STUDIES OF COLLEGE STUDENTS AND ALUMNI: SELECTED DISSERTATIONS IN HIGHER EDUCATION

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INTRODUCTION

One of the special benefits in undertaking any large scale survey is that the resulting data bank provides a rich resource for a variety of special studies over and above the primary analyses that are made of the survey data. The present volume reports the results of eight such studies, each drawing upon some substantial part of a national data bank concerning diverse colleges and universities and each undertaken as a doctoral dissertation by graduate students in the Higher Education Program of the UCLA Graduate School of Education.

The data bank to which we refer consists of questionnaire returns obtained during the calendar year 1969 from representative samples of freshmen, upperclassmen, and alumni in a total of eighty-eight different colleges and universities. Most of the institutions participated by obtaining data from all three of these groups, while others participated in only one or two of the sample surveys.

The alumni were representatives from the graduating class of 1950. Approximately 58 percent of those who received the mailed questionnaire returned it. Upperclassmen were tested in the spring of their junior year in most schools. In a few, however, the data were obtained from seniors in the fall. Approximately 66 percent of the upperclassmen who were selected for inclusion in the samples completed the questionnaires. The freshmen were tested during the summer or fall of the same year, at the time of orientation programs or the first week of classes. Approximately 80 percent of the freshmen who were included in the sample completed the questionnaires. The total number of responses for each group was approximately 8,300 alumni, 7,500 upperclassmen, and 10,500 freshmen.

may still have some pertinent information about the substance of the national survey. Each of the three questionnaires was essentially similar in content, having only minor variations owing to the status and age of the respondents. For example, in both the student and alumni questionnaires there are items about father's occupation; in the alumni questionnaire there are also items about the alumni's occupation.

In general, the content of each questionnaire is divided into three major sections: criterion variables, school and college experience variables, and background information and personal traits. The questionnaires begin with a series of activity scales designed as measures of interest and involvement in important areas of contemporary culture: community affairs, national and state politics, international and intercultural affairs, art, music, drama, literature, religion, and science. An additional scale in the alumni survey was on the topic of education. The extent to which people engage in certain kinds of activities is presumably a reflection of their interests, values, satisfactions, and commitments. Some items in each of the scales refer to some activities that are commonplace and easy to do; others require more effort and thus imply a deeper or more intense level of interest and involvement. A person's score on an activity scale is simply the number of activities he has checked.

There is then a series of items under the heading "The Changing Society". These are statements descriptive of major trends that are thought to be occurring in American society. They refer to trends in the areas of education, the labor market, economy, government planning, societal values, the environment, and resources. There are two kinds of responses to these items: one indicates agreement or disagreement with the statement as reflecting a trend; and the second response, assuming that it is a trend, indicates whether the individual

participation in various sorts of extra-curricular activities, plans for further education, aspects of the college experience that stand out in one's memory, and some corresponding information about the type of high school attended, high school achievement, and participation in various high school extra-curricular activities. The items that are listed under the headings of things that stand out in one's memory are grouped into several subcategories which are used to construct a scale. One scale, for example, measures the extent to which peer relations stand out in memory about the college experience, and another measures the extent to which academic events were viewed as particularly memorable.

The third and last section of the questionnaires deals with a variety of personal information. It includes the usual kinds of census data such as age, sex, marital status, number of children, ethnic background, occupation, income, religious and political affiliation, and various areas of the country in which the respondents have lived. Under the general heading of "Personal Traits" there are combinations of items that are totaled to provide an estimate of three traits that in combination are related to what may broadly be described as intellectual disposition. One of these is autonomy. A high score on that combination of items suggests a general independence of traditional authority. Another trait is labeled complexity, in which a high score indicates a tolerance for ambiguous situations and an enjoyment in dealing with complex and novel ideas. A third trait, labeled theoretical orientation, describes individuals having a preference for using the scientific method in thinking and tending to be logical, analytical and critical in their approach to problems.

In summary, the overall content of the questionnaires includes a variety of criterion measures--activities, awareness of social change, viewpoints with respect to some social issues, and self-ratings of progress toward the

The criterion variable in Margaret New's dissertation was aspiration for further education. Who plans to go to graduate school and what characteristics and experiences are associated with those aspirations? Clearly the most influential determinant was sex. Relatively few women had plans for further education, especially past the master's level. Beyond that, however, high school grade point average, an index of cultural sophistication, and level of mother's education were all positively related to aspirations for further education. The college experience factors of participation in extra-curricular activities and general satisfaction with college life were also related to educational aspirations.

Michael Schleyer's dissertation explores relationships between religious background and intellectuality. Intellectuality is defined as receptivity to change, critical thinking, openness to new ideas, and non-authoritarianism. Religious background was classified as Catholic, Jewish, or Protestant, with Protestant being further subdivided into conservative-fundamentalist, moderate, and liberal. His results clearly indicate that religious background is strongly associated with intellectual characteristics. Students from conservative-fundamentalist Protestant backgrounds rank lowest on intellectuality both in the freshmen sample and the upperclassmen sample, but there are, nevertheless, substantial gains in the direction of intellectuality that can be inferred by comparing the freshmen and upperclassmen responses. Unlike previous studies, in which Catholic students have often been found to rank low on intellectuality, Schleyer's results indicate that students from Catholic backgrounds are quite similar to those from moderate Protestant backgrounds, and in some cases are similar to those from liberal Protestant backgrounds. The gains in intellectuality that might be inferred from differences between the freshmen and upperclassmen cross-sectional responses which were often greater for Catholic

The next three dissertations examined data from the alumni survey. Paul Purdy was concerned with adult participation in politics and with tolerant attitudes with respect to civil rights and minorities. Among the variables associated with political participation were: having majored in social sciences or humanities in college, having participated in extra-curricular activities related to politics or student government, obtaining better than average grades, and having attended an institution classified as a selective university or a selective liberal arts college. The same variables were also related to attitudes towards civil rights and minorities. Among the factors related to low scores on civil rights tolerance were identification with the Republican party, and having majored in some vocational field such as business when in college.

Stuart Farber's dissertation examined several aspects of the college experience in relation to the alumni's self-ratings of progress toward three categories of educational objectives: vocational objectives, personal and social objectives, and liberal educational objectives. The type of institution one attended and the field in which one majored were related to progress toward the attainment of all three categories of educational benefits. Whether one resided on or off the campus during his college years had little or no relationship to the perception of vocational or liberal education benefits but was quite clearly related to the perception of personal social benefits. One of the interesting findings of Farber's study was that the extent of contacts with faculty members and with counselors was positively related to the attainment of all three types of educational benefits. Participation in extra-curricular activities was quite clearly related to the attainment of personal and social benefits, but was least related to the attainment of vocational benefits.

dormitories, fraternities or sororities; various extra-curricular activity groups; and different major fields or schools within the university. Membership in any one of these subgroups has relatively little impact upon students' perceptions of the environment when the environment scores are examined in the manner that has customarily been used in reporting the results on the CUES. However, when multivariate analyses are undertaken, and one looks at the combined influence of various group memberships upon the proportion of people regarding individual items in CUES as generally true about the campus environment, it is clear that there are substantial combined influences upon the environmental perceptions--a finding which emphasizes the need for considering more directly the important subenvironments that are often found not only in complex universities but even within the presumably more homogeneous liberal arts colleges.

In planning this volume we faced the choice between asking each doctoral student to prepare a condensed version of his own dissertation or having some one person prepare a short version of all of the dissertations. Partly because of the inevitable differences in writing style, partly because not all of the former students were still residing in southern California, and partly because when a person has written a work of some 200 or more pages in length the prospect of attempting to condense it into a bare 20 or 30 pages is a formidable one, we chose the second of these two alternatives. For these reasons, we asked Glenn Nyre to undertake the job of writing a condensed version of all eight of the dissertations. In retrospect, we are convinced that this was a wise choice. The general format in presenting each of the studies is roughly comparable and the highlights of each have been selected with a good sensitivity to their relative importance for inclusion in a condensed version. We are extremely grateful to Mr. Nyre for his thoughtful and perceptive condensations of these eight dissertations.

included in our national survey, and documents the importance of measuring subcultures in complex environments.

Lloyd Ring: "Organizational Characteristics of Colleges and Universities: A Systems Description," 1968. Ring developed and pretested an instrument for characterizing organizational functions of colleges and universities, based on the theories of Katz and Kahn.

Richard Nystrom: "UCLA: An Interpretation Considering Architecture and Site," 1968. One element of Nystrom's study was a questionnaire designed to determine how students reacted to various architectural styles on the UCLA campus and the extent to which they felt that the esthetic qualities of the campus were important to them personally and educationally. This aspect of Nystrom's study documents the importance of one aspect of the college environment.

Jere Martin: "A Comparison of Academic Activities Reported in Student Logs at Selected Institutions of Higher Education," 1969. The measure of learning styles that we have included in the Higher Education Measurement and Evaluation KIT[4] was based on Dr. Martin's study.

Patrick Partridge: "An Exploratory Study of Management Styles and Institutional Functions in Selected Urban Public Junior Colleges, " 1969. Partridge developed instruments for characterizing authoritarian vs participatory management styles and related the results to the adaptive and innovative functions of the institutions.

Richard Seligman: "Student and Administrator Perception of Campus Discipline," 1969. The instruments developed by Seligman enabled institutions to be characterized along strict vs permissive dimensions, and revealed discrepancies between administrator vs student perceptions.

Sandra Clark: "An Exploratory Analysis of E.O.P. Women in One UCLA Residence Hall," 1969. Clark's study concluded with a set of questions designed to assess how well administrators were prepared to understand and deal with the problems of disadvantaged black students. A refinement of these questions could be used in a pre- and posttest design to evaluate the impact of experience upon understanding.

Jane Permaul: "Behavioral Differences Among Selected Organized Student Groups," 1970. One aspect of this study was a sociometric device for assessing how, and about what issues, different student organizations communicated with one another.

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[4]Center for the Study of Evaluation. Higher Education Measurement and Evaluation KIT. (Los Angeles: UCLA, Higher Education Evaluation Program, Field Edition, 1972).

and expectations of Educational Research and Development Centers would always reflect some reasonable degree of openness to this kind of inquiry and exploration.

C. Robert Pace
James W. Trent

UPPERCLASSMEN'S SATISFACTION WITH COLLEGE

Raymond Cook*

In light of current pressures of enrollment, increasing costs, and further expected increases in potential college students, it behooves institutions of higher education to attempt to consider all factors related to completing successfully the requirements for a degree when establishing admissions and retention policies. Student satisfaction is only one of several possible criteria which can be considered in relationship to how well a university or college functions, but it is a criterion to which institutions must continuously respond.

On the college campus there are many observable manifestations that all students are not well satisfied with their college experience. Furthermore, what is satisfying to one student may well be dissatisfying to another. It is generally recognized that students differ and that at any given institution some students will fit better than others, will experience less conflict, and will feel more satisfied with their total experience at that college.

As was shown in the literature review in the dissertation, some research has been conducted which examines student satisfaction, but it has not been done in a manner that takes into account interacting factors. The purpose of this study was to determine the relationship between student satisfaction and variables such as major field of study, type of institution attended, reported progress or benefit derived from the college experience, the college environment, student persistence patterns, residence while in college, involvement in extra-curricular activities, faculty and counselor contact, and selected personality traits. The basis for the study was the hypothesis that there is a best fit among these variables when they are measured in terms of upperclassmen's satisfaction with the college experience.

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*Ed.D., 1971

3. Regardless of any vocational benefit college may have for you, do you think that being in college at this time in your life is a very important and beneficial experience?

Definitely yes	- value 4
Generally yes	- value 3
Generally no	- value 2
Definitely no	- value 1

Only those students who responded to at least two of the questions were assigned a satisfaction index score. Therefore the lowest possible score was 2 (1 + 1 + 0), while the highest possible score was 12 (4 + 4 + 4). Twenty-eight of the 4,404 respondents were not included in the investigation as a result of their failure to respond to at least two of the three satisfaction index questions.

Four levels of student satisfaction are arbitrarily designated for the purposes of this investigation:

Highly satisfied	- those students whose responses totaled 12
Generally satisfied	- those students whose responses totaled at least 9 but less than 12
Low satisfaction	- those students whose responses totaled at least 6 but less than 9
Dissatisfied	- those students whose responses totaled less than 6

Independent variables were extracted from other portions of the questionnaire as deemed relevant. Brief operational descriptions of the contents of the separate scales used are given below.

College and University Environment

The college environment section of the College Student Survey was used in its entirety. This section, a condensed version of the College and University Environment Scales (CUES, Pace, 1969b), was used to obtain student perceptions of their campus environment. It consists of five scales or dimensions and each

Vocabulary

This section was designed to provide information on the word power of college graduates and was utilized in this study to provide some index of the respondent's academic aptitude.

Personal Traits

This section contained opportunities for combinations of responses to the phrases, "I generally like," and "I generally am." When the responses are totaled as keyed, they are designed to provide estimates of three personal traits (autonomy, complexity and theoretical orientation), related to what has been broadly described as intellectual disposition. The three scales have been defined as follows:

Autonomy. This scale, patterned after the concepts of a number of AVL, OPI and OAIS scales, measures nonauthoritarian thinking and a need for independence. These elements are highly correlated with aesthetic and creative inclinations, independence of thinking, flexibility and intellectual quality.

Complexity. This scale measures orientation toward an experimental, inquisitive viewing of experience and tolerance for ambiguities. The scale correlates with the AVL Theoretical and Aesthetic Measures, which distinguish creative individuals, and with the Meyers-Briggs Intuition and Perception Scales, designed to measure a person's tendency to approach his environment with an open, receptive mind.

Theoretical Orientation. This scale assesses the degree of interest in using scientific methods in thinking, including interest in science as such and in scientific activities. High scorers are generally more logical, rational and critical in their approach to problems than those scoring at the average or below (Trent & Medsker, 1968).

Preliminary, chi square and step-wise multiple regression analyses were performed on the data. Results of these analyses are discussed below.

TABLE 2
Respondents' Attitudes toward
Choosing the Same College Again

Responses	(N)	Percent
No, definitely	(426)	9.7
Probably no	(877)	19.9
Probably yes	(1,842)	41.8
Yes, definitely	(1,208)	27.4
No response	(51)	1.2

TABLE 3
Respondents' Attitudes Regarding Whether or Not
College Attendance is Currently Beneficial to Them

Responses	(N)	Percent
Definitely no	(35)	0.8
Generally no	(163)	3.7
Generally yes	(1,205)	27.4
Definitely yes	(2,960)	67.2
No response	(41)	0.9

Table 4 displays the distribution of combined responses to questions contained in the satisfaction index. When the responses are viewed in this form it can be seen that 124, or approximately 3 percent, of the students received a summary score of less than 6, and applying the levels of satisfaction described earlier these students are classified as dissatisfied. An inspection of this table also discloses that 574 (13 percent) may be classified as highly satisfied, 2,734 (63 percent) generally satisfied, while 944 (21 percent) are within the low satisfaction range.

