculty members of the University involving slightly over ten full-time equivalents of effort.[41]

One further observation concerning the appointments of faculty to a science based residential college seems appropriate. Inherent in joint appointments to a residential college and a University department is the requirement that faculty must divide their time between at least two geographical locations. In the sciences this problem is somewhat intensified in that departmental research facilities are typically located adjacent to departmental offices. Science faculty will generally prefer to spend their out-of-class time on research efforts in a facility which is removed from the residential college site. In effect, this not only removes the faculty member physically from the residential college but also psychologically.

If the science-oriented residential college is to achieve optimum success, procedures and policies must be developed which will permit individual faculty members to

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[41]"Lyman Briggs College Annual Report, 1967-68."

identify closely with the College without becoming isolated from their parent departments and disciplines.

Physical Facilities

Briggs College is housed in Holmes Hall which was opened in the fall of 1965 and was constructed to serve as a living-learning unit. It was initially occupied by the Science and Mathematics Teaching Center and was reasonably well suited to serve a science-oriented residential college. Some modification of laboratories has taken place to better serve the introductory courses offered in biology and the coordinated physics-chemistry sequence. The large lecture room which can accommodate approximately 150 students has been remodeled. It is now a raised seat lecture facility which will allow students to see more clearly the various experiments conducted by their instructors. In addition to four other classrooms and faculty offices, three teletype consoles are located in the computation room on the first floor of Holmes Hall. A college library is located on the ground floor.

The Byerrum Committee suggested that Briggs College be housed in a living-learning unit in close association with the faculty. Holmes Hall has served this purpose quite well and provides a physical arrangement in which a growing "sense of community" can be realized by students, faculty, and administration alike.

Peer Group Learning Project

One of the most promising developments in Lyman Briggs College has been the inception of a program called the Peer Group Learning Project. Dean Frederic B. Dutton perceived the residential college as an appropriate structure for formalizing the process in which students help other students with academic problems. This process of students helping other students has been called Peer Group Learning, and most observers believe that both the "helper" and the "learner" benefit from the interaction.

The residential college provides a desirable framework for peer group learning in that students with similar academic interests are housed together. Implementation of Dean Dutton's proposal began with the careful selection of ten Briggs students (6 men and 4 women). These students were chosen by the faculty on the basis of both their academic expertise and personal characteristics. While it was important that each student had proven himself academically it was equally desirable that they possessed the ability to relate well to their peers. The group was quite diverse in terms of their individual academic competence and covered such disciplines as biology, chemistry, mathematics, physics, and English composition. Each Peer Group member was assigned to one of the ten houses in which Lyman Briggs students lived in Holmes Hall. This assignment insured that each Lyman

Briggs student had a member of the Peer Group Project readily available to him.

It should be noted that the Peer Group Project is not to be viewed as simply a tutorial program. While students can receive help with specific course problems, the objective of the program has been expanded beyond that of duplicating the tutorial services which are available elsewhere on campus, notably those administered by departmental offices. Rather, Peer Group members have been helpful in their contacts with students who have general academic concerns and problems such as poor study habits and negative attitudes toward their collegiate experience. Also, Peer Group members have proven to be a valuable source of referrals. In a number of instances they have been able to identify students who articulate academic concerns which are merely a camouflage for other issues and concerns. Some of the observed underlying concerns include personal problems ard a variety of emotional and psychological needs. Finally, many students express apprehension concerning the asking of "simple" questions related to subject matter recently covered in class. Peer Group members have helped students with this problem by assisting them in formulating appropriate questions for discussion with their instructors. The outcome of this assistance has been to facilitate faculty-student instruction rather than eliminating it.

In addition to the primary purpose of relating to students' general academic concerns, Peer Group members have proven to be quite valuable as consultants to the College's administration. Project members have frequently offered valuable advice and counsel concerning the College's curriculum development as well as providing student feedback regarding the overall progress of the Lyman Briggs program. In addition to enhancing the learning efficiency of the Briggs student body, the Peer Group Project seems to offer a program which will increase the "sense of community" found among Briggs students, faculty, and administration.

Members of the Peer Group Project are reimbursed by the College. However, funds for supporting this experimental venture have been made possible by a grant from the Camille and Henry Dreyfus Foundation. Assuming the potential uses of peer group learning are realized as a supplementary vehicle to the formal instructional effort, the program will likely become an integral part of Lyman Briggs College.

Undergraduate Teaching Assistants

Another experimental program which has been introduced in Briggs College is the Undergraduate Teaching Assistant program. It is believed that some of the outstanding Briggs students have the competence and enthusiasm to serve as Undergraduate Teaching Assistants and that they can and will provide as good or better instruction than the

average Graduate Teaching Assistant. The potential for this program will become clearer as the College implements its four year program.

Summary

The purpose of this study is to determine the kinds of students who were initially attracted to Lyman Briggs College. Moreover, the study intends to investigate, in what ways, if any, students who enrolled in Lyman Briggs differed from those who selected the College of Natural Science, the traditional path for students interested in mathematics and sciences at Michigan State University. This research is also directed at determining the differential role of sex, if any, between Lyman Briggs and the College of Natural Science as well as within Briggs College.

The procedure for admission to Briggs College after enrolling at Michigan State University is essentially one of self-selection. However, current research suggests that student self-selection should not be viewed as a totally rational decision. Nevertheless, students and colleges do differentially select each other and two important parts of this selectivity are the intellectual ability and socio-economic background of the student. A third variable, the student's affective characteristics, was also shown to be relevant to the self-selection process as well as to his subsequent educational experience. Other variables which

have some impact upon college enrollment include size of hometown, religious preference, race and size of high school graduating class.

The literature reveals that many institutions of higher education are experimenting with new forms of organizational patterns. Lyman Briggs College illustrates one of the emerging organizational patterns, a small, semi-autonomous residential college incorporated within an existing university's collegiate structure. Another pattern, with varying modifications which seems to be growing in popularity is that of the cluster college. This concept was initially adopted by the Claremont Colleges in 1925 from the Oxford and Cambridge instructional and living pattern.

Because this research centers upon Lyman Briggs College, a relatively new venture on the Michigan State University campus, a description of its chronological development was given. The role of two important University committees which provided guidelines and recommendations for the college's design and implementation was discussed. Other aspects of the College referred to in this chapter were the curriculum, faculty, physical facilities and Peer Group Learning Project.

Lyman Briggs enrolled its first class in the fall of 1967. It would appear to be premature to evaluate the college's educational significance after only two years of operation. However, an exploratory, descriptive study to

determine the characteristics of the student body which selected Briggs does seem appropriate. Attention may now be directed to Chapter III and the design of the study.

CHAPTER III

DESIGN AND METHODOLOGY

This chapter presents the definition of the investigation's population and sample, a description of the instrumentation, the method of collecting the data, and a review of the procedures used for analyzing the data. The testable hypotheses are also restated in null form.

The Population and Sample

The population selected for this study consisted of students who were first term freshmen at Michigan State University in the fall of 1967 and who had identified either Lyman Briggs College or the College of Natural Science as their major. Of the 6,836 freshmen enrolling in the fall term of 1967, 224 were Lyman Briggs College freshmen and 1,189 were College of Natural Science freshmen.

Data was available for 190 Lyman Briggs students including 136 men and 54 women. For purposes of comparison, a control sample of 190 College of Natural Science freshmen which also included 136 men and 54 women was randomly selected by means of student number by computer in the Department of Data Processing.

Instrumentation

The present study was designed to compare Lyman Briggs College freshmen by sex with the College of Natural Science freshmen with respect to academic aptitude to do college work, value orientation, Clark and Trow typology, and "personal characteristics." These items were also analyzed in terms of any differences that occurred between Briggs men and Briggs women. The following instruments were selected to measure the variables mentioned:

I. Academic Aptitude to do College Work

College Qualification Test - (The Psychological Corporation).

II. Value Orientation

Prince's Differential Value Inventory - (Michigan State University Student Inventory).[1]

III. Personal Philosophies

Clark and Trow Student Subcultures - (Michigan State University Student Inventory).[2]

IV. Personal Characteristics

Selected biographic and demographic data - (Michigan State University Student Inventory).[3]

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[1] Michigan State University Student Inventory, Published by Office of Evaluation Services, Michigan State University, East Lansing, Michigan.

[2] Ibid.

[3] Ibid.

The College Qualification Test

This instrument consists of three ability tests with the score of each contributing to a total score.[4] Separate subscores are available for 75 items which measure verbal ability, 75 items which measure general information knowledge, and 50 items which measure numerical ability. However, the total score was used in preference to the three subscores. The total score is reported to have greater general predictive power than the scores of any of the three tests taken separately.[5]

The test manual reports split-half reliabilities of .97 for males and .96 for females.[6] Lehmann and Dressel in a 1963 Michigan State University study reported a split-half reliability of .93.[7] In another Michigan State study, Lehmann, Ikenberry and Hartnett report validity coefficients ranging from .34 to .66.[8]

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[4]George Bennett, Marjorie C. Bennett, Winburn L. Wallace, and Alexander C. Wesman, College Qualifications Tests, Manual (New York: The Psychological Corporation, 1957).

[5]Ibid., p. 50.

[6]Ibid., p. 28.

[7]Irvin J. Lehmann and Paul L. Dressel, Critical Thinking, Attitudes, and Values in Higher Education, Final Report, Cooperative Research Project No. 1646 (East Lansing, Michigan: Michigan State University, 1963), p. 30.

[8]Irvin J. Lehmann and Stanley O. Ikenberry, Critical Thinking, Attitudes, and Values in Higher Education: A Preliminary Report (East Lansing, Michigan: Office of

Prince's Differential Value Inventory

Prince's scale (DVI) was used to measure freshmen student values at the beginning of the 1967 fall term. The scale was a portion of the Michigan State University Student Inventory. The scale consists of 64 pairs of forced choice statements which places the student's values along a traditional-emergent value continuum. The value orientation of an individual is determined by his choices from the 64 pairs of statements.

Lehmann and Hill in a recently conducted study report that "a high score indicates a leaning toward traditional values; that is, personal respectability, respect for others, feelings of guilt, thrift, and self-denial."[9] According to Lehmann and Hill, "a low score indicates a leaning toward the emergent end of the value continuum; that is, toward the personal importance of getting along with others and achieving group harmony, an acceptance of morality determined by the group rather than by any other sources, a questioning of all absolutes, a willingness to allow one's

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Evaluation Services, Michigan State University, 1959); and Rodney T. Hartnett, "An Analysis of Factors Associated with Changes in Scholastic Performance Patterns" (unpublished Ph.D. dissertation, Michigan State University, 1963).

[9] Irvin J. Lehmann and Walker H. Hill, Michigan State University 1958 and 1967 Freshmen: A Contrast in Profile (East Lansing, Michigan: Office of Evaluation Services, Michigan State University, 1969), No. 1, p. 1.

actions to be governed primarily by consideration of others, and a subordination of future goals to present needs."[10]

Lehmann and Dressel suggest that "using Riesman's classification one might call the traditional values "inner directed" and the emergent values "outer" or "other directed."[11] Scores can range from 0-64 and the scale has a total traditional-value score as well as subscores for each of the eight sub-scales. The eight sub-scales include four emergent values: sociability, relativism, present-time orientation, and conformity; and four traditional values: Puritan morality, future-time orientation, individualism, and work-success ethic.

