Academic Achievement: A Research Study

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ACADEMIC ACHIEVEMENT

A Research Study

Submitted for Honors Recognition
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Sociology Department
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by
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Date: April 1, 1968
# TABLE OF CONTENTS

## I. INTRODUCTION TO THE PROBLEM

Theoretical Development
- Attitudes
- Study Habits
- General Intelligence and Previous Achievement
- Social Factors

## II. METHODOLOGY

A. Research Site
B. Sample
C. Methods
D. Limitations

## III. FINDINGS

A. Attitudes
B. Study Habits
C. General Intelligence and Previous Achievement
D. Social Factors

## IV. CONCLUSION AND RECOMMENDATIONS

## V. APPENDIX

A. Questionnaire
B. Previous Literature
C. Pilot Study
I. Introduction to the Problem

What are the determinants of success? This question is one that has been considered for many decades and perhaps for centuries, for men are always eager to improve their abilities. They are aware that some men are more successful in their endeavors than others, but the reasons for such success are never very manifest. The factors that are associated with high achievement in any area of human undertaking and endeavor are usually difficult to name or isolate, and even more difficult to form into any type of causal relationship.

The dynamic condition or quality of learning can not stop us, however, from seeking to assess the determinants of success. In fact, perhaps, they make the challenge more exciting—and in the complex organization and increasing speed of development in our society—more necessary or seemingly so. For if man can strike upon some significant factor or identify some type of relation or correlation—even though it may be negative instead of positive—he is further ahead and closer to his assessment.

This study began, then, with an awareness of the importance of academic success. "Learning," very much related to this, in itself, is a construct that man has used to explain observed behavior changes. It refers to these changes in their function or interaction with environment. These changes
must be made manifest in some way or there can be no real knowledge that learning has occurred. In this sense, then, the performance of some skill or behavior indicates the fact of learning. In relation to academics, this performance would be most readily available and observable in the concept of grades.

Beneath this academic achievement, serving as a basis to all learning and accounting for the arousing of interest, rests motivation—the basic reason for action. This change within a person upon the realization, whether consciously or unconsciously, of some need serves as a compulsion to action and simultaneously gives purpose to functioning.

Looking at Maslow's theory of human motivation with its five steps—

1. physiological drives
2. needs for safety, security, and freedom from anxiety
3. love and acceptance in interpersonal relations
4. self- and social-esteem
5. self-actualization

we find that man's highest needs, and in a sense, one of the needs that distinguishes him from the animals, is the need to realize his own worth and be accepted for that worth—in more simple terms, the need to achieve. This special type of motivation, then, has a direct influence on learning, for it

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represents a desire to attain self-regard by successful use of talents, especially in challenging or competitive situations. It gives the student the impetus to achieve intellectually and at the same time to perform and function in conjunction with this achievement in a school situation.

If he the pupil has a strong reason to work, he will very likely perform at his ability level; if he does not have strong motivation, he will probable never realize his potentialities even though all the other learning conditions are favorable.

Strong motivation sometimes causes a student to perform at a level that might not ordinarily be expected of him. In fact, any experienced teacher will verify that a strongly motivated pupil of average ability may reach a higher achievement level in school work than a moderately motivated pupil of above average ability. In the one case there is a strong "will to learn"; in the other case, there is not. In the one case, strong motivation impels the student to work to capacity; in the other case, lack of proper motivation keeps him from actualizing his potentialities. Consequently, all other factors being equal (such as ability level, state of health, and emotional and social adjustment), the degree of motivation will largely account for the difference in degree of achievement among pupils.²

Some previous work has been done along this specific line relating the need to achieve and actual achievement:

Gough had students rate themselves as to achievement motivation and found significant correlation between self-ratings and variations in general academic scholarship. The median correlation between the need to achieve and scholarship in the five high schools he studies was .52.³

³Frandsen, op. cit., p. 212.
Turney, Frandsen, and Darke used high school teachers' ratings of motivation of their students to establish a relation between the intensity of motivation and achievement. Their correlation of ratings in high school and achievement in college for 353 freshmen was .47. They found indications that the differences in achievement motivation are as important as differences in intelligence in determining school achievement.

Lowell compared the efficiency of two groups of college students in a projective test in measuring the degree (high or low) of the need to achieve. He found that students high in the need to achieve make continual progress in learning tasks while those low in the need to achieve make no appreciable progress and may even drop in performance level when extrinsic rewards are withdrawn.

D. C. McClelland devised a measure of need achievement (nAch) and found that grades have a positive relationship to achievement under many conditions. He found positive correlations (as high as .50) between nAch and both grades and achievement test scores. He noted negative correlations between nAch and past, but not future, achievement.

Using the Attitudes toward School scale of the California

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4 Ibid.
5 Ibid.
Study Methods Survey, Carter found correlations of attitudes with grade averages of .5 and with achievement test scores of .4. The relationship of attitudes to intelligence was much below this, indicating that the measure can make an independent contribution to the prediction of achievement.7

The grading system is used most prominently in assessing academic achievement. When we refer to a "good student", we generally mean one that receives good grades. There are, of course, many other factors involved, not all identified or observable. Grades in themselves, however, tend to contribute a motivating influence, serving as part of a reward-punishment index, and, in a sense, may serve to reinforce behavior.