TABLE 5
Chi Square Relationship between Satisfaction Scores and Independent Variables

Independent Variable	X^2	df	Level of Significance
College and University Environment Scales			
Awareness	276.411	9	.001
Community	268.862	9	.001
Scholarship	207.186	12	.001
Propriety	12.542	9	.184
Practicality	11.619	9	.236
Educational Benefits			
Vocational	274.124	9	.001
Liberal Education	188.495	12	.001
Personal and Social	169.968	9	.001
Average College Grade	173.982	18	.001
Faculty-Staff Contact			
Classroom Contact	150.920	15	.001
Student-Faculty Contact	99.809	18	.001
Student-Counselor Contact	64.976	18	.001
Type of Institution	137.698	21	.001
Intellectual Disposition			
Autonomy	95.157	6	.001
Theoretical Orientation	16.040	9	.066
Complexity	7.483	6	.278
Extracurricular			
Social Service	80.282	6	.001

Although chi square values cannot be compared directly, large differences obtained from the same samples may suggest differences in part. Three of the CUES scales measuring student perceptions of college environmental characteristics showed the highest chi square relationships. Community, the scale measuring student perception of their campus in terms of its being a friendly, cohesive, group oriented campus, had the highest chi square score of all the variables. It was followed among CUES scaled by Awareness. This scale measures student perception of their campus as having an environment which encourages concern about social and political problems, expressiveness through the arts, and tolerance of criticism. Next among the CUES scales was Scholarship, which measures perception of the college as having an environment characterized by intellectuality and scholastic discipline, intellectual achievement, and the pursuit of knowledge. The remaining two CUES scales (Practicality and Propriety) were not found to have a significant relationship with satisfaction scores.

Measures of student-perceived education benefits were found to show the next highest chi square relationship. In this cluster of variables all three measures of educational benefits were shown to have statistically significant relationship with satisfaction scores. Vocational benefits had the highest chi square relationship, followed by measures of benefit to the student in the areas of liberal education and personal and social gains.

The classroom contact scale of the cluster of variables indicating degree of factulty-staff contact with students was next highest in terms of chi square relationship. Within this cluster, student-faculty and student-counselor contact were next in order according to chi square relationships.

Chi square tests between type of institution and satisfaction scores were next in magnitude. Following type of institution was the scale of

In an attempt to determine relative strength of relationship between independent variables and the dependent variable, correlation coefficients were computed for all independent variables composed of measures with interval scales. The results of the computations were such that little value could be derived in terms of strength of relationships.

This situation emphasized the necessity of subjecting the full set of independent variables to additional statistical treatment in order to consider the major hypothesis of this study. A statistical treatment to determine the proportion of variation in the dependent variable that is explained by a set of independent variables is indicated.

Step-Wise Multiple Regression

Step-wise multiple regression was selected as an additional appropriate treatment of the data in order to determine the predictive value of independent variables in terms of difference in student satisfaction with college. The results of these analyses are summarized in Table 6. This table presents information for each independent variable at the conclusion of the final step. In this instance the final step was determined by the last variable entered that was found to be statistically significant at the .10 level as determined by the F test.

Awareness was shown to be the independent variable explaining the most change (accounting for the greatest variation) in the dependent variable. Awareness was followed, in order of percent of change explained in the dependent variable, by educational benefits, community, average college grade, and autonomy.

Other independent variables explaining a lesser degree of difference in the dependent variable were found to be engineering institutions, scholarship, general universities, contact with college personnel, theoretical orientation,

residence in fraternity or sorority, general liberal arts colleges, selective liberal arts colleges, involvement in extracurricular activities, propriety, living in a rooming house, denominational liberal arts colleges, and an education major.

As shown in Table 6, awareness was the source of approximately 8.3 percent of the difference in student satisfaction index scores. This independent variable is followed in percent of influence upon the dependent variable by student perceived benefit from the college experience. This variable was responsible for approximately 6.2 percent of the difference. These two variables together then accounted for approximately 14.5 percent of the difference in the dependent variable as determined by step-wise multiple regression analysis.

Community, the second environmental measures variable, was the next highest change influence on the dependent variable (3.1 percent). Average grade while in college followed with 2.4 percent. The last independent variable explaining more than one percent of the difference in the dependent variable is autonomy. When considered together, these five independent variables (awareness, educational benefits, community, grade point average, and autonomy) account for approximately 21 percent of the difference in the dependent variable.

Several independent variables shown in Table 6 have higher normalized regression coefficients than awareness. This is an indication that when considered individually, they have stronger relationships with the dependent variable than awareness. However, their predictive value in terms of probable influence in the dependent variable is somewhat less than that of awareness. Because in the multiple regression there is an attempt to predict the criterion, the same kinds of relationships are not expected as were observed in the chi square relationships.

Summary and Recommendations

The findings of this study did not reveal sufficiently conclusive evidence to support the hypothesis that there is a best fit among students' major field of study, type of institution, personal characteristics, the college environment, involvement in extra-curricular activities, and perceived benefit from the college experience when measured in terms of satisfaction with the college experience.

Support for the hypothesis, however, was indicated by certain of the findings. Chi square analysis showed a statistically significant relationship between student satisfaction and 19 independent variables. Significant relationships between student satisfaction and the Community, Scholarship, and Awareness Scales of the College and University Environment Scales were found. In addition, type of institution, primary college residence, average college grade, sex of respondent, and autonomy were found to have statistically significant relationships with satisfaction scores. Indications of relationships were also discovered between satisfaction with college and educational benefits, involvement in extracurricular activities, plans to attend graduate school, and student-counselor and student-faculty contact.

Correlation coefficients disclosed a slight positive relationship between the dependent variable and several intervally scaled independent variables. Measures of autonomy and complexity were found to have negative relationships with college satisfaction scores.

Step-wise multiple regression applied to all independent variables did not reveal strong values for explaining differences in the dependent variable. However, the regression analysis did indicate the five strongest variables: awareness, perceived benefit from the college experience, community, average college grade, and autonomy. These five variables accounted for 21 percent of the difference in scores of student satisfaction with the college experience.

No real value was discovered in terms of student satisfaction for the encouragement often given for participation in extracurricular activities. It appears from the evidence discovered here that faculty as well as student time and energy directed toward increasing student involvement in extracurricular activities of academic and non-academic nature might be better spent improving student perceptions of the qualities of the college environment associated with a friendly, cohesive, group-oriented atmosphere.

Evidence concerning the influence of the atmosphere often attributed to selective liberal arts colleges casts serious doubt on the ability of such atmosphere to exert either a positive or negative effect upon the student in terms of satisfaction with the college experience. In addition, identification of some majors often associated with a "liberal arts" education as containing disproportionate numbers of dissatisfied students was not supported by this investigation. In fact, both the type of institution and the major field of study found to have the strongest negative relationship with satisfaction of the student was engineering. Majoring in the arts was found to have no significant relationship to satisfaction level and majors in the humanities were found to have little difference in level of satisfaction when compared to all other majors. However, it should be noted that this conclusion is based upon a very high level of significance, that is, .001. Humanities and business did exceed the .01 level of probability.

When the population was considered by type of institution, marked differences were found. Forty percent of the dissatisfied females were attending general liberal arts colleges. This type of institution, combined with selective liberal arts colleges and teachers colleges, accounted for 75 percent of all the dissatisfied females.

match with an expressed intent of improving the student satisfaction with college without further investigation. Still, the students of today may be asking for things other than satisfaction with their college and the results of this study should not be construed to constitute a rationale for disregarding concerns regarded to be relevant by students.

As this study progressed, an underlying concern developed that the design fails to consider adequately the interactions that are likely to exist among various combinations of variables which, when considered individually, are found to have little or no real influence upon student satisfaction with college. Additional efforts should be made to make sure that measurements used are appropriate measurements. This study was dependent upon secondary analyses using scales developed by others who have indicated a need for further refinement of the measures to assure more reliability and validity. It could be that once greater reliability and validity is attained for those measures, they may be more predictive than the present investigation revealed.

There is also some question as to whether the statistical treatments applied in this study were sufficiently able to take into account the interactions that may exist between certain of the independent variables when their relationships to student satisfaction were investigated. Although the findings revealed statistically significant effects of few independent variables upon differences in student satisfaction with college, there were indications that additional independent variables or combination of variables not identified here could affect student satisfaction, and that other types of analyses might reveal the existence of interactions between certain variables which could account for the differences found on student satisfaction scores.

Further research focusing on the following avenues of inquiry is therefore recommended as follows:

CORRELATES OF GRADUATE DEGREE ASPIRATIONS

Margaret Ann New*

Introduction

For many students, particularly those whose parents are college-educated, going to college is a natural extension if not the normal expection of their preparation for adult life (Remmers & Radler, 1957). Parental values are generally passed along to offspring (Havinghurst & Breese, 1947); the aspiration for a college diploma is no exception (Trent, 1970b). It is known that experiences encountered at college are also a significant influence on educational goals (Pace, 1967; Thistlethwaite, 1965). The relative importance of family versus college experience, however, is not clear and most probably varies considerably from one individual to another (Astin, 1965).

The purpose of this study was to assess the relative influence of pre-college background and inputs from the college experience and environment on student aspirations to pursue and attain advanced academic or professional degrees. To do this, the study determined the correlation between stated aspiration and (1) pre-college influences; (2) the college experience as reflected in student interests, attitudes, activities and involvements during the undergraduate years; and (3) the scholastic demands of the college or university attended as perceived by the student. Included in pre-college influences were such variables as family socioeconomic status, father's occupation, parental education, cosmopolitanism, high school activities, and past academic performance. Many of these variables were combined to form a broad composite indicator termed the Cultural Sophistication Index (CSI).

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*Ed.D., 1972.

TABLE 1
Colleges and Universities Selected for the Study

School	Freshmen		Upperclassmen	
	Sample size	Response rate	Sample size	Response rate
Engineering Schools				
South Dakota School of Mines and Technology	138	92.0	99	99.0
Rensselaer Polytechnic Institute	151	50.0	105	49.5
Virginia Polytechnic Institute	197	85.4	74	99.0
Teachers College				
Delta State Teachers College	76	76.0	70	63.6
University of Northern Iowa	147	100.0	123	63.0
Montclair State College	274	91.3	140	71.0
Select Liberal Arts Institutions				
Beloit College	132	90.7	88	82.7
Macalester College	103	71.0	95	73.0
Carleton College	123	82.0	73	66.7
Denominational Liberal Arts Institutions				
La Salle College	161	86.0	99	100.0
Goshen College	117	74.5	94	72.6
Susquehanna University	114	76.0	96	87.2
Select University				
University of California, Los Angeles	215	72.8	143	65.9
Total sample	1,948		1,299	

The specific research hypotheses tested in this study are stated below as null hypotheses:

H_1 There is no significant correlation between level of academic aspiration and level of cultural sophistication.

H_2 There is no significant difference between upperclassmen and freshmen on level of cultural sophistication and level of academic aspiration.

H_3 There is no significant difference between freshmen and upperclassmen after controlling for additional pre-college influences between High aspiration and college scholarship environment.

H_4 Among female college students, there is no significant correlation between level of academic aspiration and their mother's level of education.

H_5 There are no significant predictors of academic aspiration.

H_6 There is no significant difference in measure of college experiences and perceptions among upperclassmen with the High level of academic aspiration and upperclassmen with Medium or Low levels of academic aspiration.

H_7 There is no significant difference in measure of college experiences and perceptions among freshmen with the High level of academic aspiration and freshmen with Medium or Low levels of academic aspiration.

H_8 There is no significant difference between male and female upperclassmen in the High academic aspiration level.

H_9 There are no significant differences between institutions on degree of aspiration for freshmen and upperclassmen.

TABLE 2
Academic Degree Aspirations for Freshmen and Upperclassmen by Sex

Sex and Level of Aspiration	Freshmen			Upperclassmen		
	(N)	%		(N)	%	
Males						
Baccalaureate degree	(317)	30.1		(237)	31.3	
Master's degree	(390)	37.0	69.9	(307)	40.5	68.7
Doctorate or advanced professional degree	(347)	32.9		(214)	28.2	
Total	(1054)	100.0		(758)	100.0	
Females						
Baccalaureate degree	(451)	52.4		(241)	45.1	
Master's degree	(314)	36.5	47.5	(246)	46.1	54.9
Doctorate or advanced professional degree	(95)	11.0		(47)	8.8	
Total	(860)	100.0		(534)	100.0	

The difference in graduate degree aspiration found cross-sectionally between the two class levels of women contrasted significantly with the relatively similar male aspirations. It could be inferred from these cross-sectional differences that college makes a greater impact on women's academic aspirations than on those of men. One could also infer that for both sexes the overall effect of college in this area is to decrease aspiration for the most advanced degrees (doctoral or higher professional degrees); 23 percent of the freshmen aspired to this level, compared with 20.2 percent of the upperclassmen. The difference between the two groups concerning enthusiasm for very advanced education, along with significantly higher aspiration

TABLE 3
Distribution of Scores on the
Cultural Sophistication Index

Type of Score	Freshmen (N = 1,948)	Upperclassmen (N = 1,317)
Maximum Score	40	41
Minimum Score	0	0
Median	19	19
Mean	19.8	19.7
Standard Deviation	6.7	6.7

TABLE 4
Class Distribution of Scores on the
Cultural Sophistication Index

Class	Low	Medium	High
Freshmen	23.2%	66.2%	10.6%
Upperclassmen	24.4%	65.2%	10.4%

This disproportion enhances the weight of a high CSI score and lowers the weight of a borderline score, thereby emphasizing the importance of high cultural sophistication in the following analyses.

Level of Academic Aspiration by Level of Cultural Sophistication

The first research hypothesis (H_1) suggested that no significant correlation would be found between level of academic aspiration and level of cultural sophistication. The degree of correlation between the two rank-ordered variables was tested by computing Kendall's τ and finding the

4. Greater differences in aspiration between freshman and upperclassman man years occur for women than for men.

5. Regardless of sex, class, or average level of aspiration, the proportion of aspirants toward high academic degrees increases with an increasing level of cultural sophistication.

From these results, hypothesis one is rejected. A modest positive correlation does exist between level of academic aspiration and level of cultural sophistication.

Upperclassmen and Freshmen: Level of Degree Aspiration by Level of Cultural Sophistication

Hypothesis two (H_2) suggests taking the results of hypothesis one a step further to look at differences between upperclassmen and freshmen. It states that no significant difference exists between upperclassmen and freshmen on level of academic aspiration by level of cultural sophistication.

It was not surprising to find CSI to be positively correlated with academic aspiration, but the difference additional years of college make on the degree of correlation between the two classes is what merits attention here, as the degree of significance of that finding is tested directly.

The initial step in this procedure was to find the correlation between CSI and academic aspiration by class without regard to sex. These data confirmed expectations: for freshmen, Kandall's τ was 0.16, and for upperclassmen it was 0.08, both significant at the $p>.0001$ level. The second step was to determine if these mean values of τ were in fact from different sample populations or whether they represented the same sample population but differed by chance. This calculation revealed that the τ's found indeed represented different populations, at a .001 level of significance.

Conclusions drawn from these analyses are as follows:

1. the freshmen's relationship between CSI and degree aspiration is significantly greater than that of the upperclassmen

Multiple R represents the zero-order correlation between the actual values obtained for high degree aspiration (dependent variable) and those values predicted from the least-squares equation.