The test-retest reliability of the traditional value score is .70; the internal consistency (K-R21) is .75.[12]

Clark and Trow Typology

Clark and Trow have developed four hypothetical student subcultures.[13] These subcultures have been characterized as "personal philosophies" of higher education. They are formed from the combination of two variables: (a) the

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[10] Ibid., p. 2.

[11] Lehmann and Dressel, op. cit., p. 29.

[12] Lehmann and Hill, op. cit., p. 2.

[13] Burton 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.

degree to which students are involved with ideas and (b) the extent to which they identify with their college or university.

		Involved with Ideas: Much	Involved with Ideas: Little
Identify with their college	Much	Intellectual	Collegiate
	Little	Non-Conformist	Vocational

The characteristics of each as described in the Michigan State University Student Inventory are:[14]

Vocational Culture

PHILOSOPHY A: The philosophy emphasizes education essentially as preparation for an occupational future. Social or purely intellectual phases of campus life are relatively less important, although certainly not ignored. Concern with extracurricular activities and college traditions is relatively small. Persons holding this philosophy are usually quite committed to particular fields of study and are in college primarily to obtain training for careers in their chosen fields.

Intellectual Culture

PHILOSOPHY B: This philosophy, while it does not ignore career preparation, assigns greatest importance to scholarly pursuit of knowledge and understanding wherever the pursuit may lead. This philosophy entails serious involvement in course work or independent study beyond the minimum required. Social life and organized extracurricular activities are relatively unimportant. Thus, while other aspects of college life are not to be

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[14]Michigan State University Student Inventory, op. cit.

forsaken, this philosophy attaches greatest importance to interest in ideas, pursuit of knowledge, and cultivation of the intellect.

Collegiate Culture

PHILOSOPHY C: This philosophy holds that besides occupational training and/or scholarly endeavor an important part of college life exists outside the classroom, laboratory, and library. Extracurricular activities, living-group functions, athletics, social life, rewarding friendships, and loyalty to college tradition are important elements in one's college experience and necessary to the cultivation of the well-rounded person. Thus, while not excluding academic activities, this philosophy emphasizes the importance of the extracurricular side of college life.

Nonconformist Culture

PHILOSOPHY D: This is a philosophy held by the student who either consciously rejects commonly held value orientations in favor of his own, or who has not really decided what is to be valued and is in a sense searching for meaning in life. There is often deep involvement with ideas and art forms both in the classroom and in courses (often highly original and individualistic) in the wider society. There is little interest in business or professional careers; in fact, there may be a definite rejection of this kind of aspiration. Many facets of the college--organized extracurricular activities, athletics, traditions, the college administration--are ignored or viewed with disdain. In short, this philosophy may emphasize individualistic interests and styles, concern for personal identity and, often, contempt for many aspects of organized society.

Several studies using the Clark-Trow typology have been conducted. However, reliability and validity coefficients for the subcultures do not seem to be readily available. Studies by Gottlieb and Hodgkins and Hodgkins do seem to support the validity of the subcultures as being useful in understanding the influence of higher education on

the student.[15] Standing cautions that it is "important to note that the majority of studies using the Clark-Trow typology do not classify students as interacting members of a group sharing a similar orientation."[16] Rather, they are simply typed according to selection of an adherence to similar orientations.

Personal Characteristics

The Michigan State University Student Inventory is an extensive survey of items relating to students' biographic and demographic characteristics. Based upon the relevance of particular questions to this research eleven items were selected from the various questionnaires comprising the Inventory. In addition to these items, the Michigan State University Registrar's Office provided information concerning father's and mother's educations; father's and mother's occupations; and the student's rank in his high school graduating class.

Enrollment in Lyman Briggs College

Included within the Michigan State University Student Inventory are seven questions which ask those students

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[15] George Robert Standing, "A Typological Approach to the Study of Men's Residence Groups" (unpublished Ph.D. Thesis, Michigan State University, 1968), p. 41.

[16] Ibid., p. 42.

who enrolled in Lyman Briggs College why they elected to do so. The results of these questions will provide some description of why entering freshmen students interested in mathematics and science selected Briggs as opposed to the more traditional path available through the College of Natural Science.

Career Plans

During the 1969 Spring Term a questionnaire was distributed to those students who had enrolled in Briggs College during the fall of 1967. Included within this questionnaire were items relevant to these students' career plans and to what extent, if any, their plans had changed since their enrollment as entering freshmen at Michigan State University.

Collection of the Data

Each freshman entering Michigan State University in the fall of 1967 was required to participate in one of the Summer Orientation programs held throughout the summer months. The College Qualification Test was administered to each participant who attended a Summer Orientation program. The results of this examination were stored on IBM cards in the Office of Evaluation Services.

During the first week of the 1967 Fall Term, each entering freshman was required to complete the Michigan

State University Student Inventory. The results of the Inventory were stored on magnetic tape in the Data Processing Office.

For each student, information about father's education, father's occupation, mother's education, and rank in his high school's graduating class was obtained from the Registrar's Office.

All of the above student data, including College Qualification Test scores and personal characteristics relevant to this study selected from the Michigan State University Student Inventory, were placed on a single IBM card. Each student's IBM card also included his responses to the seven questions dealing with why the student elected to enroll in Briggs College. The questionnaire dealing with Briggs students' occupational plans was distributed to second year students during the 1968 Spring Term. Responses were received from 111 of the 125 sophomores enrolled in Briggs at that time.*

Method of Analysis

For purposes of statistical analysis, the research hypotheses stated in Chapter I of this investigation have been organized into null hypotheses as follows:

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*The major analyses related to hypotheses 1-4 were based on the responses of 380 students--190 from Briggs and 190 from Natural Science.

I. Academic Aptitude to do College Work

Null Hypothesis 1a: Briggs College males do not differ from Natural Science males on the basis of academic aptitude to do college work, as measured by the College Qualification Test.
Null Hypothesis 1b: Briggs College females do not differ from Natural Science females on the basis of academic aptitude to do college work, as measured by the College Qualification Test.
Null Hypothesis 1c: Briggs College males do not differ from Briggs College females on the basis of academic aptitude to do college work, as measured by the College Qualification Test.

II. Value Orientation

Null Hypothesis IIa: Briggs College males do not differ from Natural Science males on the basis of value orientation as measured by the Differential Value Inventory.
Null Hypothesis IIb: Briggs College females do not differ from Natural Science females on the basis of value orientation as measured by the Differential Value Inventory.
Null Hypothesis IIc: Briggs College males do not differ from Briggs College females on the basis of value orientation as measured by the Differential Value Inventory.

III. Clark and Trow Subcultures or Personal Philosophies

Null Hypothesis IIIa: Briggs College males do not differ from Natural Science males on the basis of the Trow and Clark student subcultures or "personal philosophies."
Null Hypothesis IIIb: Briggs College females do not differ from Natural Science females on the basis of the Trow and Clark student subcultures or "personal philosophies."
Null Hypothesis IIIc: Briggs College males do not differ from Briggs College females on the basis of the Trow and Clark student subcultures or "personal philosophies."

IV. Personal Characteristics

Null Hypothesis IVa: Briggs College males do not differ from Natural Science males on the basis of

the following "personal characteristics": (A) student's educational aspirations; (B) parental educational aspirations; (C) rank in high school graduating class; (D) father's education; (E) mother's education; (F) father's occupation; (G) mother's occupation; (H) religious preference; (I) size of hometown; (J) size of high school graduating class; (K) participation in high school activities; (L) importance of good grades; (M) organization of academic work; (N) employment preference; (O) employment organizational preference; and (P) factor giving student most prestige with both faculty and other students.

Null Hypothesis IVb: Briggs College females do not differ from Natural Science females on the basis of the following "personal characteristics": (A) student's educational aspiration; (B) parental educational aspirations; (C) rank in high school graduating class; (D) father's education; (E) mother's education; (F) father's occupation; (G) mother's occupation; (H) religious preference; (I) size of hometown; (J) size of high school graduating class; (K) participation in high school activities; (L) importance of good grades; (M) organization of academic work; (N) employment preference; (O) employment organizational preference; and (P) factor giving student most prestige with both faculty and other students.

Null Hypothesis IVc: Briggs College males do not differ from Briggs College females on the basis of the following "personal characteristics": (A) student's educational aspiration; (B) parental educational aspirations; (C) rank in high school graduating class; (D) father's education; (E) mother's education; (F) father's occupation; (G) mother's occupation; (H) religious preference; (I) size of hometown; (J) size of high school graduating class; (K) participation in high school activities; (L) importance of good grades; (M) organization of academic work; (N) employment preference; (O) employment organizational preference; and (P) factor giving student most prestige with both faculty and other students.

Earlier in this chapter it was indicated that two important topics of this study would be why students who elected to enroll in Briggs did so and what occupational changes have occurred, if any, between the beginning of the

students' freshman year and conclusion of their sophomore year. Neither item is stated in hypothesis form; however, a frequency distribution will be presented in Chapter IV for each topic.

The analysis of variance model, and the chi square (X^2) statistic were used for analyzing the data in this investigation. The analysis of variance model was used to test the hypotheses that there were no differences between Lyman Briggs males and Natural Science males, between Lyman Briggs females and Natural Science females, and between Lyman Briggs males and Lyman Briggs females on the basis of academic aptitude to do college work. Similarly, the analysis of variance model was used to investigate value orientations among the four groups.

The chi square (X^2) was used to test the null hypotheses that there were no differences between Lyman Briggs males and Natural Science males, between Lyman Briggs females and Natural Science females, and between Lyman Briggs males and Lyman Briggs females on the basis of the Clark and Trow student subcultures. Similarly, the chi square (X^2) was used to test that there were no differences between Lyman Briggs males and Natural Science males, between Lyman Briggs females and Natural Science females, and between Lyman Briggs males and Lyman Briggs females on the basis of the 16 "personal characteristics" items. The .05 level of

confidence was the criterion used for testing the null hypothesis where the chi-square statistic was used.

In addition to testing all hypotheses, the responses to all items used in null hypothesis IV, personal characteristics, were reported in frequencies and percentages. If significant differences occurred, the frequency distribution is shown in Chapter IV. The other frequency distributions for those items which did not reveal significant differences are reported in Appendix B, C and D.

Summary

The population of this study consisted of 6,836 first-term freshmen who enrolled in the fall of 1967. Included among this group were 224 Lyman Briggs students and 1,189 College of Natural Science freshmen. Data was available for 190 Lyman Briggs students including 136 men and 54 women. For purposes of comparison, a control sample of 190 College of Natural Science freshmen which also included 136 men and 54 women was randomly selected.

Data were collected from existing student records including scores on the College Qualification Test and the Differential Value Inventory as well as results obtained from the Clark and Trow typology and selected background characteristics. A questionnaire designed to determine the percentage of Briggs second year students who had changed their occupational plans since their initial enrollment at

Michigan State University was administered during the 1969 Spring Term.

Operational hypotheses were stated relevant to this study, and appropriate computer programs were selected for purposes of analyzing the investigation's data. The following chapter will discuss the analysis and interpretation of the results of this study.