This study centers on the concept of grades as the index of academic achievement, in an effort to account for differences.

7Ibid.
Theoretical Development

Based upon previous research in the field of the sociology of education and on previous similar research at the same site, this study will attempt to confirm the specific or significant relations of selected variable of academic achievement and grade levels. The general theoretical development to be followed can be presented in the following outline form:

A manifest causal relationship exists between academic achievement and its variables, attitudes, methods of study, general intelligence and previous achievement, and various social factors.

1. Academically-oriented students show different grade-point averages than vocationally or socially-oriented students.
   a. Students are ranked as vocational, academic, or collegiate according to their answers to dichotomous choices, personal aspiration, and recognition of the purpose of a college education.
   b. A comparison is made of these rankings with grade-points, with the expectation of the academically-oriented students showing the higher grade-point averages.

2. Those students exhibiting high academic achievement in grades follow a different pattern of study methods than those exhibiting low academic achievement.
a. A comparison of the methods of the highest students and those of the lowest students is made to determine if there exists any general over-all pattern of study methods.

b. Correlations of grades with individual items:
1. where studying is done
2. how much time is spent on each subject
3. use of a study schedule
4. use of the library
5. attendance at campus lectures
6. amount of outside reading
7. when the hardest subject is studied

3. General intelligence and previous achievement should show the closest relation to actual academic performance.

a. Relation of ACT scores to grade-averages

b. Relation of rank in high school graduating class to grade-averages

4. Variable social factors may be responsible for high or low academic achievement.

Examination of the following elements:

a. age
b. academic class
c. rural or urban background
d. size of high school
e. extracurricular activities
f. holding a job
1. Attitudes

We have seen the importance of attitudes and the role they play in academic achievement, especially through the need to achieve. We realize then a relation between motivation and performance, the first providing purpose for the second. How then can these attitudes be measured in relation to learning?

In attempting to show the relation of attitudes in achievement, an ideal-type set of categories was employed. No one particular person will exactly fit each type, but on a theoretical plane, the types can be used as models or standards against which the particular individual can be judged and evaluated. Such a set of types was taken from Burton R. Clark and Martin A. Trow in "Determinants of College Student Subcultures". The three types which are of interest here are:

1. Academic
   serious-minded, idea-involved students
   students who get high grades, work hard, and discuss outside of class what they've learned
   liked by teachers, but seen as "grinds" by other students
   prepare for graduate work or professional training
   use undergraduate work to extend appreciation of ideas
   and gain a general education
   likely from the upper-middle class

2. Vocational
   preparing for future job
   not intellectually oriented, does what needs to be done

---

sees ideas and scholarship as a luxury like sports
down-to-business, no-nonsense type, pragmatic
engages in little extracurricular activity
usually of lower-middle or working class

3. Collegiate
interested in sports, dates, and fun
not idea-, but people-and event-oriented
active in extracurricular activities
not going to let studies interfere with college life
usually from upper or upper-middle classes

Those three types, then, were used as the basis of
evaluating student motivation. The elements taken from each
of these were made into three parts of the questionnaire which
would determine the orientation of the students and serve as
a basis for comparison in supporting the hypothesis.

Clark and Trow go on in the same selection to describe
two areas of change in the contemporary education scene--what
they call the "decline of the collegiate" and the "triumph of
vocationalism." 9

In the first, they say that there is no longer the
important role of the collegiate student with his money, good
times, leisure, and light-heartedness. Most students today
are more concerned because of the necessity in today's world
for advanced technical and professional training. They are
more conscious of what they have to do with their lives once
they get away from the college scene--and thus what they do
in college is of vast importance. College students today,

9Ibid., p. 455.
also, are not the big-money kids of years ago, but are middle-
to low class kids with an eye toward the future and a little
money that must go a long way. The increasing number of
students trying to enter college has also caused the colleges
to require more of their students, to emphasize "intelligence,
good high school record, and seriousness." The three important
factors in this change then are: changing career patterns,
democratization of college-going, and increasing selectivity
of colleges.

The emphasis and importance of the vocational role is
increasing for many of the same reason according to Clark and
Trow:

1. occupational change--the need for more professional
   and technical training

2. education as means of mobility--diploma seen as the
   way to a better-paying job

3. ascendance of public colleges--more able to respond
   to public's needs and demands, more convenient and
   easier to enter, usually more service-minded

4. bureaucratization of academic organization--impersonal
   student-faculty relations

5. withdrawal of student involvement--more involved in
   off-campus events and jobs

To quote part of what was said in this report and which
is of value in this study:

The trend toward vocational orientation indicates
that a new cultural conflict is emerging in colleges.
The older conflict was between the academic and the
collegiate subcultures with the faculties upholding
intellectual values and the majority of students
opposing them with their own nonintellectual or anti-
intellectual interests. With the decline of the collegiate and the growth of the vocational, the emerging conflict is between the academic and the vocational subcultures. Both of these orientations are "serious"; both are legitimate in the eyes of adults; both find proponents in the faculty as well as in the student body. The old conflict was whether students would study or play. The new conflict is whether they will study in broad fields of knowledge and concern themselves with general issues, or study in applied, narrow fields and concern themselves with acquiring the skills and certificates they need for a job.10

10Ibid., p. 456.
2. Study Habits

So much emphasis has been placed in recent years on the importance and necessity of efficient work and study skills as an aid to, and a determinant of, success in any occupation. Especially in the educational field has there been increasing emphasis on the determination of what students can do and how efficiently. Many courses are being taught in both high school and college, such courses as "how to study", or those specially designed to show students how to take notes, write papers, read more efficiently, or make the best use of their time, or those special courses concerned with increasing reading speed and effectiveness. All of these are based on the assumption of a causal relationship between study skills and grades.

Concern with this "how to study" program began in the twenties, with primary emphasis on the failing and probationary students and directed mostly to diagnosis and remedial work. By 1940 it was realized that many other students have difficulties that affect their work and thus need some attention also. Not only the poor students, but the average and superior ones also needed help in directing their work. Good students were found to be inefficient in their study skills or had some disability or problem which prevented them from using what skill they did have. Any achievement they had made was found to be the result more of intelligence or hard work, rather than in methodology.\[11\]

Some work has been done in this area of study habits, more in a theoretical sense, ending in the presentation in many psychology books of principles for effective study or in specific pamphlets for study guidance. Of interest here are two sources:

A. Psychology of Learning

Many factors account for the fact that many people with low IQs have good academic records—especially things like motivation, background, and efficiency of study habits.

Factors involved in effective study are:

1. having a defined purpose
2. development of interests from knowledge and experience --relating old and new facts --use of knowledge and materials --participation in activities
3. developing mental set for study --having materials at hand, following a set schedule, and setting goals --overlooking distractions
4. using a time schedule

B. Brown-Holtzman Survey of Study Habits and Attitudes

This is an inventory for high school and college students which includes 75 items. The items are series of statements which are responded to in the extent that they represent the


\[13\text{Oscar Buros, Fifth Mental Measurements Yearbook, (New}

\[\text{Jersey: Gryphon Press), 1959, p. 689.}
real actions and attitudes of students. The inventory assumes the frankness and capability of the students in understanding their own motivation and attitudes.

It essentially compares student's study habits and attitudes with those of students in general who do well academically. Preliminary testing showed "study attitudes more related to high grades than the assessment of the mechanics of studying or study skills." It provides a basis for counseling and remedial work in attitudinal and motivational problems.

In a more practical vein, however, it must be realized that there are so many methods presented today and each individual might have to employ the one most suited to his needs. Individual human differences make us wonder then if any clear-cut pattern of studying will exist. Emphasis may not be so much on method, but more on efficiency for the individual of the specific method used.
3. General Intelligence and Previous Achievement

The great differences that exist in mental endowment among students of any group make this an important variable in the measuring and evaluating of actual performance or use of this ability. Intelligence functions in learning by aiding the ability to identify and make use of aspects of previous learning.

There has been great emphasis in the past decades on the measuring of intelligence, whether in terms of IQ or of general, over-all achievement. Underlying this is the assumption of a relation between general intelligence and academic performance. In this regard:

...all measures of school performance show strong and stable relationships to IQ and other measures of academic aptitude. In large heterogeneous groups, that is, groups with wide ranges of scores on both measures, from one-half to two-thirds of the variations in school achievement appear to go hand in hand with the variations in intelligence, which is another way of saying that the correlations between these two scores are usually about .7 or .8.\(^\text{14}\)

Previous achievement, however, is also recognized generally as a good predictor of future achievement.

The two indices used in this study--ACT scores and rank in high school--can give us information on both of these.

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4. Social Factors

This grouping is, perhaps, the hardest to assess for it can include countless variables, many of which are unmeasurable in a study of this type and depth. All men function, however, in a social context so it is important to realize what possible role some of these factors could play. Of interest here is the more psychological study by Heath included in the appendix.

Two studies are of particular interest in this area:

A. Sells

Sells analyzed factors involved in academic success by doing correlations on points of behavior and grade-points. The study included 206 undergraduates at Texas Christian University. His results, shown in the accompanying chart, were formed into a pattern which showed TCU high ranking students as:

- non-smokers
- church-attenders
- carrying a heavier course load
- getting good grades in high school and as a college freshman
- having a good attendance record
- spending more time studying and reading
- not active in sports, but active in group life
- looking forward to graduate work
- emotionally independent from the family
- having a bank account
- not owning a car

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Behavioral characteristics of university students correlated with grade-point average. (Sells, 1963)