R Square represents the proportion of the variance in the reported high-aspiration level accounted for by the regression equation.

R Square Change indicates the change in R Square from its previous value achieved by adding one new variable.

Simple R represents the correlation coefficient between high-aspiration level and that particular independent variable.

B represents the slopes of the regression coefficients.

Beta represents the standardized regression coefficients or the adjusted partial slopes.

The data in Tables 6 and 7 indicate that few variables, using Beta weights, were significantly correlated with high degree aspiration even at the .10 level as determined by the F test. Furthermore, the college scholarship environment did not appear significant on either the freshman or the upperclassman lists. While it was not the least correlated of the variables (three items are less positively correlated for the freshmen; four for the upperclassmen), apparently this aspect of the college environment played a small role in the determination of academic aspiration as measured.

The variables in Table 6 for upperclassmen that are significantly correlated with high degree aspiration are the respondent's sex (Beta .318) and high school grade point average (Beta .175). Appearing in Table 7 as significant correlates of high degree aspiration for freshmen are the respondent's sex (Beta .329), Protestant affiliation (Beta .121), the time the respondent decided to attend college (Beta .107), the Cultural Sophistication Index (Beta .106), and high school grade point average (Beta .102). The failure of the Cultural Sophisitcation Index particularly with reference to upperclassmen, to be a prominent factor in predicting high degree aspiration through multiple regression heightens concern over the relationship between the Cultural Sophistication Index and degree aspiration.

TABLE 7
Freshmen Multiple-Regression Analysis of Independent Variable Influence on High Degree Aspiration

Item (variable)	Multiple R	R^2	R^2 Change	Simple R	B	Beta
Cultural Sophistication	.196	.038	.038	.196	.196	.106
Time decided to attend college	.245	.059	.022	.183	.079	.107
How many friends go to college	.249	.062	.002	.134	.020	.021
High school GPA	.263	.069	.007	.146	.073	.102
Respondent's age	.267	.071	.002	-.042	.171	.036
Respondent's sex	.404	.163	.092	.283	.514	.329
Respondent's marital status	.405	.164	.000	.020	-.203	-.033
Respondent's political identification	.409	.167	.004	.050	.030	.026
Parents' political identification	.410	.168	.000	.042	-.006	-.007
Total high school activities	.416	.173	.005	.062	.039	.093
Respondent's race	.420	.177	.003	-.034	-.156	-.046
Catholic	.421	.177	.000	.008	.126	.072
Jewish	.424	.180	.003	.098	.288	.079
Protestant	.439	.193	.013	.128	.220	.121
Major - Biology	.463	.214	.022	.191	.229	.081
- Social science	.470	.221	.007	.080	-.036	-.017
- Language	.470	.221	.000	-.048	-.164	-.049
- Humanities	.470	.221	.000	-.014	-.195	-.060
- Art	.471	.221	.000	-.052	-.256	-.074
- Engineering	.471	.222	.001	.035	-.283	-.119
- Business	.482	.233	.011	-.137	-.468	-.168
- Education	.484	.234	.001	-.138	-.249	-.091
- Other major	.490	.240	.006	-.066	-.225	-.108
College Scholarship Environment	.493	.243	.003	.045	.038	.054

freshman and upperclassman women, there was a small but significant correlation between maternal education and daughter's academic aspiration (freshmen: $\tau = 0.10$, $p<.0001$; upperclassmen: $\tau = 0.07$, $p<.005$), results that again showed a smaller correlation for upperclassmen than freshman women.

In general, a greater proportion of daughters (freshmen, 11.0 percent; upperclassmen, 8.8 percent) sought advanced degrees than the percentage of their mothers who had some graduate training (5.6 percent and 5.7 percent respectively for the two class levels of daughters). However, when only the daughters of mothers actually holding an advanced degree were looked at separately, their percentage of high degree aspirants was much higher than the total group (freshmen 22.4 percent; upperclassmen 16.7 percent).

The conclusions drawn from these data and other analyses performed in the dissertation are as follows:

1. There is a significant, but modest, positive correlation between mothers' education and daughters' level of aspiration.
2. The correlation is stronger for freshmen than for upperclassmen.
3. One out of 18 mothers whose daughters are in college has received graduate training or a degree.
4. More freshman and upperclassman females aspire to higher academic achievements than were reached by their mothers.
5. The probability of high academic aspiration increases for females with mothers having graduate training.

Hypothesis four is rejected on the above evidence that indicates that a modest positive correlation does exist between females' level of academic aspiration and mothers' education.

Upperclassmen and Freshmen: Significant Predictors of Degree Aspiration

The fifth hypothesis (H_5) states that there are no significant predictors of high degree aspiration. To look at the predictive power of numerous selected variables, a step-wise multiple-regression analysis was employed, similar to the one used to test hypothesis three. In this analysis, however, the

list, however, and does not appear for any of the three other sex and class level differentiated groups. This finding has unclear implications as one would expect an interest in humanities to be related to high cultural sophistication. No satisfactory explanation can be offered in this study for the isolated appearance of this major and the concurrent disappearance of cultural sophistication for upperclassman women only.

The tables concerning freshmen and upperclassmen males reveal some characteristics having negative correlation with aspiration for advanced academic degrees--specifically, being in the fields of engineering, business or education. A common denomenator among these three majors is that each offers a professional start in its respective field without requiring further training beyond the baccalaureate level. A career in any of these three fields may be enhanced by graduate schooling, but it is not required as a minimum credential for career entrance. Thus, for many students with little motivation or opportunity to pursue graduate studies, these three fields may be very attractive, as they can suspend their education at the bachelor's level without great occupational hindrance.

Biology and social science majors appear on the multiple regression tables for both upperclassman and freshman females and have a positive correlation with aspiration. With the exception of a biology major for freshman males, neither of these majors is included among significant correlates (or overcomes the negatively correlated majors previously mentioned) for males.

High school activities appear to be correlated with aspiration for freshman males and females, and even more strongly for upperclassman women. Many more variables are seen as significantly correlated with aspiration for freshmen than for upperclassmen. Among the variables found to be unique to freshmen are the following: the time the student decided to attend college, Jewish

and viewpoints between students of high degree aspiration and those of low/medium aspiration for both upperclassmen and freshmen. Low and medium degree aspiration levels were combined to isolate and thus emphasize the difference between the highest degree aspiration and the lower degree aspirations.

As in previous analyses, a sample of traits and experiences previously found to be related to educational plans was selected from the data available. The six variables included: extracurricular activities, perceived benefit of college (other than vocational gain), the role of women, civil rights attitudes, liberalism, and satisfaction with college. The students were ranked on each variable according to the position they took or the number of items they responded to, depending on the nature of the measurement used. In some cases, the students' ranking "score" indicates the degree of agreement with accepted college outcomes. In others, it represents the degree of judged "liberalism" of attitude. The operational definition of "liberal" in this context means the degree to which an individual advocates equal rights for women, civil rights for all citizens, and other popularly defined liberal ideas. The relationship between the level of aspiration and attitude, experience and viewpoint was tested for all six variables using the Chi square technique.*

Of the six variables, five had a significant relationship to high academic aspiration for upperclassmen, the exception being perceived benefit of college (other than the vocational dimension). Among the freshmen, five variables also had a significant relationship to high academic aspiration. The one exception for this group of students was viewpoint on the role of women. View-

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*More specific information concerning the scoring for each measure can be found in Appendix C of the original report of the study (pp. 119-125). The twelve tables used for depicting the results of the analyses (Tables 18-29) are also displayed in the complete dissertation (pp. 73-80).

In both the freshman and upperclassman samples, the distribution of viewpoints on civil rights had a tendency toward liberalism. The distribution was similar between those two groups except for the high degree aspirants, where the upperclassmen were clearly more liberal than freshmen. These results corroborated previous research findings which have shown that high achievers, and therefore high degree aspirants, are more liberal than other students on civil rights issues. The same general pattern of liberalism was also found on the viewpoint on liberalism scale, though the distribution there was not heavily weighted toward the "liberal" category. Forty-four percent of the freshmen and 55 percent of the upperclassmen were represented in the two most liberal categories. The Chi square indicated a strong relationship between aspiration and the measure of viewpoint on liberalism.

From the twelve tables covering the six variables studied for these hypotheses, a class profile can be drawn indicating the order of each variable's relationship to degree aspiration. For freshmen they are: civil rights, benefit of college, extracurricular activities, liberalism, and satisfaction with college. A somewhat different profile appears for upperclassmen: civil rights, liberalism, satisfaction with college, extracurricular activities, and the role of women. Role of women was not statistically significant for freshmen, nor was benefit of college for upperclassmen.

The inferred tendency for high degree aspirants to become more liberal with increased exposure to college corroborates similar findings in previous research regarding a relationship between students' liberal tolerance and persistence in college (Feldman & Newcomb, 1969; Trent & Medsker, 1968). Thus it appears that an increased liberal attitude may well have a relationship to high degree aspiration. Indeed, most studies on this subject have shown that seniors are more liberal in their attitudes toward civil

aspiration for advanced academic degrees, the major differences being the considerably greater probability that a male will pursue graduate work than that a female will. The eighth hypotheses (H_8) bears on the differences between upperclassman males and females at the high level of academic aspiration.

Aside from the discrepancy in proportion of high degree aspirants, the question remains of whether or not both sexes use the same criteria in making their respective decisions to pursue a graduate degree. This hypothesis seeks further clarification of the question, using the Automatic Interaction Detector (AID) technique to sort out the criteria that most influence high aspiration, selecting them in order of decreasing importance. Student profiles were extracted from a branching-tree analysis which reveals how each characteristic entered the profile. The earlier a characteristic enters as a branch variable, the higher its correlation with aspiration.

A comparison of the tree analysis for males with that for females indicated that, for both sexes, the student's expected occupation is the most important determinant of degree aspiration. This variable is first in the branching sequence for both men and women, but plays a more important role for females. The student's major field plays the next most important role in identifying high aspirants and continues to play a selective role at more distant branch points. A number of other variables, including college grade point average, number of books in the home, father's level of education, civil rights attitudes, academic activities, and topics the respondent talks about, all have an influence, but none apparently as strong as expected occupation and major.

Student's expected occupation and college major both suggest strong goal orientation. They also suggest a definite purpose in the student's quest for an advanced degree--namely preparation for a profession. Little, if anything,

If the type of college does make a difference on student academic aspirations, a definite relationship should exist between schools rank-ordered for the aspiration level of their students and schools rank-ordered by the students' entering grade point average, cultural sophistication, and perception of a scholarly college environment--variables that have been shown in this study to have varying degrees of positive correlation with aspiration.

In testing this hypothesis, the institutions in the sample were ranked based on the percentage of students in each of them with high aspirations. This was done for both the freshman and upperclassman samples, and little difference was found in school rank between the two levels of students. Rank-ordered testing made comparison possible between the schools arranged by level of expressed student aspiration to attend graduate school and the schools ranked by percentage of graduates actually entering graduate school. The latter figures were gained from the Office of Institutional Research at each institution for their graduates in the years 1968, 1969, and 1970, the three years the upperclassmen in the study would most likely have graduated.

This permitted a direct comparison of stated aspiration with actual graduate school enrollment. An immediate finding was the great discrepancy between stated aspiration and actual enrollment. Other than the college that maintained its rank of first place on both stated and actual attendance, the institutions showed great differences in the percentage of students aspiring to graduate school and those actually enrolling. It is possible, however, that schools do not keep accurate records of how many of their graduates actually enroll for post-graduate training. Also, some students may delay their plans for graduate education beyond the time originally anticipated. Perhaps a more accurate picture of the congruence between graduate school aspiration and actual attendance could be gained if these students were studied over a longer period of time.

by their extracurricular activities and reported satisfaction with college. There is also a divergence between the cross-sectional differences of freshman and upperclassman women and those of their male counterparts with reference to aspiration; there is a three-to-one difference between males and females who aspire to the highest degree category as incoming freshmen.

In this study, student perception of college scholarship environment is shown to have a minimal effect on aspiration, there being no significant correlation between college scholarship environment and academic aspiration for individual students. Only with school rank-order tests could a positive relationship be shown to exist between college scholarship environment and degree aspiration, high school grade point average, and cultural sophistication.

In all, these results indicate that graduate education is definitely male-dominated and that academic achievement and a background high in cultural sophistication remain selective determinants of students who later pursue graduate education. To some extent, a student's participation in campus life and a positive attitude toward the institution in which he is enrolled may be meaningful influences, though they certainly vary by institution and may in part be predetermined by student self-selection into an established environment.

However, no one of these variables by itself can predict students with high degree aspirations. The combination of variables, including sex, cultural sophistication, and grade point average, is a fairly reliable sign of high degree aspiration, but all remain far from accurate predicators of post-graduate education. Certainly additional research is necessary before those seeking eventual high-level educational attainment can be reliably identified early in life.

Several implications of this study are clear:

1. Few women are planning to go to graduate school. This situation could well be changing, but the traditional outlook still prevails. Compared to women entering college, a much

THE RELATIONSHIP BETWEEN RELIGIOUS BACKGROUND AND INTELLECTUALITY IN COLLEGE

Michael Blair Schleyer*

Factors which underlie the various ways in which students progress throughout their college careers have been studied continually for the last twenty years or so. Relationships have been found indicating that certain factors played important roles in determining personality development of college students as well as academic development. For example, socioeconomic status (Hollingshead, 1949; Trent & Medsker, 1968; Tyler, 1956), parents' attitudes toward education (Sexton, 1965), and proximity to educational institutions (Medsker & Trent, 1965; Trent & Medsker, 1968) were found to be important in this respect.

The primary concern of this study was an investigation of the relationship between another possible underlying factor--religious background--and the intellectuality of college students. The two terms "religious background" and "intellectual" are used according to the following definitions.

"Religious background" means association with a religion and its accompanying attitudes, values and activities before one enters college. The supposition is made that when one indicates having been raised in a Catholic, Jewish or Protestant family--even though he may later disclaim religious beliefs associated with that religious group--he has been subjected previously to the religion's ideals, values, restrictions and beliefs, whether through the media of Church, family or community, and to some extent influenced by them.

The term "intellectual" was applied as a descriptive personality characteristic, primarily including a receptivity to change, critical thought, an openness to the ideas of others, and actions of a non-authoritarian nature.

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*Ph.D., 1972.

TABLE 1

Freshmen's Religious Backgrounds

Religious Background	(N)	Percent	Accumulative Protestant Percent
Catholic	(2059)	28.7	
Jewish	(638)	8.9	
Liberal Protestant	(1976)	27.6	27.6
Moderate Protestant	(1428)	19.9	47.5
Conservative Protestant	(1066)	14.9	62.4
Total	(7167)	100.0	

TABLE 2

Upperclassmen's Religious Backgrounds

Religious Background	(N)	Percent	Accumulative Protestant Percent
Catholic	(1201)	23.9	
Jewish	(332)	6.6	
Liberal Protestant	(1524)	30.4	30.4
Moderate Protestant	(1197)	23.9	54.3
Conservative Protestant	(761)	15.2	69.5
Total	(5015)	100.0	

Based on the dissertation literature review, the following framework was constructed around which objectives and hypotheses of the study were developed:

Analyses

The Function of Religious Background

> There will be no significant differences found among the five groups of freshmen and upperclassmen--Catholic, Jewish, Liberal Protestant, Moderate Protestant, and Conservative Protestant--on all measures of intellectuality considered together.