CHAPTER IV

ANALYSIS OF THE DATA

This chapter reports the analysis of the data comparing, by sex, Lyman Briggs and Natural Science students in terms of academic aptitude, value orientation, Clark and Trow typology and other personal characteristics. In addition, it presents a comparison of Briggs College men and women on the above items. A summary of why students selected Briggs College is also revealed. Finally, the results of a questionnaire given to Lyman Briggs students after their sophomore year to determine what occupational changes, if any, have been made by Briggs students between the beginning of their freshman year and conclusion of their sophomore year are presented and discussed.

Academic Aptitude

Hypothesis I is concerned with differences between Lyman Briggs and Natural Science students by sex with respect to their academic aptitude to do college work. To test this hypothesis statistically, it was converted into the following null forms:

Null Hypothesis 1a - Briggs males do not differ from Natural Science males on the basis of academic aptitude to do college work as measured by the College Qualification Test.

Null Hypothesis 1b - Briggs females do not differ from Natural Science females on the basis of academic aptitude to do college work as measured by the College Qualification Test.

Null Hypothesis 1c - Briggs males do not differ from Briggs females on the basis of academic aptitude to do college work as measured by the College Qualification Test.

College Qualification Test means and standard deviations were computed for each college sex group and are presented in Table 1. The results of the analysis of variance for these data are shown in Table 2.

Table 1. Means and standard deviations for Briggs students and Natural Science students by sex in terms of their academic aptitude to do college work.

	LBC Males	NS Males	LBC Females	NS Females
N	136	136	54	54
Mean	158.34	151.19	155.76	147.33
S. D.	21.82	25.07	19.92	23.22

LBC = Lyman Briggs College

NS = College of Natural Science

Table 2. Analysis of variance for Briggs students and Natural Science students by sex in terms of their academic aptitude to do college work.

Sources of Variation	df	MS	F	P
Colleges	1	5388.85	10.16	.01
Sex	1	895.54	1.68	NS
College X Sex	1	35.38	.07	NS
Within groups	376	530.04		

The analysis of variance table reveals that there was a non-significant F ratio for both the sex variable and College X Sex interaction. Because of the non-significant interaction effect, further statistical tests on the hypotheses (Ia, Ib, and Ic) were not conducted. The null hypotheses were thus accepted at the .05 level of confidence. However, Table 2 also reveals that statistical differences were presented between the two colleges. It may be concluded that differences in academic aptitude to do college work are apparent only between the two combined college groups. The data do not support the hypotheses that differences exist between the two colleges by sex or between Briggs males and Briggs females.

Differential Value Inventory

Hypothesis II is concerned with differences between Lyman Briggs and Natural Science students by sex in terms of their value orientation as measured by the Differential Value Inventory. To statistically test the relevant aspects of this hypothesis, it was converted into the following null forms:

> Null Hypothesis IIa - Briggs males do not differ from Natural Science males on the basis of value orientation as measured by the Differential Value Inventory.
>
> Null Hypothesis IIb - Briggs females do not differ from Natural Science females on the basis of value orientation as measured by the Differential Value Inventory.
>
> Null Hypothesis IIc - Briggs males do not differ from Briggs females on the basis of value orientation as measured by the Differential Value Inventory.

Differential Value Inventory means and standard deviations were computed for each college-sex group and are presented in Table 3. The results of the analysis of variance for this data are shown in Table 4.

Table 3. Means and standard deviations for Briggs students and Natural Science students by sex in terms of their value orientation

	LBC Males	NS Males	LBC Females	NS Females
N	136	136	54	54
Mean	32.38	31.87	31.24	32.57
S. D.	8.09	6.97	7.42	6.39

Table 4. Analysis of variance for Briggs students and Natural Science students by sex in terms of their value orientation.

Sources of Variation	df	MS	F	P
Colleges	1	.0237	.00	NS
Sex	1	3.54	.06	NS
College X Sex	1	65.48	1.20	NS
Within groups	376	54.51		

The analysis of variance table reveals that a non-significant F ratio existed for the college variable, the sex variable, and the College X Sex interaction. Because no differences existed on the college sex variable as well as the absence of any interaction effect, further statistical analyses of hypotheses IIa, IIb, and IIc was not required. The null hypotheses were thus accepted at the .05 level of confidence.

Clark and Trow Typology

Hypothesis III is concerned with differences between Briggs and Natural Science students by sex in terms of their "own" philosophy of higher education as it relates to the four hypothetical subcultures postulated by Clark and Trow. To statistically test this hypothesis it was converted into the following null forms.

Null Hypothesis IIIa - Briggs males do not differ from Natural Science males on the basis of their "own" philosophy of higher education as it relates to the Clark and Trow student subcultures.

Null Hypothesis IIIb - Briggs females do not differ from Natural Science females on the basis of their "own" philosophy of higher education as it relates to the Clark and Trow student subcultures.

Null Hypothesis IIIc - Briggs males do not differ from Briggs females on the basis of their "own" philosophy of higher education as it relates to the Clark and Trow student subcultures.

Each of these hypotheses was analyzed separately by the chi square (X^2) statistic. The .05 level of confidence was established a priori.

Table 5. Clark and Trow Student Subcultures: A comparison between Briggs males and Natural Science males, between Briggs females and Natural Science females and between Briggs males and Briggs females with respect to their "own" philosophy of higher education.

Hypothesis		N	X^2	df	P
H_oIIIa	LBC M	136	2.470	3	NS*
	NS M	136			
H_oIIIb	LBC F	54	2.928	3	NS
	NS F	52			
H_oIIIc	LBC M	136	1.924	3	NS
	LBC F	54			

*NS designates not significant at the .05 level of confidence.

Table 5 reveals that Briggs males differed little from Natural Science males with respect to their "own" philosophy of higher education. Similarly, little difference can be observed between Briggs females and Natural Science females or between sexes within Briggs College. It appears that students within each of their four groups responded in a similar manner to each of the four subcultures, "vocational," "intellectual," "collegiate," and "nonconformist." Frequency distributions associated with this variable are found in Appendix A.

Desired Philosophy of Higher Education

Hypothesis III is also concerned with differences between Briggs students and Natural Science students by sex in terms of the Clark and Trow student subculture which most nearly describes the "desired" kind of personal philosophy they would like to have, if they had a choice. To test this hypothesis statistically it was converted into the following null forms.

> Null Hypothesis IIIaa - Briggs males do not differ from Natural Science males on the basis of their "desired" philosophy of higher education as it relates to the Clark and Trow student subcultures.
>
> Null Hypothesis IIIbb - Briggs females do not differ from Natural Science females on the basis of their "desired" philosophy of higher education as it relates to the Clark and Trow student subcultures.

Null Hypothesis IIIcc - Briggs males do not differ from Briggs females on the basis of their "desired" philosophy of higher education as it relates to the Clark and Trow student subcultures.

Each of these hypotheses was analyzed separately by the chi square (X^2) statistic. The .05 level of confidence was established a priori.

Table 6. Clark and Trow Student Subcultures: A comparison between Briggs males and Natural Science males, between Briggs females and Natural Science females, and between Briggs males and Briggs females with respect to their "desired" philosophy of higher education.

Hypothesis		N	X^2	df	P
H_oIIIaa	LBC M	135	4.596	3	NS*
	NS M	136			
H_oIIIbb	LBC F	54	3.565	3	NS
	NS F	53			
H_oIIIcc	LBC M	135	3.252	3	NS
	LBC F	54			

*NS designates not significant at the .05 level of confidence.

The data as reported indicate that no statistically significant differences exist for the three hypotheses in Table 6. In reviewing the frequency distributions in

Appendix A, students within each of the four groups varied only slightly in terms of their responses for each of the four subcultures, "vocational," "intellectual," "collegiate," and "non-conformist." Moreover, in reviewing the frequency distributions only a small number of students revised their responses on the "desired philosophy" from their "own philosophy" choice.

Personal Characteristics

Hypothesis IV concerned differences in selected "personal characteristics" between Briggs and Natural Science students by sex. To statistically test this hypothesis, the following null hypotheses were structured.

Null Hypothesis IVa - Briggs males do not differ from Natural Science males on the basis of the following characteristics: a) size of home community; b) religious preference; c) father's occupation; d) father's education; e) mother's occupation; f) mother's education; g) size of high school graduating class; h) degree of participation in high school activities; i) rank in high school; j) own educational aspirations; k) parents' educational aspirations; l) importance of good grades; m) organization of academic work; n) prestige factors among students and faculty; o) organizational preference; p) occupational preference.

Null Hypothesis IVb - Briggs females do not differ from Natural Science females on the basis of the following personal characteristics: a) size of home community; b) religious preference; c) father's occupation; d) father's education; e) mother's occupation; f) mother's education; g) size of high school graduating class; h) degree of participation in high school activities; i) rank in high school; j) own educational aspirations; k) parents' educational aspirations; l) importance of good grades; m) organization of academic work; n) prestige factors among students and faculty; o) organizational preference; p) occupational preference.

Null Hypothesis IVc - Briggs males do not differ from Briggs females on the basis of the following personal characteristics: a) size of home community; b) religious preference; c) father's occupation; d) father's education; e) mother's occupation; f) mother's education; g) size of high school graduating class; h) degree of participation in high school activities; i) rank in high school; j) own educational aspirations; k) parents' educational aspirations; l) importance of good grades; m) organization of academic work; n) prestige factors among students and faculty; o) organizational preference; p) occupational preference.

Sixteen items are listed in hypothesis IV. Each of the "personal characteristics" within hypotheses IVa, IVb and IVc was analyzed by the chi square (X^2) statistic and accepted or rejected at the .05 level of confidence. The analysis of each specific comparison reaching statistical significance will be reported individually later in this chapter. Frequency distributions of non-significant characteristics are shown in Appendix B, C and D.

To provide greater clarity in interpreting the results, a summary of the analysis of the data for null hypotheses IVa, IVb, and IVc are presented in Tables 7, 8 and 9. The data in Table 7 indicates that Lyman Briggs males do not differ significantly from Natural Science males in terms of a) size of home community; d) father's education; f) mother's education; g) size of high school graduating class; h) degree of participation in high school activities; i) rank in high school; j) own educational aspirations; k) parents' educational aspirations; l) importance of good grades; m) organization of academic work; n) prestige factors

Table 7. Personal Characteristics: A comparison between Briggs males and Natural Science males on the basis of selected personal characteristics.

	Variable	df	x^2	P
a.	Size of home community	4	2.023	N.S.
b.	Religious preference	4	13.098	<.025
c.	Father's occupation	8	17.433	<.05
d.	Father's education	1	1.196	N.S.
e.	Mother's occupation	1	3.844	<.05
f.	Mother's education	1	3.128	N.S.
g.	Size of high school graduating class	4	2.427	N.S.
h.	Degree of participation in high school activities	2	2.120	N.S.
i.	Rank in high school	3	6.689	N.S.
j.	Own educational aspirations	4	5.202	N.S.
k.	Parents' educational aspirations	4	5.244	N.S.
l.	Importance of good grades	1	2.681	N.S.
m.	Organization of academic work	1	3.801	N.S.
n.	Prestige factors among students and faculty	8	3.129	N.S.
o.	Organizational preference	8	7.010	N.S.
p.	Occupational preference	7	4.821	N.S.