<table>
<thead>
<tr>
<th>Negative Correlations</th>
<th>Positive Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Behavior</strong></td>
<td></td>
</tr>
<tr>
<td>academic status:</td>
<td></td>
</tr>
<tr>
<td>no. of credit hours divided by no. of years in school</td>
<td></td>
</tr>
<tr>
<td>freshman gpa</td>
<td></td>
</tr>
<tr>
<td>rank in high school graduating class</td>
<td></td>
</tr>
<tr>
<td>study habits:</td>
<td></td>
</tr>
<tr>
<td>no. of hours/day</td>
<td></td>
</tr>
<tr>
<td>no. of periodicals and journals read</td>
<td></td>
</tr>
<tr>
<td>no. of books read yearly</td>
<td></td>
</tr>
<tr>
<td>college attendance:</td>
<td></td>
</tr>
<tr>
<td>no. of days missed, present semester</td>
<td></td>
</tr>
<tr>
<td>no. of days missed through illness</td>
<td></td>
</tr>
<tr>
<td>religious activity:</td>
<td></td>
</tr>
<tr>
<td>church attendance frequent membership</td>
<td></td>
</tr>
<tr>
<td>activities:</td>
<td></td>
</tr>
<tr>
<td>no. events per month frequency of games played each month participation in sports</td>
<td></td>
</tr>
<tr>
<td>no. of groups in which membership is held smoking chosen career requires graduate work</td>
<td></td>
</tr>
<tr>
<td>duration of visits to family has bank account owns automobile</td>
<td></td>
</tr>
</tbody>
</table>
This study used only the grade-point average of the student to examine the impact of extracurricular activities and part-time employment. The study identified 40 factors associated with academic achievement and all but one turned out indeterminate. The only one having any real impact was high school academic rank—apparently qualities for good academic achievement are acquired during student's early years and before college.

The hypothesis of this study was: The greater the extent of involvement in nonacademic activities, the lesser the achievement of a high gpa. The grade point was related to three factors: educational background, social background, and behavior patterns.

In the behavior patterns, several factors came out:

--student employment is not related to low achievement
--with sufficient motivation and intelligent scheduling of time, working need have no adverse effects on achievement.

There is evidence that school achievement is positively related to social status, the differences in achievement being unexplainable simply in terms of intellectual level.  


This includes the fact that class differences in attitude toward education are important. Studies of both the children and their parents show that higher-class children are taught to respond favorably to competitive situations in schoolwork and intelligence testing, and that they are more strongly motivated for personal achievement and academic advancement.\(^\text{18}\)

Some of the variables that are included in this study are chronological age, social class level, rural or urban background, degree of activity outside of classes, holding a job, and the size of the high school from which the respondent comes. It is hoped that these correlations will add to the findings in this area on academic achievement.

\(^{18}\text{Ibid.}\)
II. Methodology

A. Research Site

The college under study, Carroll College, is a liberal arts school located near the outskirts of the capital city, Helena, Montana, a town of approximately 23,000. The school has approximately 1000 students, with over 700 living on campus. It functions co-educationally, engaging in realms beyond the purely academic, having regular social functions. Its religious nature combined with the liberal art approach is expressed in the purpose of the college, stated in the Carroll College Bulletin of Information for the academic years 1966 to 1968:

The aim of the College is therefore formed by the Catholic concept of the complete nature and final destiny of man. The College determines to provide a complete and integrated education, moral as well as intellectual, in order to develop the whole person in an orderly and balanced manner for complete living in time and eternity. To accomplish this the College provides professional guidance and instruction for developing qualities of competent leadership and service in all fields of human endeavor.

Complex problems of modern life are presented to the students in such a way that they are assisted in their solution through a discovery of eternal principles. The College is dedicated to the principle of educating an unchanging nature in the midst of a changing world, realizing that neither age nor modernity is the final touchstone of truth. Youth is educated at Carroll College
by the light of the tested wisdom of the past, amidst the academic and practical affairs of the present, as a preparation for the future. 19

The school is small enough and mirrors a degree of cohesion through the combination of the close spatial proximity and the smallness of the classes. It is a school which is known predominately for its academic programs and standards, especially in the areas of science and pre-medicine. It makes many scholarships and awards available for academic achievement, as well as for athletic prowess, each year.

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19 This is of general interest following the guidelines Burton Clark set down in his *Educating the Expert Society* (San Francisco: Chandler Publishing Co., 1962, pp. 214-230.) Clark presents five factors that shape student subculture at a school, one of the most important being the purpose of the college. In early education, he says, in a liberal arts college, the academic and collegiate groups competed, the vocational aspect being virtually excluded. The increasing competition of small colleges for students resulted in the colleges sacrificing much of its own authority, becoming more what the students wanted. The collegiate subculture predominated, then, during the last 75 to 100 years unless (1) strong religious control was present or (2) the college selected and held the more serious-minded students. The public schools, in contrast to this, have existed with a mixture of the three subcultures, with a growing influence of and emphasis on the vocational aspect.
B. Sample

Co-ed students were randomly selected to represent at least 10% of the total coed population. Total population of full-time coeds was 412; sample size was 46 or 11.1% of the population.