Testing for significant differences among the five groups of both freshmen and upperclassmen was done by employing multivariate analysis of variance. This analysis considered only the religious background of the students as a basis for comparing scores on all measures of intellectual attainment. The data relevant to this hypothesis, for both class groupings of students, are shown in Tables 3 and 4.

From these two tables it can be seen that there were significant intellectual differences between the five religious deliniations. Although the succeeding hypotheses attempt to determine where these differences lie, the rejection of this hypothesis was essential to the decision to carry on an investigation of the others.

The Function of Socioeconomic Status

> There will be no significant interaction between religious background and socioeconomic status when comparing intellective scores of the five groups.

On the basis of father's occupation and parents' annual income, the five religious groups (both as freshmen and upperclassmen) were found to have had significantly different backgrounds in this respect. The Jewish group was characterized as having fathers predominantly in professional employment categories, earning high wages. The Liberal and Moderate Protestant groups were almost identical to each other, reporting their socioeconomic levels to be more equally divided between the professional and managerial levels. The Catholic and Conservative Protestant groups were also similar in that the

TABLE 4
Multivariate Test of Equality of Mean Vectors
for "Religious Background" (Upperclassmen)

Variable	Hypothesis Mean Squared	Univariate F	P
1. Plan to enroll in graduate school	3.65	14.78	.01
2. National and State Politics Activity Scale	95.96	23.99	.01
3. Total Arts Activity Scale	311.42	8.68	.01
4. Religious Activity Scale	311.51	72.23	.01
5. Science Activity Scale	13.59	3.47	.01
6. Political Activism Scale	18.99	40.00	.01
7. Changing Society - Occurring	17.21	1.30	.27
8. Changing Society - Desirable	65.89	9.76	.01
9. Educational Benefits - Vocational	1.87	1.72	.14
10. Educational Benefits - Liberal	6.92	3.23	.01
11. Autonomy	79.49	17.39	.01
12. Complexity	167.68	14.59	.01
13. Theoretical Orientation	122.47	11.65	.01

F-Ratio for multivariate test of equality of mean vectors = 14.81
D.F. = 56. and 19128.25; p less than .01
D.F. for hypothesis = 4
D.F. for error = 4930

The Function of Sex

> There will be no significant interaction found between religious background and sex.

In controlling for the sex variable, interactions were found in both samples. In the freshman sample, the sex distributions contributed to the variance in scores among the five religious groups, affecting five of the seventeen variables employed: high school classmates attending college, number of books in home, educational benefits - vocational and liberal dimensions, and science activity. Only two variables were affected by this interaction in the upperclassman sample: the activity scales for national and state politics and for religion. Thus, on a few specific test scores in each sample, intellectual differences among the groups of students could not be attributed to religious background alone, but to some extent, to the sex of the members of the groups also.

The Function of Academic Aptitude

> Significant differences found among the five groups of freshmen and upperclassmen will not be significantly altered when academic aptitude is a covariate.

Care was taken to distinguish academic aptitude from intellectuality. If one religious group entering college was found to have had a higher level of academic aptitude, perhaps the intellectual characteristics attributed to that group were not due to its religious background, but rather to this measure of intelligence.

Three predominant clusters of groups emerged when examining this variable. The Jewish group had almost three-fifths of its population at the high aptitude level and was the only group in either sample to have a majority of students thus coded. The Catholic, Liberal Protestant and Moderate Protestant groups were quite similar in that each had less than a majority of students at this

3. The last cluster consisted solely of the Conservative Protestant students. This group, the most religiously fundamental of the five groups tested, displayed the lowest overall degree of intellectual attainment. It was not only greatly differentiated from the Jewish group, but from the other Protestant and Catholic groups as well.

It may be concluded that the intellectual differences observed among religious groups were strongly related to the degree of fundamentalism of the individual groups; the more fundamental the group, the less it was intellectually-oriented generally. Also, it could be inferred from cross-sectional comparison that the nature of an individual's religious background has a definite impact throughout the college experience, as this ordering of denominational groups was not unique to the freshmen, but was the same for the upperclassmen. Therefore the hypothesis must be rejected.

Factors Associated with Pre-College Intellectual Growth

> When testing items concerning implied family, peer and community influences, the scores of the Conservative Protestant and Catholic students will indicate a lack of influence toward greater intellectual pursuits from these sources, followed by the Moderate Protestant, Liberal Protestant and Jewish students respectively in ascending order.

The relationship between family religious beliefs and the intellectual growth of children was reinforced by the findings of this study. The closer the family's association with more conservative theological doctrines, and the more rigid they were in following those defined teachings and beliefs, the less interest was shown in providing intellectual stimuli in the home.

The findings concerning peer and community factors associated with intellectual growth were similar. The students with more religiously liberal backgrounds were found to have had more close friends and high school classmates preparing to enter college than students with more fundamental backgrounds. Assuming that close peers are a source of motivation, it is likely that students with more religiously liberal backgrounds received greater support from their peers to attend college.

Activity and Interest in Various Aspects of Society*

Findings concerning student activities and interests agreed generally with the pattern of group intellectuality already established. As freshmen, the Conservative Protestants were the least active in the areas of national and state politics and science. In the arts, the group fared better, showing interest and activity comparable to its more liberal counterparts. A small degree of political activism was characteristic. As upperclassmen, the Conservative Protestant students scored significantly below all other groups on each of the four activity scales.

The Catholic freshmen conveyed extreme disinterest in the arts, scoring well below all other students in the study. Activity was higher in the area of national and state politics, however. As upperclassmen, the Catholic group consistently scored significantly higher than the Conservative Protestant students; in the arts, political activism, science and general political activity, the Catholics equalled, and sometimes excelled, the activity of the Moderate and Liberal Protestants.

The Liberal Protestant and Moderate Protestant groups appeared to have similar interests and activities in these areas both as freshmen and upperclassmen. While not as active as the Jewish group, these groups maintained a rather high rate of activity, greatly surpassing the Conservative Protestants and in several cases the Catholics. The Jewish group, in both samples and on every variable, demonstrated that the least fundamental of all groups was also the most involved in affairs of the society.

The scores on the religious activity scale showed a reverse ordering of the religious groups than did the scores on the other activity scales, except for the Catholics, whose reported activities were much like those of the Liberal Protestants.

freshman scores with those of the upperclassmen, indicating that the college experience was seen as less productive by the upperclassmen than was hoped for by the incoming freshmen.

The college experience was expected to influence intellectual growth by opening new and varied fields of exploration for the college student. In comparing the scores of the respective freshman and upperclassman groups, significant increases in national and state political activity were found for all five groups.

In science, the arts and political activism, significant increases were found only for certain groups of students, as follows:

1. In comparing freshman and upperclassman scores, the Catholic sample showed significant increases in activity in all areas. The Catholic upperclassmen surpassed the Conservative Protestants in political activism, equalling that of the Moderate and Liberal Protestants. In the arts, where as freshmen they had ranked below the Conservative Protestants, the upperclass Catholics showed significantly greater artistic activity.

2. The Liberal and Moderate Protestant groups showed significant increases in scientific activity when comparing the freshman and upperclassman samples.

3. The Conservative Protestant and Jewish students showed no significant increases other than in national and state politics.

Although the actual scores of all groups decreased on the Religious Activity scale, only the three Protestant groups significantly decreased their religious activity as upperclassmen. The college experience apparently had no substantial liberalizing effect on the Jewish and Catholic students with reference to religious activity.

Reasons for this may have been different for these two groups, however. The freshman Jewish students were extremely non-active in the religious area; any further decrease in religious activity on the part of the upperclassmen could not have been very plausible. A speculative reason for the Catholic

Conservative Protestant Students

The Conservative Protestant students were hypothesized to be, along with the Catholic sample, the most fundamentally-oriented group in the study. Previous research had indicated that a strong dedication to God and the church, to religious doctrine, and a generally high degree of religious activity were characteristic of this Protestant group. Accordingly, it was anticipated that these ties would contribute negatively to the intellectuality of these college attenders; this was, in fact, the case. As freshmen, the Conservative Protestant students displayed the least intellectual orientation overall, and except for certain areas such as activity in the arts, demonstrated this characteristic on virtually every item and scale.

When comparing the Conservative Protestant freshmen and upperclassmen, the upperclassmen were significantly more intellectual along several dimensions. These apparent intellectual advances, although welcomed, must be regarded in a more relative context, however. Even though the Conservative Protestant upperclassmen had higher intellective scores than had the freshmen, they remained as far, and in certain instances even farther, below the measured intellectual level of the other students as upperclassmen than they had as entering freshmen.

A deep regard for what are considered to be the more pragmatic aspects of personality development seems to exist today among the fundamental Protestant denominations. A strict adherence to the Protestant ethic, when maintained in today's society, does not seem to permit a great expansion of ideas or the rise of a more universal man prepared to exist productively in a pluralistic society. The fundamentalist Protestant Church assumes a role which appears to perpetuate the blockage of these ideals. Its enforcement of religious doctrine and continued maintenance of the status quo limits the intellectual capabilities of its members, and in doing so, furthers the existence of the Church much as it was in the past.

significantly differ in their degree of political activism and activity in the arts as upperclassmen. Unlike the Conservative Protestants' apparent advances, the Catholics' apparent intellectual advances were large enough to surpass the Liberal Protestants in many respects; the Catholic group clustered with the Jewish group on several occasions, also.

At the conclusion of the college experience, then, the Catholics still appeared much like the Liberal and Moderate Protestant students in relation to overall intellectual attainment, but tended to score in a more intellectual direction on several measured dimensions.

A reason for these findings might be that a rather intensive self-examination of the Roman Catholic Church had been going on for some time before the sample was surveyed. The Second Vatican Council early in the 1960's favored critical exploration; many individuals within the Church identified its shortcomings, and research supported those contentions. Evidently this re-direction had an effect. Less rigid enforcement of religious dogma in the Church, and an attitude that one can learn to question yet exist within the framework of the Church, may have been responsible for the greater Catholic intellectuality since Trent's investigation.

While the Catholic students are still attending less selective types of colleges and universities in large numbers, it may be concluded that this group was most ready for the intellectual opportunities offered at those institutions: the Catholics seemingly took greater advantage of the college environment than any other group in the study, and as shown by the upperclassman data, expressed greater awareness of the liberal arts benefits received during those years.

Moderate Protestant Students

Data from the present study indicated that the Moderate Protestant denominations may have undergone a process of social assimilation. The activities

greater numbers, the effect of that attendance was not in evidence. Apparently the college experience had less of an impact upon the intellectual advances of this group than upon its more religiously conservative counterparts.

Jewish Students

The Jewish sample in this study consistently displayed the most intellectual characteristics of any group tested. The overall differences between this group and the other four were extreme and existed throughout the analysis. As entering freshmen, the Jewish students already had achieved a high degree of intellectual orientation. Their religious and family backgrounds apparently had fostered an interest in various aspects of the society and an openness to change before their college enrollment. As upperclassmen these characteristics were still prevalent; the Jewish group remained the most intellectually inclined. However, like the Liberal Protestants, few intellectual advances from the freshmen year to the final college years were evident.

Several possible explanations can be suggested for this later finding. A "ceiling" effect may have been responsible, though the author tends to minimize this possibility because significant advances were made on some variables. It is likely that significant increases could have been expected on other items as well. Also, the fact that the Liberal Protestants likewise experienced few intellectual advances, yet scored well below the Jewish group both as freshmen and upperclassmen, seems to negate such a theory. It could be that the items used were not sufficiently sensitive to demonstrate behavioral changes for this group, or that a longitudinal design may have provided more exact and differing results from those found by the cross-sectional analysis employed in this study. A more acceptable theory may be that the more religiously liberal groups were not as receptive as the fundamental groups to the intellectual stimuli offered by the colleges they attended. It seems likely that the intellectual

which did not reflect differences in the class position or regional background of individual members." He probably found a greater similarity between denominations because of his relatively homogeneous sample of Detroit Protestants; on a national scale his conclusions appear to be unfounded.

The present study uncovered extreme intellectual differences between persons of the more conservative Protestant denominations and those from liberal Protestant denominations, even within such a homogeneous group as college attenders. Significant differences between moderate and liberal Protestants and between moderate and conservative Protestants occurred as well, even when considering class position and regional background in the analysis. Variations between the Protestant groups were found among values, attitudes and activities; the ways in which they anticipated and interpreted the college experience; and their intellectual advances between the two stages of testing.

An opinion that can be drawn from these findings is that a desire for intellectual growth is not inherent, and must first be recognized as a developmental characteristic, then evaluated, and finally considered to be of enough worth to elicit a desire for change in that direction. If one has a recognition of and concern for the intellectual development of members of our society, numerous implications concerning the church, the family and formal education can be found in the present data. Some of them have already been explored above, but several require further discussion here.

Intellectuality in itself denies the perpetuation of existing values which preserve the status quo. Since the relationship between intellectuality and religious background has been shown to be strong, values and attitudes associated with the churches must be re-evaluated constantly. It should be recognized by all churches that change is inevitable, and that if control over the though process is enforced in a society where education becomes more

understandings and a structuring of more meaningful college curricula and experiences could be established.

The data in this study pointed to a greater vocational orientation by the Catholic and Conservative Protestant group members than the other three groups, yet these groups did not express, as upperclassmen, any greater attainment of vocationally-oriented benefits than the other groups. Perhaps for these students, as well as others entering college with this goal high in priority, a re-orientation concerning the diverse advantages of a college education might well be justified. Although it is folly to deny the importance of vocational studies for many in our society, the prospect of broadening one's mind by learning in various academic areas can probably also prepare the student to participate in more than his chosen area of specialization if need be. With a greater exposure to other areas of education, he could more likely adapt readily to change when affected by it during his lifetime. Many people futilely seek employment today as a result of not being familiar enough with other fields to which they could adapt their skills and knowledge.

Certain aspects of education have been neglected in the backgrounds of several academic subgroups in this study. The arts, for example, have been low in priority for students from Catholic and Conservative Protestant backgrounds. In various other educational areas, wide ranges of exposure and interest by religious groups was evident. The students, away from the home and its governing influences, may for the first time be receptive to experiences presenting new and varied ideas for their contemplation. The college campus may thus be seen as an environment in which to present lectures, seminars and experiences which will help bridge these cultural gaps.

But the colleges must not be concerned only with students lacking in intellectual characteristics, for it was recognized here that higher education

(or other groups) at denominational colleges, teachers colleges, or selective liberal arts schools would help refine the presentation. It would be possible, then, to determine the specific environmental influences of campuses in reference to the five groups of students tested in this study.

