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ABSTRACT

This study was conducted to determine if colleges achieve direct effects on students' chances of graduation from college in five years as a result of variation in their organizational structures. The contextual findings of the study are: (1) the general quality of educational resources has no impact on graduation chances; (2) faculty attention per demand has a small positive effect on men's graduation rates from their initial college and a small negative impact on women's completion rates, although it does increase women's likelihood of obtaining a B.A. from another institution in five years; (3) size has no consistent impact on graduation chances for either men or women, but greater numbers of undergraduate majors have a modest negative impact on graduation from initial college on both men and women; and (4) mean hours per school spent in extracurricular organizations per week has a small but consistent impact on the graduation chances of males and females from their first college. (Author/HS)

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The research reported herein was performed pursuant to a grant (Grant No. OEG-1-70-000045-0022(509), Project No. 0-A-027) with the Office of Education, U.S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy. This investigation utilized the Project TALENT Data Bank, a cooperative effort of the U.S. Office of Education, the American Institute for Research, and the University of Pittsburgh. The design and interpretation of the research reported herein, however, are solely the responsibility of the author.

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PREFACE

This research was initially part of a joint venture and was to be part of a larger project conducted by Prof. John Meyer, Dr. William J. Bowers and myself. Due to difficulty in finding support for this larger venture, which would have studied the effects of colleges on occupational decisions, educational careers and deviant behavior, this project was done as a separate study. However, many of the ideas and much of the intellectual support derive from this earlier collaboration. Since then many people have contributed to the development of this work. Without this help and support, completion of the research would not have been possible. Dr. William Bowers, Director of the Center for Applied Social Research, Northeastern University, contributed an enormous amount of time and energy and also offered me the use of facilities at the Center. Given the difficulties that were encountered in processing the data this help was invaluable. A number of other members of the Center also contributed to the project and to them I am most grateful. Karen Ohlin facilitated the data processing and assisted in the continuing attempt to unravel the complexities and to 'clean up' the data supplied by Project Talent. Without her programming skills this work would have been unthinkable. Glenn Pierce was generous with his considerable methodological skills and also provided sound statistical advice. Members of the Northeastern University Computation Center were also generous in lending their time and expertise in solving the numerous computational problems that arose in the course of the study. To these people, and my superb typist, Mrs. Keiko Oh, I am very grateful.

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CHAPTER I

INTRODUCTION

Summary

The general problem of this study was to determine if colleges achieve direct effects on students' chances of graduation from that college - and to a lesser extent from any college - in five years as a result of variation in their organizational structures. This, of course, requires that individual characteristics known to affect this outcome be held constant in the analysis. A model was developed that specified ways in which recent trends in the organization of higher education have affected the organizational resources per student that we argued are likely to affect student commitment to the initial college attended, apart from individual skills and resources that students bring to college with them..

In summary, the contextual findings of this study are: (1) College Quality: the general level of educational resources has no impact on graduation chances, independent of characteristics of students recruited to those contexts; (2) Faculty Attention per Demand: this index has a small positive effect on men's graduation rates from their initial college and a small negative impact on women's completion rates; (3) but faculty attention per demand does increase women's likelihood of obtaining a B.A. from another institution in five years; (4) Size-Complexity: Size has no consistent impact on graduation chances for either men or women; but one measure of complexity, i.e., the number of undergraduate majors, has a modest negative impact on graduation from initial college on both men and women. Later specification of these effects indicates that size may have two different effects: (a) a small negative effect on graduation chances of low ability men and women; and (b) a small positive influence on middle and upper ability students' graduation rates. (5) Density of Extracurricular Group and Organizational Roles: one measure of this, i.e., the mean hours per school spent in extracurricular organizations per week, has a small but consistent impact on the graduation chances of males and females from their first college.

It must be remembered that these are effects of colleges that remain after individual and other college characteristics have been controlled. However, even though they appear to be genuine contextual effects, they are very small. The beta weights range from .05 to .10, so that even the strongest contextual variable has a negligible influence in terms of the amount of variance explained. In total college characteristics account for less than 5 percent of the variance explained.

These findings, and those of other studies (Astin, 1964; Sewell and Wegner, 1970; Meyer, 1970; Astin, 1969; Panos and Astin, 1968; Werts, 1968; Drew and Astin, 1972) of contextual effects on college occupational choice and dropout, indicate that there are few general effects of different types of colleges on a variety of student career outcomes and those that

do occur are small. This happens, in spite of the fact that American colleges are highly stratified in terms of the distribution of educational talent and resources. Two conclusions are derived from this general set of findings. One concerns the methodological strategy for studying the effects of college organizational structures on students, and the other is a substantive argument on how socializing organizations achieve an impact on individuals.

Problem and Objective of This Research

For a long time sociologists have seen educational institutions as primarily operating to channel young people into the larger society; in other words, functioning as a role allocating system. It is conventional to note that in most societies, especially complex industrial ones, the family is inadequate to the task of completely preparing young people for adult roles. Thus educational systems, age groupings, adolescent cultures and the like are necessary to lead young people a good part of the way in the economy and in other institutions. Or at least, it has been argued, these structures arise out of stresses and difficulties in this general process of adjustment (Eisenstadt, 1956).

Those responsible for educational policy and for the management of educational institutions constantly make decisions affecting who will be trained for what positions in society and in what kinds of educational environments. These practical considerations are, of course, directly related to abstract sociological ideas about role allocation. Both theorists and administrators are concerned with how the educational system and particularly the organizations within it can be structured to develop students' interests and capacities so that they match those required by the distribution of positions available in the adult society.

Researchers have tried to study the effects of college by finding changes in student attitudes and values during the college years (Jacobs, 1957; Goldsen et al., 1960). But many such changes are peripheral to the major life decisions students make and which colleges must directly affect. If colleges function to fit young people into concrete social positions in the larger society, how do they do so? How do they encourage students to continue on through college or drop out along the way? And then how do different types of institutional arrangements produce these effects in different degrees?

The aim of this research is to examine the effects of college organizational structures on graduation rates (or conversely dropout rates) among colleges. Much is known about the way differential selection affects student educational decisions, but little is known about the impact of college social organization on the decision to stay or drop out of a particular college (cf. Summerskill, 1962; Bayer, 1968). Since the objective is to show the effects of college social structures on attrition, we have had to consider two kinds of problems: (1) what are the relevant dimensions

of colleges and how does one measure them; and (2) how do these college characteristics affect students' organizational commitment, independently of individual attributes of students, such as academic aptitude and social class?

We begin by considering how individuals develop commitment to organizational statuses in socializing institutions such as colleges and then specifying those dimensions of college that may affect this process. It is conventional to note that colleges are temporary institutions housing a transient population and that the major rewards the organization has for motivating compliance with rules and commitment to the status are symbolic. Colleges do not ordinarily pay students to attend at very lucrative rates-nor can they offer other immediate tangible material benefits of membership. They must therefore affect students' commitment by making them want to remain in the status through: (1) symbolic rewards, such as grades; (2) by affecting students' perception of the future value of membership for economic and occupational achievement etc.; (3) or by committing students to social activities and social relationships in the organization which make the role meaningful and pleasurable and thereby affect students' desire to retain membership in that college. In short, colleges may affect students' commitment by shifting their ideas about the kinds and status level of adult economic and occupational roles it can allocate them to, and by allocating them to role relationships within the organization which are important and meaningful and which serve to locate their identity within the social structure of the college community. Newcomb's famous study of Bennington College (1943) emphasized this latter point by showing the importance of the college community that developed at this (then) new experimental college.

A number of studies have shown that at the individual level these processes work to increase students' commitment to college and lower dropout. It is a well-known finding that students who get higher academic rewards are less likely to drop out (Summerskill, 1962). Students who feel academically successful and competent are apt to be more committed. Similarly it is known that students who see college as important for occupational or economic success are less likely to leave a given institution. Thus many studies show that students with higher career aspirations, which typically depend on high levels of education, have lower dropout rates (Bayer, 1968). Lastly, it is common to find that students who are highly involved in the college community are less likely to drop out. Most studies of fraternities have shown that membership tends to increase the likelihood of graduating from that college (Kamens, 1967; Feldman and Newcomb, 1969). Other studies show that students who are involved in close friendships with other students at the college are also more likely to remain in the organization (Spady, 1968; 1970).

Studies of these processes at the individual level have also produced an important specification of the relative influence of these processes. That is, students' involvement in the college community and their perception of the value of college membership reduce the importance of academic

rewards for organizational commitment. Spady (1968), for example, has shown that college friendships decrease the impact of grades on student dropout at a very high quality institution. Similarly, Kamens (1967) showed that fraternity membership reduces the importance of academic achievement on membership continuation. This idea suggests, for example, that colleges which are tough academically may also produce high levels of commitment if they involve students' in the college community, or if they change their ideas about future benefits to be gotten from membership in the institution. It is important to remember that all of these processes may operate independently.

This raises the question of how college organizational structures may affect: (a) students' sense of academic success; (b) the meaningfulness of the college role and the extent to which students' identities are located in the college social structure; and (c) the value students perceive a given institutional membership is likely to confer on them. We turn now to suggest specific dimensions of college social structures and how they may affect these processes.

It is conventional to distinguish between the academic structure of colleges and the extracurricular structure of student social organizations and activities that colleges support. It is also common to note that students may be differentially committed to each of these aspects of college organization. (Cf. Clark and Trow, 1966 for a typology based on this distinction.) We begin with this distinction but go beyond it by suggesting that each of these aspects of college organization can be treated as variables. All colleges, for example, have extracurricular structures but there is wide variation in the number and kinds of groups and activities that given colleges support. Some schools have a very 'rich' and variegated student organizational life while others have a very impoverished extracurricular structure.

The idea that college academic and extracurricular opportunity structures vary among institutions leads us to conceptualize each as a separate status structure which may independently affect organizational commitment. Colleges may be classified in terms of each of these dimensions. This argument indicates two contextual or college level variables that may be of importance in affecting graduation rates. The first is:

A. The Density of Student Social and Organizational Roles per Student that the College Supports: this refers to the average number of informal and organizational relationships with other students, and the range of interests and activities covered by such relationships, per student. This is, of course, an attribute of the college, for schools differ in their ability to support a wide variety of student activities.

This variable refers to the availability of student relationships in the college community. The second is a measure of the availability of faculty-student role relationships for that proportion of students who want them.

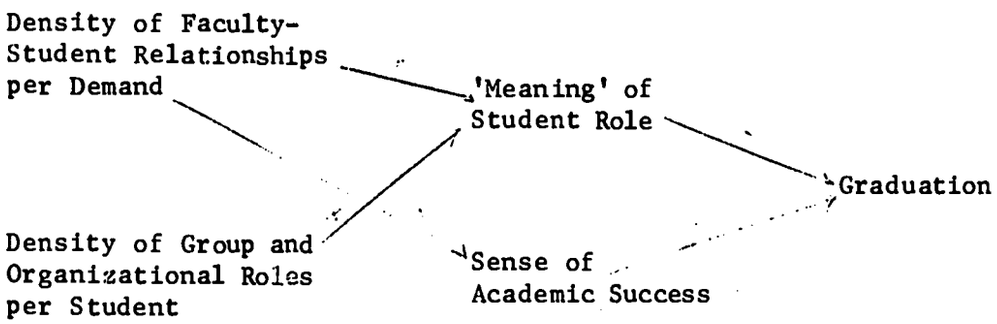
It is:

B. Faculty Attention per Demand or The Availability of Faculty-Student Role Relationships at the College Relative to the Demand for Them: this is the amount and range of formal and informal interaction with faculty members in which the typical student is encouraged to participate at the college.

It is important to remember that variable B is conceptualized in terms of students' interest and desire for such contacts. Many students do not want close contact with faculty, since it may increase amount of teacher control over their academic life. One study at a large, urban university showed that students generally liked courses better if teachers did not encourage informal contacts (A. Seidler, 1969, course paper). Hence measurement of this variable must include a measure of student desire for faculty contact as well as its availability.

Both of these variables refer to the availability of social relationships that colleges offer the typical student. We expect both to positively affect graduation rates in the following ways. Figure 1 shows how these college variables are expected to affect graduation rates. It is, of course,

Figure 1



assumed that individual characteristics of students recruited into these contexts are held constant. We can state these ideas formally in propositional language.

Proposition I. The availability of faculty-student relationships per demand will positively influence students' sense of academic competence by providing social support and encouragement for intellectual interests and aspirations.

Proposition II. The density of student social and organizational roles and the density of faculty-student role relationships will positively influence the meaningfulness of college membership.

Both arguments rest on the common idea that high levels of participation in a system increase the attractiveness of the group to participants. Each is likely to affect the extent to which students see their identity and interaction located in the social structure of the college.

We indicate now how recent trends in the organization of higher education have affected the distribution of these opportunity structures among colleges. Colleges that enroll the majority of undergraduates have tended in the last two decades to get larger and more complex. One important educational trend has been the development of 'multiversities'. Furthermore, educational resources and values, as currently defined, have tended to be allocated to large, complex institutions since in the eyes of their constituents this is seen as the most efficient distribution of educational resources given current purposes and educational policy. However, these variables are likely to have important effects in reducing the educational resources per student. Hence these are two important college characteristics that must be considered.

C. Size and Complexity: the former is the total number of students on campus and complexity is the number of differentiated functions that a school assumes. Thus a school with many research bureaus and many different graduate, undergraduate and professional schools is more complex than a small liberal arts college with no research or community service programs.

D. Quality: the level of resources regarded valuable in contemporary higher education - the training and productivity of faculty, the levels of preparation and ability of students, and the possession of an abundance of books and buildings, etc. per teacher and per student.

Both tend to be related, as is well known. This leads to proposition 3.

Proposition III. The greater the size and complexity of the college, the higher its quality tends to be on the average.

Both variables tend to decrease the academic resources per student and the availability of chances for participation in the college, as we indicate in the following propositions.

Proposition IV. The greater a school's size and complexity, the lower the density of student group and organizational roles per student; and

Proposition V. the lower the density of faculty-student role relationships per demand.

Remember that both ideas are stated in terms of resources per student. Proposition IV indicates that larger and more diversified universities

probably lower the number of other students a given student will know well and the number of organizations and activities he will participate in personally. (Cf. Gump and Barker, 1964, for evidence on this idea at the high school level.) Proposition V suggests that the same holds true of relationships between faculty and students. In larger, more complex schools a student is less likely to have several courses with the same instructor. And faculty members in such schools are likely to find outside research activities and intellectually congenial colleagues and graduate students with whom to interact more rewarding than interaction with undergraduates.

College quality is likely to have a similar effect.

Proposition VI: The higher the quality of the school, the lower is likely to be the density of student-faculty role relationships relative to demand.

This idea follows from the fact that quality in American higher education has not been defined primarily around the activities of teaching. High quality schools have more able and interested students who want and need faculty time and attention; but their faculty-student ratios are not enough lower than other schools to provide for this time. In addition, faculty attention in these schools is drawn away to research work and to interaction outside the school and away from undergraduates.

As a result, high quality colleges are likely to have two quite different effects on students.

Proposition VII: The higher the quality of the school the greater the value of membership.

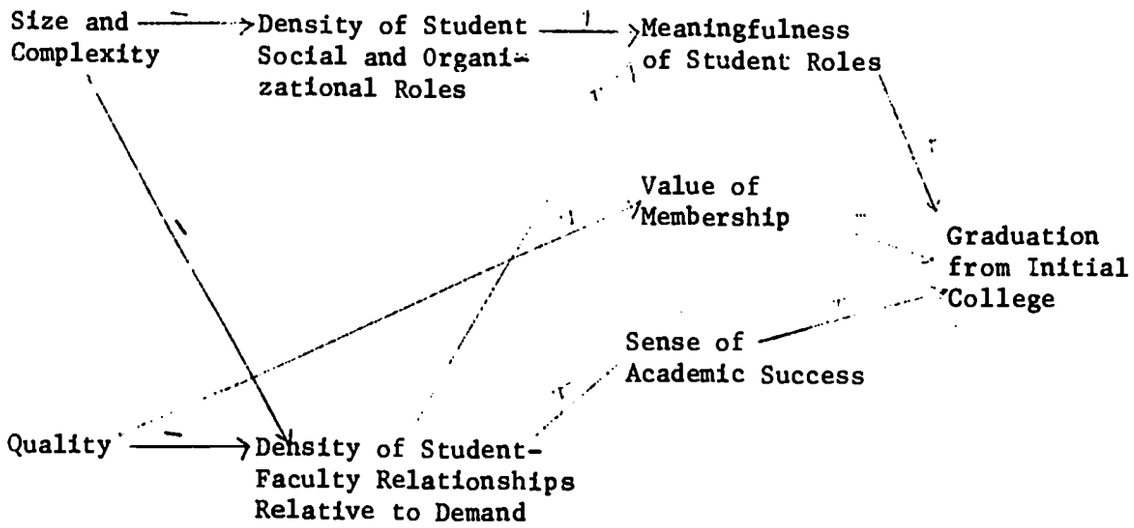
Proposition VIII. The higher the quality of the school, the lower the sense of academic success.

Proposition VII indicates that high quality colleges provide more prestige, more successful professors and alumni with whom to interact and identify. Proposition VIII, however, indicates that they lower students' sense of intellectual self competence. This happens because they have higher standards. They have more able students so standards as to the quality and quantity of students' work rise, both in the minds of students and in the grades given by teachers. These colleges have highly trained faculty members who are oriented to research and to interaction with their colleagues and graduate students. In these circumstances, their standards as to what constitutes good, interesting and legitimate academic work on the part of students tend to rise. For all these reasons, standards rise. But what is meant by this is simply that any given level of effort on the part of a student of any given ability is less likely to be rewarded by faculty members (with good grades or informal approval) or by peers. Thus any given student is less likely to be approved and rewarded the higher the quality of the school. He is allocated less academic success, and thus

except in unusual cases feels less academically successful.

These ideas are put together in the following model which shows the major relationships between school characteristics and individual outcomes or colleges.

Figure 2



The arrows represent causal effects of one variable on another and the sign indicates whether it is positive or negative.

This model represents our ideas of how colleges may affect student graduation rates, independently of characteristics of students they recruit. The next section discusses the measurement of these characteristics and other variables included in the analysis, and the data on which the study if based.

CHAPTER II

Measures, Methods and Data

Description of Variables in the Model: the major variables in the model of dropout are contextual or college level, variables, since the focus of our interest is on the effects of colleges on students' behavior. Since it is clearly necessary to control for the students different types of colleges select, individual variables also enter the model, both as controls for 'inputs' and as intervening variables that specify the relations between college variables and attrition. While the individual variables were constructed from student responses to Project Talent tests and questionnaires, the contextual characteristics of colleges were developed from two sources: (1) objective measures of quality, size and other characteristics that are available from official records, handbooks and other sources have been collected and put on computer tapes by a project at Columbia University called the College Characteristics Data Bank. This was obtained from the Bureau of Applied Social Research and merged with the computer tapes of information from Project Talent by matching the college IDs on each set of tapes. The resulting tape contains information on the individual student collected by Project Talent and data on the college he attended that was available in the College Characteristics Data Bank. (2) A second source of information about colleges was the students' themselves. They were treated both as respondents and as informants to yield two types of aggregate data on colleges. In the first case, the responses of students were aggregated to yield a mean for the college and this was then treated as a global attribute of the college. This was done to develop a measure of the amount of extracurricular participation of given colleges. Since such a measure is very dependent upon sample size, we limited construction of this measure to those schools represented by 25 or more students in our sample. While it would have been preferable to insist on larger numbers of students, such a tactic would have excluded a majority of the colleges, since very few schools are represented by 50 or more students in these data. As the result of our procedure, we have mean scores on this variable for 121 of the 968 colleges in the sample. Secondly, students were also treated as informants about the college. In this instance we wanted information about the college that was unavailable from other sources and that concerned the presence of absence of student organizations, namely fraternity and sorority systems. Assuming that in most cases an individual student knows whether these groups exist at the college he attends, we treated all students as reliable informants, realizing that a small amount of measurement error is likely. This seemed a reasonable price to pay for information that was unavailable elsewhere. This data is available for all the colleges in the study.

The variables used in our model are described below.

A. College Characteristics:

I. Quality: this refers to the academic resources available to institutions. The quality measure in the Data Bank is a linear combination of the scores of each college on five separate indicators. These are: (a) Ph.Ds per Faculty; (b) Faculty-student ratio; (c) Income per student; (d) Books per student; and (e) Size of the library (cf. Nash, 1966). These scores are in decile ranks per item. The index is the sum of the scores on each item. Of the 1144 colleges in the data bank, scores are available on all five items for 1051. Only 11 colleges have scores based on less than four of the five items (Nash, 1966: 27A). Scores on this variable range from a low of 5 to a high of 50.