A breakdown of the sample:

- Freshmen: 20
- Sophomores: 13
- Juniors: 8
- Seniors: 5
- Total: 46

Each class was represented by at least 10% of the population.

C. Methods

Much of this study was based on a previous one, covering much the same material, but not as expanded or complete as this one. The first study then served as a pilot study for this one. Special assistance was gained in both studies by the office of the Dean of Studies, the Mathematics Department, and the IBM room of the college.

The questionnaire used to gather data (a copy can be found in the Appendix) included:

1. A stub giving general information including class, grade-point, age, major, number of hours usually carried, rank in high school graduating class, the ACT score, when obtained, from the Dean of Studies; was included in this area.
2. Attitude section including:
   a. an aspiration question
   b. nine dichotomous choices
      These were constructed from the three types into 9 pairs from which one (which is normally more important to you) was to be chosen. The pairs were assigned as follows:

<table>
<thead>
<tr>
<th>Academic</th>
<th>Vocational</th>
<th>Collegiate</th>
</tr>
</thead>
<tbody>
<tr>
<td>idea-----------------------</td>
<td>friend------------------</td>
<td></td>
</tr>
<tr>
<td>scholarship----------------</td>
<td>wealth------------------</td>
<td></td>
</tr>
<tr>
<td>pay------------------------</td>
<td>position----------------</td>
<td></td>
</tr>
<tr>
<td>study----------------------</td>
<td>date---------------------</td>
<td></td>
</tr>
<tr>
<td>teacher--------------------</td>
<td>boss---------------------</td>
<td></td>
</tr>
<tr>
<td>original idea-------------</td>
<td>useful idea------------</td>
<td></td>
</tr>
<tr>
<td>job-----------------------</td>
<td>football game----------</td>
<td></td>
</tr>
<tr>
<td>grades---------------------</td>
<td>popularity-------------</td>
<td></td>
</tr>
<tr>
<td>advancement---------------</td>
<td>praise-------------------</td>
<td></td>
</tr>
</tbody>
</table>

   c. question on the purpose of a college education
   d. an open-ended question asking for student's basic reason for studying.

3. Study habits
   Multiple-choice questions, usually requiring only one check, on 3 major areas—when, where, and how.

4. Social factors such as rural or urban home, subjective rating of socio-economic status of family, degree of activity in clubs and organizations, and holding a job.
Correlations were done by use of the Mathematics Department calculator and the computing formula:

\[ r = \frac{n(\Sigma xy) - (\Sigma x)(\Sigma y)}{\sqrt{n(\Sigma x^2)} \cdot \sqrt{n(\Sigma y^2)} - (\Sigma y)^2} \]

The ranking of students according to father's occupation to determine general social class standing followed that based on prestige level formulated by North and Matt:20

<table>
<thead>
<tr>
<th>North-Hatt Ranks</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-23</td>
<td>Professional, top business, government</td>
<td>1</td>
</tr>
<tr>
<td>24-36</td>
<td>Semiprofessional, medium business, or government</td>
<td>2</td>
</tr>
<tr>
<td>37-60</td>
<td>Skilled worker, small business, upper white collar</td>
<td>3</td>
</tr>
<tr>
<td>61-77</td>
<td>Semiskilled worker, petty business, lower white collar</td>
<td>4</td>
</tr>
<tr>
<td>78-90</td>
<td>Unskilled worker</td>
<td>5</td>
</tr>
</tbody>
</table>

D. Limitations

The main danger in a study of this type rests in the isolating of the different variables and the possibility of the loss of assessing their interactions.

Sample size may exist as somewhat of a limiting factor, although the sample does represent 11.1% of the population.

Grade-point average is used as the sole index of achievement, despite the realization that high grades don't necessarily reflect true high academic achievement. Some value is gained, here, by the correlation of the grade averages with the ACT achievement scores.

It should be added that a study of this kind necessarily ignores what may be very important—the psychological variables such as ego functioning, psychosomatic or psychotic disorders, the influence of past experiences, the influence of self-concept, and personality type—that are not readily measured or obtained.
III. Findings

A. Attitudes

Beginning with this particular point, it is hoped will shed some light on the type of students and the general atmosphere of the research site and sample. Through this the analysis of the methodology may be seen in a more complete and comprehensive manner. Attitudes, though not as directly manifested as study habits, often play a significant part in the development of the basic personality and thus, are important factors to analyze in trying to assess certain types of behavioral patterns or isolated actions. No human action is completely isolated of the context of human thought and consideration—and for this reason, attitudes often play a primary or secondary role in the formation of such patterns.

In the task of determining if certain students, because of their attitudes, have different methods and grades than others, we must begin with the assessment of certain typologies of students. The criteria for the determination of such typologies was included in the introduction to this paper and was based on the types set down by Burton Clark and Martin Trow. These types were known as the Academic, Vocational, and Collegiate, based on their attitudes and orientation toward learning and toward their particular school environment, or "subculture" as Clark and Trow would call it.
Three methods of assessing this were included in the questionnaire—the question on what the student would most like to be remembered as, the dichotomous choices which presented pairs from which one which was most important to the respondent was to be checked, and the question about the purpose of a college education. By examining the charts on the next few pages, we can see how the sample group answered these questions and how their answers compare, first with the three answers as a whole, and second, with the answers by other respondents.