The findings of this study suggest that studying the effects of religious background should not be minimized, but rather, intensified, by clerical and lay scholars alike. Moreover, this type of evaluation and commentary should be encouraged among the ranks of church attenders themselves, for the realization of one's own characteristics is the first step toward the initiation of change. Religious background--the direct influences of church and family attitudes associated with the teachings of a church--does determine strongly the intellectual characteristics of individual members of the family. If we, then, as educators, clerics, researchers, critical commentators, or just private individuals better understand the complexities and implications of this relationship and proceed to concern ourselves with data and theory such as is presented here, we will have moved closer to a goal of intellectual growth in persons on our campuses and in society.

MAJOR FIELD TRANSFER: THE SELF-MATCHING OF UNIVERSITY UNDERGRADUATES TO STUDENT CHARACTERISTICS

Lawrence Kent Kojaku*

As a growing majority of American youth enter post-secondary education, the issue of student selection of an institution in which to continue his educational experience, whether it be a personally appropriate institution or a personally fulfilling curricular specialization, deserves increased study. The initial decisions which young people make concerning their educational plans are often tentative. Prior research has indicated that generally one-third to one-half of university graduates change from one major field to another (Bradley, 1962; Gamble, 1962; Pierson, 1962; Warren, 1961). Corroboration of these previous findings was found in the current investigation, in which 44 percent of the sample made a major field change. The nature of this widespread behavioral phenomenon in higher education and some explanations for its occurrence were the subject of this study.

The phenomenon of student transfer from one major field to another was examined in this study, with a particular focus on the relationship between major field transfer and the personal attributes and cognitive styles associated with various major fields of study. More specifically, an attempt was made to find out if, when undergraduates transfer from one area to another, they are matching some of their own characteristics with those of the students in the major fields that they enter, a practice henceforth referred to as self-matching.

This investigation assessed whether students making major field transfers are more similar to students in the field they leave or in the fields they

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*Ph.D., 1972.

> Satisfying choices require some matching of student characteristics and competencies with the demands of the prospective field of study. When a student's characteristics resemble those of the typical student in his prospective field, he is likely to feel at home and remain in his field. Conversely, incongruities between a student and his field result in feelings of alienation and dissatisfaction and usually lead to a change of plans.

The sample selected for this study was comprised of the 1880 upperclassmen respondents attending the seventeen highly selective and comprehensive general universities in the Center's national survey data bank. There were 390 respondents from four highly selective universities, public and private, and 1490 respondents from thirteen comprehensive general universities, public and private.

As an adjunct to this study, a sample of freshman respondents who responded to the higher education survey's freshman questionnaire was used to support the "fixed trait" nature of the variables. These 2484 members of the class of 1972 were sampled from the same universities and at the same time as the upperclassmen. Thus it was possible to compare the mean scores of the freshman major fields as indicated by the present study's sample of upperclassmen with the major field mean scores of the survey's actual freshman sample.

Two hypotheses pertain to the objectives of this study. Stated according to the null hypothesis, they are as follows:

H_1 The ratio of the between-fields to the within-fields variability is as likely to decrease as it is to increase after major field transfer has occurred during the period between the first and third years of university attendance.

H_2 For both males and females, the ratio of the between-fields to the within-fields variability is as likely to decrease as it is to increase after major field transfer has occurred during the period between the first and the third years of university attendance.

The specific major hypothesis of this investigation concerned the likelihood that increased within-fields homogeneity and increased between-fields heterogeneity may occur for ten variables. In order to test this hypothesis, the sign test was used. It is based on the binomial distribution, which is usually described as the sample distribution of random effects drawn from a two-class population. When obtained scores can fall into one of two classes, the binomial distribution may be used to test the hypothesis that there is a given probability that one alternative occurs more than another in the population. In this study the upperclassman F ratios will be either higher or lower than the corresponding freshman F ratios. The sign test of the study hypothesis examines whether the probability that the resulting number of upperclassman F ratios which are higher than freshman F ratios is due to more than chance.

Tables 1, 2, and 3 present the mean scores and rank orders on the ten variables of the freshman major field choices, of the persisters in major fields, and of the major fields of upperclassmen. These three sets of scores and order of rank for majors on each score revealed that on at least one group of variables major fields have similar profiles. In general, the ten variables can be divided into two loose groupings. With varying degrees of similarity between any two variables in the group, six measures share similar patterns of major field mean scores and rank orders: Aesthetic Involvement, Changing Society--Desirable, Parents' Socioeconomic Status, Vocabulary, Autonomy, and Complexity. One of the study's remaining four variables, High School Grade Average, is somewhat related to the six above, because its major field score order slightly resembles that of Parents' Socioeconomic Status. However, High School Grade Average has a pattern of scores very similar to that of Theoretical Orientation, a variable with a mean score and rank order

TABLE 2

Student Characteristics and Major Fields:
Mean Scores and Rank Orders of Persisters in Major Fields

Variable	Major Field Mean Scores and Rank Orders (in parentheses)									
	Physical sciences or Math	Biological sciences	Social sciences	Language	Humanities	Arts	Engineering	Business	Education	Other
High School Grade Average	5.14 (1)	4.93 (3)	4.56 (8)	4.96 (2)	4.75 (4.5)	4.15 (9)	4.66 (6)	4.02 (10)	4.65 (7)	4.75 (4.5)
Post-College Job Sureness	2.14 (6)	2.34 (3)	2.05 (9.5)	2.28 (4)	2.11 (8)	2.46 (2)	2.12 (7)	2.06 (9.5)	2.77 (1)	2.24 (5)
Aesthetic Involvement	14.94 (8)	15.20 (7)	17.49 (4)	18.76 (3)	20.03 (2)	20.78 (1)	11.71 (10)	13.80 (9)	17.15 (5)	16.15 (6)
Changing Society--Occurring	16.71 (10)	17.24 (7)	17.97 (3)	16.72 (9)	18.00 (2)	17.60 (6)	16.83 (8)	18.39 (1)	17.93 (4)	17.88 (5)
Changing Society--Desirable	7.50 (4)	7.18 (7.5)	8.32 (1)	7.28 (6)	7.43 (5)	7.95 (2)	7.07 (10)	7.18 (7.5)	7.13 (9)	7.67 (3)
Parents' Socioeconomic Status	19.44 (6)	19.65 (5)	19.80 (4)	21.84 (1)	20.23 (2)	19.83 (3)	17.03 (10)	18.66 (8)	17.38 (9)	18.78 (7)
Vocabulary	12.94 (4)	12.60 (5)	13.41 (2)	13.36 (3)	13.97 (1)	12.35 (6)	9.84 (10)	10.59 (9)	11.40 (7)	10.98 (8)
Autonomy	7.17 (3)	6.95 (6)	7.65 (2)	6.32 (10)	7.76 (1)	7.05 (4)	6.97 (5)	6.39 (9)	6.53 (7)	6.90 (8)
Complexity	13.60 (5)	13.48 (7)	14.78 (2)	13.52 (6)	15.33 (1)	14.65 (3)	12.90 (8)	12.32 (10)	12.80 (9)	13.68 (4)
Theoretical Orientation	10.08 (1)	9.54 (2)	7.72 (4)	6.72 (8)	7.50 (5)	6.78 (7)	9.25 (3)	6.93 (6)	6.38 (10)	6.64 (9)

profile very different from that of the first six variables mentioned. The patterns of major field scores on Theoretical Orientation, Changing Society--Occurring, and Post-College Job Sureness are usually different from those of the aforementioned six related variables. Thus, in drawing a general picture of the mean score and rank order profile of a major field, the description will usually be divided in terms of these two groupings of variables.

Although it is difficult to find indications of self-matching in the scores and rankings of the major fields of freshmen, persisters and upperclassmen, some evidence of this process exists in these descriptive findings. There appear to be instances of the accentuation of major field differences after curricular transfer. For example, the variable Theoretical Orientation is closely associated with the natural and applied sciences. On Theoretical Orientation, physical sciences/math ranks first, biological sciences second, and engineering ranks third consistently for freshman, persister, and upperclassman major field choices. An examination of the actual mean scores of these three major fields reveals that all three upperclassman mean scores on Theoretical Orientation are higher than the freshman scores, suggesting that differences are accentuated after major field transfer. The opposite accentuation pattern, in which upperclassman mean scores are lower than freshman scores, can be seen for the same three major fields in their scores on Aesthetic Involvement, a variable not traditionally associated with natural and applied sciences. Thus, there is evidence of increased between-fields differences in the mean scores of the major fields, one indication of the occurrence of self-matching in curricular transfer.

In relating the mean score profiles of major fields to the patterns of frequencies in major field migrations, other issues can be raised. For example, defection from certain major fields and recruitment into certain

mostly in the high-to-middle range; one exception was the low score of social sciences on Post-College Job Sureness. Mixed score rankings mostly in the high-to-middle range were also characteristic of language, with the exception of three variables on which language ranked low: Autonomy, Changing Society--Occurring, and Theoretical Orientation. Humanities yielded high scores on six variables: Aesthetic Involvement, Changing Society--Occurring, Parents' Socioeconomic Status, Vocabulary, Autonomy, and Complexity. On High School Grade Average, Changing Society--Desirable, and Theoretical Orientation, humanities ranked in the middle; but on Post-College Job Sureness, humanities had a low score. Arts is less similar to the other three major fields in this group, in spite of the high-to-middle range of most of its scores. Unlike the other three fields, arts ranked low on High School Grade Average, in the middle on Vocabulary, and high on Post-College Job Sureness.

Three professional fields comprise the next curricular group sharing similar profiles of mean scores and rankings. Engineering scores ranked low on all the variables except Theoretical Orientation, on which they were high, and on Autonomy, where the score was in the middle range. Low scores also characterized business, with the exception of a high score on Changing Society--Occurring, and a middle ranking on Theoretical Orientation. Education produced low ranking scores on six variables. However, there were middle ranking scores in education for Aesthetic Involvement and Vocabulary, and high scores on Post-College Job Sureness and Changing Society--Occurring.

The mean scores of "other" major fields were in the middle-to-low range, with the exception of a high ranking score on Changing Society--Desirable. Finally, the freshman choice of no major field yielded high mean scores for two variables, Autonomy and Complexity, and low rankings for High School

The examination of the relation between the study variables and patterns of curricular transfer revealed that in some variables and major fields the accentuation of initial differences occurs after curricular transfer. The greater total mean score differences occurring between the major field choices of upperclassmen than between those of freshmen suggest increased between-fields differences. Patterns of mean scores and rank orders for most major fields of the total sample indicated that three variables (Post-College Job Sureness, Changing Society--Occurring, and Theoretical Orientation) and sometimes a fourth (High School Grade Average) produced different profiles from those of the remaining variables. Comparisons between males and females and between highly selective universities and general comprehensive universities revealed that differences in major field score and ranking profiles were most pronounced on the Changing Society scales and Parents' Socioeconomic Status.

The score patterns of those in the total sample majoring in the nine specified content areas fell into three loose groups. The physical and biological sciences had scores and rankings in the middle range. Higher score patterns occurred for social sciences, language, humanities, and arts. The three professional fields of engineering, business, and education had the lowest score profiles. The major field scores generally fell into the same three groups for both selective and general universities and for males and females. In the comparison of sex, there were overall differences between male and female mean scores in two major fields: males had higher score rankings than females in arts, and females scored higher than males in engineering.

As a preface to a discussion of the results of the analyses as they pertain directly to the previously stated hypotheses, the appropriateness of investigating the shifting of students among major fields over a period of time while using nonlongitudinal data is established in the following comments.

TABLE 4
A Comparison of the Survey Freshman Sample and the Freshman Major Field Choices of the Study Sample (in parentheses): Rank Orders of Mean Scores and Rank-Difference Correlations

Variable	Rank Order of Major Fields											
	Physical sciences or Math	Biological sciences	Social sciences	Languages	Humanities	Arts	Engineering	Business	Education	Other	No major	Spearman Rho Correlation
High School Grade Average	2 (2)	3 (3)	4 (7)	1 (1)	9 (5)	6 (9)	8 (8)	11 (11)	10 (4)	7 (6)	5 (10)	.56
Post-College Job Sureness	6 (10)	2.5 (4)	8.5 (7)	10 (5)	8.5 (8)	4 (2)	7 (9)	5 (6)	1 (1)	2.5 (3)	11 (11)	.76
Aesthetic Involvement	9 (9)	8 (8)	3 (4)	6 (3)	2 (2)	1 (1)	10 (11)	11 (10)	7 (5)	5 (6)	4 (7)	.88
Changing Society--Occurring	6 (10)	4 (9)	1 (6)	5 (7)	2 (5)	9 (2.5)	7 (8)	3 (2.5)	11 (1)	8 (4)	10 (11)	-.09
Changing Society--Desirable	5 (5)	4 (8)	3 (1.5)	1 (3)	2 (6)	6 (1.5)	8 (9)	10 (10)	11 (11)	7 (4)	9 (7)	.66
Parents' Socioeconomic Status	7 (4)	6 (5)	4 (3)	2 (1.5)	1 (1.5)	5 (7)	9 (11)	11 (8)	10 (10)	8 (6)	3 (9)	.70
Vocabulary	6 (4)	5 (5)	3 (3)	1 (1.5)	2 (1.5)	7 (7)	9 (11)	10 (10)	11 (9)	8 (8)	4 (6)	.87
Autonomy	6 (5)	7 (4)	2 (3)	5 (8)	1 (1)	4 (9)	8 (7)	9 (10)	11 (11)	10 (6)	3 (2)	.71
Complexity	7 (8)	6 (6)	3 (4)	5 (5)	2 (1)	1 (2)	9 (9)	11 (11)	10 (10)	8 (7)	4 (3)	.73
Theoretical Orientation	1 (1)	3 (2)	5 (6)	9 (4)	6 (5)	8 (9)	2 (3)	10 (10)	11 (11)	7 (8)	4 (7)	.86

TABLE 5
Changes in Major Field F Ratios: Total

Variable	F[a]		Direction of Change	Between-fields var. / Within-fields var.	
	Freshman	Upperclassman		Freshman	Upperclassman
High School Grade Average	11.21	10.22	decrease	14.05 / 1.25	12.82 / 1.25
Post-College Job Sureness	9.09	14.66	increase	4.88 / 0.54	7.69 / 0.52
Aesthetic Involvement	13.57	22.47	increase	450.57 / 33.20	723.90 / 32.21
Changing Society--Occurring	1.42*	3.93	increase	16.87 / 11.90	46.63 / 11.86
Changing Society--Desirable	3.37	5.17	increase	20.41 / 6.05	31.10 / 6.01
Parents' Socioeconomic Status	4.05	6.07	increase	142.37 / 35.18	211.61 / 34.86
Vocabulary	13.96	21.80	increase	194.09 / 13.91	293.77 / 13.48
Autonomy	3.88	8.82	increase	17.56 / 4.52	38.97 / 4.42
Complexity	7.27	14.30	increase	78.20 / 10.75	149.00 / 10.42
Theoretical Orientation	11.90	18.39	increase	122.78 / 10.31	185.31 / 10.08

[a]N = 1732 (complete data sample)

*p = Not significant (.01 level)

TABLE 6
Changes in Major Field F Ratios: Males

Variable	F[a]		Direction of Change	Between-fields var. / Within-fields var.	
	Freshman	Upperclassman		Freshman	Upperclassman
High School Grade Average	7.92	7.87	decrease	11.56 / 1.46	11.57 / 1.47
Post-College Job Sureness	3.27	6.76	increase	1.86 / 0.57	3.73 / 0.55
Aesthetic Involvement	10.70	17.25	increase	378.45 / 35.38	584.22 / 33.86
Changing Society--Occurring	1.32*	2.88	increase	15.03 / 11.35	32.21 / 11.20
Changing Society--Desirable	2.78	3.56	increase	17.19 / 6.18	21.89 / 6.15
Parents' Socioeconomic Status	3.70	5.06	increase	126.49 / 34.19	171.46 / 33.87
Vocabulary	10.10	16.41	increase	142.82 / 14.14	222.46 / 13.56
Autonomy	3.01	5.54	increase	14.17 / 4.70	25.51 / 4.61
Complexity	5.27	9.66	increase	56.10 / 10.64	99.46 / 10.30
Theoretical Orientation	7.14	12.12	increase	78.07 / 10.94	127.92 / 10.56

[a]N = 1007 (complete data sample)

*p - Not significant (.01 level)

Because males markedly outnumbered females in the total sample, the one variable, High School Grade Average, with a decreasing F statistic of the male sample was the same as in the total sample. However, the one variable with a decreasing F in the female sample was not reflected in the total sample's F statistics. As in the total sample and the male sample, the one variable which did not have a significant F ratio was Changing Society--Occurring. However, in the female sample that variable was also the one with the decreasing upperclassman F statistic.