Since quality also refers to the kinds of students a college recruits as well as to its general academic reputation, we also selected from the Data Bank indicators of these aspects of quality. They are: (1) the selectivity of colleges' admissions policy. This is measured by the ratio of applicants accepted to the total number of applications that the college receives and is scored from one to ten. A score of one means that the school accepts only one out of every ten applicants, whereas a score of seven indicates a much less selective college that admits seven out of every ten who apply. (2) Average Ability of the Student Body: this is an estimate of a college's academic ability rating devised by Astin (1965). Each college is given a score on the basis of the number of National Merit Scholar finalists who chose this school as one they wanted to apply to divided by the total number of the entering freshman class at that institution. The scores on this variable were normalized with a mean of 50 and a standard deviation of 10. Two thirds of the schools thus fall between 40 and 60 on this index. (For a fuller description of this measure, cf. Nash, 1966; 6A, 7; and Astin, 1965.) Astin has provided justification and some validation of this measure and our data indicates that it correlates well with both individual ability as measured by scores on the Talent test battery of general academic ability and with other measures of college quality, notably the index of academic resources. (3) Percent Going on to Post Graduate Study: this is a measure of colleges' 'output', and is more specifically a measure of the academic productivity of colleges. We have used it, in lieu of better measures, as an indicator of the academic 'climate' of an institution. However, since it is available for only about half the universe of colleges represented in the Data Bank, we use this variable with great caution. (4) Academic Prestige: this is a subjective rating of colleges developed by Berelson (1961). We have used this as an ordinal scale by combining both colleges and universities that Berelson ranked into one category, instead of maintaining separate scales for liberal arts colleges and for universities. Our scale includes both colleges and and universities and is scored: 1 = highest prestige; 2 = second highest; 3 = third highest; and 4 = all the rest.

II. Size-Complexity:

(a) Size: this is the total number of students at an institution, including both undergraduates and graduates.

(b) Complexity: we have taken two items from the Data Bank to measure this concept. They are: (1) Degrees Awarded by the Institution: this refers to the kinds of degrees a college or university confers and hence measures the extent of a post-graduate program a school supports. Schools were coded 1, if they offered only the B.A.; 2, if they gave M.S.s or M.S.s; and 3, if they conferred Ph.D.s and professional degrees, such as MD or LLD. (2) Number of Undergraduate Majors: this is a measure of the size of the undergraduate curriculum, and is based on the absolute number of undergraduate majors that a college offers. While the former indicator of complexity measures the vertical complexity of a college's structure and the extent to which its structure is organized around post college training and research programs, the 'number of undergraduate majors' measures its 'horizontal complexity', i.e., the extent to which its undergraduate structure houses many different kinds of disciplines and training programs. These dimensions of colleges are related but their correlation is a modest +.376 for men and +.418 among women, substantially lower than the correlations between size and degrees awarded (+.618 for men and +.703 for women). Number of undergraduate majors is also correlated with size, +.550 for men and +.521 for women. Both measures tap different dimensions of complexity.

III. Faculty Attention per Demand (or Density of Faculty-Student Role Relationships Relative to Demand): measurement of this variable involves combining a measure of the availability of faculty attention with one of the interest and desire of students for such relationships. Faculty-student ratios are a rough inferential measure of the supply of faculty contact. To measure student demand we use the aggregated ability level of the student body on the assumption that higher ability students both want and need more faculty attention. These two variables are combined into an index which is additive and linear. Scores on this variable range from 12 to 93 with a mean of 60.39 for men and 58.67 for women and standard deviations of 10.06 and 9.68 respectively.

IV. Density of Student Groups and Organizations per Person: this refers to the 'richness' of student extracurricular life and the extent colleges support an opportunity structure that has many or few group roles per student. We have used two contextual variables to measure this. Both are derived from the Project Talent data on students. (1) the absence or presence of a fraternity or sorority system at the school: students were asked to report whether such a system existed at their college. About 75% replied that there were Greek letter societies on their campus. This variable is coded: 1 = no fraternities or sororities, 2 = presence of Greek letter societies. Since there was no information in the College

Characteristics Data Bank on the proportion of students at each college involved in such societies or any other usable information on the variety of extracurricular groups, we had to use this measure as the closest approximation. This seemed reasonable since it is known that fraternities and sororities are one important type of group and do involve their members, at least, in other extracurricular organizations (cf. Kamens, 1972; and Feldmand and Newcomb, 1969). Thus whether a college has such extracurricular organizations or not does reflect the number of extracurricular roles available. We had hoped to get a measure of the proportion of students per college involved in such organizations but this was not available in the latest edition of the Data Bank. (2) Mean Number of Hours per School Spent in Extracurricular Organizations per Week: this is a measure of the concept that we constructed from students' responses to the second wave of the Project Talent survey during the freshman year in college. Students were asked the number of hours per week they spent in college clubs and organizations and in collegiate sports. To develop this measure we aggregated individual responses to these questions for those colleges represented by more than 25 students. For 121 colleges we were able to construct a mean rate of organizational participation per school. As a result there is considerable samplin g bias for this measure. However, since we are trying to infer relationships rather than describe populations, this sampling bias is less problematic.

The means and standard deviations of these variables are presented later in the data description section for men and women separately.

B. Student Characteristics:

V. Value of the Student Role: this refers to the extent to which students see their current institutional role conferring future benefits or rewards on them, i.e., income, prestige, etc. We measure this concept in two ways: (a) students' educational plans as freshman; and (b) students' freshman occupational expectations. The former measures the status level in the educational system that they wish to achieve: No degree; a B.A. or B.S.; and M.S. or M.S.; Ph.D; EdD.; LLB.; M.D.; D.D.S.; or other (Talent, 1961 questionnaire, #45). This was coded for the regressions as 1 = no degree; 2 = B.A. 3 = M.A.; 4 = Ph.D., Ed.D. or professional degree. The second measure was one of occupational plans and refers to the type of high status occupation students aspire to, since other literature had suggested that this might be an important distinction (Meyer, 1970). Two dichotomous variables were developed from the Project Talent occupations code of freshman plans (Q. 24, 1961 survey). The first was: academic career choice vs. all others. Academic careers refer to those those standards, entry, activities, values and ideology are strongly controlled by universities. These are educationally based occupations and include: college teachers, researchers, and fields that require a Ph.D. The other type of high status careers are those based in the traditional 'free' professions, including engineering. We call this variable professional-en-

gineering plans vs. all others. Such careers are based largely outside university settings and are less controlled by the values and standards incorporated in colleges and universities. (Cf. Meyer, 1970, for a further discussion.)

VI. Sense of Academic Success: this is measured by students' freshman grade average and is coded from F to A. No measures of subjective perception of academic competence were available.

VII. Meaningfulness of the Student Role: this was measured in two ways. First, we used student reports of their actual levels of participation in extracurricular groups and organizations, as measured by the number of hours per week they spent in such activities. Secondly, we used a four point scale of satisfaction with college (Q. 56, 1961 Survey) that was coded 1 = low and 4 = high. This is a generalized measure of satisfaction with the student role at the particular institution attended.

VIII. Graduation Status Index: this will be described more fully in the data description section. On the basis of students' reports in 1965 concerning their degree status, the following categories were developed: (a) graduated with a B.A. from the college initially enrolled in as a freshman in 1960; (b) transferred to another institution and obtained a B.A.; (c) still enrolled in the initial college with no B.A.; (d) enrolled in another college than first attended, but with no B.A.; and (e) out of college altogether with no B.A. or B.S. In the regressions, unless otherwise stated, this variable is dichotomized as: 1 = graduated from the first school; 2 = all others.

C. Individual Background Variables: Since the focus of this research is on the effects of colleges on students' educational decisions, a limited number of individual characteristics have been used in the analysis. Only those known to have an important impact on graduation were used. Fortunately, a great deal is known about the individual characteristics of students that influence this process (cf. Summerskill, 1962; Astin, 1972; Bayer, 1968). Such variables were chosen after a search of the literature and as a result of preliminary regression analyses in which the independent impact of many individual level variables was examined. Because some variables had a different impact on men and women, a slightly different list of variables was chosen for men and women. We will indicate this when discussing each variable.

I. Academic Aptitude: (1) this is an obvious and well documented predictor of dropout. To measure it for both men and women we have used Project Talent test C-002, which is a measure of general academic ability (cf. Flanagan, et al., 1964:3-69). Among all ability tests considered this one had the highest correlation with the dependent variable and was also more highly correlated with all other measures of ability than others. The intercorrelations of this measure of ability with other ability measures ranged from .80 to .90. This test score was used for both and women. (2) Since high school grades are known to have an indepen-

dent influence on graduation, apart from measured intelligence (cf. Astin, 1972), we have also used students' reports of their high school grade average as a separate measure of ability. This comes from Q.113 of the Student Information Bank, which was completed when students were still seniors in high school. This variable is coded 1 = all A's; 2 = mostly A's; 3 = mostly A's and B's; 4 = mostly B's and C's; 5 = mostly C's and D's; 6 = mostly D's and below.

II. Sex Role: this is controlled in all analyses by dividing the sample by sex and performing separate analyses on each subsample.

III. Social Class: for males an SES index constructed by Project Talent called P 801 was used. This is fully described in Appendix 1. It includes measures of family income, parents' education, father's occupation, and a number of items that reflect the educational resources in the home and family life style. However, it was found that some of the items in this index negatively affected women's graduation chances while others increased them. Indicators of family income were found to reduce women's chances while parents' education and occupational status increased them. Thus a separate SES measure was developed for women to avoid this problem. The following measures were used: (1) mother's educational level; (2) father's educational level; and (3) father's occupational status. The latter was coded into 6 occupational prestige categories (cf. occupational status code of Talent SES index P*801), and the former are the same as those used in the construction of the SES index for males.

IV. High School Educational Plans and Aspirations: two sets of items were used to measure students' aspirations prior to college entry. One is a 6-point scale of the amount of education high school seniors expected to have during their life (Q.304, Student Information Blank). Unfortunately, this is not exactly comparable to the questions asked of these students as freshmen. The second items were student reports of their substantive occupational choices. Two variables were created from these: Academic career choice vs. all others and Professional-Engineering Career Choice vs. all others. These were constructed in the same way for high school seniors as for the college freshmen and the coding has been described earlier.

V. Religion: among males this proved important so a variable Jewish vs. all others was developed.

VI. Certainty of Occupational Choice prior to college: this appeared to be an important variable, particularly in regard to college effects on occupational plans. Subsequent analysis showed that it wasn't but it is used in one of the regressions reported. It is a six-point scale of certainty, going from completely decided to completely undecided (Q.348).

The table below present the means and standard deviations for all of these individual level varialbes for men and women.

(Table 1 About Here)

Data and Study Design: The data for this study consist of a national probability sample of 11,361 college students, who entered an accredited four year college in the fall of 1960 and who responded to three waves of a panel study conducted by Project Talent (cf. Flanagan et. al., 1964, for a description of the study design). One thousand four hundred and ninty-one (1491) junior college students were excluded from the original sample, as well as 2809 students who were attending non-accredited four year colleges.

Students were surveyed at three points in time by Project Talent: (1) during the senior year in high school in the spring of 1960, Project Talent administered a number of aptitude and interest tests to these students, as well as a self administered questionnaire designed to provide information on students' background, home environment, e.g., SES, occupational plans, high school activities and a variety of other standard background variables. Since Talent is largely a study of the development and allocation of manpower in American society, the tests and questionnaire items emphasize vocational abilities, interests, plans and educational aspirations. (2) One year later in June of 1961, these same students were surveyed by mailed questionnaire and asked some of the same questions about the college experiences, activities and success, relevant to the process of adult socialization. (3) Five years later in October of 1965, mailed questionnaires were again sent to members of the sample. Many of the earlier questions were repeated and a number of others were added to find out additional information about work experiences, educational progress, occupational choices they had or were making, and academic activities and attitudes. While Project Talent has plans for a 20 year panel study of this sample, our data consists of the college respondents who participated in each of the three waves of the study: 1960 as high school seniors; 1961 at the end of the freshman year in college; and 1965 when they were BA degree holders, degree candidates or dropouts from higher education. It was necessary to exclude any student in the sample who was a non-respondent at any one of these time points, since the data collected at each time are all vital for the analysis. The information gathered in 1960 is important for measures of background variables, attitudes, abilities and values prior to college entry. The 1961 information provide us with both measures of student adaptation to college and with measures of college environments, since this is obtained through knowledge of the ID of colleges students attended. Lastly, the 1965 survey is the source of data on educational completion rates. Because degree status and graduation from the initial college attended is a variable constructed from student self reports, this data exists only for students who returned the questionnaire in 1965.

Table 1

Means and Standard Deviations of Intervening Variables (College: 1961) and Background Characteristics (High School: 1960) of Men and Women

SEX: Males

Variables	Mean	Standard Deviation
Graduation From Initial College	2.51	0.499
Freshman Educational Plans	3.68	0.895
Freshman Professional-Engineering Career Choice	2.69	0.460
Freshman Grade Average	4.31	0.691
Freshman Academic Career Choice	2.90	0.291
Freshman College Satisfaction	4.54	0.620
Freshman Extracurricular Organizational Participation	4.57	4.52
High School Ability Score (Talent C-002)	643.25	90.44
SES Index	105.38	8.594
High School Grades	4.26	0.993
High School Educational Plans	6.265	0.840
Jewish/Other Religion	2.89	0.301
High School Academic Career Choice	2.86	0.344
High School Professional Engineering Career Choice	2.56	0.495
High School Occupational Certainty	3.98	1.122

Table 1

Means and Standard Deviations of Intervening Variables (College: 1961) and Background Characteristics (High School: 1960) of Men and Women

SEX: Females

Variables	Mean	Standard Deviation
Graduation from Initial College	2.49	0.500
Freshman Educational Plans	3.30	0.726
Freshman Professional-Engineering Career Choice	2.97	0.157
Freshman Grade Average	4.52	0.669
Freshman Academic Career Choice	2,95	0.206
Freshman College Satisfaction	4.69	0.543
Freshman Extracurricular Organizational Participation	4.98	3.806
High School Ability Score (Talent C-002)	635.47	88.75
High School Grades	3.99	0.927
Social Class:		
Mother's Educational Level	6.61	1.87
Father's Educational Level	6.85	2.49
Father's Occupational Status	4.60	1.156
High School Educational Plans	5.96	0.847
High School Academic Career Choice	2.89	0.308
High School Professional-Engineering Career Choice	2.96	0.194

The size and complexity of the Project Talent samples make response bias an important source of error. While they have attempted to correct for this by conducting special surveys of non-respondents and then weighting the sample appropriately to take account of non-response, this alternative was not available to us because the computer tapes that were constructed by Project Talent failed to distinguish the respondents from the special sample of non-respondents. Fortunately, the response rates of the college bound portion of the 1960 twelveth grade sample are considerably higher than the rate for the overall sample. Table presents the rate for the overall sample (The table comes from Flanagan, et al., 1971: 1-5).

(Table 2 About Here)

Of the 81,175 students in the 1960 high school senior sample, 61.2% returned the questionnaire in the 1961 follow up. By 1965, the response rate dwindled to 37.8%. This is largely a result of the sheer physical difficulty of locating people and getting questionnaires to them. This problem is somewhat mitigated in the case of four-year college students, partly because of the extensive records on residence that colleges keep. The response rates of the college bound part of the sample in 1965 were: males = 54.3%; and females = 54.2%. These are people who responded to all three waves of the study. Since these response rate are not available in the Project Talent reports, we have had to construct them ourselves, using the Talent estimates of four year college going rates for men and women in 1960 together with our data on the total number of college men and women who responded in 1965. Project Talent estimates that 37% of males and 27.5% of the females of the 1960 high school senior class entered a four year college in 1960-61 (cf. Flanagan, 1964:10-49). This produces an N of 14,686 for men, and an N of 11,408 for women. Our data show that there are 7980 males and 6190 females who entered a fouryear colleges in 1960, and who responded to the 1960, 1961 and 1965 surveys. This results in the above figures for male and female response rates. These figures are considerably higher than those for the pattern of response among the entire 1960 Talent sample; where the response rate for males is 38.1% and for females 37.6% (cf. Table 1). The response of the college sample is about 15% higher than these rates, and this is about average for large scale, mailed surveys. (Cf. also Bayer, 1968, for a discussion of Project Talent Data.)

Construction of the graduation/degree Index: This is the major dependent variable in the study and refers to both students' B.A. degree status in 1965 and to the college from which they graduated. Three questions from the 1965 questionnaire were used to construct the index.

(1) Q.22: Which of the following college degrees or diploma have you earned or do you plan to earn? (This was followed by a list of degrees and two sets of pre-coded categories, one for degrees earned and the other for degree plans.)

Numbers of TALENT probability-sample cases, numbers with one-year and five-year follow-up data, and corresponding percentages

Classified by grade (at time of original testing) and sex

GRADE	SEX	(1) Total no. of TALENT probab. sample cases	(2) No. of cases in SPECIAL SAMPLE OF NONRESPONDENTS* 1-YEAR FOLLOW-UP	(3) 5-YEAR FOLLOW-UP	(4) Number of FOLLOW-UP RESPONDENTS* 1-YEAR FOLLOW-UP REG.**	(5) SPEC.**	(6) TOT.	(7) 5-YEAR FOLLOW-UP REG.**	(8) SPEC.**	(9) TOT.
12	M	39,692			23,178	661	23,839	15,108	867	15,975
	F	41,483			27,061	609	27,670	15,616	936	16,552
	Tot.	81,175	1277#	2074	50,239	1270	51,509	30,724	1803	32,527
11	M	45,443			20,307	1388	21,695	15,718	1201	16,919
	F	47,060			23,175	1318	24,493	16,703	1164	17,867
	Tot.	92,503	2893	2558***	43,482	2706	46,188	32,421	2365	34,786
10	M	50,654			20,915	1017	21,932	15,899	1060	16,959
	F	49,195			21,567	1095	22,662	15,867	984	16,851
	Tot.	99,849	3066	2654	42,482	2112	44,594	31,766	2044	33,810
9	M	50,171			21,181	1127	22,308	13,227#	799#	14,026#
	F	51,500			23,637	1018	24,655	13,905#	773#	14,678#
	Tot.	101,671	3202***	2531	44,818	2145	46,963	27,132#	1572#	28,704#
9-12 combined	M	185,960			85,581	4193	89,774	59,952#	3927#	63,879#
	F	189,238			95,440	4039	99,479	62,091#	3857#	65,948#
	Tot.	375,198			181,021	8232	189,253	122,043#	7784#	129,827#

GRADE	SEX	Percentage of all nonrespondents: 1-YEAR FOLLOW-UP	5-YEAR FOLLOW-UP	Response rates: Percentage of: Tot.	Special nonresp. sample	Tot.	Percentage of: Tot.	Special nonresp. sample	Tot.
12	M			58.4		60.1	38.1		40.2
	F			65.2		66.7	37.6		39.9
	Tot.	4.1	4.1	61.9	99.5	63.5	37.8	86.9	40.1
11	M			44.7		47.7	34.6		37.2
	F			49.2		52.0	35.5		38.0
	Tot.	5.9	4.3***	47.0	93.5	49.9	35.0	92.5	37.6
10	M			41.3		43.3	31.4		33.5
	F			43.8		46.1	32.3		34.3
	Tot.	5.3	3.9	42.5	68.9	44.7	31.8	77.0	33.9
9	M			42.2		44.5	26.4##		28.0##
	F			45.9		47.9	27.0##		28.5##
	Tot.	5.6***	3.4	44.1	67.0	46.2	26.7##	62.1##	28.2##
Average % for a grade				48.9		51.1	32.8##		35.0##

*Only cases in the probability sample for grades 9-12 are included in these counts. All counts are based on the TALENT tape files.

**"Reg." means regular respondent to mailed questionnaire.
"Spec." means member of TALENT sample who was in special sample of nonrespondents to mailed questionnaire.

***Stratified sample.

#Approximate number.

##Approximate percentage.

(2) Q.23: What colleges or universities have you attended as an undergraduate? If you have already earned a bachelor's degree, please specify the degree, and the month and year received.

(3)Q.26: Are you enrolled in a college or university this semester?

By matching the ID of the college a student entered with that of the last college attended, together with the information on degree status and enrollment, we were able to construct a variable that distinguishes between: (1) students who graduated with a B.A. from their initial college; (2) those who have earned a B.A. from a college other than the one they entered, i.e., transfers; (3) students who are still enrolled at their original college and have no B.A.; (4) students who are enrolled in a college other than their initial one and who do not yet have the B.A.; and (5) lastly, those students who do not have a B.A. and are not enrolled in any college as of October, 1965. This index allows us to distinguish between several kinds of 'dropouts'. Table 3 shows the distribution of males and females on the graduation index. This table includes all students in a four year college, whether it is accredited or not.