N.S. designates not significant at the .05 level of confidence.

among students and faculty; o) organizational preference; and p) occupational preference. Thus, the null hypothesis that Briggs males do not differ from Natural Science males with regard to these personal characteristics was accepted. However, significant differences were found between the Lyman Briggs and Natural Science males in b) religious preference; c) father's occupation; and e) mother's occupation. Therefore, the null hypothesis that Briggs males do not differ from Natural Science males in terms of these characteristics was rejected.

The data in Table 8 presents the results for null hypothesis IVb. Briggs females do not differ from Natural Science females on the basis of a) size of home community; b) religious preference; c) father's occupation; d) father's education; e) mother's occupation; f) mother's education; g) size of high school graduating class; h) degree of participation in high school activities; i) rank in high school; j) own educational aspirations; k) parents' educational aspirations; l) importance of good grades; n) prestige factors among students and faculty; o) organizational preference. Thus, the null hypothesis that Briggs females do not differ from Natural Science females with respect to these personal characteristics was accepted. Two statistically significant differences were found between the females of each college in terms of m) organization of academic work and p) occupational preference. Therefore, the null

Table 8. Personal Characteristics: A comparison between Lyman Briggs females and Natural Science females on the basis of selected personal characteristics.

	Variable	df	X^2	P
a.	Size of home community	4	0.436	N.S.
b.	Religious preference	4	4.636	N.S.
c.	Father's occupation	8	12.102	N.S.
d.	Father's education	1	0.141	N.S.
e.	Mother's occupation	1	0.683	N.S.
f.	Mother's education	1	0.557	N.S.
g.	Size of high school graduating class	4	1.986	N.S.
h.	Degree of participation in high school activities	2	1.302	N.S.
i.	Rank in high school	3	3.468	N.S.
j.	Own educational aspirations	4	6.593	N.S.
k.	Parents' educational aspirations	4	4.887	N.S.
l.	Importance of good grades	1	0.963	N.S.
m.	Organization of academic work	1	4.770	$<.05$
n.	Prestige factors among students and faculty	8	9.908	N.S.
o.	Organizational preference	8	5.045	N.S.
p.	Occupational preference	7	17.565	$<.025$

N.S. designates not significant at the .05 level of confidence.

hypothesis that Briggs females do not differ from Natural Science females in terms of these characteristics was rejected.

The data in Table 9 reveal that Briggs males and Briggs females did not differ on a) size of home community; b) religious preference; c) father's occupation; d) father's education; e) mother's occupation; f) mother's education; g) size of high school graduating class; h) degree of participation in high school activities; i) rank in high school; l) importance of good grades; m) organization of academic work; n) prestige factors among students and faculty. Thus, the null hypothesis that Briggs males do not differ from Briggs females with regard to these characteristics was accepted. However, significant differences were found to exist between these groups in terms of four variables: j) own educational aspirations; k) parents' educational aspirations; o) organizational preference; p) occupational preference. Therefore, the null hypothesis that Briggs males do not differ from Briggs females on these characteristics was rejected.

Frequency Distributions of Comparisons Reaching Statistical Significance

Earlier it was indicated that frequency distributions would be reported in this chapter for those comparisons within hypotheses IVa, IVb, and IVc which reached statistical

Table 9. Personal Characteristics: A comparison between Lyman Briggs males and Lyman Briggs females on the basis of selected personal characteristics.

	Variable	df	X^2	P
a.	Size of home community	4	4.622	N.S.
b.	Religious preference	4	7.057	N.S.
c.	Father's occupation	8	7.220	N.S.
d.	Father's education	1	2.300	N.S.
e.	Mother's occupation	1	1.614	N.S.
f.	Mother's education	1	0.729	N.S.
g.	Size of high school graduating class	4	0.956	N.S.
h.	Degree of participation in high school activities	2	0.250	N.S.
i.	Rank in high school	3	3.271	N.S.
j.	Own educational aspirations	3	29.363	<.001
k.	Parents' educational aspirations	4	31.338	<.001
l.	Importance of good grades	1	1.785	N.S.
m.	Organization of academic work	1	1.058	N.S.
n.	Prestige factors among students and faculty	8	8.949	N.S.
o.	Organizational preference	8	26.170	<.001
p.	Occupational preference	7	34.101	<.001

N.S. designates not significant at the .05 level of confidence.

significance. The following personal characteristics were significantly different within hypothesis IVa, which concerned comparisons between Briggs males and Natural Science males.

Religious Preference

The religious preference between Briggs males and Natural Science males was significantly different as shown in Table 10. Nearly 32 percent of the Natural Science males reported their religious preference to be Catholicism, while only 22.8 percent of the Briggs males indicated they were Catholic. Approximately 10 percent of the Briggs males indicated no preference while less than 1 percent stated they were Jewish. On the other hand, 15 percent of the Natural Science males reported no preference, while 4.4 percent indicated their faith to be Jewish. Protestantism was the most frequently reported preference. There were 60 percent of the Briggs males and 52.6 percent of the Natural Science males indicating Protestantism as their religious preference.

Father's Occupation

Table 11 reports a significant difference between Briggs males and Natural Science males in terms of father's occupation. Nearly 30 percent of Briggs males' fathers were involved in professions, while less than 20 percent of the Natural Science males' fathers were reported to be

professionally employed. At the same time, nearly 30 percent of Natural Science males' fathers were in the skilled laborer category, while only 16 percent of the Briggs males had fathers who were skilled laborers. However, it should be noted that the percentage differential narrows when the manual worker category is added to the skilled worker classification for each group.

Table 10. Religious Preference: A comparison between Briggs and Natural Science males in terms of their religious preference.

(Variable) Religious Preference	LBC Males N	%	NS Males N	%
Catholic	31	22.8	43	31.6
Jewish	1	0.7	6	4.4
Protestant	81	59.6	62	45.6
None	13	9.6	20	14.7
Other	10	7.4	4	2.9

$X^2 = 13.098$ (Significant at or beyond the .05 level of confidence, df = 4).

Mother's Occupation

The number of Briggs mothers who worked was significantly different from the number of working mothers of Natural Science males. Table 12 indicated that only 25

percent of the Natural Science mothers worked, whereas approximately 35 percent of the Briggs mothers were employed.

Table 11. Father's Occupation: A comparison between Briggs and Natural Science males in terms of their father's occupation.

(Variable) Father's Occupation	LBC Males N	LBC Males %	NS Males N	NS Males %
Manual Worker	11	8.1	9	6.6
Skilled Labor	22	16.2	37	27.2
Business Owner	10	7.4	14	10.3
Farm Owner or Operator	7	5.1	3	2.2
Executive or Managerial	19	14.0	24	17.6
Office, Clerical or Sales	18	13.2	9	6.6
Teacher (Elementary or Secondary)	2	1.5	6	4.4
Professional	39	28.7	24	17.6
Service	4	2.9	2	1.5

$X^2 = 17.433$ (Significant at or beyond the .05 level of confidence, df = 8).

Hypothesis IVb, which involved comparisons between Briggs and Natural Science females, included only two variables which were significantly different. These were the preferred organization of academic work and occupational preference.

Table 12. Mother's Employment Status: A comparison between Briggs and Natural Science males in terms of employed mothers.

(Variable) Mother's Employment Status	LBC Males N	%	NS Males N	%
Yes	47	34.6	34	25.0
No	89	65.4	101	74.3

X^2 = 3.844 (Significant at or beyond the .05 level of confidence, df = 1).

Organization of Academic Work

Table 13 reports that approximately three out of every four females in the College of Natural Science preferred their academic work organized around a predominance of class work, class assignments, and regular examinations. However, 43.6 percent of the Briggs women reported a preference for independent reading, writing, and research.

Table 13. Organization of Academic Work: A comparison between Briggs and Natural Science females in terms of their preference regarding the organization of their academic work.

(Variable) Organization of Academic Work	LBC Females N	%	NS Females N	%
Regular Classwork and examinations	30	54.5	39	73.6
Independent reading, writing and research	24	43.6	14	26.4

X^2 = 4.770 (Significant at or beyond the .05 level of confidence, df = 1).

Occupational Preference

Significant differences also appeared between the two groups with respect to their occupational preference. The greatest difference between the two groups appeared when 30.2 percent of the Natural Science females expressed a preference for a professional life. Only 3.6 percent of the Briggs females indicated their desire to serve in one of the professions. A somewhat similar percentage of Briggs (38.2) and Natural Science women selected their occupational future to revolve around a home and family.

Table 14. Occupational Preference: A comparison between Briggs and Natural Science females in terms of their occupational preference.

(Variable) Occupational Preference	LBC Females N	%	NS Females N	%
An academic life	21	38.2	15	28.3
A business life	0	0.0	0	0.0
A professional life	2	3.6	16	30.2
A life of a trained technician or craftsman	1	1.8	1	1.9
A life centering upon some aspect of the creative arts	2	3.6	0	0.0
A life centering upon a home and a family	21	38.2	17	32.1
Other	3	5.5	1	1.9
I have not given sufficient thought to this matter to say	5	9.1	2	3.8

$X^2 = 17.565$ (Significate at or beyond the .05 level of confidence, df = 7).

There were four personal characteristics within hypothesis IVc concerning Briggs males and females which were significantly different. Included among these were the variables of the student's educational aspirations, parents' educational aspirations, organizational preference, and occupational preference.

Own Educational Aspirations

Seventy-two percent of the Briggs males expect to enroll in graduate school, while only 35 percent of the Briggs females aspire to graduate school enrollment. However, the data in Table 15 suggests that all the Briggs males and the vast majority of Briggs women expect to complete their undergraduate education.

Table 15. Own Educational Aspirations: A comparison between Briggs males and females in terms of their educational aspirations.

(Variable) Student's Educational Aspirations	LBC Males N	%	LBC Females N	%
A year of college	0	0	0	0
Two years of college	0	0	3	5.6
Three years of college	0	0	2	3.7
Four years of college (Bachelor's Degree)	38	27.9	20	55.6
Graduate or professional school	98	72.1	19	35.2

$X^2 = 29.363$ (Significant at or beyond the .05 level of confidence, df = 3).

Parents' Educational Aspirations

Over 55 percent of the parents of Briggs males, as shown in Table 16, expect their sons to attend graduate school. In comparison, it is interesting to note that only 14.8 percent of the parents of Briggs females anticipate that their daughters will enroll in graduate programs. It is apparent that both Briggs males and females aspire to a higher level of educational attainment than what they view their parents' educational aspirations to be for them.

Table 16. Parents' Educational Aspirations: A comparison between Briggs males and females in terms of their perceptions of their parents' educational aspirations for them.

(Variable) Parent's Educational Aspirations	LBC Males N	%	LBC Females N	%
A year of college	1	.7	0	0
Two years of college	0	0	1	1.9
Three years of college	0	0	2	3.7
Four years of college (Bachelor's Degree)	60	44.1	43	79.6
Graduate or Professional School	75	55.1	8	14.8

X^2 = 31.338 (Significant at or beyond the .05 level of confidence, df = 4).

Organizational Preference

The organizational preference of the two groups of students was significantly different. The data, as reported in Table 17, show that 35.2 percent of the Briggs females preferred educational institutions as their preferred organizational structure whereas only 10.3 percent of the Briggs males selected educational organizations as their preference. Briggs males and females did achieve some similarity in their responses when each group (Briggs males 33.8 percent and Briggs females 40.7 percent) selected a public or private research organization as their first choice. Nearly 17 percent of the Briggs males indicated their preference for the professions as opposed to only 5.6 percent of the women. Only 7.4 percent of the Briggs males preferred the prospect of owning a business or farm.