Tables 6 and 7 include indicators of slight differences between males and females in the within-fields homogeneity and between-fields heterogeneity reflected by the F fraction. Although the increased F statistics of upperclassmen resulted from great increases in between-fields variance rather than great decreases in within-fields variance for both sexes, this was especially the case for females.

While the primary concern of this study was to test the hypotheses by what Tukey (1969) calls confirmatory data analysis, opportunities for exploratory data analysis should not be ignored. The F values obtained to test the hypotheses can also be discussed as indicators, which include, according to Mosteller and Tukey (1968), "any hints and suggestions obtained from data by an understandable process...informative to a reasonable man (p.100)." Thus, although this analysis of the data does not meet the classical assumptions of a F test, it is possible to examine the F statistics as ratios of two variances. Because the F test gives the adjusted significance of differences between groups, the F statistics could be viewed as F ratios only in order to ascertain which of the ten variables significantly differentiate major fields.

Occurring was the only variable in which there was not correlation between the scores of the survey freshmen sample and those of the freshman major field choices of the study (upperclassman) sample. Moreover, it was the only variable in the analysis of variance which yielded more than one non-significant F value. That is, using the F's obtained as statements of probable variability, the F statistic of Changing Society--Occurring indicated that the scores of students in various major fields on that variable did not differ significantly.

Conclusions and Recommendations

The findings of this study support the self-matching theory of major field transfer. Apparently, university undergraduates are at least partially motivated to leave a major field because they perceive some disparity between their own attitudes and the characteristics of fellow students in their initial major field choice. Students who change majors select their subsequent major field, to a marked degree, on the basis of whether they perceive their characteristics to match those of the students who major in a given field. As a result of this self-matching process, the major field choices of upperclassmen are more different between fields and more similar within each field than are the freshman choices, according to the data of this investigation.

The results of this study disagree with those found by two other researchers (Watley & Werts, 1969; Werts & Watley, 1968), who used the same analysis of variance procedure to test the self-matching theory and concluded that their results did not support the "birds of a feather" theory. The differences they found between males and females also were not substantially reflected in this study. In speculating on the possible explanation for the difference

were cross-tabulated, yielding a result of borderline statistical significance. In order for the self-matching theory to be exhaustively proved, curricular persistence or transfer per se--that is, instability of choice regardless of major field--should not be highly associated with any of the variables studied.

2. More nearly equal samples of institutional types should be studied. In this investigation, the sample sizes of one of the two types of universities was so much smaller than the other (selective university N = 385; general university N = 1416) that a comparative analysis of variance could not be performed. Differences were also found between the two types of universities in the study, indicating that future research should compare major field transfer patterns among other (perhaps more disparate) types of institutions.
3. Complete data should be collected from each respondent. A complete data sample is necessary in order to perform the kind of comparative analysis of variance done in this study. Moreover, in research studying respondent changes, in which the sample is divided into many cells (in this study over 100 cells), for any given variable a case of incomplete data may be crucial because of the small number in many of the cells.
4. Major fields should be written in the survey instrument by the respondents and then hand-coded into categories according to the investigator's own criteria. In this study, one cannot be certain regarding how the respondents interpreted the categories of major fields printed in the questionnaire. Thus, since the precise departments included in a major field category are not known, interpreting the

between the characteristics of a student and those of the other students in a field is one basis for predicting persistence in that field.

The results of this study should be of interest to secondary school and university counselors. Academic and career guidance is a major function of student personnel services during young adulthood. Counselors should collect and make available to a student information on his own characteristics and on the characteristics of groups in curricular or vocational fields. By helping a student to recognize the relationship or match between his own profile of attributes and those of people in various groups, the student can make more informed decisions and plans. Of course, the findings of this study are not directly applicable to the counseling situation. However, similar test data on any counselee could be easily converted into valuable guidance information, as outlined by Prediger (1971).

The descriptive information yielded by this investigation may have significant implications for curriculum planning, evaluation, and reform. An institutional study modeled after this investigation would provide a given department with information as to the whole range of characteristics of entering freshmen, the characteristics of groups of students defecting into particular other fields, the characteristics of recruits into the department from each of the other fields, and the characteristics of the persisters remaining in the department. Thus, a department could make plans for not only enrollment changes, but also for changes in the characteristics of its students at different levels of progress in the department.

A more serious question involves the implications of these major field changes for the curriculum and instruction in departments. Faculty members in a given department should ask themselves whether they desire students with certain characteristics to defect, persist or enter the

WOMEN: PERSONAL AND ENVIRONMENTAL FACTORS IN ROLE IDENTIFICATION AND CAREER CHOICE

Felice Karman*

This study was designed to explore the psychological and sociological characteristics that describe the roles of two types of women--those who choose to pursue stereotypic masculine careers and those who elect stereotypic feminine careers--focusing on background features as well as current life styles. The theoretical framework for this study is based on the orientation of role theory as defined by Theodore Sarbin (1954, p. 225), conceptualized as:

> a patterned sequence of learned actions or deeds performed by a person in an interaction situation. The organizing of individual actions is a product of the perceptual and cognitive behavior of person A upon observing person B. On the basis of this conceptualization of the actions of B, A expects certain further actions from B. This expectation is covert, and is the equivalent of saying "locates or names the position of the other." Once having located or named the position of the other, A performs certain acts which have been learned as belonging to the reciprocal position; these actions are conceptualized as A's role.

The role may be that of an individual as she performs in a reciprocal manner to the perceived role, for example, of mother, father, husband, and institution, or the society in which she lives.

In addition to role-role conflict, Sarbin also recognizes, as a possible further source of dissonance, the intervening variable of self, which is the phenomenal experience of one's identity. Self is the person as an organization of qualities--what the person is as compared to what she does (self-role conflict). Self is inferred from acts, and is described by adjectives (curious, worried, punctual, etc.).

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*Ed.D., 1972.

TABLE 1

Career Aspirations of 1,646 Upperclassman Women
Students in 38 Colleges Throughout the United States

Career Aspiration	Number	Percent
Traditional Careers		
Teacher	803	52.0
Counselor, social worker	94	5.7
Nurse or other health worker (lab technician and other medical technologist)	77	4.6
Librarian	28	1.7
Housewife	10	.6
Other	211	12.8
Total Traditional	1223	74.4
Non-Traditional Careers		
Scientist (physicist, chemist, meteorologist, oceanographer)	20	1.0
Clinical psychologist	15	.7
Physician	14	.7
Lawyer	11	.5
Government executive or politician	10	.5
Computer specialist	7	.4
Pharmacist	6	.3
Engineer	3	.2
Certified public accountant	3	.2
Business executive	3	.2
Mathematician	3	.2
Dentist	1	.08
Bank president	1	.08
Veterinarian	1	.08
Total Non-Traditional	109	6.60
Don't Know	314	19.0
Total Sample	1,646	100.0

12. are more likely to be of Jewish background than of Protestant or Catholic background.

Some of these findings are discussed in more detailed fashion under appropriate sub-headings below.

Religious Background

Significant relationships were found between religious background and type of career choice. Catholic women predominately aspired to traditional careers, as did Protestant women to a slightly lesser extent. In contrast, the majority of the small number of Jewish women in the sample aspired to non-traditional careers. Table 2 shows the chi-square analysis of the group differences by the three major religious affiliations in this study.

TABLE 2

Percentage Differences in Religious Affiliation Among Women of Traditional and Non-Traditional Career Choices

Career Choice	Catholic (N=59)	Jewish (N=22)	Protestant (N=265)	Other (N=50)	No Response (N=26)
Traditional	84.0	36.4	79.2	66.0	75.0
Non-Traditional	15.3	63.6	20.8	34.0	25.0

$p < .001$

Personality Characteristics

In this analysis, "self," that part of the personality which interacts with role to determine behavior, is most directly revealed by the Personality Traits measure in the questionnaire. It consists of two checklists: one headed "I generally like," followed by two or three word descriptions of people and activities, and the other, "I am," followed by a list of adjectives. The

TABLE 3

Comparison of Personal Traits Scores of the Traditional and Non-Traditional Career Groups

Scale	Group	Mean	df	t	p
Autonomy	Traditional	6.7	420	1.30	.19
	Non-traditional	7.0			
Complexity	Traditional	13.7	420	1.40	.16
	Non-traditional	14.2			
Theoretical Orientation	Traditional	6.49	420	7.50	<.001
	Non-traditional	9.04			
Anxiety	Traditional	2.75	420	.08	.9
	Non-traditional	2.76			

Because so many of the items comprising this scale were oriented to scientific interests, and since many of the non-traditionals were science majors who were planning on science-related occupations, an analysis of covariance was used to determine the relationship of Theoretical Orientation to career choice with the two science majors (biological and physical science) held constant. There remained, however, a significant difference between the scores of the two groups.

To determine if any of the individual items in the Personality Traits measure had any value by themselves, irrespective of the scales, a chi-square analysis was made for every item. Those items which significantly differentiated between groups on the basis of this analysis are shown in Table 4. Practically all of the items in the Personal Traits measures that were selected out belong to two of the sub-scales, Theoretical Orientation and Complexity, and the majority of these items are more characteristic of the non-traditionals than of the traditionals. Those which are more characteristic of the traditionals,

under the stem "I generally am," are "predictable" and "sociable," the former detracting from their Complexity scale score and the latter from their Theoretical Orientation scale score.

Attitudes

The Viewpoints section of the questionnaire has three parts, each measuring attitudes toward a different aspect of society. Four items comprising the Government index deal with nationalistic versus internationalist policies of the United States. The four items concerning women's role in society define the respondent's viewpoints about women as policy makers in business and government, as competitors with men in professional fields, and as housewives and mothers with outside occupational interests. The Civil Rights index deals with rights of the disadvantages and minorities, and repressive versus libertarian domestic government policies.

The Women's Rights index was of particular interest as a means of examining congruence between women's career planning behavior and attitudes about professional career women. Another use of the data on this measure was the comparison of the Women's Rights and Civil Rights indices to determine whether respondents would express the same degree of liberalism in their attitudes toward women as toward other oppressed groups.

As the data show in Table 5, some agreement does exist between behavior and attitudes toward women's rights. The non-traditionals scored significantly higher than the traditionals, manifesting more liberal attitudes on this index. The same group of women also scored significantly higher on the government index, again in the direction of liberalism. On the Civil Rights index, however, scores were almost identical, and they were higher than on the Women's Rights index. Apparently, the attitudes of both traditionals and non-traditionals were more liberal toward civil rights than they were toward women's rights.

institutions is from zero to 33 percent, and within the general university category, from 3.8 to 18 percent. Although engineering schools, select liberal arts, and universities have the highest proportion of non-traditionals, it appears that this variable, enrollment by type of school, may be no more critical in the examination of differences between traditionals and non-traditionals than is the individual school itself with its own set of unique environmental characteristics.

Educational Benefits

The Educational Benefits section of the questionnaire consisted of a list of statements expressing the more commonly sought goals or values one might derive from the college experience. These goals were divided into three categories: Vocational, Liberal Education, and Personal and Social Benefits. The respondents rated each statement on a four-point scale according to the extent she felt she had benefited on each during her college years.

It was anticipated that the non-traditionals would score higher on Vocational Benefits than on the other two indices because of the highly demanding nature of their career goals, which would seem to encourage a special awareness of and appreciation for the professional or vocational benefits over and above the cultural or social aspects of the college curriculum. However, the data, provided in Table 6, do not bear out that expectation.

Government, Social Service, and Academic. The Athletic heading includes varsity and other sports; Creative activities include music, drama, arts and crafts; Government consists of participation in national political groups as well as student government; Social Service activities are those designed to serve the needs of others; Academic activities consist of membership in groups interested in school (or academic) related projects.

Results of t tests showed that the traditionals engaged more in Athletics and Creative activities than do the non-traditionals, although the differences were not considered to be significant. Social Service and Academic activities, on the other hand, did show significant differences, with more involvement on the part of the non-traditionals. Government activities were more popular with the non-traditionals, although differences in that category were not significant.

Sources of Assistance

One portion of the questionnaire was designed to determine 1) from whom the respondents most frequently requested assistance--faculty, counselors, or parents--and 2) the kinds of assistance they most needed--vocational, academic, or personal. It was assumed that the non-traditionals would appear less reliant in general upon others than the traditionals, since in their choice of careers they have expressed a degree of disregard for the "conventional wisdom" of others. However, the data did not substantiate this expectation.

The frequency with which upperclassman women sought assistance with their problems from counselors and parents was approximately the same for both traditionals and non-traditionals, with the exception of one instance, where traditionals more frequently reported seeking help with vocational plans from counselors. The only major statistical differences between groups was that more non-traditionals requested assistance from faculty members than

TABLE 7

Variables of Predictability on Criterion, Career Orientation, as Determined by a Stepwise Multiple Regression Analysis

Variable	% of Variance (R square)	Beta	Standard Error	F*
Theoretical Orientation Scale	.12	.11	.01	4.05
College grade average	.15	.17	.17	13.72
I like science and mathematice	.18	.21	.05	17.80
Viewpoints regarding the role of women in society	.21	.14	.02	9.85
Certainty of future job choice	.22	.13	.03	8.94
Requesting faculty help with academic problems	.23	.10	.04	5.38
Self-descriptiopn: I am analytical	.24	.11	.05	4.76

*All F values significant at .01 or better

The point here is not to downgrade the position of teacher or others in the traditional category. The point is rather to suggest that women perceive a narrow range of career possibilities because they are fearful of venturing into a man's world, frequently doubting their capacity to fill masculine typed positions. It is also apparent that higher education evidently has little or no effect in changing the situation.