Table 3

Distribution of Males and Females on Graduation Index

	SEX	
	Males	Females
B.A. from Initial College	47.6%	50.1%
B.A. from Another College: Transfer	13.4%	14.0%
No B.A. but Enrolled in Initial College	8.6%	2.8%
No B.A. but Entolled in Another College	11.2%	4.9%
No B.A., but not in any College	19.2%	28.2%
	(7980)	(6190)

Usable N = 14,170
NA on Sex = 92 (excluded from tabulation)
TOTAL N = 14,262

Table 4 shows the results of this cross tabulation when those attending non-accredited four year colleges are removed. Note that the graduation rates from initial college attended are substantially higher in this table for both men and women (cf. also Bayer, 1968).

Table 4

Graduation Status by Sex, Accredited Colleges Only:

	SEX	
	Males	Females
Received a B.A. from initial College	57%	58%
Transferred to Another Institution and Earned a B.A.	9%	11%
No B.A.: Still Enrolled in Same College	10%	3%
No B.A.: Enrolled in College Other Than First Attended	9%	4%
No B.A. and Not Enrolled in College: Out of College Altogether	16%	24%
	(6280)	(5081)

Usable N = 11,361
NA = 2,809

Since Astin (1972) has recently published a report on college dropouts, using a national survey conducted by American Council on Education on the class of 1970, we can check our results against his to determine if large biases in our data exist. Because Astin's sample of institutions included both accredited and non-accredited four year colleges, we will compare his results against those we obtained when students attending non-accredited four year colleges were included in the analysis.

Two differences between his data and our own must be born in mind: (1) his sample design involves a stratified sample of institutions and students within them taken in 1966, while ours is a sample of students who were freshmen in 1960-61; (2) his data is weighted to take account of both school size, and hence sampling variation, and institutional type, so that colleges of each type of selectivity and control, etc. are weighted according to the proportion of students enrolled in them. This is done to 'correct' for the effects of school type on attrition. By contrast, our data are unweighted. With these differences in mind, we can compare his estimates with ours. He uses the following categories: (a) students who had received a B.A. or B.S. from the four year college in 1970 (four years after they entered); (b) students who were still enrolled; and (c) those with no B.A. but who intended to return to school, as indicated by requesting their former college to send a transcript to another school (cf. Astin, 1972:10).

Table 5

Astin's Estimates of Graduation Rates, Class of 1970 (Four Year Colleges Only)

	SEX	
	Men	Women
Received a B.A. from First College	45.2%	48.6%
Received a Degree or Was Still Enrolled in College	60.7%	55.6%
Received a Degree, Was Still Enrolled, or Requested that a Transcript be Sent to Another College	83.5%	78.3%

Notice that the rates are cumulative. His first category refers to students who have received a degree from the institution they first entered and is comparable to our first category. The graduation rates for both men and

women are very similar in both sets of data. The rate is slightly higher in the Talent data (about 2%) but this may be accounted for by the fact that 5 years had elapsed after initial entry into college when Talent administered its follow up questionnaire, while Astin's survey has done only 4 years after students entered college. Given the discrepancies in the other code categories of both studies further comparisons are meaningless. The comparison between these sets of data shows two important things: (1) first it gives us conficence that there is no serious bias in our data due to non-response; and (2) it shows that graduation rates have been relatively stable over the decade 1960-1970. As a result, we have added conficende that our data are not seriously flawed or out of date, due to its failure to include the post 1964 generation of college youth.

Data on College Characteristics: The data from the Project Talent test batteries and questionnaires are not the only source of information used in this study. To measure college environments, e.g., quality and size, we have used the Columbia Data Bank of College Characteristics (Nash, 1969). This consists of a computer tape that contains a large amount of information on the 1144 regionally accredited four year colleges and universitites in 1962-63 that has been compiled from a variety of sources, e.g., Office of Educationserveys, college handbooks, catalogues, etc. All of the non-aggregated measures of college characteristics used in this study come from this data bank. This information allows us to characterize each of the colleges attended by students in the Talent surveys in terms of its size and complexity, quality and other college level variables. Our sample includes 968 colleges for which we have both college level data and information on individuals attending them. The means and standard deviations of these variables, together with the response rates for each variable are presented below. The first part of the table shows the means and standard deviations for the national distribution of the 1144 accredited four year colleges in the Columbia Data Bank of College Characteristics. The second part shows the means and standard deviations for the colleges that students in the Project Talent sample attend. This is done for the purpose of providing a comparison between the national distribution of colleges and that part of distribution that the majority of students in the Talent surveys are enrolled in. (For a discussion of how this sample design with its attendant bias may affect the analysis, cf. the section on Sources of Error in the Data.)

(Tables 6 A,B,C About Here)

Comparison of the three sets of data clearly show that men and women in the Talent surveys are attending larger and higher quality colleges than the average college in the Data Bank. This is especially true if we use average ability of entering students as the measure of quality. Similarly, on all the measures of size and complexity, we see that students in the sample attend schools that are more complex and larger than the average. This, of course, is a result of the sample design. Since students and not colleges were sampled, the colleges in the sample are those in which the

Table 6 A

Means, Standard Deviations and Response Rates for the 1144 Accredited Four Year Colleges in the Columbia Data Bank of College Characteristics

Variables	Mean	Standard Deviation	Response Rates %	N
A. Quality Measures				
1. Selectivity	3.24	3.42		699
2. Average Ability of Students	43.28	19.30	89%	1015
3. Quality Index: Academic Resources	27.62	9.68	100%	1139
4. Ph.D. per Faculty (decile rank)	4.50	2.87	97%	1107
5. Faculty/Student Ratio	4.50	2.87	99%	1134
6. Income per Student	4.52	2.88	94%	1072
7. Books per Student	4.51	2.87	99%	1138
8. Library Size	4.48	2.87	100%	1139
9. Percent Going on to Graduate School	27.44	21.24	44%	496
9A. Prestige: Berelson Rating				744
B. Size-Complexity Measures				
10. Total Size	3236.25	5713.63	100%	1139
11. Undergraduate Size	2414.03	3738.00	100%	1139
12. Degrees Awarded	2.55	.90		1096
13. No. Majors Offered	17.75	12.05	80	911
14. Percent Resident on Campus	52.48	30.18	88	1006
C. Components of Faculty/ Student Roles per Demand				
15. Faculty/Student Ratio		See above		
16. Average Ability of Students				

Table 6 B

Means and Standard Deviations of College Characteristics of Four-Year Accredited Schools Attended by Males in Project Talent Sample

Variables	Mean	Standard Deviation
A. Quality Measures		
1. Selectivity	8.01	1.95
2. Average Ability of Students	54.73	8.40
3. Quality Index: Academic Resources	30.39	9.55
4. Faculty/Student Racio (in dociles)	5.71	2.90
5. Percent Going on to Graduate School	34.65	21.04
5A. Prestige: Berelson Rating	3.60	0.72
B. Size-Complexity Measures		
6. Total Size	7800.85	5900.92
7. Degrees Awarded	3.30	0.78
8. No. Majors Offered	29.12	16.54
C. Density of Roles per Student		
9. No Fraternities/Sororities (25% of schools don't have them and 75% do.)	2.80	0.40
10. Hours per Week in Student Organizations and Activities	10.06	1.70
11. Hours per Week in College Sports		
12. Percent Residential/Size	2.15	3.72
13. Percent Residential	55.42	31.16
D. Faculty/Student Roles Relative to Demand		
14. Average Ability + Faculty/ Student Ratio	60.39	10.06

Table 6 C

Means and Standard Deviations of College Characteristics of Four-Year Accredited Schools Attended by Women in the Project Talent Sample

Variables	Mean	Standard Deviation
A. Quality Measures		
1. Selectivity	8.07	1.88
2. Average Ability of Students	53.09	8.15
3. Quality Index: Academic Resources	29.70	9.02
4. Faculty/Student Ratio (in dociles)	5.61	2.99
5. Percent Going to Graduate School	30.84	21.76
5A. Prestige: Berelson Rating	3.61	0.69
B. Size-Complexity Measures		
6. Total Size	7200.15	6000.56
7. Degrees Awarded	3.17	0.80
8. No. Majors Offered	26.58	15.54
C. Density of Roles per Student		
9. No. Fraternities/Sororities Frats. Sors. on Campus	2.70	0.45
10. Average Hours per Week in Student Organizations and Activities	9.93	1.76
11. Average Hours per Week in College Sports		
12. Percent Residential/Size	2.81	4.05
13. Percent Residential	58.23	30.13
D. Faculty/Student Roles Relative to the Demand		
14. Average Ability + Faculty/ Student Ratio	58.67	9.68

majority of the American college population are enrolled. Our data simply are representative of the trends in higher education toward concentration of educational resources and talent in 'multiversities'.

Sources of Error in the Data: As a measure of access to higher educational degrees, our data do not take into account two important effects: (1) Delayed entry into higher education; and (2) Delayed completion. Many students enter four year colleges and universities some years after they have completed high school. Some initially enter junior colleges and transfer after two years, while others delay entering higher education altogether until their early or middle 20s. For example, out of the 15,681 people in the Project Talent sample who were college students in 1965, we had to exclude 1419 cases because they had no 1960-61 college ID. Most of these represent transfers from junior colleges. As a result from these data we do not know the effects of late entry into higher education.

Secondly, it is known that many students who enter college and leave without a degree eventually graduate from some college (Eckland, 1964). Our own data (cf. Table) on transfers shows that within 5 years of initial entry into higher education, over 60% of the males have earned B.A. degrees from some college and another 20% are still enrolled. Among women, 64% have earned a B.A. from some school, but only 8% of those without degrees are still enrolled.

Both of the above effects, it must be remembered, result from the structure of American higher education, which allows many to enter, delayed entry, and delayed completion, so that the biases in the data are not merely statistical but represent effects of the educational system itself (cf. Turner, 1961).

A third effect not covered by these data is the impact of one's starting point in the educational system. From the data on transfer rates we know what the effects on graduation are of initially attending a selective, high quality college, for example. We do not, however, know from these data what the impact of initially entering a junior college is on earning a B.A. (Cf. Clark, 1964, for a study of a junior college and its effect on students' educational aspirations.)*

* When both students who entered two year and four year colleges are combined, Project Talent estimates that 48.7% of the males and 53.9% of the women have obtained a B.A. degree by 1965. Since they have not done separate tabulations for those who entered junior colleges and for those who first entered four year colleges, it is not clear what the rate of B.A. attainment is for those who initially entered junior colleges (cf. Flanagan, 1971: Table 2-2).

A fourth source of bias in these data results from the sample design. Project Talent data represents a sample of students. This means that some types of colleges are underrepresented because few students in the sample attend them, even though these schools constitute a substantial portion of the distribution of American colleges. In these data small colleges are underrepresented. The median size of colleges in the U.S. is 1143 (Nash, 1966). In the Columbia Data BAnk, the mean size of the 1139 colleges attended by Project Talent students is 2414 with a standard deviation of 3738 (this includes undergraduates only). In the Talent sample of students the mean college size is 7200 with a standard deviation of 6000. Students in the Project Talent sample are attending colleges that are considerably larger than the typical American college. This has important consequences for the analysis. It means that in the regression analysis the effects of small colleges may be covered up because of the samll size of the samples from such schools. We correct for this by inspection of complex cross tabulations, in which the effects of extreme clesses of a variable such as size can be seen. We can thus use cross tabulations to check on the adequacy of the regression analysis. It must be remembered, however, in considering the result of the regression analysis that the effect of our sample design may be to dampen the impact of college characteristics by restricting the range of variation on these variables. In short, our sampling design may result in a conservative bias.

Our final assurance about the adequacy of these data for our particular problem, i.e., uncovering school effects, rests on the fact that they are reasonably comparable with one other large, national survey, which used a different sampling design; and that biases in the data are less critical for the problem of uncovering relationships than for estimating population distribution.

Plan of Analysis and Statistical Procedures: The analysis proposed requires us to examine the influence of one or more organizational contexts on student dropout, when a large number of individual variables are held constant simultaneously. Two methods of analysis are used: (1) multiple regression analysis; and (2) complex multivariant cross tabulation procedures. The latter is known as contextual analysis and has been the subject of a number of recent methodological discussions, which have highlighted its usefulness and limitations (Blau, 1957; Davis, et al., 1961; Thielens, 1961; Lazarsfeld, 1959; and Tannenbaum and Bachman, 1964). The first step in the analysis is to separate the within school and between school variance through multiple regression procedures. The latter is the variance that is accounted for by institutional characteristics (cf. Coleman,1966: 290ff.). This procedure allows us to determine the relative strength of individual and college characteristics in accounting for variance on the dependent variable. Since we are interested in describing relationships between variables in these data, standardized regression coefficients (beta weights) will be used to extimate the relative strength of the school and individual variables in accounting for variance in graduation-dropout rates.

Complex multivariate cross tabulations will then be used to explicate relationships that the regression analysis indicates are important. This allows us to examine the extent to which the relationship exists for the entire range of values of third and fourth variables, and also provides a check on the linearity of the relationships. Secondly, it allows us to check on the effects of sampling biases. For example, smaller colleges (under 1500) are underrepresented in these data, but constitute an important segment of American higher education. Regression analysis will underestimate the effects such schools may have simply because they are a small proportion of the total sample.

For the regression analysis we have constructed a systematic one third subsample of the original sample of students enrolled in accredited four year colleges. The N of this subsample is 3787. This was done to save computer time and expense. However, the multivariate cross tabulations are based on the total sample (N = 11,361).

Statistical Significance: We have not indicated specific significance levels for coefficients in the regression analyses because we are concerned about the relative strength of relationships. Almost any coefficient is significant in a sample of this size. Since we have not indicated significance levels in each table, we will propose a general rule for evaluating the statistical significance of regression coefficients in all analyses. Any coefficient over .04 (beta weight) can be regarded as statistically significant at the .05 level. In the subsample we use, with 1720 degrees of freedom, an F ratio of 3.84 is required to achieve statistical significance at the .05 level. A regression coefficient of .04 achieves this size F ratio. While sometimes statistically significant, coefficients below .04 can be regarded as non-significant.

It must be emphasized, however, that in this situation - with a very large sample size and huge degrees of freedom - it is the size of the regression coefficients, and not their statistical significance, that is the major issue. That very small college effects are statistically significant is not very helpful, empirically or theoretically, in this research.

CHAPTER III

RESULTS

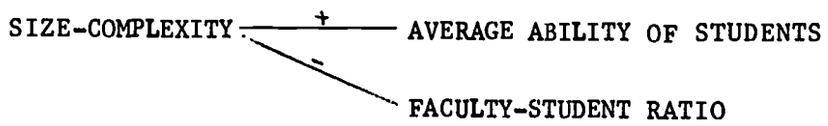
School Characteristics and Graduation Status: Zero Order Relations

This section shows the relation between the measures of quality, bureaucratization and the extracurricular structure and the effects of these variables on graduation status, individually and in combination. No individual characteristics, except sex, are controlled, since we are interested in determining if any of the contextual characteristics specified in the model have important effects on graduation. Once this is determined we will introduce individual variables into the regression equations and see if the school effects still remain after controls for college selectivity are introduced. In the following analysis we have dichotomized the dependent variable into these categories: (1) graduated with a B.A. or B.S. from the initial college entered in 1960; and (2) left the initial college without a degree. This procedure allows us to examine the impact of school characteristics on student commitment to the undergraduate career at the particular college they entered. Later we will show the impact of student's starting point in the educational system, i.e., the type of college he first attended, on the likelihood of attaining a B.A. degree in five years from any college.

(Correlation Matrix(s) Here)

The correlation matrices show two major trends in higher education: (1) the concentration of talent and resources in large, complex institutions now known as 'multiversities'. The correlations between the measures of quality and size-complexity reflect this trend. The best measure of 'multiversity' structure, i.e., the degrees a university confers, is more highly correlated with the measures of quality than the other two indicators of size and complexity. The correlations between it and average ability of the student body is .395 and between it and the level of academic resources is +.427. This is true for both men and women. (2) A second trend is not so obvious in these data. That is the distribution of faculty-student role relations i.e., 'faculty attention per demand', and the effect of institutional size and complexity on this resource. We have argued that educational trends have resulted in the decrease in faculty attention per level of ability or per level of student demand. However, the correlations between size-complexity and the variable 'faculty attention per demand' are all positive for both men and women. They are +.237, +.176, and +.382 for men; and +.233, +.185, and +.287 for women. These correlations, however, are largely an artifact of the way the variable 'faculty attention per demand' was constructed; and thus conceal a negative relation between the availability of this resource and multiversity organization.

Figure 3



Males: Zero Order Correlations of Institutional Variables

	Grad. Status	Selectivity	Ave. Ability	Prestige	Fac/Stud. Ratio	Quality Index	% Going On	Fac/Stud. R. & Ave. Abil.	Size	Number of Majors	Degrees Awarded	% Residential	% Resid/Size	Fraternities/ Sororities	Mean Hours per Sch. of Extracur. Acts.
A. Quality:															
Selectivity	+.099														
Ave. Ability	-.191	-.311													
Prestige	.062	.259	-.419												
Fac/Stud. R.	-.106	-.123	.457	-.186											
Quality Index	-.120	-.117	.621	-.375	-										
% Going On	-.148	-.207	.381	-.449	.340	.402									
B. Fac/Stud. Ratio & Ave. Ability	-.191	-.299	-	-.404	-	-	.399								
C. Size-Compl.															
Size	-.020*	.003*	.281	-.319	-.018*	.195	-.090	.237							
No. Majors	.028*	.015*	.210	-.210	-.013	.114	-.120	.176	.550						
Deg. Awarded	-.071	-.015*	.395	-.180	.155	.427	-.046*	.382	.618	.376					
D. % Residential	-.031*	.049*	.110	.052	.255	.364	.230	.164	-.178	-.091	.152				
% Resi/Size	+.035*	-.010*	-.093	.080	.219	.064	.144	-.023*	-.521	-.344	-.449	-			
Frats/Sors	-.080	.053	.083	-.114	-.064	.070	-.047*	.058	.351	.236	.307	-.029	-.336	-	
Mean Hours per Sch. Extracur. Acts.	-.084	-.013*	.025*	.256	.115	.099	.112	+.052*	-.186	-.183	-.080	.145	.239	-.181	

* Not significant at .05 or below.

Females: Zero Order Correlations of Institutional Variables

	Grad. Status	Selectivity	Ave. Ability	Prestige	Fac/Stud. Ratio	Quality Index	% Going On	Fac/Stud. R. & Ave. Abil.	Size	Number of Majors	Degrees Awarded	% Residential	% Resid/Size	Fraternities/ Sororities	Mean Hours per Sch. of Extra-cur. Acts.
A.Quality:															
Selectivity	+.073														
Ave. Ability	-.005*	-.252													
Prestige	-.034*	-.050*	-.395												
Fac/Stud. R.	-.036*	-.103	.374	-.096											
Quality Index	-.029*	-.122	.621	-.337	.665										
% Going On	-.073*	-.165*	.053*	-.262	.040*	.166									
B.Fac/Stud. Ratio & Ave. Ability	-.017*	-.241	-	-.362	-	-	.044								
C.Size-Compl. Size	+.061*	.055	.304	-.380	-.086	.221	.145	.233							
No. Majors	+.115	.054	.240	-.280	-.065	.167	-.182	.185	.521						
Deg. Awarded	.020*	.027*	.336	-.226	-.003*	.371	.141	.287	.703	.418					
D.% Residential	-.064	-.044	.113	.147	.217	.322	.041*	.163	-.221	-.060	.039				
% Resid/Size	-.031*	-.119	-.064	.156	.324	.062	-.091	.047*	-	-.344	-.586	-			
Frats/Sors	-.028*	.054*	.043*	-.050*	-.189	.038*	-.074	-.019	.445	.303	.409	-.063	-.441		
Mean Hours per Sch. in Extracur. Acts.	-.041*	-.083	.023*	.231	.093	.114	-.103	.052*	-.088	-.102	.107	.143	.121	-.053*	-

Since it is a combination of two variables--average ability of the student body and faculty-student ratio--and since the first variable has almost twice the weight of the second in determining the scores per college for this index, the correlations between the resulting index and size-complexity measures are largely a result of the initial correlations between average ability of students and the indicators of size-complexity. The result is that the decline in faculty resources per level of student demand as colleges increase in size and complexity is concealed. The reduction of this resource per student is more adequately revealed by looking at the correlations between components of the 'faculty attention per student demand' index and size-complexity separately. Faculty-student ratio (measured in dociles) has a negative correlation with size and 'number of undergraduate majors' offered and a weak positive relation with the third indicator of complexity, 'number of degrees awarded' (+.155) among men. Among women all of these correlations are negative. On the other hand, the correlations between average ability of students and size-complexity measures are all positive. These two separate sets of correlations support the inference that larger, more complex institutions reduce the amount of faculty attention and recognition per level of student ability. This idea is directly supported by other research we have conducted, which shows that college size and student contact with faculty are inversely related. (Kamens, 1971)

The correlation matrices also show a third set of relationships of importance in our model: namely, those between the measures of size-complexity and the indicators of the 'density of formal and informal groups on campus per student'. The latter, of course, refers to the extensiveness and complexity of student extracurricular social structure. Among men the most direct indicator of this concept, the mean hours per week spent in extracurricular organizations per college, is negatively related to all three of the measures of size-complexity. (-.186, -.183, -.080) These relationships are similar for women, with one exception: the items 'degrees awarded' is positively associated with the mean time per school spent in extracurricular life. However, the results on our second measure of this concept, the presence or absence of fraternities and sororities on campus, are quite different. Larger colleges are more likely to have such organizations (+.351) However, since we have no evidence on the proportion of students at these colleges involved in such student organizations, this variable provides a much weaker measure of the concept than the former. The modest negative correlation between the presence of fraternities and sororities on campus and the average hours per college students spend in extracurricular organizations (-.181 for men and -.053 for women) supports this idea. While fraternities and sororities are more likely to exist at larger institutions, fewer other groups and organizations per student in campus groups and organizations is reduced.