Occupational Preference

The occupational preference of the two groups was significantly different as is indicated by the data in Table 18. Briggs males greatest preference was for a professional life (33.1 percent) while 38.9 percent of the Briggs females selected an academic life as their preferred occupation. Thirty seven percent of the Briggs females indicated a life centering upon home and family for their primary future endeavor. It should also be noted that 25.7 percent of the

Briggs males indicated their occupational preference for a business life.

Table 17. Organizational Preference: A comparison between Lyman Briggs males and females in terms of their organizational preference.

(Variable) Organizational Preference	LBC Males N	%	LBC Females N	%
Own business (or farm)	10	7.4	0	0
Small business farm	2	1.5	0	0
Medium to large firm or corporation	23	16.9	4	7.4
Own professional office	23	16.9	3	5.6
An educational institution (e.g. high school or college)	14	10.3	19	35.2
A public or private research organization	46	33.8	22	40.7
A public or private welfare agency	1	0.7	1	1.9
Government service (other than research, welfare, or military)	2	1.5	1	1.9
Other firm, organization, or situation	15	11.0	4	7.4

$X^2 = 26.170$ (Significant at or beyond the .05 level of confidence, df = 8).

Table 18. Occupational Preference: A comparison between the Briggs males and females in terms of their occupational preference.

(Variable) Occupational Preference	LBC Males N	LBC Males %	LBC Females N	LBC Females %
An academic life (teaching, research, other scholarly work)	35	25.7	21	38.9
A business life	5	3.7	0	0
A professional life (doctor, lawyer, engineer, etc.)	45	33.1	2	3.7
A life of a trained technician or craftsman	6	4.4	1	1.9
A life centering upon some aspect of the creative arts	4	2.9	2	3.7
A life centering upon a home and a family	15	11.0	20	37.0
Other	5	3.7	3	5.6
I have not given sufficient thought to this matter to say	21	15.4	5	9.3

$X^2 = 34.101$ (Significant at or beyond the .05 level of confidence, df = 7).

Summary of Personal Characteristics Related to Hypotheses IVa, IVb, and IVc

Comparisons between Briggs and Natural Science males revealed significant differences on the following items: religious preference, father's occupation and percentage of mothers who were employed. The two groups did not differ in terms of: size of home community, father's education,

mother's education, size of high school graduating class, degree of participation in high school activities, rank in high school, own educational aspirations, parents' educational aspirations, importance of good grades, organization of academic work, prestige factors among students and faculty, organizational preference, and occupational preference.

Significant differences existed between Briggs females and Natural Science females on two personal characteristics: the preferred organization of academic work and occupational preference. The two groups did not differ with respect to: size of home community, religious preference, father's occupation, father's education, mother's occupation, mother's education, size of high school graduating class, degree of participation in high school activities, rank in high school, own educational aspirations, parents' educational aspirations, importance of good grades, prestige factors among students and faculty, and organizational preference.

Comparisons between Briggs men and Briggs women indicated four personal characteristics were statistically different. These were the student's educational aspirations, the parents' educational aspirations for the student as perceived by the student, organizational preference and occupational preference. The two groups did not differ on the basis of: size of home community, religious preference, father's occupation, father's education, mother's occupation,

mother's education, size of high school graduating class, degree of participation in high school activities, rank in high school, importance of good grades, organization of academic work, and prestige factors among students and faculty.

Why Students Chose to Enroll in Briggs

Included within the Michigan State University Student Inventory were seven questions related to why a student elected to enroll in a residential college. The questions were to be answered by students selecting a residential college to determine what kinds of characteristics they felt a residential college should possess. As shown in Table 19 Briggs students responded to those questions in the following manner.

Over 90 percent of both Briggs males and females agreed that there should be closer contact with faculty and more individual attention within Briggs College than would be found within the larger University. A large proportion of Briggs males and females agreed that there should be broader training available within Briggs. However, a larger proportion of Briggs males than females (54% vs 43%) indicated they had selected Briggs because it would provide for both a more specialized training as well as a broader training. Briggs males and females indicated there should not be less competition, this attitude being more prevalent in the females. Both groups (but more so, the males) agreed that

more personal freedom should be found in Briggs than available outside of it. Briggs males were evenly divided in terms of whether a more tolerant faculty should exist in Briggs than in the larger University. However, Briggs females did not share this attitude. Although both Briggs males and females expected to obtain more individualized attention in Briggs, a larger proportion of females than males (94% vs 88%) had this attitude.

Table 19. (A summary of) reasons given by students who enrolled in Briggs College fall term 1967.

Question: I chose to enroll because there should be		LBC Males N	LBC Males %	LBC Females N	LBC Females %
Closer contact with faculty	Yes	125	91.9	53	98.1
	No	11	8.1	1	1.9
More individual attention	Yes	120	88.2	51	94.4
	No	16	11.8	3	5.6
More specialized training	Yes	74	54.4	23	42.6
	No	62	45.6	31	57.4
Broader training	Yes	105	77.2	42	77.8
	No	31	22.8	12	22.2
Less competition	Yes	16	11.8	2	3.7
	No	119	87.5	52	96.3
More personal freedom	Yes	83	61.0	29	53.7
	No	52	38.2	25	46.3
More tolerant faculty	Yes	67	49.3	19	35.2
	No	67	49.3	34	63.0

Occupational Plans

During the 1969 Spring Term, a six item questionnaire was administered to sophomore students who were still enrolled in Briggs College. Included within this group were 90 men and 35 women. Eighty males and 31 females completed and returned their questionnaires. The primary purpose for administering the questionnaire was to determine what percentage of those students who were still enrolled in Briggs had changed their occupational plans since they had entered Michigan State University.

It was interesting to note that 56 percent of the students indicated they had not changed their occupational plans. However, 25 percent of the males said they were either uncertain or had no idea of what they wanted to do following graduation. On the other hand, none of the females responded in terms of being unclear as to their vocational direction. The results of this questionnaire which is located in Appendix E follow.

Table 20. A summary of the occupational plans of 1968-69 Briggs College sophomores.

	Question	LBC Males N	LBC Males %	LBC Females N	LBC Females %
I.	I want to prepare for a profession or vocation				
	1. Important	75	94	29	94
	2. Not important	6	6	2	6
II.	I want the prestige attached to a college degree				
	1. Important	36	56	13	45
	2. Not important	45	44	18	55
III.	Which of the following comes closest to describing your career plans?				
	1. I know exactly what I am going to do	13	16	3	9
	2. I am pretty sure about what I will do	40	50	21	68
	3. I am not too certain as to what I want to do	24	29	7	23
	4. I have no idea	4	5	0	0
IV.	When did you really decide on your career choice?				
	1. Before high school	3	4	4	13
	2. During high school	25	31	19	61
	3. During your first two years of college	25	31	8	26
	4. Have not yet decided	28	34	0	0
V.	Do you think that at some time in the future you would like to join the Peace Corps or Vista?				
	1. Definitely not	8	9	2	6
	2. Probably not	45	56	15	48
	3. Probably yes	25	31	12	40
	4. Definitely yes	3	4	2	6
VI.	Have your occupational plans changed since you came to MSU?				
	1. Yes	48	59	15	48
	2. No	33	41	16	52

CHAPTER V

SUMMARY, CONCLUSIONS AND IMPLICATIONS FOR FUTURE RESEARCH

This chapter contains a summary of the study, a discussion of the findings, a presentation of the conclusions, and implications for future research.

The Problem

The purpose of this study was to describe the kinds of students who elected to enroll in Lyman Briggs College in comparison with students who entered the College of Natural Science during the fall of 1967. More specifically, in an explorative and descriptive way, an attempt was made to:

1. Determine in what ways Briggs College students, compared by sex are similar and/or dissimilar to other freshmen interested in science or mathematics who elected to enroll in the College of Natural Science with regard to selected affective and cognitive characteristics.
2. Determine in what ways Briggs College male students are similar and/or dissimilar to Briggs College

female students with regard to selected affective and cognitive characteristics.

Within recent years Michigan State University has been experimenting with an educational structure new to its campus, the semi-autonomous residential college. Thus far, three such colleges have been organized. One of these is Lyman Briggs College which enrolled its first class in the fall of 1967 to serve students interested in mathematics and the sciences.

Although the residential colleges on the Michigan State campus vary from the Oxford pattern established seven centuries ago, they have retained the objective of bringing students and faculty together to achieve a "personalized" educational experience. Presumably, students and faculty can indeed come to know each other as complete personalities rather than each remaining a relatively faceless, anonymous creature throughout the student's undergraduate program. A "sense of community" should develop within each residential college which would permit observers as well as participants to identify the community's human and intellectual values.

The reduction of an institution of higher learning into smaller collegiate units than traditionally found within colleges on large university campuses is consistent with the thinking of many of today's higher education writers. These scholars argue that the absolute size of a university is relatively unimportant if the horizontal patterns within the

university are appropriate to its size. Moreover, they believe that new forms of horizontal organizations facilitate academic innovation. The Educational Policies Committee of Michigan State University subscribes to this argument. The committee offered academic innovation in the sciences as their primary rationale for supporting the development of Lyman Briggs College.

A factor which has also contributed to the birth of today's residential colleges is the emergence of residence halls as learning centers which include classrooms, laboratories, and offices for faculty and academic administrative staff. Another trend of recent years which has provided support for residential colleges is the decentralization of academic administration on university campuses. According to a number of researchers, student subcultures can form within the reference points of residence halls and related academic majors.

Michigan State University, in implementing its concept of residential colleges, has placed students interested in related academic majors in a given residence hall. Hopefully, a residential college organized in this way can utilize the influence and potential of student relationships and student-faculty relationships to enhance the climate of learning which exists within the College. Accordingly, Lyman Briggs College, emphasizing a liberal science based program has

been located in Holmes Hall, a coeducational residence hall with instructional facilities and faculty office space.

The procedure for admission to Briggs College, after having been accepted by Michigan State University, is essentially a process of self-selection. Although student self-selection of a given college or university should not be viewed as a rational and fully informed decision, students and colleges do differentially select each other. Current research suggests that there are a number of variables associated with student-college selectivity. Among these are the student's intellectual ability, socioeconomic background, and affective behaviors. Included within the frequently used terms to describe affective behaviors are appreciation, attitudes, beliefs, interests, and values. The present study was designed to determine, on the basis of selected affective and cognitive characteristics, what kinds of students were enrolling in Briggs College, and, if they differed from students in the College of Natural Science, in what way or ways.

Population and Sample

The samples for the study were selected from 224 Lyman Briggs College students and 1,189 College of Natural Science students who were first term freshmen in the fall of 1967. Data was available for 190 Lyman Briggs students, including 136 men and 54 women. For purposes of comparison, a

control sample of 190 College of Natural Science freshmen which also included 136 men and 54 women was randomly selected.

Methodology

The data for this study was primarily gathered from existing records. The total score from the College Qualification Test was used to measure students' academic aptitude to do college work and was obtained from the Office of Evaluation Services. Information relevant to the Differential Value Inventory, the Clark and Trow typology and selected personal characteristics were derived from the Data Processing Office. Other background characteristics including father's education, father's occupation, mother's education, and rank in his high school's graduating class were obtained from the Registrar's Office. A questionnaire was administered to second year Briggs students during the 1969 Spring Term to determine what percentage of those students had changed their occupational plans since the beginning of their freshman year.