In assigning students to a certain type, the researcher took into consideration all three parts, and in a case where the answers included two different choices, the student was classified as two out of the three choices dictated. In some instances reference was made to the answer given to the open-ended question regarding motives for studying to help determine classification. In two instances no clear determination was possible.

Table I on pages 28 and 29 represents the answers given by each respondent to the three main areas plus the compiled assessment of the students according to the three types. This is further broken down and its significance explained through Table I a.
Table I: Rating of each respondent according to the three types on the basis of their answers regarding attitudes

Legend:  
A--Academic  
V--Vocational  
C--Collegiate  
#--Student Number

<table>
<thead>
<tr>
<th>#</th>
<th>Dichotomies</th>
<th>Aspiration</th>
<th>College Purpose</th>
<th>Open Ended Question</th>
<th>Compiled Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A</td>
<td>C</td>
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Table I (cont.)

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<td>V</td>
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</tbody>
</table>
Breaking down Table I we can see how the different types compared and how the different class levels stood within the types. This chart was based solely on the compiled ratings from Table I, those in the last column.

Clark and Trow predicted an academic-vocational conflict in their study cited previously. This is carried out in this study also, with the academic and vocational types having 37.0% and 47.7% respectively. It's interesting that the difference of 10.7% favors the vocational, especially at a site that stresses the academic. Note that 50% of the Freshmen classify as academically-oriented—perhaps still eager to prove themselves and "make good"—while only 20% of the seniors are the same, having perhaps already proven themselves and more concerned with life after college. Both the Freshmen and seniors had 40% in the vocational type. The high comparison of Academic and Vocational among the Freshmen (50%—A to 40%—V) may reflect the serious atmosphere of today's modern education in which the competition helps eliminate the less serious-minded.

The collegiate type claimed only 10.7% of the sample. The fact that the highest percentage in this group was among seniors (20%) may indicate a decline of academic interests in the last year.

The number of students not classified (4.7%) is not large enough to affect the sample findings.
Table I a: Breakdown of each type by academic class

<table>
<thead>
<tr>
<th>1. Class levels</th>
<th>A</th>
<th>V</th>
<th>C</th>
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<th>Total</th>
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<tbody>
<tr>
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<tr>
<td>Sophomores</td>
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<td>1</td>
<td>1</td>
<td>13</td>
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<tr>
<td>Juniors</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Seniors</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>22</td>
<td>5</td>
<td>2</td>
<td>46</td>
</tr>
</tbody>
</table>

Percentage: 37.0 47.7 10.7 4.7 100.0

2. Percentage breakdown of above

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>V</th>
<th>C</th>
<th>ND</th>
<th>Total</th>
</tr>
</thead>
<tbody>
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<tr>
<td>Sophomores</td>
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<tr>
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<td>.125</td>
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<td>.2</td>
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</tbody>
</table>

Legend: A—Academic  
V—Vocational  
C—Collegiate  
ND—Not determinable
Table I b: Breakdown of each type according to the three attitude sections in the questionnaire plus the compiled assessment of all girls

<table>
<thead>
<tr>
<th>Type</th>
<th>Dichotomies</th>
<th>Aspiration</th>
<th>College</th>
<th>Compiled</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>17 (37.0)</td>
<td>5 (10.7)</td>
<td>14 (30.1)</td>
<td>17 (37.0)</td>
</tr>
<tr>
<td>V</td>
<td>9 (20.0)</td>
<td>33 (71.7)</td>
<td>25 (54.3)</td>
<td>22 (47.7)</td>
</tr>
<tr>
<td>C</td>
<td>9 (20.0)</td>
<td>6 (13.0)</td>
<td>6 (13.0)</td>
<td>5 (10.7)</td>
</tr>
<tr>
<td>ND</td>
<td>11 (23.9)</td>
<td>2 (4.7)</td>
<td>1 (2.4)</td>
<td>2 (2.4)</td>
</tr>
</tbody>
</table>

Legend:  
A -- Academic  
V -- Vocational  
C -- Collegiate  
ND -- Not determinable
Table I b presents a further breakdown of each type in relation to the three specific areas of evaluation plus the compiled assessment—all taken from Table I. Notice how the conflict of academic and vocational is carried through only in the compiled rating. Throughout the four sections, however, the major response was in an academic or vocational bent—the collegiate never rating above 20%.

In the dichotomous choices almost 40% are classified as academic while only 10% aspire to be recognized as such and only 30% think this is the main purpose of a college education. This could reflect either a more practical concern with the vocational or an avoidance of "intellectualism"—an anti-intellectual attitude in which the students do not like to be thought of as "grinds" by other students. Or it could represent a combination of these two. The vocational type is understandably high in student's aspirations (71.7%) and the purpose of a college education (54.3%). The collegiate type is consistent, ranking between 10 and 20% in all groups.