The evidence to date provides support for two sets of linkages between college characteristics that are germane to our model; and reflect the consequences of broad trends in the organization of higher education: (1) larger, more complex colleges reduce the amount of faculty attention and

supervision available to undergraduates per level of ability; and (2) large, complex schools also have lower levels of extracurricular participation per student. (For additional support for this idea at the high school level, cf. Gump and Barker, 1964) This partly occurs because large colleges have more commuting students and fewer residential facilities per student population. Size and percent students residing on campus are negatively correlated for both men and women (-.178 and -.221 respectively).

School Effects on Graduation: The first column of the correlation matrices shows the impact of college characteristics on degree achievement at students' initial college. Since the effects differ for men and women we will discuss them separately, beginning with the males. All of the measures of college quality show a positive impact on increasing graduation rates among men. These effects range from a low of +.06 for prestige to a high of -.191 for average ability of the student body. However, since these measures are all inter-correlated, it is not clear whether all these variables independently affect graduation, or if some of these relations are spurious. This is a problem we will shortly turn to. Second, the matrix shows the effect of the variable, 'faculty attention per student demand'. Its impact, uncontrolled for student characteristics, is -.191, an effect no stronger than that of the average ability of studnets. Third, of the measures of size-complexity, two are unrelated to graduation status, while the other -'degree awarded' - has a weak positive influence on increasing the likelihood of degree attainment (-.070). While these findings are in agreement with those of other researchers, particularly on size (cf. Panos and Astin, 1969) they are theoretically interesting because they are not what one would expect. Many arguments about higher educational organizations have stressed the negative influence of size and bureaucratization on student social relationships and student-faculty relations (cf. Kamens, 1971; and Feldman and Newcomb: 1969 , for a summary). These ideas lead us to expect at least a modest negative effect of size and complexity (read bureaucratization) on graduation. Instead, we find no effect with two measures and a weak positive influence on the one measure that is most reflective of 'multiversity' level structure, namely the complexity of a university's graduate and professional programs as measured by the variety of degrees a school confers. One possibility is that the arguments about the alienating effects of size and bureaucratization have been over-stated. Another is that a negative relation actually exists and is concealed by the effects of differences in recruitment and selection that suppress this effect. One indication that this may be true is the fact that college quality and size-complexity are positively correlated. Thus even before individual characteristics of students selected are considered, these effects of size-complexity may be reduced and even reversed when the influence of college quality and selectivity are removed. Thus any conclusions about the impact of size and bureaucratization must result from analysis that separates the independent effects of these variables. Fourth, the last class of college variables, designed to measure the density of extracurricular roles and groups per student, are both positively associated with the likelihood of

graduating from the initial college of entry. However, these relationships are not strong (-.080 for the presence or absence of fraternities/sororities, and -.084 for the mean hours of extracurricular participation per week) even through they are statistically significant.

The findings for women are considerably different from those of men. First, few of the measures of college quality show any effect on graduation and in the case of those that do the magnitude of impact is smaller than for males. Of special interest is the finding that the two quality measures that show the strongest effect on men have no zero order correlation with female likelihood of graduation from college of first entry. These variables are: the average ability of the student body and the index of academic resources (the effects on women are -.005 and -.029 respectively). Only college selectivity and the percent going on to graduate school have even weak zero order correlations with graduation. Secondly, the variable "faculty attention per demand' also has littel effect on graduation status (-.017). These findings indicate that there may be different processes at work affecting the commitment of women to college. Either women are less affected by aspects of the college social structure that we have specified or women are treated differently. (For some evidence for the first view, cf. Spady, 1968). The first argument leads us to expect generally smaller effects of college characteristics on women, when selectivity is controlled for; while the second idea points to the fact that women may be treated differently than men at the same college, e.g., tougher grading standards are applied to them or less encouragement is offered by faculty. If this latter idea is true, then when background and intervening variables are controlled, e.g., sense of academic success, effects of college social structure should emerge. In short, differential treatment of women in the same college may suppress the impact of colleges on women's organizational commitment. We examine this argument later.

Third, unlike the findings for men, the effects of all measures of size-complexity are in the direction one would expect. All have a negative impact on graduation, though only one of the measures is statistically significant. All, however, work in the direction of reducing the chances of graduation from that college. This is the kind of finding we expect if the argument about the alienating features of large, complex educational bureaucracies is right. Notice especially that the measure of complexity least highly correlated with academic quality, i.e., the 'number of undergraduate majors offered' - has a modest zero order effect in reducing the prospect of graduation (+.115).

Lastly, the measures of the schools' extracurricular opportunity structure both show no significant effects on graduation. Among men both variables showed small but statistically significant impact.

Joint Effects of College Variables, Uncontrolled for Student Characteristics: We turn now to examine the impact of school characteristics in combination, in order to eliminate those relationships between contextual variables and graduation that are spurious and to specify the direction of the impact of size-complexity, once the effects of college quality and faculty attention per demand are removed through multiple regression. After we have eliminated those school variables that make no independent contribution in the multiple regression equations, we will introduce individual level variables or student 'inputs', such as SES and academic ability, into the regressions to determine if any of the contextual variables retain their influence once selectivity of students to different school types has been controlled for.

The first question is to determine which of the measures of college quality retain their influence on graduation. The intellectual problem here is similar to that confronted by Coleman et al. (1966) in their analysis of the effects of high schools on the transmission of cognitive skills. That is, are school resources other than the kinds of students they recruit important in affecting educational attainment?

The study contains a number of measures of college educational quality. Two of them refer directly to characteristics of students that the colleges recruit: (a) the average ability of the students at each school; and (b) the proportion of students at each college who enter graduate or professional schools. The other measures refer to some resource of colleges other than the types of students it attracts and selects. These are: (1) the general academic resources that a college possesses, as measured by the quality index; (2) its ability to be selective in its admissions policy; (3) its overall prestige, which is generally a measure of the academic productivity and standing of the faculty; (4) and finally, the faculty-student ratio. The latter is one of the components of the academic quality index but we decided to look at its effect separately since it plays an important role in the 'teacher recognition per demand' index.

The regressions in table show the effect of each measure of college quality, when other measures are simultaneously controlled for men and women separately. The first part of the table (section A) shows the independent effects of average ability of the student body and the index of academic quality on graduation status. Among men the effect of academic resources is reduced to zero when aggregated academic aptitude is controlled. In the case of women the zero order correlations of these two contextual variables and graduation are slight to begin with. However, unlike the men, when average ability of the student body is controlled the beta weight of college quality (academic resources) slightly increases and the sign of the beta weight of average ability changes. Though both of these coefficients are very small, it should alert us to the possibility that high ability colleges may be treating women differently than men.

Table 7

School Effects on Graduation Status, Uncontrolled for Individual Characteristics of Students

College Characteristics	MALES Simple r	MALES Beta	MALES r^2	FEMALES Simple r	FEMALES Beta	FEMALES r^2
A. Average Ability of Students	-.191	-.189		-.005	.020	
			.191			.033
Quality Index of Academic Resources	-.120	-.002		-.029	-.042	
B. Average Ability of Students	-.191	-.189		-.005	-.007	
			.193			.053
Prestige	+.062	-.021		-.034	-.041	
Faculty-Student Ratio	-.106	-.024		-.036	-.038	
C. Average Ability of Students	-.191	-.169		-.005	+.015	
			.208			.076
Quality Index	-.120	+.022		-.027	-.027	
Percent Continuing Education	-.147	-.091		-.069	-.069	
D. Selectivity	+.099	+.042	.216	+.073	+.073	.121
Prestige	+.062	-.060		-.034	-.082	
Percent Going on	-.147	-.101		-.073	-.082	
Faculty Attention per Demand	-.191	-.161		-.017	-.026	

Sections B, C, and D show the effects of other measures of quality in combination. Since the variable 'faculty attention per demand' and the index of academic resources are composed of a common item we could not introduce both of these variables in the same regression equation. In these regressions the two variables whose effects persist after other quality measures have been controlled are: (a) average ability of the student body (-.169); and (b) the percent going on to graduate education(-.101). The variable 'faculty attention per demand' also retains its effects on graduation (-.161). However, most of its effects are due to the variable, average ability of the student body. Among women, the picture is different. As expected, all of the quality measures have smaller effects on graduation. The two variables with the strongest effects on graduation are: (a) the percent going to graduate school; and (b) admissions selectivity of the college. These effects are very small (.073 and -.082). All other variables, including 'faculty attention per demand' have negligible effects.

(Table 7 About Here)

The evidence for men indicates that college quality, which is known to reduce dropout, achieves its effects through its association with the aggregate ability level of the college and has no independent influence via differential teaching or faculty resources.

Academic Quality ------> Aggregate Ability -----> Graduation

The variable 'faculty attention per demand' appears to achieve its impact through its major component, average ability of students. It must be remembered that individual variables have not yet been introduced so that the above relations may disappear when individual characteristics of students are controlled. Among women this picture of college effects does not hold, either because women are less responsive to college contexts or because they are treated differently than man in the same context. The latter idea might help to explain why average ability of the student body and 'faculty attention per demand' index have such negligible influence on women's likelihood of graduation. We will examine this idea more extensively later.

Since the 'faculty attention per demand' index is an important concept in this study it may be useful to examine the joint and independent zero order effects through tabular analysis. We had expected that the two components of the index would interact so that the effects of the index would be larger than that of the separate components, i.e., average ability of the student body and faculty-student ratio. To examine this possibility further, we have constructed the measure of average ability in the table below to emphasize the upper range of the distribution, where interaction should be most likely to occur. Note that the highest category of average ability is almost two standard deviations from the mean. Table shows the zero order effect for males and females of the most important component of the index: average ability of the student body. Column 1 and 3 in the

table show the percent who complete the B.S. or B.A. at the first college attended and columns 2 and 4 show the percentage who have transferred to other colleges and received a degree by 1965. The table shows that (1) the differences between schools in graduation rates is smaller among women; and (2) only among women do the rates of transfer B.A. attainment differ among schools, with the advantage being in favor of those girls who start their careers at schools with more able student bodies.

(Table 8 About Here)

The next table shows the zero order effects of the components of the faculty attention per demand index for males and females separately. While there is a consistent increase in graduation rates as the average ability

(Table 9 About Here)

of the student body increases in all categories of faculty-student ratio, there are no consistent effects of the latter. This is true only for men. Among women there is no consistent effect of average ability of students in all categories of faculty-student ratio. The only place in this table where graduation rates vary with increases in the faculty-student ratio is among those men in very low ability colleges and among those in very high ability schools but the differences are small. Contrary to our expectations there is no evidence of a joint impact of these two variables.

The next problem is to examine the effects of size-complexity on graduation status when college quality has been removed. We saw earlier that one measure of complexity, i.e., the degrees a university confers, had a small positive impact on graduation and that neither of the other measures had even a modest negative influence on graduation, as we had expected. This, however, may be a spurious finding since college quality, i.e., average ability of the student body, and size-complexity are positively correlated (+.281, .210, .395). A negative relationship thus may exist between size-complexity and graduation when the influence of academic quality is removed. Table shows the effects of the three measures of size=complexity when the variable 'faculty attention per level of ability (demand)' is introduced. The result among men is to slightly increase the negative influence of one measure of complexity - the number of undergraduate majors offered - and to reduce the positive effect of the other two measures to zero. Notice too that the impact of 'faculty attention per demand' is very slightly increased (-.191 to -.195). What is surprising is that the latter variable's impact is not increased substantially when the effect of size and complexity are removed. Colleges without graduate programs and research institutes, we expected, would have faculty who are more oriented to undergraduates and this should increase the holding power of colleges with very able student bodies and many teachers per student. Among women, however, the impact of 'faculty attention per demand' is slightly increased when the effects of size and complexity are removed (-.01 to -.03). Secondly, the effect of the variable 'number of under-

Table 8

Graduation Status by Average Ability
of Students and Sex

	SEX			
	Males		Females	
Average Ability	Gratuate 1st School	Transfer B.A.	Graduate 1st School	Transfer B.A.
Low (0-39)	48% (533)	9%	57% (553)	8%
Medium (40-58)	53% (4100)	9%	56% (3567)	10%
Medium High (59-65)	70% (1109)	7%	63% (707)	14%
High (66+)	76% (538)	9%	67% (254)	17%

N = 11,361
NA = 2,809

Table 9

Graduation Status by Faculty-Student Ratio,
Average Ability of Students and Sex:
(% Graduate From First College)

Sex: Males

Average Ability	Low	Medium Low	Medium	Medium High	High
Low (0-39)	46% (285)	46% (126)	53% (34)	60% (40)	58% (48)
Medium (40-58)	51% (1437)	52% (976)	55% (755)	54% (679)	51% (249)
Medium High (59-65)	67% (115)	70% (289)	74% (162)	69% (217)	71% (326)
High (66+)	- (6)	63% (30)	73% (164)	74% (52)	79% (280)

Sex: Females

Low (0-39)	59% (288)	53% (101)	45% (51)	66% (58)	52% (54)
Medium (40-58)	56% (1324)	56% (732)	57% (637)	58% (566)	55% (302)
Medium High (59-65)	60% (100)	65% (147)	58% (85)	62% (143)	65% (232)
High (66+)	- (8)	- (10)	64% (84)	53% (15)	73% (137)

graduate majors' on women is similar to its impact among men: it has a modest impact in reducing the likelihood of graduation (+.121). These colleges may be vocationally oriented institutions that recruit lower ability students, so it must be remembered that these modest institutional effects may disappear when individual student characteristics are introduced.

Table 10

Effects of Size-Complexity and Faculty Attention per Demand on Graduation Among Men and Women, Uncontrolled for Individual Student Characteristics

	MALES			FEMALES		
Size/Complexity:	Simple r	Beta	r^2	Simple r	Beta	r^2
Size	-.020	.002	.202	+.061	+.040	.126
Number of Undergraduate Majors	+.028	+.070		+.115	+.121	
Degrees Conferred	-0.71	-.024		+.020	-.048	
Faculty Attention per Demand	-.191	-.195		-.027	-.035	

Before introducing individual characteristics of students into the regression equations, we turn to examine if the slight effects of the two measures of 'density of group roles' are spurious. We expect that colleges with larger opportunity structures will increase the organizational commitment of students and there are slight positive zero order effects of both the indicators of the extensiveness of colleges' extracurricular structure. However, since these measures are also correlated with college quality, the zero order effects may be spurious. The following table shows the independent impact for men and women of the variables, presence of a fraternity and sorority system and mean hours per school spent in extracurricular organizations per week, when both 'faculty attention per student' index and size and complexity are controlled.

(Table 11 About Here)

For both men and women the small effects of each measure of the density of the extracurricular sturcture persists. They are -.102 and -.078 for men and -.086 and -.023 for women. In fact, the effects of the presence of fraternity-sorority system on graduation are increased, especially among women while those of 'mean hours per school spent in extracurricular organizations' are slightly reduced.

Table 11

Effects of Faculty Attention per Demand, Size-Complexity, Density of Group Roles on Graduation Status of Males and Females, Uncontrolled for Individual Student Characteristics

	Sex					
	Males			Females		
	Simple r	Beta	r^2	Simple r	Beta	r^2
I. Size Complexity:						
Size	-.020	.013	.232	.061	+.057	.148
Number of Majors	.028	.066		.115	+.126	
Degrees Awarded	-.071	-.005		.020	-.021	
II. Density of Roles:						
Presence of Fraternities & Sororities	-.080	-.102		-.028	-.086	
Mean Hours Spent for Extracurricular Organizations per School	-.084	-.078		-.041	-.023	
III. Faculty Attention per Student Demand	-.191	-.194		-.017	-.049	

Two points are clear from the evidence so far. First, even before individual characteristics of students are introduced the impact of contextual variables is weak. This is consistent with the evidence of other contextual studies of attrition (Astin, 1964; Iffert, 1958; Wegner and Sewell, 1970; Panos and Astin, 1969; Astin 1969). Note the relatively small multiple r's. Secondly, the failure of size-complexity to reduce commitment and graduation rates is surprising. Two of the measures, size and the degrees a college confers, have practically no influence on men. However, one measure of complexity, i.e., the number of undergraduate majors offered, does have a modest negative influence on the likelihood of graduating, when the availability of faculty and the average aptitude level of students is controlled. The differential impact of school size and complexity on men and women is also interesting and unexpected. It may, of course, be spurious - which we will check - but it may also result from the fact that such colleges treat men and women differently and thus reduce the motivation of women to remain.

The findings of size-complexity are theoretically interesting since the sociological literature had led us to expect modest negative effects on commitment. Since large complex institutions are more impersonal and less likely to offer the majority of students social relationships and the psychological pleasures of a community, they should reduce organizational commitment and graduation rates among both men and women. (For evidence on the effects of size on cohesiveness and faculty-student, cf. Feldman and Newcomb, 1969; Panos and Astin, 1969; Kamens, 1970.) Clearly some other processes are at work to counteract these nagative effects of size. Other evidence indicates that it is not just differential selectivity of students, since no study has found even modest negative effects of size or complexity on graduation, when individual characteristics of students have been controlled (cf. Panos and Astin, 1969). One possibility, suggested by Meyer (1970), is that large, complex institutions integrate students into the occupational world better and thus produce a sense of confidence about occupational prospects, which counteracts the negative influence of impersonality, lack of campus social relationships and lack of recognition and performance opportunities. They may do this by exposing students to a variety of occupational roles, models and types of work (cf. Kamens, 1971). This argument may be useful in accounting for the differential impact of complexity on men and women. We will examine this possibility after we have considered the effects of school characteristics when individual student characteristics are introduced into the regressions.

Secondly, the differential impact of college quality on men and women is of interest, especially the fact that high ability colleges have no zero order impact on the organizational commitment of women. This indicates that either women are responding to such contexts differently than men or that they are being treated differently in these schools by faculty than men. These possibilities will be investigated. It must be remembered, however, that individual student characteristics have not yet been introduced, so these zero order findings may disappear.

The Effects of College Characteristics, Controlling for Individual Student Attributes Since B.A. attainment depends on a variety of skills and motivations that students bring with them to college, the effects of these student characteristics must be removed before any estimate of the impact of colleges on student retention can be arrived at. One of the strong points of the Project Talent data is that very good measures are available in these data of important student resources and skills. Of special interest are the measures of intellectual skills that were developed and administered to all high school seniors in 1960 and the measures of family SES and student educational aspirations. Together with high school grades and ethnicity, these are known to be important determinants of attrition. (Bayer, 1968; Astin, 1972; Panos and Astin, 1969) From preliminary regression analyses that were done separately for men and women, the following background variables were chosen: academic ability, as measured by Project Talent test battery C-002; high school grades; social class; high school educational plans; and, for men only, ethnicity-Jewish vs. all others. These variables were chosen both because of their importance in previous research and as a result of their demonstrated importance in early regressions on these data.

Our argument has asserted that colleges with very able student bodies and large ratios of faculty to students confers resources on students that sustains their organizational commitment, in addition to those that they bring with them to college. The table below shows the impact on graduation from that college of the 'faculty attention per demand' index when individual student characteristics have been controlled in the regression.