There are several implications for the higher education process and for college counseling to be gleaned from a composite of the foregoing information. Non-traditional career aspirants in the present sample requested assistance from counselors concerning vocational plans significantly less often than women of the traditional career group, but sought out contacts with faculty members more, perhaps indicating the desire for contact with a more appropriate role model. This finding could be a function only of the relative degree of certainty about future career goals between groups, but it may also mean that women who plan to enter male-dominated fields experience less satisfaction from their encounters with counselors.

Although the question cannot be clarified here, as there are no data regarding satisfaction with counseling services, other studies of career counseling indicate a stereotyped approach to women students, particularly among male counselors (Farmer, 1971). More specifically, Thomas (1967) studied the reactions of female and male counselors with female clients holding traditional feminine career goals and those holding non-traditional career goals. He observed that all counselors, but particularly the male, perceived the traditional feminine goals as being more appropriate.

Williams (1971), in a study of women medical students, wrote that women interested in medical careers are "more often than not faced with attitudes ranging from skepticism to downright disapproval." In her report of Radcliffe alumnae who enrolled in medical school, she found that one of the most

salient factor in a woman's professional career, and too often she is expected (by herself as well as others) to subordinate her individualistic goals to those of her husband and family. In the words of Kluckhohn (1953), woman's role is still devoted to things "aesthetic and moral which busy men define as the nice but non-essential embroidery of American life."

POLITICAL PARTICIPATION AND CIVIL RIGHTS ATTITUDES OF COLLEGE ALUMNI: CLASS OF 1950

Paul Wayne Purdy*

Montesquieu (1748) forewarned that the tyrannical power of a prince in an oligarchy is not as dangerous to the public good as is the apathy of citizens in a democracy. Many years later, Shills (1961) noted, in a slightly different manner, that the problem for a democracy is the restraint of the rulers and the willingness of the citizenry to accept authority while taking a rationally critical attitude toward it. Critical appraisal of the government and active participation in its affairs are as relevant to the continued well-being of this nation and the world as they have ever been.

Crucial problems of every description abound in the United States; racial injustice, economic instability, environmental pollution, military conflict and increasing urbanization are among those warranting attention. But perhaps the greatest problem of all is the seeming absence of general concern for the democratic process and the lack of political involvement on the part of the educated and uneducated alike.

If issues are not resolved through the democratic process, solutions derived through other means will render meaningless the principles of democracy itself, resulting at best in paternalism in the name of liberty. One of the obligations of higher education in this country is to awaken and sustain political conscience and dialogue; another is to demonstrate through the study of history and social and political institutions that an awakened citizenry and enlightened leadership can accomplish great social reform.

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*Ed.D., 1972.

(1) I attended meetings of a political club or group.

(2) I did some volunteer or paid work for a political party.

(3) I contributed money to some political cause or group.

(4) I talked with an elected official about some problem (national or state).

(5) I signed a petition, wrote a letter, card, or telegram concerned with some political issue.

(6) I participated in a public protest or rally over some political issue.

(7) I held a political or public office (elected to or appointed, full-time or part-time).

Each item indicated was worth one point on the scale, the highest possible score being seven. Respondents indicating two or less items were classified as "low"; those indicating three or four were classified as "medium"; and those indicating five or more items were classified as "high" participants on the PPI.

Five items from the Viewpoints section of the alumni questionnaire were employed in the formulation of the Civil Rights Index (CRI). Three of the five items had particular or implied reference to poverty, injustice, and discrimination against blacks. The items, with keyed responses, are listed below:

(1) If Negroes live poorly it is in great part the fault of discrimination and neglect from whites. (agree)

(2) Anyone, no matter what his color, who is willing to work hard can get ahead in life. (disagree)

(3) More money and effort should be spent on education, welfare and self-help programs for the culturally disadvantaged. (agree)

(4) Issues such as law and order, civil rights, and public demonstrations are complex and need careful evaluation and judgment of individual cases. (agree)

(5) People who advocate unpopular or extreme ideas should be allowed to speak on college campuses if the students want to hear them. (agree)

Religious beliefs and political identification are discriminately related to political participation and civil rights attitudes. The Jewish alumni in the sample were the most active politically, followed by those with no formal religious identification. Democrats and Independents were more active in politics than Republicans, and were also found to be more liberal on the issue of civil rights.

No appreciable differences were found between sex on either political participation or civil rights attitudes; male and female alumni were fairly evenly distributed on the PPI and CRI. On the PPI, this remained true when the analysis was restricted to those who had bachelor's or master's degrees, but at the doctoral level of degree attainment, males were proportionately more active politically than females. The data were mixed for the CRI when related to level of education. Females were decidedly more liberal at the bachelor's level, slightly more liberal at the master's level, and proportionately more conservative at the doctorate and professional degree levels than were males.

Rather distinct patterns of political participation and liberal attitudes were evident with reference to different income levels. Taken in the aggregate, higher proportions of alumni with moderate to high incomes were active in political affairs than were those of lower income levels. This pattern was evident with relation to tolerance for civil rights as well.

Controlling for party identification revealed that Democrats and Independents were essentially accounting for the greatest numbers of those with liberal attitudes as income increased. Proportionately, among Republicans, income did not differentiate as much as it did among Democrats in the percentage of alumni with liberal attitudes. Republican proportions ranged from 36.7 percent in the "high tolerance" civil rights category for the below-

TABLE 1

Summary of Alumni Rankings on the Political Participation and Civil Rights Indices by Type of Institution, Reported in Percentages

Rank	Name of Index						
	Political Participation				Civil Rights		
	High	Medium	Low	% Total	High	Low	% Total
Type of Institution							
Select Liberal arts colleges	25.4	47.5	27.2	100	53.4	46.6	100
Select universities	24.3	46.2	29.6	100	45.0	55.0	100
General liberal arts colleges	22.8	45.0	32.2	100	41.5	58.5	100
State colleges and other universities	17.1	52.0	30.9	100	35.4	64.6	100
Engineering universities	16.4	48.9	34.8	100	32.9	67.1	100
Denominational liberal arts colleges	15.3	46.5	38.2	100	36.8	63.2	100

It is obvious that students going to college from different backgrounds and attending colleges with different approaches to education will reflect different values socially, politically and educationally. It does not necessarily follow that one form of college experience is superior to another or that a graduate of one type of institution will not make as significant a contribution to society as his counterpart from another type. What can be said is that, viewed from the standpoint of American idealism as it is related to participatory democracy and respect for the rights of all citizens, graduates of certain types of institutions seemingly approach these ideals more than others.

Up to this point, data have been discussed which reflect relationships between several independent variables and the two dependent indices. In order to distinguish more clearly between the effects of these independent variables on each index score, the data were analyzed by means of a stepwise multiple regression equation containing twenty-seven variables. Results of those analyses are discussed below.

As revealed in Table 2, more than 5 percent of the variance on the PPI was accounted for by participation in college political groups. The next most significant contributing variable was annual income, accounting for an additional 2 percent of the variance; participation in politics had a tendency to increase as annual income increased. Explaining an additional 1 percent of the variance was identification as an Independent or nonpartisan. Size of community of residence and identification as a Republican were the next most influential variables; each explained an additional .5 percent of the variance.

As may also be observed from Table 2, succeeding variables, while statistically significant at the .05 level, contribute very little to the total variance on the PPI. The variables, level of education, science major, residing in the northeast, identification as a Democrat, and average college grades, each contribute about.3 percent to the total variance. In the aggregate, the ten variables listed above explained 10.80 percent of the total variance of 11.56. The remaining variables entered into the regression equation were statistically insignificant, and are therefore not included in the table.

Just as fewer than one half of the twenty-seven variables entered into the regression equation explained the variance on the PPI, fewer than one half of the variables had an appreciable impact on the variance on the CRI. Eleven variables made significant contributions to the total amount of variance accounted for on the CRI. From Table 3, it may be observed that identification as a Republican had the greatest influence on the variance of the CRI, accounting for nearly 10 percent of the total of 16.85 percent. This was followed by the social science major variable, which accounted for 1.6 percent of the total variance. The remaining variables appearing in the table are statistically significant at the .05 level, based on their F values, but contribute very little to the remaining variance.

The variables, level of education (1.46 percent), attendance at a select liberal arts college (.8 percent), average grade in college (.58 percent) and age (.41 percent), explain the greatest amount of the remaining variance. The other variables in Table 3 are statistically significant, but add little to the variance.

Having discovered which variables in this study were predictors of political participation and attitudes toward civil rights, attention was then turned to the relationship of the two indices to one another to discover

if they were truly measuring disparate traits. Controlling for the effect on the two indices by all of the independent variables in the list of predictors and using the CRI as the dependent variable, the entire list of variables was simultaneously entered into Stepwise Multiple Regression analysis at the first step. When this was accomplished, the simple correlation coefficient representing the relationship between the CRI and the PPI amounted to .025, a very low positive correlation.

At the second step, the PPI was entered into the equation subsequent to the original independent variables. The resulting correlation coefficient amounted to .055, meaning that with or without the intervening effects of the independent variables, political participation and civil rights attitudes are not highly related attributes.

Summary and Implications

The present study was essentially of an exploratory and descriptive nature. Certain background variables that appeared definitely related to political participation and attitudes toward civil rights were identified. However, the three basic categories of variables--educational experiences, group affiliation (political and religious), and personal characteristics--accounted for relatively small amounts of the total variance in scores on the PPI and CRI. This suggests that other unidentified factors explain the remaining variance.

Two variables did individually explain a large amount of the variance that was accounted for on the two indices: participation in college political groups accounted for the greatest amount of variance on the PPI, and identification as a Republican accounted for the greatest amount of variance on the CRI. Considering only these two variables, additional research might focus on factors that contributed to their development.

inadvertently, many of them appear to have chosen to leave the affairs of government to the politicians and hold views concerning minorities, the culturally disadvantaged and persons espousing unpopular or extreme ideas that seem to inimical to democratic ideals.

Higher education is more than a transmitter of knowledge; it is a transmitter of values also. And it is the value questions that have concerned those in American higher education in recent years to an unprecedented degree. As related to this study, American higher education is called upon to give more than lip service to providing educational opportunities to Black Americans and other minorities. Some institutions are meeting the challenge; others remain recalcitrant and uncommitted. Aside from denying full educational opportunities to minorities, the recalcitrant institutions are denying their students and faculty the opportunity of communicating and interacting with individuals with whom they must ultimately live and work. Most future alumni will fare no better than the majority of alumni in this study on civil rights attitudes unless the value of racial equality is as much a part of higher education as are the values of quality scholarship and intellectual integrity.

Concomitant with the value of racial equality should be the value of participatory democracy. Political process values can be taught without the process itself becoming a political issue; but politicization may be preferable to apathy. As these data revealed, those alumni who participated in college political groups were prone to be more active politically and more tolerant on civil rights issues than those who did not participate. Continuing education programs for alumni and seminars for students designed to educate them on the political process and to develop a political consciousness would assist in imparting greater political awareness and, hopefully, political efficacy.

ALUMNI PERCEPTION OF EDUCATIONAL BENEFITS AS RELATED TO COLLEGE EXPERIENCES AND INSTITUTIONAL TYPES

Stuart Lee Farber*

The higher education experience provides an opportunity for academic and other environmental influences to merge and determine the setting in which a student's growth and behavioral development will take place. Exactly how the student and the campus setting interact remains unknown in any precise detail, but recent investigations offer suggestions as to the kinds and amounts of interaction. Increasingly, concepts are stated indicating that the value or success of a college experience is a result of the interaction process between students and the total college environment.

In the past, institutional evaluation has been accomplished primarily through faculty committees, accreditation teams, consultants, trustees' studies, alumni visits and similar activities (ACT, 1969). More recent studies have provided for student and alumni to serve as the population samples for institutional evaluation. Spaeth and Greely (1970) indicate that, "Alumni are, of all persons, especially qualified by past experiences to offer opinions on the ways in which college has served or failed to serve them."

The educational benefits students receive while at institutions of higher education logically relate to the kinds of experiences they have. These experiences can be related to a major field of study, a college residence, participation in extracurricular activities, counseling and advising

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*Ed.D., 1973.

this study, information was extracted from the following sections of the original Center alumni questionnaire: Educational Benefits, School and College Experience, and Personal Information.

Educational Benefits

The Educational Benefits section of the survey provided seventeen items related to typical objectives of a college or university. These items were: (1) vocational training, (2) specialization, (3) literature, (4) philosophy, cultures, (5) social development, (6) personal development, (7) critical thinking, (8) art, music, drama, (9) communication, (10) science, (11) citizenship, (12) individuality, (13) friendships, (14) vocabulary, facts, (15) religion, (16) tolerance, and (17) social, economic status.

For each item, the respondents were asked to mark either "Very Much," "Quite a Bit," "Some," or "Very Little," depending upon the extent to which they felt they were influenced or benefitted in that respect. For initial scoring purposes, a determination was made of the frequency of each response for each item.

The seventeen educational benefits were categorized into the following three classifications of benefits: (a) Vocational, including numbers 1, 2, 14, 17, (b) Personal and Social, including numbers 5, 6, 12, 13, 15, 16, and (c) Liberal Education, including numbers 3, 4, 7, 8, 9, 10, 11. In scoring these subscales, value scorings were determined in the same manner as was used for the individual items, and the sum of the items included in each of the subscales was divided by the number of items in each scale. The frequencies were then entered in distribution tables as a raw count, row percentage, column percentage and total percentage for each of the four values.

to graduate school, personal problems, and financial problems. For purposes of this study, all six counseling areas were utilized as categorized above.

Personal Information

The only information utilized from the Personal Information section of the questionnaire was the sex of the respondent. Institutional typology was patterned after the types explained in the introduction to this volume.

Based on these variables, the following hypotheses were set forth:

1. There will be a significant relationship of alumni perception of derived educational benefits with regard to:
   a. institutional types
   b. sex
   c. participation in extracurricular activities
   d. college residence
   e. college major
   f. professional counseling and/or faculty advising
2. There will be a significant predictability of educational experiences as related to alumni perception of derived educational benefits.

Analyses

An analysis of characteristics of the sample population showed that the largest number of respondents by major field was education with 1,326, followed by social science, 1,325; engineering, 1,238; business, 1,189; physical sciences and mathematics, 835; biological science, 627; humanities, 592; arts, 395; other, 356; and language, 248. The sample analysis also showed that males constituted almost two-thirds of the respondents, and that place of residence was nearly equally divided between those having resided on or off campus.

TABLE 1
Percentage Distribution of Educational Benefits Score
by Type of College for Total Sample Population*

Type of Institution	(N)	Vocational Benefit	(N)	Personal and Social Benefit	(N)	Liberal Ed. Benefit
General Liberal Arts (GLA)	(1019)	66.0	(1035)	67.0	(1012)	65.5
Denom. Liberal Arts (DLA)	(573)	69.7	(573)	72.2	(533)	64.8
Selective Liberal Arts (SLA)	(462)	63.4	(542)	74.4	(565)	77.5
Teachers Colleges (TC)	(805)	76.9	(699)	66.8	(659)	63.0
State Colleges (SCOU)	(474)	74.6	(400)	63.0	(354)	55.7
Engineering (EC)	(843)	77.2	(445)	40.7	(484)	44.3
Selective Universities (SU)	(505)	67.6	(438)	58.8	(442)	59.3
General Universities (GU)	(1226)	71.9	(933)	54.8	(930)	54.6

* Percentage marking "Very Much" or "Quite a Bit" of Benefit

was from the engineering colleges with 40.7 percent. Within the Liberal Education benefits column the selective liberal arts type was highest with 77.5 percent, followed by general liberal arts with 65.5 percent. The lowest percentage was again from the engineering institutions with 44.3 percent.