The analysis of variance model was used to test for differences in the College Qualification Test means. Similarly, the analysis of variance model was used to test for differences in the Differential Value Inventory means. The chi square (X^2) statistic was used to analyze the remaining information gathered from the Michigan State University

Student Inventory as well as the items obtained from the Registrar's Office. The .05 level of confidence was chosen as the level at which differences were considered as a result of factors other than by chance.

Findings and Conclusions

A comparison of Briggs students with the College of Natural Science students by sex, as well as a comparison of Briggs males and females, are reported in four parts. These are academic aptitude to do college work, value orientation, Clark and Trow typology, and selected personal characteristics. Three basic hypotheses were used to analyze the data relating to these variables. Stated in null form these are:

1. Lyman Briggs males do not differ from Natural Science males.
2. Lyman Briggs females do not differ from Natural Science females.
3. Lyman Briggs males do not differ from Lyman Briggs females.

Academic Aptitude to do College Work

The null hypotheses relating to academic aptitude to do college work were accepted at the .05 level of confidence. However, further statistical analysis did reveal that when

the two groups of students were compared, without regard to sex differences, Lyman Briggs students had a statistically significant higher College Qualification Test total score.

Value Orientation

The null hypotheses with respect to value orientation was accepted at the .05 level of confidence. Further analysis revealed that the four groups mean score range on the Differential Value Inventory was a very narrow one. The range for the four groups on the 64 item instrument was 31.24-32.57, a spread of only 1.33 points.

Trow and Clark Typology

The null hypotheses with respect to the student's "own" philosophy of higher education were accepted at the .05 level of confidence. Similarly, no statistically significant differences with regard to the student's "desired" philosophy of higher education were obtained. The frequency distributions were, in fact, quite similar.

Selected Personal Characteristics

Tests of significance were conducted on the following variables: (a) size of home community; (b) religious preference; (c) father's occupation; (d) father's education; (e) mother's occupation; (f) mother's education; (g) size of high school graduating class; (h) degree of participation in

high school activities; (i) rank in high school; (j) own educational aspirations; (k) parents' educational aspirations; (l) importance of good grades; (m) organization of academic work; (n) prestige factors among students and faculty; (o) organizational preference; and (p) occupational preference.

No significant differences were found to exist with respect to any of the null hypotheses on the following variables: size of home community, father's education, mother's education, size of high school graduating class, degree of participation in high school activities, rank in high school, importance of good grades, and prestige factors among students and faculty.

The following statistically significant differences were found:

1. Lyman Briggs males differed from College of Natural Science males in terms of religious preference (fewer Catholics, more Protestants among Briggs males), father's occupation (more professionals, less skilled labor among Briggs male fathers), and mother's occupation (more Briggs mothers worked).
2. Lyman Briggs females differed from College of Natural Science females on the basis of organization of academic work (Briggs females preferred more independent work) and occupational preference (Briggs

females expressed less interest in a professional life).

3. Lyman Briggs males differed from Lyman Briggs females with respect to their own educational aspirations (Briggs males and higher educational aspirations), parents' educational aspirations for their child as perceived by the student (higher educational aspirations for Briggs males), organizational preference in which they wish to work (more Briggs females preferred educational institutions), and occupational preference (more Briggs males preferred a professional life style).

Although the differences in item 3 are statistically significant, any interpretation must consider the practical significance of these differences for they are what one might reasonably expect in today's society.

Discussion

In general, the data suggests that Briggs College is adhering to the University directive that it not become an Honors College for science and mathematics students. It is quite true that when the students are grouped together by college, without regard to sex, Briggs students possess a statistically significant higher total score on the College Qualification Test than the student sample in the College of Natural Science. However, the mean scores achieved by each

group suggest that both colleges enrolled students who possessed a high academic aptitude for college work. Moreover, it should be noted that the students of the two colleges did not vary when the data on rank in their high school graduating class were analyzed separately for the males and females.

A factor which may have contributed to the statistically significant higher score for Briggs students on the College Qualification Test is the exposure that all residential colleges receive during the Alumni Distinguished Scholarship program. This competitive event is held each Winter Term on the Michigan State campus and consists of high achievement high school students from all over the United States, and indeed the world, who engage in keen competition for a variety of scholarships. However, the College of Natural Science, as well as all other academic units, also receive considerable visibility throughout the program.

The Differential Value Inventory, based upon the results provided by this instrument, suggests little difference between the two colleges with regard to student value orientation. Similarly, student attitudes toward higher education as depicted by the Clark and Trow typology revealed little difference between students in Briggs and those in the College of Natural Science.

The socioeconomic background data presents a somewhat mixed picture with respect to comparisons between the two colleges. The data revealed that a total 42.7 percent of the fathers of Briggs males were in either a professional category and/or an executive and managerial group as compared with only 35.2 percent of the fathers of male students in Natural Science. Also, it was shown that 35 percent of the Briggs males' mothers are employed as opposed to only 25 percent of the mothers of Natural Science males. However, there were no statistically significant differences occurring between Briggs males' fathers and fathers of Natural Science males in terms of the fathers attending college. Moreover, there were no statistically significant differences between Briggs females and Natural Science females on the basis of father's occupation, number of fathers who attended college, mother's occupation, and number of mothers who attended college.

Lyman Briggs females did differ from females in the College of Natural Science in that they preferred a larger amount of their undergraduate work to be organized on the basis of independent study. The Natural Science females favored the more traditional classwork and examination format. It is interesting to note that the two groups also differed with respect to their preferred occupational choice. Over 30 percent of the Natural Science females expressed their preference for a professional life while only 3.6

percent of the Briggs females expressed a similar preference. This might be explained in that Briggs College was described as a liberal science based program which may not have appealed to the student who desired to become a professional scientist.

The educational aspirations of the Briggs males were significantly greater than that of the Briggs females. Moreover, the parents of Briggs males, as perceived by the student, had greater educational expectations for him than did the parents of Briggs females.

Briggs males were significantly different from Briggs females with respect to their preferred organizational structure. Also, Briggs males' occupational preference significantly differed from that of the Briggs females.

It would appear that on the basis of the data derived from the various instruments and questionnaires employed within this study, no marked differences or major discrepancies exist between students who entered Lyman Briggs College and the College of Natural Science as first term freshmen in the fall of 1967. However, this is not to suggest that no differences exist between these two groups of students. It is possible that significant differences might have been obtained with other instruments (for example, the Vernon-Alpert Lindsey Study of Values rather than the Differential Value Inventory). More importantly, however, it may be that other variables not included in this study

would show differences between the two groups. Such variables, for example, might include the personality characteristics of deference, level of maturity and suggestibility.

In Chapter I of this study the suggestion was made that comparative studies would be conducted between Briggs College and the College of Natural Science for purposes of evaluating Briggs College's progress and its impact upon students. Although Michigan State University has not yet developed a formal program of evaluation for Briggs College and the other two semi-autonomous residential colleges, it is quite probable that one will be developed in the near future.

The climate of learning that is created within Briggs may help to produce a bachelor's degree recipient who varies from his counterpart in Natural Science with respect to a whole host of affective and cognitive characteristics. Assuming that Briggs College does in fact enroll a representative cross section of Michigan State University science students, the quality of the four-year experience will determine in part whatever differences exist between the graduates of the two colleges. The kind of student-faculty community within Briggs which gives promise of being structured under the leadership of Dean Frederic B. Dutton suggests that a distinctive "climate of learning" can be created. The three elements of leadership within Holmes Hall, the physical facility which houses Briggs, include the administration of the College, members of residence hall

management, and representatives from the Vice President of Student Affairs' staff.

The administrative structure involving the key members from each one of these areas of leadership in Holmes Hall, headed by Dean Dutton, gives promise of developing into an educational team which is thoroughly aware of the unique opportunities presented within the context of a semi-autonomous residential college. The revised administrative structure relating to Briggs College, coupled with the Peer Group Learning Project and the utilization of undergraduates as teaching assistants, can contribute to the establishment of an outstanding educational community. This type of community can facilitate the growth of both humane and intellectual values.

Implications for Future Research

I. In order to better understand the impact of the residential college upon its students, some assessment of the students' environment should be conducted. A relatively new environmental assessment measure which might be given to students in Briggs College and the College of Natural Science for comparative purposes is the Inventory of College Activities (ICA).

II. The intellectual achievement of students in Briggs College and the College of Natural Science should also be compared. Assuming that such research would

control for the students aptitude to do college work, various comparisons could be made with regard to overall academic achievement as well as grade point averages earned in science and non-science coursework.

III. The Graduate Record Examination represents another measure which may be used for comparative purposes between the two colleges. Again, such an evaluation would be conducted based upon students being matched with respect to their academic aptitude to do college work at the time of their enrollment at Michigan State University.

IV. Briggs College represents an excellent opportunity for researchers to analyze why certain beginning students do very well academically in their first and second term of their college experience but descend upon "hard times" academically which may lead to ultimate dismissal from the University. Conversely, researchers might wish to study the behavior of students who do poor academic work initially but then "catch fire" and become outstanding students.

V. Interest patterns, as measured by any one or combination of a variety of instruments which are available for this purpose, of students who elect to enroll in Briggs College represents another area of possible investigation. Investigators may wish to compare interest patterns of students who are

successful in their science studies and who remain in Briggs College as opposed to those who subsequently withdraw from the College. Another comparative measure utilizing an Interest Inventory may be made between students who select Briggs and those who elect to enroll in the College of Natural Science.

VI. Graduate school plans of graduates from each college should also be studied. In this way, an additional measure of the impact of the two colleges upon their students could be measured.

VII. It would be of interest to contact the College's graduates five years after their graduation to not only determine what and how well they are doing but also to ask them to look back retrospectively upon the experiences they had as undergraduates. A similar study could be conducted with regard to those graduates who have been absent from the campus for only two to three months. Studies of this nature might well provide information which would have useful implications for the undergraduate program.

VIII. This study should be replicated to determine whether chance factors influenced the outcome and to examine the variables in greater depth.

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APPENDICES

APPENDIX A

A COMPARISON OF LYMAN BRIGGS MALES AND COLLEGE OF NATURAL SCIENCE MALES, LYMAN BRIGGS FEMALES AND COLLEGE OF NATURAL SCIENCE FEMALES, AND LYMAN BRIGGS MALES AND LYMAN BRIGGS FEMALES IN TERMS OF THE CLARK AND TROW TYPOLOGY

Table A1. A comparison of Lyman Briggs males with College of Natural Science males in terms of their "own" philosophy of higher education as measured by the Clark and Trow Typology.

Variable	LBC Males		NS Males	
	N	%	N	%
Vocational	36	26.5	37	27.4
Intellectual	51	37.5	41	30.4
Collegiate	41	30.1	51	37.8
Non-conformist	8	5.9	6	4.4

$x^2 = 2.470$

df = 3

Not statistically significant

Table A2. A comparison of Lyman Briggs males with College of Natural Science males in terms of their "desired" philosophy of higher education as measured by the Clark and Trow Typology.