(Tables 12A and 12B About Here)

While the original correlation coefficient is greatly reduced when student characteristics are introduced, a small positive effect of this contextual variable remains for man (-.055). In the case of women, however, an important change occurs when individual ability and other background variables are introduced. While the zero order relation shows no impact of the contextual variable on graduation, the partial regression coefficient (or beta weight) shows that colleges with very able women and high faculty-student ratios actually reduce girls' chances of graduating (+.099) Since such colleges are also known to lower the chances of academic success per level of ability (Davis, 1966; Kamens 1968; Drew and Astin, 1972), one interpretation of this finding is that women are more sensitive to such relative deprivation than men, the result being that their commitment to continuation is lowered in such contexts. This may occur because women's occupational and career motivations are weaker than men's, and hence the external pressures to stay in a given college are less pressing. It may, however, result from the fact that such colleges treat women differently. Women in high quality colleges may be exposed to higher standards and expectations than men and hence experience lower opportunities for success per ability

Table 12A

Effects of School Variables, Controlled for Background Characteristics, on Graduation Status

Sex: Males

A. Variables	Simple r	Beta	r^2
Faculty attention per Demand	-.191	-.055	.333
Ability (Talent C-002)	-.266	-.149	
High School Grades	.233	.143	
SES Index	-.099	-.024	
Jewish/Other Religion	+.086	+.043	
High School Educational Plans	-.212	-.098	
B. Variables			
Quality Index of Academic Resources	-.120	+.017	.333
Average Ability of Students	-.191	-.062	
Ability (Talent C-002)	-.266	-.150	
High School Grades	+.238	.143	
SES Index	-.099	-.026	
Jewish/Other Religion	+.086	+.040	
High School Educational Plans	-.212	-.099	

Table 12B

Effects of School Characteristics, Controlled for Student Selectivity, on Graduation Starus

Sex: Females

A. Variables	Simple r	Beta	r^2
Faculty Attention per Demand	-.017	+.099	.353
Ability (Talent C-002)	-.256	-.179	
High School Grades	+.236	.149	
Mother's Educational Level	-.014	+.044	
Father's Educational Level	-.068	-.028	
Father's Occupational Level	-.069	-.031	
High School Educational Plans	-.243	-.170	
B. Variables			
Quality Index of Academic Resources	-.029	+.005	.354
Average Student Ability	-.005	+.102	
Ability (Talent C-002)	-.256	-.182	
High School Grades	.236	+.149	
Mother's Education	-.014	+.046	
Father's Education	-.068	-.028	
Father's Occupational Position	-.069	-.032	
High School Educational Plans	-.243	-.168	

than their male counterparts. We will show very shortly that women are graded more severely in these schools than men and examine the consequences of this practice.

The second part of Table 12 shows that other reources of colleges, apart from the ability of students they recruit, have no impact on educational commitment to that institution. The partial regression coefficent for the index of academic resources is +.017 for men and +.005 for women. Within the range of resources now available to colleges, we find no effect whatsoever of differentials in educational facilities, when aggregate characteristics of the clientel and individual characteristics of students are controlled. This is true among both men and women.

This table confirms earlier research on the positive effects of high ability student bodies on organizational commitment (Kamens, 1968; Astin, 1969) but indicates that there are important sex differences in the impact of these colleges. To investigate the latter finding further, we present in tabular form the effects of the 'faculty attention per demand' index on graduation and transfer status for men and women, when individual ability and high school grades are controlled. The index was constructed so that average ability of the student body receives more weight than faculty-student ratio and so that the higher values of both school variables are

(Table 13 About Here)

distinguished. Among men the effects of colleges are consistent but small among all categories of ability. The table shows that for women, the college variable has no consistent positive effects in any ability group and that among lower ability women, it has slight negative effects on graduation. Thus it appears that high ability colleges discourage lower ability women from graduating. At the same time they provide no additional encouragements for other groups of female students, so that their net impact on commitment is negative. Such colleges do, however, increase the transfer rates of girls at all ability levels, as the table also shows. It must be emphasized that this effect is small. Similarly while colleges with more faculty per student and higher ability student bodies provide additional incentive for all ability groupings of males to graduate, this effect is also small.

We have purposely left the NAs on the school index in the table. These are students who are attending a four year college - many of which are unaccredited. Note the incredibly low rates of graduation from these schools, at all ability levels, among both men and women. The cell frequencies indicate that these are schools with very low aptitude student bodies. Nevertheless, many of these students earn a B.A. at some college after leaving their initial schools, as the data on percent transferring and earning a B.A.' shows.

Table 13

Graduation Index by Average Ability-Faculty Student Ratio Index and Individual Ability Index and Sex

(Percent Graduate with B.A.)

SEX: Males

Faculty Recognition per Demand:	Ability High School Index: Low		Medium		High	
	Percent Graduate	Percent Transfer	Percent Graduate	Percent Transfer	Percent Graduate	Percent Transfer
NAs	9% (964)	27%	10% (267)	38%	26% (253)	47%
Low 2	44% (1433)	7%	55% (572)	9%	66% (518)	10%
3	47% (464)	9%	59% (270)	7%	74% (406)	9%
4	43% (413)	10%	56% (227)	12%	73% (320)	11%
5	53% (51)	16%	66% (59)	10%	76% (108)	7%
6	58% (97)	7%	77% (94)	6%	77% (237)	8%
7	80% (5)	20%	64% (11)	9%	87% (30)	7%
High 8	52% (21)	19%	71% (38)	18%	85% (181)	5%

Table 13

Graduation Index by Average Ability-Faculty Student Ratio Index and Individual Ability Index and Sex

(Percent Graduate with B.A.)

SEX: Females

Ability-High School Index

Faculty Recognition per Demand:	Low		Medium		High	
	Percent Graduate	Percent Transfer	Percent Graduate	Percent Transfer	Percent Graduate	Percent Transfer
NAs	9% (593)	24%	19% (202)	35%	36% (184)	39%
Low 2	48% (1038)	8%	62% (571)	8%	69% (565)	9%
3	43% (341)	10%	60% (268)	12%	71% (344)	10%
4	46% (312)	12%	59% (222)	13%	69% (312)	15%
5	45% (20)	25%	56% (39)	23%	66% (77)	12%
6	50% (74)	14%	67% (54)	11%	69% (153)	18%
7	- (1)	-	- (2)	-	89% (9)	11%
High 8	- (5)	-	70% (23)	17%	74% (96)	12%

The Effects of Size and Complexity: While 'multiversities' are impersonal and offer a less cohesive college community than smaller, less complex schools, they tend to attract better academically qualified students. Hence any negative effects of the college structure on individual commitment may be counteracted by the fact that such schools initially select students who are more likely to graduate. The following tables show the effects on graduation of the three measures of size and complexity, after individual attributes of students are taken into account. The first part of table indicates that for males school size has no effect, while, of the measures of complexity, one has a small positive impact and the other a small negative impact on graduation. The findings are similar for women.

(Tables 14A and 14B About Here)

What is interesting is that the findings after individual characteristics of students have been introduced are substantially similar to those obtained before individual characteristics were considered. It is of great interest that the negative effects of 'multiversities' are not very pronounced at all. In fact one of the measures of complex structure, i.e., the 'degrees conferred by a university', continues to have a slight positive influence on graduation among men (-.048) and women (-.024).

The model specifies two ways that size and structural complexity is likely to achieve negative effects on organizational commitment. The first is by reducing the availability of academic attention and rewards for students at the same time that they are recruiting more academically able students than other types of colleges. This idea leads us to believe that the negative impact of size and complexity on graduation should increase when the effects of 'faculty attention per demand' are removed. Section B of tables 14A and B show the effects of both sets of contextual variables. Note first that there is only a very slight change in the size of the multiple r's for both men and women. Contrary to expectation, the results with 'faculty attention per demand' added to the regression are very similar to those we obtained before it was introduced. It still retains a slight positive influence on graduation among men and a slight negative effect among women, but it does not alter the influence of size and complexity.

The second way that large, complex institutions should affect the organizational commitment of students is through its impact on the distribution of extracurricular group roles. By reducing the supply of extracurricular groups and roles per student, large, complex educational institutions should decrease organizational commitment. Thus when measures of the level of group roles per person are considered, the negative impact of multiversity structure on student graduation should increase, after, of course, student selectivity is controlled. The following tables show the effects of size and complexity on graduation, when both the extent of extracurricular group roles per student and the level of faculty atten-

Table 14A

Effects of Size-Complexity on Graduation from Initial College When Individual Characteristics Are Controlled:

SEX:Males

A. Variables	Simple r	Beta	r^2
	-.020	.021	.336
Number of Majors Offered	+.028	.061	
Degrees Awarded	-.071	-.048	
Ability (Talent C-002)	-.266	-.162	
High School Grades	.238	.152	
SES Index	-.099	-.028	
Jewish/Other Religion	+.086	+.062	
High School Educational Plans	-.212	-.098	

Effects of Size-Complexity and Faculty Attention per Demand When Controls for Selectivity are Introduced:

SEX: Males

B. Variables			
Faculty Attention per Demand	-.191	-.060	.340
Size	-.020	+.019	
Number of Majors Offered	+.028	+.064	
Degrees Awarded	-.071	-.030	
Ability (Talent C-002)	.266	-.146	
High School Grades	.238	.143	
SES Index	-.099	-.020	
Jewish/Other Religion	+.086	+.059	
High School Educational Plans	-.212	-.095	

Table 14 B

Effects of College Characteristics on Graduation
from Initial College, When Individual Characteristics Are Controlled:

SEX: Females

A. Varialbes	Simple r	Beta	r^2
Size	+.061	+.024	.358
Number of Majors Offered	+.115	+.105	
Degrees Awarded	+.020	-.024	
Ability (Talent C-002)	-.256	-.144	
High School Grades	+.236	.148	
Mother's Education	-.014	+.047	
Father's Education	-.068	-.018	
Father's Occupational Status	-.069	-.023	
High School Educational Plans	-.243	-.169	

Effects of Size-Complexity and Faculty Attention
per Demand When Controls for Selectivity Are Introduced:

SEX: Females

B. Variables			
Faculty Attention per Demand	-.017	+.084	.366
Size	+.061	+.020	
Number of Majors Offered	+.115	+.098	
Degrees Awarded	+.020	-.039	
Ability (Talent C-002)	-.256	-.173	
High School Grades	+.236	+.147	
Mother's Education	-.014	+.048	
Father's Education	-.068	-.029	
Father's Occupational Status	-.069	-.028	
High School Educational Plans	-.243	-.168	

tion per demand simultaneously introduced. Three things are apparent.

(Tables 15A and B About Here)

First, neither for men or women are the effects of size and complexity altered. Second, the small impact of faculty attention per level of ability are not altered. And third, among men the small positive zero order effects of both measures of density of group roles per student, i.e., the presence of fraternities and sororities and the mean number of hours per school spent in extracurricular organizations per week, remain after both individual variables and the other college contextual characteristics are introduced. This is also true for women, except that the zero order effect of the presence of fraternities and sororities is slightly increased.

These data demonstrate that the effects of all the contextual variables on educational attainment, as we have measured it, are weak, after individual characteristics of students are considered. As we have pointed out, the findings on size and complexity are of special theoretical interest because they are exactly what we would not have expected. This suggests that such institutions have special compensatory mechanisms that help maintain the commitment of students to the undergraduate career there, which have not been emphasized. One possibility, of course, is the organization of youth 'ghettos' in and around these institutions (Lofland, 1969). These contain both diverse groups and 'life styles' and may have the indirect effect of supporting educational commitment. Furthermore, since students are separated from other groups in these areas by residential segregation and age grading, a certain amount of 'labelling' occurs and local stereotypes of 'the student' are developed and applied to residents of these ghettos. This may also help to commit students to the student 'identity'. Unfortunately, these possibilities have not and cannot be investigated with the data in this study. This would entail developing measures of the patterns and density of student residential segregation. Before considering this possibility, which we cannot investigate, one other mechanism should be considered which we can examine. Large, complex schools may affect students' career choices and sense of occupational prospects positively, while at the same time that they reduce the possibilities of involvement in meaningful social roles within the college organization. This is an explanation of the unexpected findings of size and complexity that we can and will look at shortly.

The other finding of special interest is the differential impact on men and women of 'faculty attention per demand' index. Remember that the major component of this index is 'average ability of the student body', while the other is the faculty-student ratio. As expected, this variable has a small positive influence on graduation among men (cf. Kamens, 1968; Astin, 1969). But it has a small negative impact on women. Since this contextual variable is known to affect the distribution of academic success, after individual characteristics are controlled, this finding suggests:

Table 15A

Effects of Size-Complexity and Density of Group Roles per Student on Graduation, When Individual Characteristics Are Controlled:

SEX: Males

Variables	Simple r	Beta	r^2
Faculty Attention per Demand	-.191	-.061	.356
Density of Extracurricular Roles: Mean Hours per School Spent in Extracurricular Organizations per Week	-.084	-.066	
Fraternities/Sororities on Campus	-.080	-.097	
Size	-.020	+.028	
Number of Majors Offered	+.028	+.061	
Degrees Awarded	-.071	-.010	
Ability (Talent C-002)	-.266	-.149	
High School Grades	.238	+.142	
SES Index	-.099	-.019	
Jewish/other Religion	+.086	+.049	
High School Educational Plans	-.212	-.091	

Table 15B

Effects of Size-Complexity and Density of Group Roles per Student on Graduation, When Individual Characteristics Are Controlled:

SEX: Females

Variables	Simple r	Beta	r^2
Faculty Attention Per Demand	-.017	+.074	.372
Density of Extracurricular Roles: Mean Hours per School Spent in Extracurricualr Organizations per Week	-.041	-.038	
Fraternities/Sororities on Campus	-.028	-.068	
Size	+.061	+.029	
Number of Majors Offered	+.115	+.100	
Degrees Awarded	+.020	-.012	
Ability (Talent C-002)	-.256	-.180	
High School Grades	.236	.142	
Mother's Education	-.014	+.048	
Father's Education	-.068	-.039	
Father's Occupational Status	-.019	-.001	
High School Educational Plans	-.243	-.166	

(1) that such colleges treat men and women differently. That is, they may have higher academic expectations for women and thus allocate less success per ability; or (2) that women are more easily discouraged by high academic expectations and low, immediate rewards per ability and motivation. The latter idea suggests that there are sex differences in response to relative deprivation caused by the grading standards and academic expectations of high ability schools. (cf. Davis, 1966 for the original statement of the relative deprivation argument.)

The next section investigates these arguments in an attempt to uncover possible compensatory mechanisms that sustain commitment in large, complex colleges and to explain the differential reactions of men and women to high ability colleges. We examine the effects of colleges on the following intervening variables: (a) educational and occupational plans; (b) academic success; (c) extracurricular participation in student organizations; and (d) sense of educational satisfaction. These have been conceptualized as the intervening processes by which colleges affect individual commitment in the model, and the second part of this section will examine the extent to which contextual characteristics influence these individual states.

Effects of College Characteristics on the Distribution of Academic Success and Educational Aspirations and Occupational Plans

Colleges may affect organizational commitment through both the allocation of academic success and recognition; and through their impact on allocation to occupational roles. Both variables are linked to dropout at the individual level. (Bayer, 1968; Astin, 1972) Thus in attempting to explain the differential impact of high ability colleges on men and women and the unexpected findings of size and complexity on graduation, we begin by examining the effects of thse contextual characteristics on academic success and career plans. In later sections we will develop this analysis to include the other intervening variables specified in the model.

It is well-known that high ability colleges lower students' chances of academic success at each ability level (Davis, 1966) and it is also known that such colleges via their grading practices have a negative influence on students' intellectual self image. (Drew and Astin, 1972) Thus, high ability colleges may differentially affect men and women's organizational commitment by allocating them different levels of success per ability. Colleges in our sample with many high ability students and many faculty per student may in fact operate on a double standard; whereby academic expectations for women are higher than those for men. While performance standards at such institutions are generally high, they may be higher for women than for men. This may occur under the following conditions: (1) if women are thought to be brighter than men in these schools, faculty may grade them more severely. Since there are often fewer girls in these institutions, it may appear that they have to be more intelligent to get in, though our data show that the correlations between individual test

scores (Talent battery C-002) and 'faculty attention per demand' are the same for men and women (+.42 and .39 respectively). (2) Faculty may think that it is less important to encourage women than men, so that academic expectations are more lenient for the latter. The following tables report the impact of 'faculty attention per demand' on allocation of grades among men and women. Size and complexity have been controlled in an effort to ex-

(Table 16 About Here)

amine any distinctive impact this variable may have that is independent from that of faculty attention per demand. The data support the idea that women are allocated less academic success than men, when individual characteristics are controlled. Faculty attention per demand has a very slight negative influence on the freshman grade average of men (-.023). This is well documented finding. Among women however there is a much stronger negative impact of high ability colleges on freshman grades (-.128). Thus, in these data there is very good evidence of differential reward patterns for men and women. This evidence departs from that reported by others in two ways: (a) the negative effects for men that we have found are smaller than those others have discovered (Davis, 1966; Drew and Astin, 1972; Werts, 1968). This may be the result of the different methods used, particularly in the case of Davis (1966) who used partial gammas as a measure of effect; or it may also to an unknown degree reflect differences in the samples. (b) We have found distinct evidence of <u>differential treatment</u> of men and women in the <u>same</u> types of colleges. This finding, to our knowledge, has not been reported before. When school and individual variables are introduced simultaneously, one other small effect occurs: the sign of the variable high school educational aspirations changes from positive to negative among women (+.063 to -.065). Since it is small this change may be spurious, but it may also indicate that high ability colleges discourage those girls with high educational aspirations and undermine their academic motivation. We can check this possibility through tabular analysis.

The first problem to consider is the effect of educational aspirations on women's academic performance in college when intellectual aptitude is controlled. Table 17 shows for men and women this relationship. Only those students who aspired to some amount of education in a four year college are considered, since few students already in a four year college had other plans. Note that among men high school educational plans has a small but positive influence on freshman academic performance at all ability levels, but among women in the upper ability categories high educational aspirations have a modest <u>negative</u> impact on academic achievement. This may result from the fact that girls with higher educational aspirations are attending colleges with more stringent grading practices but if this is the case we should find the same results among men. We check for this pos-

(Table 17 About Here)

Table 16

Effects of Size-Complexity and Faculty Attention per Demand in Sense of Academic Success: Freshman Grades

A. SEX: Males

Variables		Simple r	Beta	r^2
Faculty Attention per Demand		.148	-.023	.426
Size		+.010	-.003	
Number of Majors Offered		-.025	-.044	
Degrees Awarded		+.039	-.006	
Ability (Talent C-002)		.328	.234	
High School Grades		-.363	-.286	
SES Index	+.050	+.050	-.002	
Jewish/Other Religion		-.036	-.012	
High School Educational Plans		+.170	+.016	

B. SEX: Females

Variables			
Faculty Attention per Demand	-.001	-.128	.449
Size-Complexity			
Size	-.067	-.022	
Number of Majors Offered	-.037	+.020	
Degrees Awarded	-.056	-.039	
Ability	+/314	+.270	
High School Grades	-.377	-.302	
Social Class			
Mother's Education	+.055	+.029	
Father's Education	+.062	+.037	
Father's Occupational Status	-.013	-.031	
High School Educational Plans	+.063	-.065	

Table 17

Freshman Grade Average by High School Educational Plans, Ability-High School Grades Index and Sex: (% with B or Higher Grade Average)

High School Educational Planes:	SEX: Males Low	Males Medium	Males High	Females Low	Females Medium	Females High
Some College (4 year College)	20% (250)	28% (50)	64% (15)	25% (373)	63% (142)	82% (91)
Graduate from 4 year College	18% (1712)	33% (699)	54% (630)	30% (1298)	51% (759)	75% (971)
Study for Advanced College Degree	25% (914)	39% (658)	66% (1309)	32% (375)	52% (355)	72% (616)
% Difference	-5%	-11%	-2%*	-7%	+11%	+10%

N = 11,217

* Based on very small cell size.

sibility by controlling for faculty attention per demand, which is an index of average ability of students and the faculty-student ratio, in addition to these individual characteristics. Table presents these results. Among males there are no consistent negative effects of the school context

(Table 18 About Here)

across ability categories and across levels of educational aspirations. College context has more consistent negative effects on women's academic achievement but they are small. Notice, however, that even when college ability level and the proportion of faculty to students are controlled for, there still exists among middle ability women and high aptitude women in low ability colleges a negative relationship between educational aspirations and freshman achievement. In short, though schools with higher ability students and more faculty do grade women more severely than other colleges, this does not entirely explain the negative association between educational aspirations and freshman grades.

One other point should be noted about the effects of colleges on academic rewards. Our findings on this score are smaller than those of other researchers who have found consistent negative effects of high ability colleges on academic achievement. This association is very weak in our data, especially for men. Two explanations are likely: (a) our measure of school context is different from that used by others. This is unlikely, however, because the zero order correlations in our data between the index of faculty attention per demand and freshman grades (-.01) and between the measure of average ability of the student body and freshman grades (-.001) are almost the same. The latter is the measure that other researchers who have found this effect have used (Davis, 1966; Drew and Astin, 1972). (b) A more likely possibility is the fact that the categories of the variable freshman grade average in our data are less discriminating due to Project Talent coding procedures. Averages were coded from A to F with no mid or quarter point intervals, such as B+ or B-. As a result we have a less discriminating scale of freshman performance than other researchers have used.