Table II lists each type of student, her class, and her grade-point average. The mean grade-point averages of each group, plus the standard deviation and the range, is presented at the bottom of each column.
**Table II—Type and Grade-point average comparison of all respondents**

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Vocational

<table>
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<td>2</td>
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mean g p a = 2.75
standard deviation = .66
range = 2.1 to 3.41
Table II (cont.)

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</table>

mean GPA = 2.86
standard deviation = .5
range = 2.3 to 3.36

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<td>3.5</td>
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<tr>
<td></td>
<td>4</td>
<td>2.8</td>
</tr>
</tbody>
</table>

mean GPA = 3.42
standard deviation = .46
range = 2.96 to 3.88

<table>
<thead>
<tr>
<th>Type</th>
<th>Class</th>
<th>GPA</th>
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</thead>
<tbody>
<tr>
<td>Indeterminate</td>
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<td>4</td>
<td>2.6</td>
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</tbody>
</table>

mean GPA = 2.4
standard deviation = .28
range = 2.12 to 2.68
It is interesting that the results here are opposite what would be expected. The collegiate group, which would be expected to be the lowest in grades, is the highest while there is only a difference of .11 in favor of the vocational over the academic. The range of the academic (2.1 to 3.41) and the vocational (2.3 to 3.36) are fairly even and consistent showing a recognizable similarity. The range, however, of the collegiate is considerably higher, from 2.96 to 3.88. The range of the indeterminate group, from 2.12 to 2.60, would place it in the academic or vocational realm.

This phenomena could perhaps be explained in several different ways:

1. as an inaccuracy in classification of the students as to the three types. This would invalidate much of what has been previously said.

2. as an indication that the collegiate students might be more liberally balanced than the others

3. as an indication that the academically-minded students are more concerned with other things than grades; they perhaps learn for learnings sake and spend more time in other outside work or reading and aren't under the pressure of grades

4. that the sample size was too small to adequately measure any existing differences

It is interesting that the mean grade average of the indeterminate group is the lowest—of interest perhaps to anyone measuring or declaring the value and effect of working for a specific goal or in motivational theory in general.
Table II a: Breakdown of students by type and grade-point

<table>
<thead>
<tr>
<th>GPA</th>
<th>A</th>
<th>V</th>
<th>C</th>
<th>ND</th>
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</thead>
<tbody>
<tr>
<td>1.0-1.9</td>
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<td>1</td>
<td>---</td>
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<tr>
<td>2.0-2.7</td>
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<td>3.4-4.0</td>
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<td>3</td>
<td>---</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>17</strong></td>
<td><strong>22</strong></td>
<td><strong>5</strong></td>
<td><strong>2</strong></td>
<td><strong>46</strong></td>
</tr>
</tbody>
</table>

Breaking the grades down into four classes to correspond with an A, B, C, and D rating, we can easily compare each classification as to level of students. Our findings from Table II are shown, with the collegiate group having the students with the higher grade points. Note that most of the students (35 of the 46) ranked in the "B" and "C" levels, indicating somewhat of the expected "heavy middle." It is interesting that the majority of vocationally-oriented students ranked above the majority of academically-oriented students. We see this difference too in comparing the median grade-point averages of each group:

- Academic: 2.6
- Vocational: 2.95
- Collegiate: 3.5
In relating these findings to our previously stated hypothesis that academically-oriented students show different grade-point averages than vocationally or socially-oriented students, with the expectation of the academic students having the higher grades, we find that we cannot substantiate such a statement. We have found exactly the opposite of what was expected, but it is significant that the findings match exactly those of the previous study at the same site—the study that was used as a pilot study for this. This fact would seem to indicate that perhaps the methods used in obtaining information or evaluating students as to types were faulty and new methods should be found; or perhaps it would indicate some significant finding—that perhaps as stated before, the academic students aren't as concerned with grades as such or that the collegiate students are indeed more liberally balanced and oriented. Such a fact would require further investigation before any definite conclusions could be drawn about the value of this particular phase of our study or about the motivational element in academic achievement. From the findings in this sample, the first hypothesis cannot be accepted as it stands.
B. Study Habits

The second part of this analysis consists of the determination if those students exhibiting high academic achievement in grades follow a different pattern of study methods than those exhibiting low academic achievement.

In selecting methods to analyze, significant findings as to areas showing some degree of correspondence between "good" and "poor" students were taken from the pilot study from a comparison of the highest students with the lowest. These elements were then included in the questions on the questionnaire—the only drawback to this is that it didn't allow room for variety beyond what was mentioned on the questionnaire.