Variable	LBC Males		NS Males	
	N	%	N	%
Vocational	23	17.0	21	15.4
Intellectual	52	38.5	44	32.4
Collegiate	41	30.4	55	40.4
Non-conformist	13	9.6	13	9.6

$x^2 = 4.596$

df = 3

Not statistically significant

Table A3. A comparison of Lyman Briggs females with College of Natural Science females in terms of their "own" philosophy of higher education as measured by the Clark and Trow Typology.

Variable	LBC Females N	LBC Females %	NS Females N	NS Females %
Vocational	11	20.0	18	34.6
Intellectual	20	36.4	16	30.8
Collegiate	21	38.2	16	30.8
Non-conformist	3	5.5	2	3.8

$x^2 = 2.928$

df = 3

Not statistically significant

Table A4. A comparison of Lyman Briggs females with College of Natural Science females in terms of their "desired" philosophy of higher education as measured by the Clark and Trow Typology.

Variable	LBC Females N	LBC Females %	NS Females N	NS Females %
Vocational	7	12.7	13	24.5
Intellectual	23	41.8	15	28.3
Collegiate	20	36.4	19	35.8
Non-conformist	5	9.1	6	11.3

$x^2 = 3.565$

df = 3

Not statistically significant

Table A5. A comparison of Lyman Briggs males with Lyman Briggs females in terms of their "own" philosophy of higher education as measured by the Clark and Trow Typology.

Variable	LBC Males		LBC Females	
	N	%	N	%
Vocational	36	26.5	10	18.5
Intellectual	51	37.5	20	37.0
Collegiate	41	30.1	21	38.9
Non-conformist	8	5.9	3	5.6

$x^2 = 1.924$

df = 3

Not statistically significant

Table A6. A comparison of Lyman Briggs males with Lyman Briggs females in terms of their "desired" philosophy of higher education as measured by the Clark and Trow Typology.

Variable	LBC Males		LBC Females	
	N	%	N	%
Vocational	23	17.0	7	13.0
Intellectual	52	38.5	23	42.6
Collegiate	41	30.4	19	35.2
Non-conformist	13	9.6	5	9.3

$x^2 = 3.252$

df = 3

Not statistically significant

APPENDIX B

TABLES OF NON SIGNIFICANT "PERSONAL CHARACTERISTICS" VARIABLES COMPARING LYMAN BRIGGS MALES WITH COLLEGE OF NATURAL SCIENCE MALES

Table B1. A comparison of Lyman Briggs males with College of Natural Science males in terms of their size of home community.

Variable Size of Home Community	LBC Males N	 %	NS Males N	 %
Farm	13.0	9.6	7.0	5.1
Village, 250-2,499 population	13.0	9.6	15.0	11.0
Town, 2,500-24,999 population	37.0	27.2	39.0	28.7
City, 25,000-99,999 population	38.0	27.9	39.0	28.7
City, over 100,000 population	35.0	25.7	36.0	26.5

$x^2 = 2.023$

df = 4

Not stitistically significant

Table B2. A comparison of Lyman Briggs males with College of Natural Science males in terms of the number of fathers who have attended college.

Variable	LBC Males N	 %	NS Males N	 %
Attended college	77	56.6	68	50.0
Not attended college	59	43.4	68	50.0

$x^2 = 1.196$

df = 1

Not statistically significant

Table B3. A comparison of Lyman Briggs males with College of Natural Science males in terms of the number of mothers who have attended college.

Variable	LBC Males		NS Males	
	N	%	N	%
Attended college	57	41.9	45	33.1
Not attended college	79	58.1	90	66.2

$X^2 = 3.128$

df = 1

Not statistically significant

Table B4. A comparison of Lyman Briggs males with College of Natural Science males in terms of the size of their high school graduating class.

Variable	LBC Males		NS Males	
	N	%	N	%
Under 25	3	2.2	2	1.5
25-99	18	13.2	12	8.8
100-199	38	27.9	35	25.7
200-399	36	26.5	37	27.2
Over 400	41	30.1	50	36.8

$X^2 = 2.427$

df = 4

Not statistically significant

Table B5. A comparison of Lyman Briggs males with College of Natural Science males in terms of participation in high school activities.

Variable	LBC Males		NS Males	
	N	%	N	%
Very active	53.0	39.0	50	36.8
Moderately active	68.0	50.0	68	50.0
Not active	15.0	11.0	16	11.8

$x^2 = 2.120$

df = 2

Not statistically significant

Table B6. A comparison of Lyman Briggs males with College of Natural Science males in terms of their rank in their high school graduating class.

Variable	LBC Males		NS Males		P
	N	%	N	%	
First quarter	118	86.8	111	81.6	NS
Second quarter	16	11.8	17	12.5	
Third quarter	1	0.7	8	5.9	
Fourth quarter	0	0	0	0	

$x^2 = 6.689$

df = 3

Not statistically significant

Table B7. A comparison of Lyman Briggs males with College of Natural Science males in terms of their educational aspirations.

Variable	LBC Males		NS Males	
	N	%	N	%
A year of college	0	0	2.0	1.5
Two years of college	0	0	2.0	1.5
Three years of college	0	0	1.0	0.7
Four years of college (Bachelor's Degree)	38.0	27.9	39.0	28.7
Graduate or professional school	98.0	72.1	92.0	67.6

$X^2 = 5.202$

df = 4

Not statistically significant

Table B8. A comparison of Lyman Briggs males with College of Natural Science males in terms of the parents educational aspirations for their son as perceived by their son.

Variable	LBC Males		NS Males	
	N	%	N	%
A year of college	1.0	0.7	0	0
Two years of college	0	0	1.0	0.7
Three years of college	0	0	2.0	1.5
Four years of college (Bachelor's Degree)	60.0	44.1	55.0	40.4
Graduate or professional school	75.0	55.1	77.0	56.6

$X^2 = 5.244$

df = 4

Not statistically significant

Table B9. A comparison of Lyman Briggs males with College of Natural Science males in terms of the importance of good grades.

Variable	LBC Males N	LBC Males %	NS Males N	NS Males %
Very important	120	88.2	124	91.2
Not important	15	11.0	11	8.1

$X^2 = 2.681$

df = 1

Not statistically significant

Table B10. A comparison of Lyman Briggs males with College of Natural Science males in terms of their preference for the organization of academic work.

Variable	LBC Males N	LBC Males %	NS Males N	NS Males %
A predominance of class work, class assignments, regular examinations, etc.	68	50.7	80	58.8
A predominance of independent reading, writing, and research	60	44.8	54	39.7

$X^2 = 3.941$

df = 4

Not statistically significant

Table B11. A comparison of Lyman Briggs males with College of Natural Science males in terms of those factors which gain prestige with students and faculty.

Variable	LBC Males		NS Males	
	N	%	N	%
Being original and creative	46	33.8	37	27.2
Having a pleasing personality	34	25.0	41	30.1
Demonstrating scholarly capacity	24	17.6	24	17.6
Being active in campus activities	14	10.3	18	13.2
Dedicating yourself to your studies	9	6.6	9	6.6
Not being too critical	3	2.2	3	2.2
Coming from the right social background	0	0.0	0	0.0
Being active in inter-collegiate athletics	2	1.5	2	1.5
Being a member of a fraternity or sorority	1	0.7	1	0.7

$x^2 = 3.129$

df = 8

Not statistically significant

Table B12. A comparison of Lyman Briggs males with College of Natural Science males in terms of the type of organizational setting in which they would prefer to work.

Variable	LBC Males		NS Males	
	N	%	N	%
Own business (or farm)	10	7.4	12	8.8
Small business firm	2	1.5	0	0.0
Medium to large firm or corporation	23	16.9	25	18.4
Own professional office (e.g. law office, dental office)	23	16.9	35	25.7
An educational institution (e.g. high school, college)	14	10.3	14	10.3
A public or private research organization	46	33.8	38	27.9
A public or private welfare agency	1	0.7	1	0.7
Government service (other than research, welfare, or military)	2	1.5	2	1.5
Other firm, organization, or situation	15	11.0	9	6.6

$X2 = 7.010$

$df = 8$

Not statistically significant

Table B13. A comparison of Lyman Briggs males with College of Natural Science males in terms of their occupational preference.

Variable	LBC Males		NS Males	
	N	%	N	%
An academic life (teaching, research, other scholarly work	35	25.7	37	27.2
A business life	5	3.7	8	5.9
A professional life (doctor, lawyer, engineer, etc.)	45	33.1	49	36.0
A life of a trained technician or craftsman	6	4.4	5	3.7
A life centering upon some aspect of the creative arts	4	2.9	2	1.5
A life centering upon a home and a family	15	11.0	14	10.3
Other	5	3.7	4	2.9
I have not given sufficient thought to this matter to say	21	15.4	15	11.0

$x^2 = 4.821$

df = 7

Not statistically significant

APPENDIX C

TABLES OF NON SIGNIFICANT "PERSONAL CHARACTERISTICS" VARIABLES COMPARING LYMAN BRIGGS FEMALES WITH COLLEGE OF NATURAL SCIENCE FEMALES

Table C1. A comparison of Lyman Briggs females with College of Natural Science females in terms of the size of their home community.

Variable	LBC Females N	LBC Females %	NS Females N	NS Females %
Farm	4	7.3	3	5.7
Village, 250-2,499 population	6	10.9	7	13.2
Town, 2,500-24,999 population	12	21.8	12	22.6
City, 25,000-99,999 population	24	43.6	21	39.6
City, over 100,000 population	9	16.4	10	18.9

$X^2 = 0.436$

df = 4

Not statistically significant

Table C2. A comparison of Lyman Briggs females with College of Natural Science females in terms of religious preference.

Variable	LBC Females N	LBC Females %	NS Females N	NS Females %
Catholic	22	40.0	17	32.1
Jewish	1	1.8	1	1.9
Protestant	26	47.3	33	62.3
None	3	5.5	0	0
Other	3	5.5	2	3.8

$X^2 = 4.636$

df = 4

Not statistically significant

Table C3. A comparison of Lyman Briggs females with College of Natural Science females in terms of fathers occupation.

Variable	LBC Females N	LBC Females %	NS Females N	NS Females %
Manual worker	3	5.5	11	20.8
Skilled labor	12	21.8	8	15.1
Business owner	5	9.1	6	11.3
Farm owner or operator	1	1.8	0	0.0
Executive or managerial	10	18.2	7	13.2
Office, clerical or sales	3	5.5	5	9.4
Teacher (elementary or secondary)	0	0.0	2	3.8
Professional	15	27.3	9	17.0
Service (store, clerk, barber)	3	5.5	1	1.9

X^2 = 12.102

df = 8

Not statistically significant

Table C4. A comparison of Lyman Briggs females with College of Natural Science females in terms of fathers education.

Variable	LBC Females N	LBC Females %	NS Females N	NS Females %
Attended college	25	45.5	26	49.1
Did not attend college	30	54.5	27	50.9

X^2 = 0.141

df = 1

Not statistically significant

Table C5. A comparison of Lyman Briggs females with College of Natural Science females in terms of mothers occupation.

Variable	LBC Females N	%	NS Females N	%
Employed	24	43.6	19	35.8
Not employed	31	56.4	34	64.2

$X^2 = 0.683$

df = 1

Not statistically significant

Table C6. A comparison of Lyman Briggs females with College of Natural Science females in terms of mothers education.