Table 17 also shows one other set of findings. Size and complexity have no consistent negative impact on the allocation of academic success, once individual characteristics of students are controlled. This finding rules out one possible compensatory mechanism by which larger institutions may counteract the negative effects of impersonality and low levels of group membership and participation.

These data indicate that high ability colleges may be especially discouraging to women, particularly those with initially high educational aspirations. This suggests that the negative impact of school context may actually <u>increase</u>, when we control for freshman educational plans. The reasoning is that by giving lower grades per ability, high ability colleges may reduce students' intellectual self concept <u>and</u> also their educational

Table 18

Freshman Grade Average by Faculty Attention per Demand, High School Educational Plans, Ability-High School Grades Index and Sex: (% Earning a B or Higher Grade Average)

Males Only

Ability-High School Grades Index

	Low			Medium			High		
	High School Educational Plans								
Faculty Attention per Demand	Some College	College	Beyond College	Some College	College	Beyond College	Some College	College	Beyond College
Low	16% (45)	16% (771)	24% (360)	29% (14)	34% (298)	36% (208)	- (6)	59% (195)	65% (294)
Medium Low	29% (17)	19% (232)	29% (131)	22% (9)	29% (125)	37% (122)	- (5)	49% (134)	68% (241)
Medium	21% (24)	17% (218)	25% (158)	- (5)	24% (121)	40% (137)	- (1)	60% (144)	65% (275)
High	- (5)	18% (58)	30% (47)	- (0)	33% (51)	42% (83)	- (0)	42% (89)	62% (343)
% Difference	+5	+2	+6	-7	-1	+6	-	-17	-3

Females Only

Low	25% (161)	30% (591)	27% (172)	68% (62)	54% (324)	51% (146)	90% (46)	73% (326)	74% (173)
Medium Low	19% (47)	30% (143)	31% (71)	55% (29)	49% (147)	48% (73)	69% (16)	74% (213)	70% (110)
Medium	16% (49)	26% (218)	42% (45)	57% (21)	44% (153)	63% (70)	64% (14)	75% (216)	77% (146)
High	31% (13)	25% (44)	50% (20)	- (4)	46% (41)	47% (34)	- (4)	68% (134)	70% (117)
% Difference	+6	-5	+23	-11	-8	-4	-26	-5	-4

aspirations. Those girls whose plans are changed in this fashion should also be less academically motivated. We can examine this possibility by looking at the effects of school context when freshman educational plans and individual background variables are controlled. Freshman aspirations have a positive effect on academic success as do individual ability and

(Table 19 About Here)

high school grades. However, introducing this variable causes a slight increase in the negative effect of 'faculty attention per demand' but this is negligible. It also results in an increase in the negative impact of girls' high school educational motivations, so that it is almost double in size when freshman educational aspirations are not included (-.06 to -.11). Among men, introducing freshman educational plans has no effect except to reduce the impact of high school educational aspirations to zero. These data are further evidence that women - with initially high educational aspirations - are being allocated lower levels of academic rewards than men when individual ability and other background variables are controlled.

Effects of Colleges on Students' Educational Plans

We turn now to examine directly the effects of colleges on students' educational and occupational plans, since this is likely to be an important mechanism by which colleges affect organizational commitment. The data on grade allocation lead us to expect that high ability colleges should reduce women's educational aspirations. This is perhaps the process by which they undermine girls' motivations to remain in the organization. Secondly, large, complex institutions may neutralize the negative influence of their low level of group roles per person by positively affecting students' educational plans and occupational aspirations. We have argued elsewhere that large colleges shift students into professional careers (cf. Kamens, 1971; Meyer, 1970) and hence increase organizational commitment.

Table 20 examines these possibilities by looking at the influence of faculty attention per demand and size-complexity on students' freshman educational plans, when initial educational plans at entry and other important background variables are controlled.

(Table 20 About Here)

Among both men and women high ability colleges with many faculty per student have very small positive effects on educational aspirations (+.040 for men and +.037 for women), while one measure of complexity, 'degrees conferred', has a small negative impact (-.061 and -.040). This occurs despite the fact that the former allocate fewer academic rewards per ability to students, especially women. This analysis replicates the recent findings of Drew and

Table 19

Effects of School Characteristics on Freshman Grades, Controlling for Freshman Educational Plans and Background Variables

SEX: Males

Variables	Simple r	Beta	r^2
Faculty Attention per Student	+.148	-.029	.447
Size-Complexity:			
Size	+.010	.001	
Number of Undergraduate Majors	-.025	-.050	
Degrees Awarded	+.039	+.002	
Freshman Educational Plans	.258	.154	
Individual Academic Ability	.328	+.218	
High School Grades	-.363	-.268	
SES Index	.050	-.015	
Jewish/Other Religion	-.036	+.001	
High School Educational Plans	.170	-.028	

SEX: Females

Variables			
Faculty Attention per Student	-.001	-.132	.461
Size-Complexity:			
Size	-.067	-.022	
Number of Undergraduate Majors	-.037	+.025	
Degrees Awarded	-.056	-.034	
Freshman Educational Plans	.145	+.117	
Individual Academic Ability	+.314	+.266	
High School Grades	-.377	-.297	
Social Class:			
Mother's Education	.055	+.033	
Father's Education	.062	+.045	
Father's Occupational Status	-.013	-.034	
High School Educational Plans	.063	-.110	

Table 20

Effects of Size-Complexity and Faculty Attention per Demand on Value of Undergraduate Career: Freshman Degree Plans When Individual High School Plans and Background Variables are Controlled:

SEX: Males

Variables	Simple r	Beta	r^2
Faculty Attention per Demand	.197	+.040	.465
Size-Complexity:			
Size	+.029	-.014	
Number of Majors Offered	+.044	+.037	
Degrees Awarded	+.028	-.061	
Ability (Talent C-002)	.286	.107	
High School Grades	-.240	-.114	
SES Indes	.190	.087	
Jewish/Other Religion	-.158	-.095	
High School Occupational Certainty	-.097	-.040	
High School Educational Plans	.399	.287	

SEX: Females

Variables			
Faculty Attention per Demad	+.078	+.037	.405
Size-Complexity:			
Size	-.032	+.021	
Numberof Majors Offered	-.063	-.054	
Degrees Awarded	-.032	-.040	
Ability (Talent C-002)	+.165	+.030	
High School Grades	-.121	-.037	
Social Class:			
Mother's Education	+.012	-.046	
Father's Education	+.054	+.003	
Father's Occupational Status	-.000	-.024	
High School Educational Plans	+.392	+.378	

Astin (1972). But it differs in two important respects; (a) this analysis controls for the influence of size and complexity, which we have argued affects the distribution of academic resources which are available to students (Cf. Coleman, 1972, for a discussion of 'external diseconomies' of schools and the distinction between resources available to school systems and resources that are actually delivered to students.); and (b) we have no longitudinal measures of intellectual self rating such as they used. They show that when a measure of student's self concept is introduced, the effects of high ability colleges on educational aspirations is reduced to almost zero, though it still remains slightly positive. While we have no such measure of students' sense of intellectual competence, one remedy is available: freshman grades. Drew and Astin (1972) have shown that these are closely related to students' self ratings of intellectual ability. If colleges affect students' aspirations, primarily through the distribution of academic success, then their effects on educational plans should disappear when freshman academic performance is introduced. Table 21 shows that the

(Table 21 About Here)

effects of both size and complexity and faculty attention per demand remain when freshman grades are controlled, in addition to initial educational plans and other individual characteristics of students. Note the small increase in the multiple r's when freshman performance is included. While the effects of size and complexity are not consistent, across measures, the small positive influence of faculty attention per demand persists for men (+.043) and very slightly increases among women (+.053). This indicates that such colleges are achieving their influence independently of academic rewards, as measured by college grades. It must be emphasized that these effects are very small and, though significant statistically, they may be spurious.

Since the arguments about the impact of high ability colleges has generally centered around their influence in allocating students to educationally based careers, such as science and research (Davis, 1966; Meyer, 1970), it is important to consider if colleges have different effects on students with different types of occupational plans. Meyer (1970) has proposed distinguishing between high status careers in terms of their location in or outside of the university. In short, this results in a distinction between educationally based occupations, such as research and college teaching, whose standards of performance, and entry and whose ideology is located in and controlled by universities, and careers in the traditional 'free professions', including engineering, whose activities and standards are located outside university settings. Meyer (1970) has argued that high ability colleges should have effects primarily on students with 'academic' occupational plans since such careers are more dependent upon academic success, feelings of intellectural competence and academic relationships and performance opportunities and thus should be more directly affected by the college structure. His study found no such effects, but that of Drew and Astin (1972) found very slight positive influence of high

Table 21

Effects of School Characteristics on Freshman Educational Plans, Controlling for Individual Background and Freshman Grades

SEX: Males

Variables	Simple r	Beta	r^2
Faculty Attention per Demand	+.197	+.043	.484
Size-Complexity:			
Size	+.029	-.014	
Number of Undergraduate Majors	+.044	+.043	
Degrees Awarded	+.028	-.060	
Freshman Grades	+.258	.148	
Ability (Talent C-oo2)	+.286	+.073	
High School Grades	-.240	-.072	
SES Index	.190	+.088	
Jewish/Other Religion	-.158	-.093	
Occupational Certainty (High School)	-.097	-.042	
High School Educational Plans	+.399	.285	

SEX: Females

Variables			
Faculty Attention per Demand	+.078	+.053	.419
Size-Complexity:			
Size	-.032	+.024	
Number of Undergraduate Majors	-.063	-.056	
Degrees Awarded	-.032	-.035	
Freshman Grades	+.145	.122	
Ability (Talent C-002)	.165	-.003	
High School Grades	-.121	.000	
Social Class:			
Mother's Education	+.012	-.044	
Father's Education	+.054	-.002	
Father's Occupational Status	-.000	-.001	
High School Educational Plans	+.392	.386	

ability colleges on students with Ph.D. or Ed.D. degree plans. In fact the effect they found is so small as to be negligible.

The following regression retests Mayler's basic idea. Since size and complexity may have independent effects on students plans by removing essential resources, such as faculty interest and support, we have included it in the analysis. Table 22A and B show the impact of schools on students' academic career plans. This variable is a dichotomy of academic occupations vs. all other choices. Academic plans include aspirations to work in the social and natural sciences, in research careers or in college or university teaching, and in psychology-either research or applied fields. When high school career plans and other individual variables are controlled, we find

(Table 22 About Here)

that faculty attention per demand has a very slight negative impact on males' freshman academic career plans (+.039) but a very slight positive impact on femals' plans (-.-47). The measure of complexity, i.e., degrees conferred, has a small positive effect on freshman academic career plans for both men and women (-.040 and -.032 respectively). These findings are very small, so that their practical significance is nil. Generally these data support Meyer's argument that there are no consistent effects of college quality, or the variable we have developed, on educational and scientifically based career choices (Meyer, 1970).

To examine if the contextual variables have any influence on recruitment to other kinds of high status occupations, we look at the impact of school and individual variables on choice of 'professional and engineering' careers as freshman. Such careers include law, medicine, the clergy, architecture, and engineering. The following table shows these results. Faculty attention per demand and size-complexity have no apparent impact on these

(Table 23 About Here)

occupational choices either, once high school career choice and ability is controlled.

The results of college effects on freshman academic and professional-engineering career choices also remain the same after freshman academic performance has been controlled. Since this control does not affect the results, we do not present the tables. This means that colleges are not achieving important effects on occupational allocation via their internal reward systems. College grades in our analysis have little impact on such occupational choices after initial occupational plans and other individual and school variables have been controlled. Meyer (1970) has also made this point.

The major conclusion from this analysis is that while colleges affect the distribution of academic rewards so that women - and to a lesser extent, men - in higher ability colleges with many faculty per student do

Table 22A and B

Effects of Schools on Freshman Academic Occupational Choice, Controlling for Indicidual High School Background Variables

A. SEX: Males

Variables	Simple r	Beta	r^2
Faculty Attention per Demand	-.040	+.039	.350
Size-Complexity:			
Size	-.038	-.009	
Number of Undergraduate Majors	-.024	+.001	
Degrees Awarded	-.052	-.040	
Ability (Talent C-002)	-.091	-.036	
High School Grades	+.072	+.013	
SES Index	-.010	+.025	
Jewish/Other Religion	+.025	+.003	
High School Educational Plans	-.107	-.048	
High School Occupational Choice	+.341	+.330	

B. SEX: Females

Variables			
Faculty Attention per Demand	-.121	-.047	.386
Size-Complexity:			
Size	-.016	+.022	
Number of Undergraduate Majors	-.000	+.006	
Degrees Awarded	-.030	-.032	
Ability (Talent C-002)	-.130	-.024	
High School Grades	+.092	+.025	
Social Class:			
Mother's Education	-.028	-.017	
Father's Education	-.034	+.030	
Father's Occupational Status	-.047	-.021	
High School Educational Plans	-.129	-.054	
High School Academic Career Plans	+.372	+.350	

Table 23

Effects of School Characteristics on Freshman Professional-Engineering Occupational Plans, Controlling for Individual Characteristics

SEX: Males

Variables	Simple r	Beta	r^2
Faculty Attention per Demand	-.144	-.029	.495
Size-Complexity:			
Size	-.011	+.037	
Number of Undergraduate Majors	-.017	.000	
Degrees Awarded	-.040	-.000	
Ability (Talent C-002)	-.195	-.066	
High School Grades	+.118	+.020	
SES Index	-.048	-.000	
Jewish/Other Religion	+.055	+.032	
High School Educational Plans	-.171	-.044	
High School Professional Career Choice	.480	+.450	

SEX: Females

Variables			
Faculty Attention per Demand	-.071	-.012	.418
Size-Complexity:			
Size	+.018	+.023	
Number of Undergraduate Majors	-.008	-.024	
Degrees Awarded	+.012	+.027	
Ability (Talent C-002)	-.079	-.048	
High School Grades	+.033	-.013	
Social Class:			
Mother's Education	-.018	+.011	
Father's Education	-.019	+.011	
Father's Occupational Status	+.008	+.034	
High School Educational Plans	-.096	-.026	
High School Professional Career Choice	+.411	+.407	

earn less academic success per ability than at other schools; such colleges have no important impact on students' occupational plans as freshman. However, high ability colleges do have very small positive impact on students' educational plans, though even after academic success is controlled. This idea is also supported by the work of Meyer (1970), Drew and Astin (1972) and Werts (1968). We also found that size and complexity have no important influence on either the allocation of academic success or occupational allocation.

Thus we have one clue as to how faculty attention per demand may reduce the organizational commitment of women and lower their chances of graduating from that college. They allocate them less academic success. However, we have no idea as yet how large, complex institutions counteract their well documented alienating features so that men do not leave them, in disproportionate numbers, for other institutions. Since size and complexity do not affect academic success or occupational plans, this does not explain the absence of an expected effect.

In pursuit of other means by which colleges influence commitment, we turn to examine their effect on two other intervening variables specified in our model: (a) involvement in extracurricular organizational roles; and (b) students' satisfaction with their college experience. The first is measured by the number of hours per week students report participating in organized sports or college extracurricular organizations. The second is measured by a 4-point scale of satisfaction with the college. After examining the effects of schools on these variables, we will look at the influence of colleges on graduation chances when these variable have been controlled.

The Effects of College Characteristics on Participation and Organizational Satisfaction

We begin by examining the effects of schools on one measure of the 'meaningfulness' of the student role, i.e., satisfaction with the college. Since there are a number of dimensions of the student role, e.g., academic intellectual, social, etc. (cf. Clark and Trow 1966, for a typology of student roles), this generalized measure of satisfaction with the student role at a particular college should be differentially affected by characteristics of the college social structure. For example, those colleges with a 'rich' variety of student social groups and organizations should increase students' satisfactions,but those colleges with many very able students and few faculty per student and low faculty interest in undergraduates should decrease satisfaction with the academic aspect of the student role. The major idea here is that both school characteristics will affect satisfaction independently, since they are causally linked to different dimensions of the student role. Because there are no independent measures of satisfaction with various aspects of the student status, we will test our model by showing that different college variables have an independent impact on this general measure of satisfaction.

Table 24 shows the impact of college characteristics on satisfaction

with college for men and women. Note that the measure of satisfaction is coded so that 1 = low and 4 = high. All of the contextual variables are included in this equation because we have theorized that each set will have independent causal effects on the concept 'meaningfulness' of the student role, of which this is a measure. We see that among both men and women neither the contextual or individual variables explain much of the variance in satisfaction. The multiple r's for both are very small: .186 and .169 respectively. The only school variable that positively influences the satisfaction of men is one of the measures of density of

(Table 24 About Here)

extracurricular roles; i.e., the mean time per school spent in student organizations per week; but this effect is weak(+.068). Faculty attention per demand has no impact and the measures of size and complexity have inconsistent effects. Among women the mean hours per school of extracurricular participation has a small positive impact (+.068), while faculty attention per demand and size both have small negative effects (-.061, -.051). However, the former may simply reflect the effect of individual participation and disappear when this is controlled. Thus there may be no contextual effect at all. The case of faculty attention per demand is different, but also may disappear. It may have a genuine contextual effect on satisfaction but this may come about through its influence on the distribution of academic rewards. Once freshman grades have been controlled, the slight impact of faculty attention per demand may also disappear.

To test for these possibilities we introduce freshman grades and individual extracurricular organizational participation into these equations. The following tables show these results. Both freshman grades and the level of extracurricular participation affect students' level of satisfac-

(Table 25 About Here)

tion with college among both men and women. (The beta weights are +.149 and .070 for men and +.173 and +.103 for women). Note also the increase in the multiple r's that introducing these produces. However, these variables do not wipe out the small positive effect of the aggregate level of organizational participation among men (+.056) and women (+.063) or the negative impact of size on satisfaction among women (-.052). It does reduce the small negative impact of faculty attention per demand on satisfaction among women (from -.06 to -.03).

This data indicates that colleges achieve effects on organizational satisfaction apart from those produced by individual levels of participation and academic success. Colleges with high aggregate rates of organizational participation appear to do this to a small degree, though from these data it is not possible to know how this result is produced. One interesting possibility is that a rich variety of organizational life

Table 24

Effects of Size-Complexity, Faculty Attention per Demand and Density of Roles on Meaningfulness of Undergraduate Role - Satisfaction With College Experience, When Individual Characteristics Are Controlled

SEX: Males

Variables	Simple r	Beta	r^2
Density of Extracurricular Roles:			
Mean Hours per School Spent in Extracurricular Organizations per Week	+.076	+.068	.186
Fraternities/Sororities on Campus	-.009	.014	
Faculty Attention per Demand	+.042	-.003	
Size-Complexity:			
Size	-.031	-.057	
Number of Majors Offered	+.003	+.040	
Degrees Awarded	-.031	-.057	
Ability (Talent C-002)	+.082	.023	
High School Grades	-.086	-.050	
SES Index	+.069	+.043	
Jewish/Other Religion	-.001	+.026	
High School Educational Plans	.150	.121	

SEX: Females

Variables			
Density of Extracurricular Roles:			
Mean Hours per School Spent in Extracurricular Organizations per Week	+.070	+.068	.169
Fraternities/Sororities on Campus	-.011	.006	
Faculty Attention per Demand	-.019	-.061	
Size-Complexity:			
Size	-.055	-.051	
Number of Majors Offered	-.030	+.011	
Degrees Awarded	-.021	+.009	
Ability (Talent C-002)	+.089	.066	
High School Grades	-.110	-.079	
Social Class:			
Mother's Education	+.013	-.011	
Father's Education	+.020	-.003	
Father's Occupational Status	+.022	+.022	
High School Educational Plans	.087	.058	

Table 25

Effects of School Characteristics on College Satisfaction Controlling for Freshman Grades and Organizational Participation and Individual Background Variables

SEX: Males

Variables	Simple r	Beta	r^2
Faculty Attention per Demand	+.042	.005	.241
Size-Complexity:			
Size	-.031	-.014	
Number of Majors Offered	+.003	+.046	
Degrees Awarded	-.031	-.056	
Density of Extracurricular Roles:			
Mean Hours of Organizational Participation per School per Week	+.076	+.056	
Fraternities/Sororities on Campus	-.009	+.020	
Freshman Organizational Participation	+.100	+.070	
Ability (Talent C-C02)	+.082	-.012	
Freshman Grades	+.169	+.144	
High School Grades	-	not entered	
SES Index	+.069	+.035	
High School Educational Plans	+.150	+.116	
Jewish/Other Religion	-.001	+.026	

SEX: Females

Variables			
Faculty Attention per Demand	-.019	-.037	.255
Size-Complexity:			
Size	-.055	-.052	
Number of Majors Offered	-.030	.009	
Degrees Awarded	-.021	.016	
Density of Extracurricular Roles:			
Mean Hours of Organizational Participation per School per Week	+.070	+.063	
Fraternities/Sororities on Campus	-.011	+.012	
Freshman Organizational Participation	+.132	.103	
Ability (Talent C-002)	+.089	+.018	
Freshmand Grades	.199	+.173	
High School Grades	-.110	-.021	
Social Class:			
Mother's Education	+.013	-.025	
Father's Education	+.020	-.006	
Father's Occupational Status	+.022	+.029	
High School Educational Plans	+.087	+.062	

increases the level of informal interaction and thus affects the development of individuals' interpersonal social and friendship circles. Since Project Talent data is weak on measurements of such variables, it is impossible to investigate this idea further.