It is of interest to note the variance of percentages within each column as well as between columns. For example, the engineering schools, which had the highest percentage on Vocational benefits, had the lowest percentages in both the Personal and Social and the Liberal Education benefits. Conversely, the selective liberal arts colleges had the highest percentage on the Personal and Social and the Liberal Education benefits, while showing the lowest percentages for the Vocational benefits.

TABLE 2
College Experience Factors Related to the
Attainment of Vocational Benefits

Percent marking "very much" or "quite a bit" of benefit	Institutional Type*	College Major	Campus Residence	Counselor Contact	Faculty Contacts	Extra-Curricular Activities
		Biol.Sci.				
80						
		Engr.				
		Others				
					YES	
	ES	Phys.Sci.				
75	TC	Educ.				
	SCOU			YES		YES
			OFF			
70	GU		ON	NO		NO
	DLA					
	SU					
					NO	
65	GLA	Soc.Sci.				
		Langs.				
	SLA	Bus.				
60		Arts				
		Hum.				
55						
50						

* Code: See Table 1

TABLE 3
College Experience Factors Related to the
Personal and Social Benefits

Percent marking "very much" or "quite a bit" of benefit	Institutional Type*	College Major	Campus Residence	Counselor Contact	Faculty Contacts	Extra-Curricular Activities
80						
75	SLA	Langs.				
70	DLA	Soc.Sci. Biol.Sci.,Educ.	ON	YES	YES	YES
65	GLA TC	Hum. Arts, Bus.				
	SCOU	Others				
60	SU			NO		
					NO	
55	GU		OFF			NO
		Phys.Sci.				
50						
45						
40	ES	Engr.				

*Code: See Table 1

colleges were far above the next institutional type (approximately 13 percentage points) but the eight types of colleges and universities were divided in placement above and below the mean as was reported for the Personal and Social benefits. Majors showed a slightly larger range than they did for Personal and Social benefits, with humanities being at the top of the listing by percentages and engineering at the bottom, with the same percentage as reported by the engineering schools in the institutional type category. The other majors were fairly evenly distributed between these two extremes.

Only a slightly higher percentage of Liberal Education benefits was reported by those who had lived on campus, but differences were substantially to the advantage of those reporting to have had contacts with faculty members (a 16 percent difference) and counselors (a 14 percent difference). A 10 percent higher response was given by those who had participated in extracurricular activities while in college.

Summary of Experience Factors

In descending degree of relationship, the greatest Vocational benefits from college attendance most likely accrued to one who majored in biological science, attended an engineering school, had contacts with faculty members and counselors, and participated in extracurricular activities. Campus residence did not seem to discriminate between those having received benefits in this dimension. Those alumni who majored in humanities and the arts and attended selective liberal arts colleges reportedly received the least Vocational benefits from their college experiences.

Those alumni who were most prone to receive Personal and Social benefits attended selective liberal arts colleges, majored in languages, resided on campus, participated in extracurricular activities, and had contacts with faculty members and counselors. Attending an engineering institution and

(Personal and Social), and 7 (Liberal Education). Each of the six broad categories of experiences will be discussed below relative to their predictive value on each dimension.

Institutional Type. Multiple regression analysis showed that teachers college was the fourth strongest predictor for the Vocational benefits, engineering institution was the second strongest (negative relationship) for the Personal and Social benefits, and selective liberal arts college was the fifth strongest predictor for the Liberal Education benefits. Considering the multiple r coefficients and the r square percentages for all three criterion variables, type of institution was not considered as a strong predictor variable for the educational benefits criterion.

Activities. Academic activities were the strongest predictor variable for the Vocational benefits, and social and service activities were the strongest predictor variable for the Personal and Social benefits; while athletic and creative activities were third and fifth, respectively, for the latter dimension. Creative activity was the strongest predictor and academic activity the fourth strongest predictor for the Liberal Education benefits. It is of interest to note that although one particular type of activity was not consistently strong for all three of the benefit subscales, some element of activity participation was the strongest predictor for each of the three criterion variables.

Residence. This proved to be a relatively weak predictor variable for all three criterion variables. Overall, residence was not one of the college experience variables likely to influence perception of educational benefits, although favorable responses to educational benefits had a tendency to come from alumni who had lived in residences categorized as on campus.

TABLE 6
Multiple Regression Analysis of Personal and Social Educational Benefits and Selected Independent (predictor) Variables

	Mult. r	r Sq.	r Sq. Change	Simple r	B	Beta	f Test
Activity-Social Service	.262	.069	.069	.262	1.456	.143	145.969
EC	.307	.095	.026	-.189	-1.358	-.128	65.336
Activity-Athletic	.338	.114	.019	.190	.791	.114	111.343
Faculty Advising	.356	.126	.012	.166	.703	.085	64.244
Activity-Creative	.368	.135	.009	.207	.506	.050	18.216
Major-Human./Soc.Sci.	.375	.140	.005	.147	.203	.026	11.443
Activity-Politics	.381	.145	.005	.215	.614	.072	37.592
Counseling	.386	.149	.004	.115	.488	.068	43.240
GU	.391	.153	.003	-.073	-.322	-.036	4.311
SU	.394	.155	.003	-.026	-.335	-.027	3.421
Major-Phy./Bio.Sci.	.396	.157	.002	-.070	-.628	-.067	12.365
SLA	.398	.158	.001	.105	.730	.058	15.022
TC	.399	.159	.001	.062	.507	.047	8.929
DLA	.399	.159	.000	.082	.359	.030	4.054
Residence	.399	.159	.000	.030	.035	.016	2.400
Major-Vocational	.399	.160	.000	-.088	-.196	-.027	1.434
Activity-Academic	.400	.160	.000	.113	.027	.013	1.189
GLA	.400	.160	.000	.073	.172	.016	0.904

For determining the .01 level of confidence, the f test must be equal to or greater than 2.57.

Major Field. Humanities or social science major was the second strongest predictor variable (negative relationship) for the Vocational benefits, the sixth strongest predictor for the Personal and Social benefits, and the third strongest predictor for the Liberal Education benefits. Considering only positive relationship with the criterion variables, humanities or social science major showed some measure of pervasiveness as a predictor variable for alumni perception of educational benefits, while vocational major and physical or biological science major proved to be relatively weak predictor variables.

Counseling. Regression analysis showed counseling experiences to be the sixth strongest predictor for the Vocational benefits, the eighth strongest predictor for the Personal and Social benefits, and the sixth strongest predictor for the Liberal Education benefits. Relative to these analyses, counseling demonstrated a pervasiveness throughout the criterion variables, and was thus considered a relatively strong predictor among the nineteen variables selected for the multiple regression analysis.

Faculty Advising. The regression analysis showed that faculty advising was the third strongest predictor variable for the Vocational benefits, the fourth strongest predictor for the Personal and Social benefits, and the second strongest predictor for the Liberal Education benefits criteria. It can be summarized that faculty advising demonstrated a pervasiveness throughout the regression equation analysis to such a degree that it can be considered the single strongest predictor variable with regard to the estimation of educational benefits.

AN ANALYSIS OF OUTCOMES OF HIGHER EDUCATION*

Sonja Pauline Jacobson**

American higher education is renowned for its diversity, yet, there is a growing concern that colleges and universities in this country are becoming increasingly similar. Nearly all colleges and universities strive to perform the same generalized educational mission; traditional sources of differentiation --between public and private, large and small, secular and sectarian, male and female--are disappearing. Gradually, institutions with special missions are beginning to be replaced by modern universities and colleges which aspire to the university model. If one believes that an important function of the higher educational system is to offer alternative models, the homogenization of these institutions is a serious problem.

Previous studies have illustrated differential effects on college students which result from experiencing different higher educational environments. However, criterion measures in such studies have typically been heavily loaded with such academic components as graduate school attendance, scores on a battery of academic achievement tests, or college grade point average. The controls in most of these studies have likewise been of a purely academic nature, such as aspiration for an advanced degree, scores on academic aptitude tests, or high school grade point average.

The general purpose of this study was also to discover if alumni, in this instance twenty years after graduation, differed in definable patterns relating to the specific type of institution they attended. But, more specifically

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*The dissertation on which this condensed report is based was not available in its completed form before the publishing deadline for this volume, but its differing concern and approach were such that the editor included it to demonstrate another method of analyzing the alumni data from the Center's national study and to share some preliminary findings.

**Ed. Dissertation in preparation, expected 1973.

four items, he was included in the "College Prone" group. The 900 former students who were thus included in this analysis category were far from randomly distributed among colleges. The proportions of College Prone Males in the various types of institutions were as follows: Selective Liberal Arts Colleges, 51%; Selective Universities, 39%; Engineering and Science Schools, 34%; General Liberal Arts Colleges, 31%; General Universities, 21%; State Colleges and Other Universities, 19%; Denominational Liberal Arts Colleges, 14%; and Teachers Colleges, 13%.

In this study, the input control variable was academic, including both grade point average and peer and home environmental influences. However, the criterion or outcome variables dealt with both academic and non-academic concerns. With academic input thus equalized, it was anticipated that the non-academic benefits and activities described below would be more related to institutional type than would the academic benefits and activities. The outcome variables were included under three major groupings as follows.

Educational Benefits. This scale measured the amount of perceived benefits received from the college experience. The 17 items included in this scale were grouped into four dimensions for purposes of this study: Academic-Intellectual--vocabulary, critical thinking, science; Personal-Social--personal development, social-economic status, social development, individuality, friendships, tolerance, communication, religion; Humanistic--philosophy-cultures, citizenship, art-music-drama, literature; and Vocational--specialization, vocational training.

Activities. The eleven activity scales measured the extent to which people engage in certain kinds of activities dealing with a broad range of involvement in contemporary society and culture. These activities are considered a reflection of the alumni's interests, values, satisfactions and commitments related to

Responses were categorized in the form of group scale means for the Activity scales and in the form of percentages of alumni from each group responding in the keyed direction for the Educational Benefits scale. The interpretation of these two rank order correlations presented for each of the criterion indices was based on the differences in degree and the direction of the two correlations with the initial rank order. Differences between the Activity mean responses and the Educational Benefits average percentages were also analyzed, but are not included in this report of the study.

The theoretical structure upon which the method was based involved expected differences in certain criterion variables between the Total Males and the College Prone Males. It was assumed that if one examined output in terms of the criterion variables with respect to the entire sample of males and then only those whose academic input was similar, the output rank orders would be different between each group by institutional type and the original rank order based on selectivity.

The differences between the initial and criterion ranks of the institutions were expected to be less for the College Prone Males because of their similar academic input and the manner in which the first ranking was arrived at. It follows that if the nature of an outcome variable was less related to the college prone input factor than to the college or university environment, then rank order differences between Total Males and College Prone Males on that criterion variable should be minimal.

Educational Benefits

With reference to Academic-Intellectual benefits, it can be seen in Table 1 that the total group of college males within each institutional type had a quite similar rank order compared to the original ranking by academic orientation.

This Total Male group ordering correlated much higher with the academically ranked institutional types (.62) than did the College Prone group (.12). The large difference between the two correlations was most likely due to the reduction in range of the type of students and the comparison of varying sizes of groups. Consequently, when looking at only academically-oriented students on an academic variable, there was a reduction in the institutional differences resulting in less relationship between the two rank order correlations.

Unlike the Academic-Intellectual benefits, the eight benefits constituting the category of Personal-Social were not so obviously related to the criteria for selection of the College Prone alumni. Because of this, it was not surprising that a negative rank order correlation was found for the Total group on this dimension, and that this negative relationship was accentuated in the correlation for the College Prone group.

The least relationship with the academic orientation of an institutional type was found in the Humanistic benefits. The summary correlations shown in Table 1 were very near zero for both groups; Total Males showed a correlation of -.05 and the College Prone Males .05.

Although there was very little correlation between the academic ranking of the institutional type and the ranking on Humanistic benefits, the relationship between the correlations of the two groups was quite high. The rankings for the two groups on Humanistic benefits were identical except for ranks 3 and 4, indicating that although Humanistic benefits were not directly related to the academic ranking of institutions, there was a consistent influence of the college environment in the humanistic domain on both the general male student body and the select group of males.

TABLE 2

Institutional Rank Order Correlations on Input and Activities by Total Males and College Prone Males

Type	Input Select.	Activities																			
		Comm. Affairs		Nat./St. Politics		Education		Intercult.		Internat.		Art		Lit.		Music		Drama		Rel.		Science	
		TM	CPM	TM	CPM	TM	CPM	TM	CPM	TM	CPM	TM	CPM	TM	CPM	TM	CPM	TM	CPM	TM	CPM	TM	CPM
SLA	1	3	7	2	6.5	3	5.5	1	2.5	1	4	1	3	1	2	2	4.5	1	3.5	7	8	6	6.5
SU	2	6	8	4	4.5	8	8	5	6	3	6	2	6.5	3	5	5	8	3	5	8	7	7	4.5
ES	3	8	5.5	8	6.5	7	7	4	6	6	6	5	4.5	6	6	6	6.5	6	6.5	6	6	1	1
GLA	4	5	3	3	3	4	3	3	4	2	3	3	6.5	2	3.5	3	3	2	1	3	3	4	6.5
GU	5	7	4	5	1.5	6	4	6	6	7	6	4	4.5	7	7	7	4.5	4	3.5	5	5	2	3
SC	6	4	5.5	6	6.5	5	5.5	8	8	8	8	7	8	8	8	8	6.5	7	8	4	4	3	4.5
DLA	7	2	2	7	1.5	2	1	2	1	5	1.5	6	2	5	1	1	1	8	2	1	1	8	8
TC	8	1	1	1	4.5	1	2	7	2.5	4	1.5	8	1	4	3.5	4	2	5	6.5	2	2	5	2
Rank Order Correlation		-.52	-.85	.05	-.25	-.48	-.19	.50	-.19	.50	-.35	.90	-.25	.50	.27	.05	-.60	.60	.29	-.88	-.90	.02	-.07

the Total Male group showed a correlation of .60, while the College Prone Males had a small positive relationship of .29.

There was only a slight difference between the rank order correlation for the Total Male group and that for the College Prone group for Religious activities; for both groups the relationship was very strongly negative (-.88 and -.90, respectively). The smallest correlations between alumni activities and academic level of the institution was found in the area of science. There were minimal relationships for both the Total group (.02) and the College Prone group (-.07).

Summary

On the basis of the analyses completed thus far, it can be tentatively concluded that there are differences between alumni who have experienced different higher educational environments, even when controlling for a "college prone" background, especially with respect to non-academic kinds of outcome variables.

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