Variable	LBC Females N	%	NS Females N	%
Attended college	20	36.4	23	43.4
Did not attend college	35	63.6	30	56.6

$X^2 = 0.557$

df = 1

Not statistically significant

Table C7. A comparison of Lyman Briggs females with College of Natural Science females in terms of size of high school graduating class.

Variable	LBC Females N	LBC Females %	NS Females N	NS Females %
Under 25	1	1.8	1	1.9
25-99	5	9.1	6	11.3
100-199	15	27.3	10	18.9
200-399	17	30.9	22	41.5
Over 400	17	30.9	14	26.4

$X^2 = 1.986$

df = 4

Not statistically significant

Table C8. A comparison of Lyman Briggs females with College of Natural Science females in terms of degree of participation in high school activities.

Variable	LBC Females N	LBC Females %	NS Females N	NS Females %
Very active	19	34.5	24	45.3
Moderately active	30	54.5	24	45.3
Not active	6	10.9	5	9.4

$X^2 = 1.302$

df = 2

Not statistically significant

Table C9. A comparison of Lyman Briggs females with College of Natural Science females in terms of rank in high school graduating class.

Variable	LBC Females N	LBC Females %	NS Females N	NS Females %
First quarter	49	89.1	45	84.9
Second quarter	4	7.3	8	15.1
Third quarter	2	3.6	0	0.0
Fourth quarter	0	0.0	0	0.0

$X^2 = 3.468$

df = 3

Not statistically significant

Table C10. A comparison of Lyman Briggs females with College of Natural Science females in terms of their own educational aspirations.

Variable	LBC Females N	LBC Females %	NS Females N	NS Females %
A year of college	0	0.0	1	1.9
Two years of college	3	5.5	0	0.0
Three years of college	2	3.6	0	0.0
Four years of college (Bachelor's Degree)	30	54.5	35	66.0
Graduate or professional school	20	36.4	17	32.1

$X^2 = 6.593$

df = 4

Not statistically significant

Table C11. A comparison of Lyman Briggs females with College of Natural Science females in terms of the parents educational aspirations for their daughter as percieved by the daughter.

Variable	LBC Females N	LBC Females %	NS Females N	NS Females %
A year of college	0	0.0	1	1.9
Two years of college	1	1.8	0	0.0
Three years of college	2	3.6	0	0.0
Four years of college (Bachelor's Degree)	43	78.2	39	73.6
Graduate or professional school	9	16.4	13	24.5

$X^2 = 4.887$

df = 4

Not statistically significant

Table C12. A comparison of Lyman Briggs females with College of Natural Science females in terms of the importance of good grades.

Variable	LBC Females N	LBC Females %	NS Females N	NS Females %
Very important	52	94.5	52	98.1
Not important	3	5.5	1	1.9

$X^2 = 0.963$

df = 1

Not statistically significant

Table C13. A comparison of Lyman Briggs females with College of Natural Science females in terms of prestige factors among students and faculty.

Variable	LBC Females N	LBC Females %	NS Females N	NS Females %
Being original and creative	22	40.0	20	37.7
Having a pleasing personality	18	32.7	12	22.6
Demonstrating scholarly capacity	8	14.5	9	17.0
Being active in campus activities	4	7.3	3	5.7
Dedicating yourself to your studies	1	1.8	8	15.1
Not being too critical	1	1.8	0	0.0
Coming from the right social background	1	1.8	0	0.0
Being active in inter-collegiate athletics	0	0.0	0	0.0
Being a member of a fraternity or sorority	0	0.0	0	0.0

$X^2 = 9.908$

df = 8

Not statistically significant

Table C14. A comparison of Lyman Briggs females with College of Natural Science females in terms of organizational preference.

Variable	LBC Females N	LBC Females %	NS Females N	NS Females %
Own business (or farm)	0	0.0	0	0.0
Small business firm	0	0.0	0	0.0
Medium to large firm or corporation	4	7.3	4	7.5
Own professional office (e.g. law office, dental office)	3	5.5	4	7.5
An educational institution (e.g. high school, college)	20	36.4	14	26.4
A public or private research organization	22	40.0	17	32.1
A public or private welfare agency	1	1.8	2	3.8
Government service (other than research, welfare, or military)	1	1.8	2	3.8
Other firm, organization, or situation	4	7.3	10	18.9

$X^2 = 5.045$

df = 8

Not statistically significant

APPENDIX D

TABLES OF NON SIGNIFICANT "PERSONAL CHARACTERISTICS" VARIABLES COMPARING LYMAN BRIGGS MALES WITH LYMAN BRIGGS FEMALES

Table D1. A comparison of Lyman Briggs males with Lyman Briggs females in terms of the size of their home community.

Variable	LBC Males N	LBC Males %	LBC Females N	LBC Females %
Farm	13	9.6	4	7.4
Village, 250-2,499 population	13	9.6	6	11.1
Town, 2,500-24,999 population	37	27.2	12	22.2
City, 25,000-99,999 population	38	27.9	23	42.6
City, over 100,000 population	35	25.7	9	16.7

$X^2 = 4.622$

df = 4

Not statistically significant

Table D2. A comparison of Lyman Briggs males with Lyman Briggs females in terms of religious preference.

Variable	LBC Males N	LBC Males %	LBC Females N	LBC Females %
Catholic	31	22.8	22	40.7
Jewish	1	0.7	1	1.9
Protestant	81	59.6	25	46.3
None	13	9.6	3	5.6
Other	10	7.4	3	5.6

$X^2 = 7.057$

df = 4

Not statistically significant

Table D3. A comparison of Lyman Briggs males with Lyman Briggs females in terms of fathers occupation.

Variable	LBC Males		LBC Females	
	N	%	N	%
Manual worker	11	8.1	3	5.6
Skilled labor	22	16.2	12	22.2
Business owner	10	7.4	5	9.3
Farm owner or operator	7	5.1	1	1.9
Executive or managerial	19	14.0	10	18.5
Office, clerical or sales	18	13.2	3	5.6
Teacher (elementary or secondary)	2	1.5	0	0.0
Professional	39	28.7	14	25.9
Service (store, clerk, barber)	4	2.9	3	5.6

$X^2 = 7.220$

df = 8

Not statistically significant

Table D4. A comparison of Lyman Briggs males with Lyman Briggs females in terms of fathers education.

Variable	LBC Males		LBC Females	
	N	%	N	%
Attended college	77	56.6	24	44.4
Did not attend college	59	43.4	30	55.6

$X^2 = 2.300$

df = 1

Not statistically significant

Table D5. A comparison of Lyman Briggs males with Lyman Briggs females in terms of mothers occupation.

Variable	LBC Males		LBC Females	
	N	%	N	%
Employed	47	34.6	24	44.4
Not employed	89	65.4	30	55.6

$X^2 = 1.614$

df = 1

Not statistically significant

Table D6. A comparison of Lyman Briggs males with Lyman Briggs females in terms of mothers education.

Variable	LBC Males		LBC Females	
	N	%	N	%
Attended college	57	41.9	19	35.2
Did not attend college	79	58.1	35	64.8

$X^2 = 0.729$

df = 1

Not statistically significant

Table C7. A comparison of Lyman Briggs males with Lyman Briggs females in terms of size of high school graduating class.

Variable	LBC Males		LBC Females	
	N	%	N	%
Under 25	3	2.2	1	1.9
25-99	18	13.2	5	9.3
100-199	38	27.9	14	25.9
200-399	36	26.5	17	31.5
Over 400	41	30.1	17	31.5

$x^2 = 0.956$

df = 4

Not statistically significant

Table D8. A comparison of Lyman Briggs males with Lyman Briggs females in terms of degree of participation in high school activities.

Variable	LBC Males		LBC Females	
	N	%	N	%
Very active	53	39.0	19	35.2
Moderately active	68	50.0	29	53.7
Not active	15	11.0	6	11.1

$x^2 = 0.250$

df = 2

Not statistically significant

Table D9. A comparison of Lyman Briggs males with Lyman Briggs females in terms of rank in high school graduating class.

Variable	LBC Males		LBC Females	
	N	%	N	%
First quarter	118	86.8	48	88.9
Second quarter	16	11.8	4	7.4
Third quarter	1	0.7	2	3.7
Fourth quarter	0	0	0	0

$x^2 = 3.271$

df = 3

Not statistically significant

Table D10. A comparison of Lyman Briggs males with Lyman Briggs females in terms of the importance of good grades.

Variable	LBC Males		LBC Females	
	N	%	N	%
Very important	120	88.2	51	94.4
Not important	15	11.0	3	5.6

$x^2 = 1.785$

df = 1

Not statistically significant

Table D11. A comparison of Lyman Briggs males with Lyman Briggs females in terms of the organization of academic work.

Variable	LBC Males N	LBC Males %	LBC Females N	LBC Females %
A predominance of class work, class assignments, regular examinations, etc.	68	50.7	29	53.7
A predominance of independent reading, writing, and research	60	44.8	24	44.4

$x^2 = 1.058$

df = 1

Not statistically significant

Table D12. A comparison of Lyman Briggs males with Lyman Briggs females in terms of prestige factors among students and faculty.

Variable	LBC Males N	LBC Males %	LBC Females N	LBC Females %
Being original and creative	46	33.8	20	37.7
Having a pleasing personality	34	25.0	12	22.6
Demonstrating scholarly capacity	24	17.6	9	17.0
Being active in campus activities	14	10.3	3	5.7
Dedicating yourself to your studies	9	6.6	8	15.1
Not being too critical	3	2.2	0	0.0
Coming from the right social background	0	0.0	0	0.0
Being active in inter-collegiate athletics	2	1.5	0	0.0
Being a member of a fraternity or sorority	1	0.7	0	0.0

$x^2 = 8.949$

df = 8

Not statistically significant

APPENDIX E

A QUESTIONNAIRE TO LYMAN BRIGGS STUDENTS CONCERNING THEIR VOCATIONAL PLANS

TO: Briggs College Sophomores (students who entered fall term 1967)

FROM: Don Harden

SUBJECT: Please complete the brief six item questionnaire on the remaining part of this page by circling the most appropriate response. Information concerning your occupational plans will be helpful in interpreting a research effort in which I am presently involved. I am grateful for your cooperation in this matter. Thank you.

Items 1 and 2

People attend college for a variety of reasons. Listed below are some of the reasons students give for attending college. We would like to know why YOU decided to get a college education.

1. I want to prepare for a profession or vocation
   1. Important
   2. Not important

2. I want the prestige attached to a college degree
   1. Important
   2. Not important

****

3. Which of the following comes closest to describing your career plans?
   1. I know exactly what I am going to do. _____ answer questions
   2. I am pretty sure about what I will do. _____ 4 and 5
   3. I am not too certain as to what I want to do. _____ skip to question
   4. I have no idea. _____ five

If you answered 1 or 2 in the above question, please answer the next question.

4. When did you really decide on your career choice?
   1. Before high school
   2. During high school
   3. During your first two years of college

5. Do you think that at some time in the future you would like to join the Peace Corps or VISTA?
   1. Definitely not
   2. Probably not
   3. Probably yes
   4. Definitely yes

6. Have your occupational plans changed since you came to M.S.U.?
   1. Yes
   2. No

_____
Student Signature