The next step is to see if colleges have any impact on the level of extracurricular organizational participation, since individual participation as well as grades affects students' satisfaction with college. Because the aggregate rate of organizational participation at colleges is constructed from students' reports of their individual participation levels, we have left this variable out of the regression equations. By definition it must be correlated with individual participation levels. Table presents these results. Generally none of the college variables has any impact on individual participation rates, with one exception. High ability colleges with many faculty per students slightly reduce participation among men after individual

(Table 26 About Here)

controls are introduced (-.048).

The Effects of School Characteristics on Graduation When Intervening and Background Variables Are Controlled

The effects of colleges on graduation so far discovered have been very small after individual characteristics of students have been controlled. Similarly we have found only small impacts of college variables on the intervening states of individuals specified in our model: (a) the value of the undergraduate role, as measured by freshman educational plans and occupational expectations; (b) students' sense of academic success, as measured by high school grades; and (c) the meaningfulness of the student role, as measured by both patterns of participation in college organizations and students' satisfaction with the college they attended as freshmen. The effects of individual background factors on these variables are usually far stronger than the effects of any of the contextual variables - a finding that is common in all studies of high school or college impact.

The question that remains is whether the small effects of colleges on graduation we have found are the result of the effects of these intervening variables. Some of them, such as educational and occupational plans, show large changes between the high school and college years and during college (cf. Flanagan et. al., 1964 and 1972), which are the result of variables unmeasured in this study, e.g., peer influence, work experiences, etc.

Two findings are of special interest in this regard: (a) the differential impact of the faculty attention per demand index on men and women; and (b) the influence of the size of the extracurricular structure per student. The first may represent a genuine, though small, contextual

Table 26

Effects of School Contexts on Participation in College Extracurricular Organizations, Controlling for Individual Background Characteristics

SEX: Males

Variables	Simple r	Beta	r^2
Faculty Attention per Demand	+.010	-.048	.147
Size-Complexity:			
Size	-.003	+.008	
Number of Majors Offered	-.010	-.005	
Degrees Awarded	+.002	-.005	
Density of Extracurricular Roles:			
Fraternities/Sororities on Campus	-.002	-.001	
Ability (Talent C-002)	+.067	+.033	
SES Index	+.124	+.116	
High School Grades	-.030	-.018	
High School Educational Plans	+.087	+.056	
Jewish/Other Religion	-.007	+.010	

SEX: Females

Faculty Attention per Demand	+.034	-.001	.157
Size-Complexity:			
Size	-.006	+.003	
Number of Majors Offered	-.016	-.018	
Degrees Awarded	.008	+.001	
Density of Extracurricular Roles:			
Fraternities/Sororities on Campus	+.006	+.008	
Ability (Talent C-002)	+.074	+.017	
Social Class:			
Mother's Education	+.103	+.074	
Father's Education	+.082	+.030	
Father's Occupational Status	+.016	-.019	
High School Grades	-.084	-.058	
High School Educational Plans	+.107	+.074	

effect, but may also disappear when academic success is controlled. The other may be spurious, and represent not a contextual effect but simply the individual level of participation in the life of the collectivity. We examine these possibilities below, looking at each of these possibilities in order. Table 27 shows the impact of the index faculty attention per demand on graduation from students' initial college when academic

(Table 27 About Here)

success and other intervening variables are introduced, in addition to background variables. We see that the small positive effect of such colleges on men remains (-.059) as well as the negative impact of women (+.091). Notice that the impact of the contextual variable on graduation is as large as that of the intervening variables. Secondly, we look at the impact of the two measures of the density of extracurricular roles, when intervening variables and background factors are controlled. Table 28 show these results. Among men the slight effects of each of these measures remains (-.077; -.089). Since these variables have practically no influence on women's chances of graduation to begin with, they, of course, have no impact in this analysis either.

(Table 28 About Here)

These analyses indicate that the slight effects of college contexts are not the result of the intervening variables we have considered. While the effects of the college variables are small after background variables have been controlled, they do not disappear when these foud intervening variables are introduced.

The last analysis looks at the effects of all the contextual variables after intervening and background factors have been controlled. These results reaffirm the conclusions of the last two analyses, when size and complexity were left out of the regressions. Size and complexity generally

(Table 29 About Here)

have no effect on graduation for men or women, with the exception of one measure of complexity which has a small negative influence on both men and women (+.060 and +.097). The surprising lack of effects of size and complexity thus remain. We also see that the positive effects of the presence of fraternities and sororities (-.102) and of the aggregate level of participation at a college (-.061) for men persists and does not disappear when individual levels of participation in college organizational life, academic rewards, and other aspects of students' freshman experience are controlled. Similarly, the impact of the faculty attention per demand index remains positive for man and negative for women, independent of these controls.

The data show that the contextual effects that remain after individual

Table 27

Effects of Intervening Variables (Freshman) on Relation Between School Characteristics and Graduation Status

SEX: Males

Variables	Simple r	Beta	r^2
Faculty Attention per Demand	-.191	-.059	.354
Academic Success: Freshman Grades	-.220	-.099	
Value of Student Role: Freshman Educational Plans	-.179	-.022	
Meaningfulness of Role: Freshman Educational Satisfaction	-.115	-.057	
Involvement in Student Roles: Hours per Week Spent in Extracurricular Organizations	-.044	-.007	
Ability (Talent C-002)	-.266	-.122	
High School Grades	+.238	.108	
SES Index	-.099	-.019	
Jewish/Other Religion	.86	+.042	
High School Educational Plans	-.212	-.082	

SEX: Females

Variables			
Faculty Attention per Demand	-.017	+.089	.386
Academic Success: Freshman Grades	-.169	-.024	
Value of Student Role: Freshman Educational Plans	-.204	-.090	
Meaningfulness of Role:Freshman Educational Satisfaction	-.170	-.100	
Involvement in Student Roles: Hours per Week Spent in Extracurricular Organizations	-.003	-.046	
Ability (Talent C-002)	-.256	-.163	
High School Grades	.236	.127	
Social Class:			
Mother's Education	-.014	+.044	
Father's Education	-,068	-.037	
Father's Occupational Status	-.019	-.004	
High School Educational Plans	-.243	-.128	

Table 28

Effects of Intervening (Freshman) Variables on Relations Between School Characteristics and Graduation Status Controlling for Background Variables

SEX: Males

Variables		Simple r	Beta	r^2
Density of Roles: Mean Hours per School Spent in Extracurricular Organizations per Week		-.084	-.077	.366
Fraternities/Sororities on Campus		-.080	-.089	
Academic Success: Freshman Grades		-.220	-.100	
Value of Role: Freshman Educational Plans		-.179	-.029	
Meaningfulness of Student Role: Satisfaction with Educational Experience		-.115	-.051	
Involvement in Student Role: Hours per Week Spent in Extracurricular Organizations		-.044	+.003	
Ability (Talent C-002)		-.266	-.140	
High School Grades	.238	.238	.115	
SES Index		-.099	-.026	
Jewish/Other Religion		+.086	+.033	
High School Educational Plans		-.212	-.079	

SEX: Females

Variables				
Density of Roles: Mean Hours per Scool Spent in Extracurricular Organizations per Week		-.041	-.031	.380
Fraternities/Sororities on Campus		-.028	-.032	
Academic Success: Freshman Grades		-.169	-.039	
Value of Role: Freshman Educational Plans		-.204	-.085	
Meaningfulness of Student Role: Satisfaction with Educational Experience		-.170	-.101	
Involvement in Student Role: Hours per Week Spent in Extracurricular Organizations		-.103	-.043	
Ability (Talent C-002)		-.256	-.136	
High School Grades		+.236	+.121	
Social Class:				
Mother's Education		-.014	+.045	
Father's Education		-.068	-.022	
Father's Occupationa Status		-.019	+.004	
High School Educational Plans		-.243	-.132	

Table 29

Effects of Intervening Variables (Freshman) on Relation Between Size-Complexity, Density of Roles and Faculty Attention per Demand and Graduation Status, When Background Variables Are Controlled:

SEX: Males

Variables	Simple r	Beta	r^2
Faculty Attention per Demand	-.191	-.063	.375
Size-Complexity:			
Size	-.020	+.029	
Number of Majors Offered	+.028	+.060	
Degrees Awarded	-.071	-.015	
Density of Extracurricular Roles: Mean Hours per School Spent in Extracurricular Organizations per Week	-.084	-.061	
Fraternities/Sororities on Campus	-.080	-.102	
Academic Success: Freshman Grades	-.220	-.099	
Value of Undergraduate Role: Freshman Educational Plans	-.179	-.029	
Meaningfulness of Organizational Role: Satisfaction With Educational Experience	-.115	-.053	
Involvement in Student Role: Hours per Week Spent in Extracurricular Organizations	-.044	-.000	
Ability (Talent C-002)	-.266	-.121	
High School Grades	+.238	.108	
SES Index	-.099	-.014	
Jewish/Other Religion	+.086	+.046	
High School Educational Plans	-.212	-.074	

Table 29

Effects of Intervening Variables (Freshman) on Relation Between Size-Complexity, Density of Roles and Faculty Attention Per Demand and Graduation Status, When Background Variables Are Controlled

SEX: Females

Variables	Simple r	Beta	r^2
Faculty Attention per Demand	-.017	+.066	.401
Size-Complexity:			
Size	+.061	+.024	
Number of Majors Offered	+.115	+.098	
Degrees Awarded	+.020	-.017	
Density of Extracurricular Roles: Mean Hours per School Spent in Extracurricular Organizations per Week	-.041	-.027	
Fraternities/Sororities on Campus	-.028	-.065	
Academic Success: Freshman Grades	-.169	-.029	
Value of Undergraduate Role: Freshman Educational Plans	-.204	0.082	
Meaningfulness of Organizational Role: Satisfaction With Educational Experience	-.170	-.098	
Involvement in Student Role: Hours per Week Spent in Extracurricular Organizations	-.103	-.043	
Ability (Talent C-002)	-.256	-.164	
High School Grades	+.236	.118	
Social Class:			
Mother's Educational Level	-.014	+.047	
Father's Educational Level	-.068	-.036	
Father's Occupational Status	-.019	-.002	
High School Educational Plans	-.243	-.128	

characteristics are controlled are small. However, it should be pointed out that the effects of many of the individual student characteristics are also modest. Even so important a variable as students' intellectual resources, as measured by Project Talent's general aptitude test (-.002), has a modest beta weight of -.121 on graduation from students' initial college, and this is the largest beta in the regression. In short, a great deal of intra-college variance remains to be explained (cf. Spady, 1971 for a model that emphasizes intra-school and individual variables). We will return to suggest a solution to this problem shortly.

Having seen the impact of college social structure on students' organizational commitment to their initial college, one more problem remains to be examined. Now we must look at the effect of students' starting point in the educational stratification system on eventual B.A. attainment, five years after entry into higher education.

The Impact of Students' Starting Point in Higher Education on Eventual B.A. Attainment

This section examines the question of whether there are any advantages for students' eventual B.A. completion of starting at particular types of colleges, apart from the effects of family resources and other advantages students bring with them to college. There are many contingenciesthat affect educational careers, aside from those we have considered, and little is known about the ways schools or students' experiences in particular institutions structure these careers. As a result, much of this discussion is exploratory and represents an attempt to see if there are any systematic effects of the contextual variables we have considered on students' educational careers.

Since faculty attention per demand is an important variable in this study, we begin by showing the zero order relation between attending institutions that are high or low on this quality measure and success in eventual B.A. attainment for men and women. Notice first that those

(Table 30 About Here)

students for whom there is no informaiton on the school variables have an especially high likelihood of not having earned a B.A. and of not being enrolled in any college by 1965. The rate is 32 percent for men and 46 percent for women. These NAs represent students who attended a four year college in 1960, since junior college students have been excluded from the sample. Most of these are unaccredited institutions. While they recruit low ability students, earlier analysis shows that their holding power is low among students of all ability levels. Secondly, this table shows that among women initial attendance at an institution high on

Table 30

Graduation Status by Faculty Attention per Demand and Sex

SEX: Males

Faculty Attention per Demand:	Ns	B.A. Achievers: Graduate from 1st College	B.A. Achievers: Transferred to Another College	Non B.A. Achievers: Still Enrolled in 1st College	Non B.A. Achievers: Enrolled in Another College	Non B.A. Achievers: Not in College
NA	(1704)	12%	31%	4%	21%	32%
Low	(2824)	50%	8%	12%	10%	20%
3	(1281)	60%	8%	9%	8%	15%
4	(1096)	57%	11%	8%	9%	16%
5	(247)	68%	9%	8%	5%	11%
6	(495)	72%	8%	9%	6%	5%
7	(52)	79%	12%	2%	2%	6%
High	(281)	79%	9%	3%	4%	5%

SEX: Females

NA	(1116)	16%	28%	2%	9%	46%
Low	(2445)	56%	9%	4%	4%	28%
3	(1047)	58%	11%	3%	4%	24%
4	(961)	57%	14%	2%	5%	23%
5	(153)	60%	16%	4%	5%	14%
6	(316)	65%	15%	1%	5%	15%
7	(15)	53%	40%	0	0	7%
High	(137)	73%	14%	2%	6%	5%

N = 11,350
NA = 2,820

this rating not only results in a higher likelihood of graduating from that college but also a greater chance of earning a B.A. from any college. Thirdly, while fewer males who begin at lower quality institutions finish at these schools, many are still enrolled at that college or another one five years later. Lastly, more students who begin at lower quality institutions are out of higher education altogether with no degree after five years than students who begin at higher ability colleges.

These findings are interesting but they leave open the question of whether they are the result of the differential abilities and resources of the populations that are recruited to these types of colleges or represent a genuine effect of students' educational starting point in some way. To check for this possibility we look at a series of regression analyses in which the dependent variables are: (a) Trasfers from their initial college who have earned a B.A. at another college vs. all others; (b) Students enrolled in any college but with no B.A. in 1965 vs. all others; and (c) Students with no B.A. and not enrolled in any college in 1965.

The first analysis considers the impact of initial starting point on the likelihood of earning a B.A. in 5 years from another institution than the one students started at. We have entered all the contextual variables previously considered though we are primarily interested in the

(Table 31 About Here)

impact of school quality, as measured by the faculty attention per demand index. Among males the regression shows that none of the individual variables have any impact on attaining a B.A. after transferring to another institution. This is surprising. Neither do any of the contextual variables, except one measure of complexity-the number of undergraduate majors offered(-.052)- and one indicator of the density of extracurricular roles, i.e., the presence or absence of fraternities and sororities (+.108). The latter effect is not interpretable. It seems safe to say that there are no interpretable contextual effects. The findings for women are somewhat different. Though the multiple r is pitifully low (.158), there are two interesting contextual results. First, there is evidence that women who begin their careers at colleges with able students and high faculty-student ratios have more chances of graduating in five years from another college with a degree (-.109). There seems to be a trade-off that operates here: such colleges decrease the likelihood of women earning a B.A. at that institution, but starting at these colleges increases their chance of attaining a B.A. in five years elsewhere. Notice that though this effect is small, it is larger than the impact of any of the individual student characteristics. Secondly, there is a small negative effect on transfer - B.A. attainment rates of college size, that was not apparent among men. How high ability colleges achieve this effect on women is not clear. They may affect them by: (a) conferring resources on them directly by sustaining and developing their educational aspirations. We have seen

Table 31

Effects of School Characteristics on B.A. Attainment Chances via Transfer from Initial College, Controlling for Individual Background Characteristics

SEX: Males

Variables	Simple r	Beta	r^2
Faculty Attention per Demand	+.016	+.017	.138
Size-Complexity:			
Size	+.053	+.017	
Number of Undergraduate Majors	-.008	-.062	
Degrees Awarded	+.064	+.043	
Density of Roles: Presence of Fraternity/Sorority System	+.112	+.108	
Mean Hours per School Spent in Extracurricular Organizations per Week	+.007	+.023	
Ability (Talent C-002)	-.008	-.010	
SES Index	-.008	-.015	
High School Grades	+.014	+.014	
High School Educational Plans	-.018	-.019	
Jewish/Other Religion	-.041	-.034	

SEX: Females

Variables			
Faculty Attention per Demand	-.106	-.105	.162
Size-Complexity:			
Size	+.034	+.065	
Number of Undergraduate Majors	-.011	-.029	
Degrees Awarded	+.007	-.023	
Density of Roles: Presence of Fraternity/Sorority System	+.071	+.063	
Mean Hours per School Spent in Extracurricular Organizations per Week	+.033	+.054	
Ability (Talent C-002)	-.032	+.031	
Social Class:			
Mother's Education	-.072	-.047	
Father's Education	-.066	-.013	
Father's Occupational Status	-.035	-.040	
High School Grades	+.016	+.013	
High School Educational Plans	-.022	-.005	

that such colleges have a small socializing influence on female educational and career aspirations. (b) They may also facilitate degree achievement through resources that girls have access to as a result of college membership. These may include the 'reputation' of the college and the commitment of the initial college to helping them find suitable schools to transfer to.

We next consider the effects of colleges on enrollment in any college five years after entry into higher education. This includes students who do not have a degree but are still enrolled in their initial institution or another school. Table shows these results. Among men there is

(Table 32 About Here)

only one effect. Colleges that are high on the faculty attention per demand index have a slight negative association with enrollment (+.068). This is simply another trade off. Since such colleges increase the likelihood of graduation and do not affect B.A. achievement by transferring or other categories of the dependent variable, they must have a negative influence on this category. In short, gains for one category must represent losses for another. Note also that individual ability is negatively related to continued enrollment (+.069). School variables have no impact on women's continued enrollment.

The last analysis looks at the impact of colleges on students' likelihood of being out of college altogether with no B.A. of 5 years. Table shows that ability, high school grades and high school educational plans and even SES have modest negative effects on dropout from the educational system, while college variables have no impact on men, except for a very weak positive effect of size (-.049).

(Table 33 About Here)

However, among women the positive influence of size and number of undergraduate majors offered are larger (-.093 and -.068). In short, women who initially attended large colleges as freshman are somewhat more likely to be deterred from completing a degree or of even being enrolled in a college five years later. While other individual variables we have not examined may produce this result, it is likely that this may be the result of an interaction between certain types of individuals and the school context. (Cf. Copex, 1969, for a study of the effects of one large, multiversity on different types of students.) We examine one possibility by looking at the effects of size on males and females of different ability levels through tabular analysis.

(Table 34 About Here)

Table shows that larger colleges decrease the degree prospects via graduation and transfer for low ability men, while they slightly increase

Table 32

Effects of School Characteristics on Continuation in Any College After Leaving Initial College, Controlling for Individual Variables

SEX: Males

Variables	Simple r	Beta	r^2
Faculty Attention per Demand	+.106	+.068	.158
Size-Complexity:			
Size	-.001	+.003	
Number of Undergraduate Majors	-.026	-.037	
Degrees Awarded	+.025	+.003	
Density of Extracurricular Roles:			
Presence of Fraternity-Sorority System on Campus	-.022	-.017	
Mean Hours per School Spent in Extracurricular Organizations per Week	+.033	+.018	
Ability (Talent C-002)	+.117	+.069	
High School Grades	-.111	-.067	
High School Educational Plans	+.060	+.009	
SES Index	+.012	-.021	
Jewish/Other Religion	+.003	+.013	

SEX: Females

Variables			
Faculty Attention Per Demand	-.003	-.032	.130
Size-Complexity:			
Size	-.019	+.018	
Number of Undergraduate Majors	-.051	-.045	
Degrees Awarded	+.005	+.015	
Density of Extracurricular Roles:			
Presence of Fraternity-Sorority System on Campus	-.024	-.021	
Mean Hours per School Spent in Extracurricular Organizations per Week	+.088	+.081	
Ability (Talent C-002)	+.042	+.024	
High School Grades	-.077	-.067	
High School Educational Plans	+.025	+.005	
Social Class:			
Mother's Education	+.017	-.003	
Father's Education	+.028	+.021	
Father's Occupational Status	+.013	+.007	

Table 33

Effects of School Characteristics on Non B.A. Attainment and Not Being in Any College After Five Years, Controlling for Background Variables: (Out of Any College, No B.A. vs All Others)

SEX: Males

Variables	Simple r	Beta	r^2
Faculty Attention per Demand	+.137	+.016	.318
Size-Complexity:			
Size	-.013	-.049	
Number of Undergraduate Majors	-.004	+.005	
Degrees Awarded	+.019	-.021	
Density of Extracurricular Roles:			
Presence of Fraternity-Sorority System on Campus	+.026	+.045	
Mean Hours per School Spent in Extracurricular Organization per Week	+.073	+.050	
Ability (Talent C-002)	+.229	+.123	
High School Grades	-.206	-.125	
High School Educational Plans	+.229	+.128	
SES Index	+.122	+.057	
Jewish/Other Religion	-.077	-.044	

SEX: Females

Variables			
Faculty Attention per Demand	+.101	+.015	.390
Size-Complexity:			
Size	-.085	-.093	
Number of Undergraduate Majors	-.094	-.068	
Degrees Awarded	-.032	+.024	
Density of Extracurricular Roles:			
Presence of Fraternity/Sorority System on Campus	-.010	+.041	
Mean Hours per School Spent in Extracurricular Organizations per Week	-.025	-.040	
Ability (Talent C-002)	+.288	+.168	
High School Educational Plans	+.276	+.188	
Social Class:			
Mother's Education	+.063	-.015	
Father's Education	+.112	+.042	
Father's Occupational Status	.069	+.029	

Table 34

Effects of College Size on Degree Attainment by Graduation and Transfer and on Dropout From Education System by Sex and Ability Grades Index

SEX: Males

Ability-Grades Index

	LOW			MEDIUM			HIGH		
	B.A. Status: 1965								
Size:	I*	II**	III***	I	II	III	I	II	III
0- 999	49%	15% (246)	22%	56%	15% (110)	13%	69%	19% (118)	6%
1000-2599	52%	10% (537)	20%	59%	12% (250)	16%	73%	12% (375)	6%
2600-5099	44%	7% (393)	24%	59%	6% (203)	15%	79%	7% (272)	4%
5100-9999	47%	4% (540)	29%	63%	8% (251)	13%	78%	6% (33o)	5%
10,000+	40%	8% (851)	25%	55%	9% (493)	14%	70%	7% (732)	7%
				SEX: Females					
0- 999									
0- 999	55%	12% (269)	27%	58%	18% (187)	19%	67%	17% (270)	14%
1000-2599	48%	11% (368)	35%	60%	13% (252)	21%	69%	12% (369)	12%
2600-5099	51%	7% (275)	34%	64%	10% (178)	20%	72%	14% (209)	13%
5100-9999	47%	9% (362)	33%	59%	11% (172)	28%	66%	12% (237)	17%
10,000+	39%	10% (581)	41%	64%	8% (425)	20%	72%	8% (528)	14%

* I = Graduate from the first college
** II = Transfer and graduate
*** III = Out of college and no B.A.

the graduation prospects for men of all other ability levels. Size has larger negative effects on the graduation prospects of low ability women. Such women in the largest size colleges are very likely not to graduate and to be out of the educational system altogether with no degree. Among women of other ability levels, size tends to increase their chances of graduation, but this effect is small. In short, all of the negative effects of size in the regressions is a result of its impact on the graduation chances of men and women of low academic aptitude. This is particularly true of the largest colleges where most of these students are concentrated.

The tabular analysis helps explain the puzzling non-effects of size. No general regression effect of size occurred because this contextual variable has two sets of effects: It has a negative influence on the graduation prospects of low ability students and a small positive influence on higher ability students. Both effects are small and non-linear. The result is that they are masked in the regression analysis. (Cf. Kamens, 1971, for a discussion of the effects of size.) These results suggest that small colleges are more supportive for lower ability men, and especially such women, but that they do not offer any differential advantages to higher aptitude students. In fact they seem to discourage the most able men from completing the degree there.

This completes our exploratory analysis of the influence of students' initial starting point in the educational system on their degree chances. In the process we have been able to clarify, though not explain, two earlier puzzling findings: (1) the differential effects of faculty attention per demand on women; and (2) the lack of expected effects of size-complexity on graduation rates. While high ability colleges decrease women's chances of completing the B.S. or B.A. at that institution, starting at such colleges increases their chances of degree completion at another institution. This occurs even after individual ability and other student characteristics have been controlled. Secondly, with the help of tabular analysis we have been able to clarify the effects of size on different types of students.

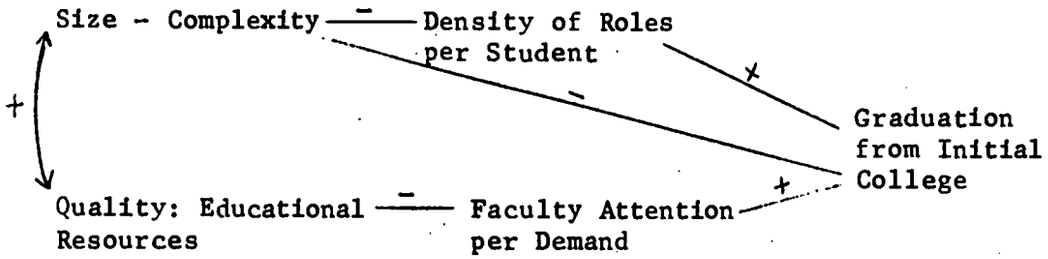
These data indicate that two college variables, i.e., size and faculty attention per demand, do affect students' eventual degree completion-as of five years after entry-though we are not sure of the ways through which this occurs.

CHAPTER IV

Conclusion

The general problem of this study was to determine if colleges achieve direct effects on students' chances of fraduation from that college - and to a lesser extent from any college - in five years as a result of variation in their organizational structures. This, of course, requires that individual characteristics known to affect this outcome be held constant in the analysis. A model was developed that specified ways in which recent trends in the organization of higher education have affected the organizational resources per student that we argued are likely to affect student commitment tothe initial college attended, apart from individual skills and resources that students bring to college with them. The figure below represents the model of college effect we developed. The pluses and minuses attached to the arrows indicate the presence of college effects, after individual variables have been controlled.

Figure 4



In summary, the contextual findings of this study are: (1) College Quality: the general level of educational resources has no impact on graduation chances, independent of characteristics of students recruited to those contexts; (2) Faculty Attention per Demand: this index has a small positive effect on men's graduation rates from their initial college and a small negative impact on women's completion rates; (3) but faculty attention per demand does increase women's likelihood of obtaining a B.A. from another institution in five years; (4) Size-Complexity: size has no consistent impact on graduation chances for either men or women; but one measure of complexity, i.e., the number of undergraduate majors, has a modest negative impact on graduation from initial college on both men and women. Later specification of these effects indicates that size may have two different effects: (a) a small negative effect on graduation chances of low ability men and women; and (b) a small positive influence on middle and upper ability students' graduation rates. (5) Density of Extracurricular Group and Organizational Roles: one measure of this, i.e., the mean hours per school spent in extracurricular organizations per week, has a small but consistent impact on the graduation chances of males and females from their first college.

It must be remembered that these are effects of colleges that remain after individual and other college characteristics have been controlled. However, even though they appear to be genuine contextual effect, they are very small. The beta weights range from .05 to .10, so that even the strongest contextual variable has a negligible influence in terms of the amount of variance explained. In total college characteristics account for less that 5 percent of the variance explained.

These findings, and those of other studies (Astin, 1964; Sewell and Wegner, 1970; Meyer, 1970; Astin, 1969; Panos and Astin, 1968; Werts, 1968; Drew and Astin, 1972) of contextual effects on college occupational choice and dropout, indicate that there are few general effects of different types of colleges on a variety of student career outcomes and those that do occur are small. This happens, in spite of the fact that American colleges are highly stratified in terms of distribution of educational talent and resources. Two conclusions are derived from this general set of findings. One concerns the methodological strategy for studying the effects of college organizational structures on students, and the other is a substantive argument on how socializing organizations achieve an impact on individuals.

A Strategy for Studying College Effects: while there appear to be few consistent or large effects of college organizational structures when these are measured across the national distribution of American colleges, there may still be important contextual effects that are concealed by this strategy. Wegner and Sewell (1970), for example, found modest effects of different nominal types of colleges in Wisconsin on students' chances of graduation. While this evidence points in the direction of examining the 'bit' between individuals and the types of institutions they are attending as the major process by which individual decisions are affected, another interpretation of this evidence is possible. (For a discussion of the 'fit' hypothesis, cf. Feldman and Newcomb, 1969: 275 ff; 325 ff.) Contextual variables of the kind we have been using, e.g., size, may have an impact on students' motivation and plans; but this impact may occur only within given types of colleges and may be different or non-existent for others. For example, among the category small colleges (0-999 students) increases in size may be associated with a disruption of community and negatively affect community involvement, while in larger institutions no effects of increases in size are likely to be found. This example suggests that contextual variables, such as size and quality, may not have continuous or linear effects throughout the entire range of values but are limited in effect to a specific range of values. One strategy this idea suggests is to perform analyses of the effects of college organizational variables within specific types of colleges, e.g., a nominal classification such that used by Wegner and Sewell (1970), and to examine the slopes of the regression coefficients for homogeneity. A similar strategy would be to perform analysis of the contextual variables within categories of size or quality. Increases in quality, for example, may mean different things in small and large institutions, and thus have different effects.

It is conceivable that such a strategy of analysis will turn up structural effects larger and more important than those previously uncovered. However, the real problem is why the effects of colleges are generally so weak, given the fact that the disparities in resources between schools are large. This leads us to a substantive argument about the ways that socializing organizations achieve an influence on people.

Sources of College Effects: the failure of this and other studies to find important contextual effects of colleges on student career choice and attrition is largely the result of the social organization of higher education and its relation to the wider social order in American society. Much thinking about socialization focuses on the direct impact of schools and colleges on individuals, and hence indirectly upon society. By affecting students' values, attitudes and cognitive skills, schools and colleges are seen as having an influence on the larger society. However, this emphasis overlooks another important process by which socializing agencies affect individuals and the larger social structure. Schools achieve important effects on students through their ability to allocate them to important social class, occupational, and political groups in the larger society. In circumstances where schools have a marked impact on entry into such elite groups, students are likely to acquire many of the attitudes, skills and other characteristics expected of such position occupants through familiar reference group processes, before they actually enter these statuses. Such transmission and emulation can occur because students (or students of a given class of institutions) are socially defined by important publics and occupational gatekeepers as future and rightful occupants of these positions. Hence acquisition of desired and expected attributes is not regarded as pretentious but is legitimated by wider social ideas and conceptions of 'students'. (Cf. Turner, 1961; and Meyer, 1969, for extensive development of this idea.)

This idea indicates the central importance of two structural characteristics of societies in determining the general socializing impact of educational institutions: (a) the clarity and visibility of groups in the society into which students are allocated; and (b) the extent to which schools, or particular classes of institutions, are linked to such elite groups. We suggest that in American society both of these conditions are generally lacking. The American stratification system tends to be organized around functionally specific occupational groups that are loosely integrated and very weakly normatively regulated through centralized political control or other coordinating mechanisms, outside the economic market. Secondly, linkages between educational institutions and national political, economic and other elites are also weak. There is no central ministry of education that sets national standards of admissions and outcomes and that helps to define the collective mission of educational institutions in terms of national goals, aspirations and policy. While some groups of colleges in American society, such as the Ivy League, may have links with important class and ethnic groups (cf. West, 1953; Collins, 1971) generally these links are weak, compared to other societies.

An interesting corollary of this argument-of special interest to this study-is that under such conditions no set of institutions is likely to have very strong socializing impacts on students, and this includes the ability of the organization to commit members to the organizational career. This we suspect is the reason for the lack of any strong contextual effect of school quality or prestige in this study on graduation rates. This idea also suggests one interpretation of the strongest and most interesting finding of the study: the difference in graduation rates between students attending institutions, for which there was no institutional information, and those attending schools for whom we do have data. The former are largely unaccredited four year colleges (The College Characteristics Data Bank does not include them), while the latter are fully accredited four year institutions. Graduation rates for the former average about 13% compared to 50% for the latter and these differences hold up after individual characteristics of students are controlled. Much of this analysis is not reported, since for most purposes of this study these students were simply treated as NAs and excluded from the analysis. Since these extremely large differences persist when individual characteristics of students are controlled (the beta weights for school effects average around .40), this suggests that the major difference is the accreditation status of colleges. Non accredited colleges simply are not licensed to grant legitimate, socially recognized B.A.s. This is perhaps their critical defect. Further support for this view comes from the fact that while very few students continue at these colleges for four years, an enormous number transfer and earn a B.A. elsewhere. We use this example to illustrate the major idea developed here. The major difference in American higher education on retention occurs not between high and low quality colleges but between those accredited institutions that can create fully recognized legitimate B.A.s and B.S.s and those that are not accredited and which therefore do not have power to turn students into fully recognized 'college graduates'. Given our findings on the effects of school resources and other college characteristics, it is inconceivable that these large differences stem from differences in the organizational structures of these colleges. In summary, this comparison suggests that since all accredited American colleges can admit students into the general social category of 'college graduate', none has any large and distinctive advantage in socializing resources. The big difference occurs between those institutions that are socially licensed to create and confer this major social identity and those that cannot.

We conclude by considering a special class of colleges that some observers have argued have especially strong linkages with Eastern financial, professional and governmental elites (Collins, 1971). Those are the eitht Ivy League colleges. Our general argument leads us to the following hypothesis about this special group of colleges. Such colleges should have a marked socializing influence on students, including the ability to commit them to the organizational career, if observers are correct in arguing that Ivy League colleges have strong links with powerful economic and occupational constituencies that enable them to allocate students to such groups, independent of students' social backgrounds. With the data available we cannot

test this idea since there are very few students in sample attending Ivy League colleges. However, we can suggest the plausibility of such reasoning, particularly if our data disconfirm it. Therefore, we use the data only for illustrative purposes. The first table below shows the rates of graduation from students' initial college for Ivy League schools, four year accredited institutions, and all four year colleges (accredited and non-accredited) for men.

Table 35

(Males Only)

	Ivy League	Four Year Accredit Colleges	All Four Year Colleges
% Graduating from Initial College with a B.A.	89%	57%	48%

(This analysis was carried out only on the subsample of students N = 1/3 of total sample. In this subsample the N for the Ivy League is 37; for accredited colleges N = 2078; and for all colleges it is 2630.)

There is an enormous difference between the graduation rates of Ivy League colleges and the others but much of this may be accounted for by differential selectivity. We cannot disprove this alternative argument, granted the limited number of cases available, but we can look at the effects of these colleges after one important source of individual differences is controlled, i.e., student academic aptitude. The following table presents these results when our index of academic ability is introduced as the third variable.

Table 36

(Males Only)

Academic Ability Index:	Ivy League Colleges	All Four Year Colleges
Low	-	27% (360)
Medium	80% (5)	44% (1348)
High	89% (27)	65% (733)

(The academic ability index combines students' high school grades and their scores on Project Talent general Academic aptitude Test C-002.)

Only one comparison is important: that between high ability students in each context. The difference between the Ivy League graduation rates for this group and for other colleges is large. It is also important to remember that the rates for the Ivy League colleges are higher than those of high ability students attending other very high quality colleges, as measured by our index of faculty attention per demand (cf. Table). This evidence does not rule out the argument of differential selection or the idea that these colleges have very high levels of resources per student, which give them special control over students' commitment. It does, however, indicate that this group of colleges are special in their holding power, and perhaps in other areas, even compared to other very high quality instituions. Given the additional evidence of other studies (Collins, 1971; West, 1953) on the links of these colleges to external elites, these data indicate that this line of reasoning is worth pursuing, since such colleges may constitute an important 'deviant case' in American higher education.

In summary, we have offered an interpretation of the weak socializing effects of colleges found in this and other studies of American higher education and have illustrated the usefulness of this argument by examining two classes of colleges that appear to have important effects on student commitment: (a) non-accredited four year colleges; and (b) Ivy League colleges.

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Appendix I

Appendix E. Description of the socioeconomic index (P*801)*

Variable P*801 is a socioeconomic index computed for each student on the basis of nine 1960 Student Information Blank questions. The items are listed below; the weight assigned to each response appears to its left in parentheses. A dash (-) appears before options that were not applicable. Items to which a student gave these responses were not included in the computation of his P*801 socioeconomic index.

Item 172. If your family has bought (or is buying) your home what is its present value?

(1) Under $6,000
(2) $6,000 to $10,000
(3) $10,000 to $15,000
(4) $15,000 to $22,000
(5) More than $22,000
(-) We are renting our home.

Item 173. Please make the best estimate you can of your family's total income for last year (1959). Include money earned by both parents or anyone else in the household who worked.

(1) Less than $3,000
(2) $3,000 to $5,999
(3) $6,000 to $8,999
(4) $9,000 to $11,999
(5) $12,000 or more
(-) I can't estimate this.

Item 176. How many books are in your home?

(1) None, or very few (0-10)
(2) A few books (11-25)
(3) One bookcase full (26-100)
(4) Two bookcases full (101-250)
(5) Three or four bookcases full (251-500)
(6) A room full--a library (501 or more)

*This variable was originally developed by William W. Cooley for use in a recent report (Flanagan and Cooley, 1966). Appendix E in that report documents the data analysis on which the choice of component items was based, and summarizes the computational procedure and the characteristics of the resulting index.

Items 190, 191, 195. How many of the following articles are in your home?

Item 190. Automatic washer, automatic clothes dryer, electric dishwasher, electric or gas refrigerator, vacuum cleaner, home food freezer (separate from refrigerator)

(1) None
(2) One
(3) Two
(4) Three
(5) Four
(6) Five or six

Item 191. Telephone, television set, radio, phonograph

(1) None
(2) One
(3) Two
(4) Three
(5) Four

Item 195. A room of my own, my own study desk, a typewriter

(1) None
(2) One
(3) Two
(4) Three

Item 206. Which one of the following comes closest to describing the work of your father (or the male head of your household)?

(1) Farm or ranch worker
Workman or laborer
Private household worker

(2) Service worker
Semi-skilled worker

(3) Farm or ranch foreman
Protective worker
Skilled worker or foreman
Clerical worker

(4) Farm or ranch owner
Salesman
Manager
Proprietor or owner
Technical

(5) Official
Professional

(-) I don't know

Item 218. Mark the one answer indicating the highest level of education your father reached.

(1) None, or some grade school
(2) Completed grade school
(3) Some high school, but did not graduate
(4) Graduated from high school
(5) Vocational or business school after high school
(6) Some junior or regular college, but did not graduate
(7) Graduated from a regular 4-year college
(8) Master's degree
(9) Some work toward doctorate or professional degree
(10) Completed doctorate or professional degree
(-) I don't know

Item 219. Mark the one answer indicating the highest level of education your mother reached.

(1) None, or some grade school
(2) Completed grade school
(3) Some high school, but did not graduate
(4) Graduated from high school
(5) Vocational or business school after high school
(6) Some junior or regular college, but did not graduate
(7) Graduated from a regular 4-year college
(8) Master's degree
(9) Some work toward doctorate or professional degree
(10) Completed doctorate or professional degree
(-) I don't know

Each student's responses to each of these items (excluding those items which he omitted or to which he gave a "not applicable" response) were converted, on the basis of Grade 12 boys in Subsample A-10.0-3* (N = 2946), to standard scores (z) with a mean of 0 and a standard deviation of 1. The means and standard deviations used in computing these standard scores are shown in Table E-1.

The usual formula for converting the raw score (X) on each item to a standard score (z) was used:

$$z_i = \frac{X_i - \bar{X}_i}{\sigma_i}$$

(In this formula the subscript i identifies the item.)

*This subsample is described in an earlier report (Flanagan et al., 1964, pages 2-12 and Appendix A, Table A-1).

In order to be able to convert the sum of each student's z_i values to an overall score (P*801) on a standard score scale it was necessary to have an approximation of the standard deviation of the sum of n items. This approximation, k_n, was computed separately for each possible value of n (the number of items entering into the sum) from 1 to 9. The formula used was:

$$k_n = \sqrt{n + n(n-1)\,\bar{r}}$$

where $\bar{r}$ was the mean of the 36 intercorrelations among the nine items, for grade 12 boys in subsample A-10.0-3, with each of the correlations based on only those boys who had applicable responses for both of the items involved in it. (This formula gives an exact value of the standard deviation of the sum of the standard scores on n items if all the correlations on which $\bar{r}$ is based are exactly equal, and a good approximation otherwise.

The values of k_n are shown in Table E-2.

Each student's z_i values for all n of the items to which he had applicable responses were then used to compute his P*801 score, by means of the following formula:

$$P*801 = 10\left(\frac{\sum_{i=1}^{n} z_i}{k_n} + 10\right)$$

P*801 is thus an approximation of a standard score with a mean of 100 and a standard deviation of 10. The possible range turns out to be from 58 to 135.