Table III compares the answers given by the eight highest students with those given by the eight lowest ones, "high" and "low" determined by grade-point averages. Following it, in part b, are the coefficients of correlation figured from all the respondent's answers about study habits. The correlations were determined by assigning numerical values to each possible answer and using the formula on page 24 of this paper.
Table III: Comparison of the answers given about study methods by the eight highest and lowest students according to grade-point averages.

a. Question

<table>
<thead>
<tr>
<th>Question</th>
<th>Choices</th>
<th>Highest</th>
<th>Lowest</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Where do you do most of your studying?</td>
<td>dorm</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>library</td>
<td>---</td>
<td>2</td>
</tr>
<tr>
<td>2. How much time do you spend on each subject per class hour?</td>
<td>0-30 min.</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>30-60 min.</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>60-90 min.</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3. Do you follow a definite study schedule?</td>
<td>no</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>yes, on 1-2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>classes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>yes, on all</td>
<td>---</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>classes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. How often do you use the library for study or research?</td>
<td>daily</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>often</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>seldom</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>5. Do you generally attend campus lectures?</td>
<td>yes</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>no</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>6. How much outside reading do you do?</td>
<td>much</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>some</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>none</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7. When do you study your hardest subject?</td>
<td>first</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>last</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>other</td>
<td>2</td>
<td>---</td>
</tr>
</tbody>
</table>
Table III (cont.)

b. Interitem correlations of the answers given by all respondents concerning study methods compared with grade-point averages:

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Coefficient of Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-0.1109</td>
</tr>
<tr>
<td>2</td>
<td>0.071</td>
</tr>
<tr>
<td>3</td>
<td>0.047</td>
</tr>
<tr>
<td>4</td>
<td>0.084</td>
</tr>
<tr>
<td>5</td>
<td>0.098</td>
</tr>
<tr>
<td>6</td>
<td>0.053</td>
</tr>
<tr>
<td>7</td>
<td>0.208</td>
</tr>
</tbody>
</table>

Only two of the above are even close to being important, numbers 1 and 7. These two seem to say that, for this sample, grades are better if studying is done in the dorm and that there is no specific "right" time for studying your hardest subject. The first establishes and the second goes against the relationships suggested possible by O'Donovan in the study on "Non-academic Involvement".

From the study of this sample, the second hypothesis would not be proven as no correlation is of sufficient size to warrant further investigation. As in the pilot study, it seems there is no right method of studying, but emphasis should be on the efficiency for the individual
of the specific method used. What is right and produces
good grades for one student evidently is not necessarily
right for another nor does it produce the same results.
High and low achievement must be due to some other variable.
C. General Intelligence and Previous Achievement

In Chapter I the importance and relation of general intelligence to present achievement was asserted with an indication that correlations between these two were usually about .7 or .8. To test this and to investigate the hypothesis that the closest indicator of academic achievement would be intelligence, ACT scores were obtained for each respondent. The .855 correlation that was found for this sample group bears out this point and becomes very important in our assessment of academic achievement. It is perhaps the most valuable finding of the whole research study.

By using rank in high school on a percentage basis, it was possible to determine if there was a defined relation of high school rank (as an index of previous achievement) to present college achievement. The correlation was -.144, which, though not high enough to be important, would imply that in this sample the higher your rank in high school, the better your achievement in college.

We have thus found at least two variables of importance in our study. One of these, that of general intelligence as determined by ACT scores, is very high in our correlation and thus is very important. The other is not high enough, however, to really indicate an important relationship.
D. Social Factors

Several variables have been included here in an effort to assure that such factors as age and degree of activity aren't more significant in academic achievement than the three previous areas of attitudes, study habits, and intelligence.

Some of the correlation findings here are:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-.2201</td>
</tr>
<tr>
<td>Academic class level</td>
<td>.174</td>
</tr>
<tr>
<td>Social class level</td>
<td>.056</td>
</tr>
<tr>
<td>Rural vs. Urban home</td>
<td>-.0175</td>
</tr>
<tr>
<td>Degree of Activity</td>
<td>.043</td>
</tr>
<tr>
<td>Holding a Job</td>
<td>-.217</td>
</tr>
<tr>
<td>Size of High School</td>
<td>.129</td>
</tr>
</tbody>
</table>

None of the findings here are sufficiently high enough to indicate a causal relationship with grades. Only four aren't negligible and warrant some comment. These four would seemingly say for this group:

--younger students average better grades
--upper classmen average better grades (seeming contradiction between this and the previous finding)
--job holders average better grades (supports the finding by O'Donovan about holding jobs)
--students from larger high schools average better grades

None of these findings are significant enough to warrant the acceptance of the hypothesis without further investigation. The fact that they possess some degree of influence, depending on the specific situation and person, cannot be overlooked.
IV. Conclusions and Recommendations

What is learned from this entire study, though few relationships of real importance could be determined? Perhaps there are really no manifest relationships or the relationships between academic achievement and its variables are so complex and intricate, or vary too widely to be accurately measured and evaluated. That this study was not able to assess the complex interaction of many or all variables at one time may account for the poor findings. It is interesting, however, that many of the findings match those of the pilot study. The fact, too, that these findings are limited strictly to this particular study and site must be remembered.

The proposed major hypothesis of a manifest relationship between academic achievement and its variables, attitudes, methods of study, general intelligence and previous achievement, and various social factors has not been proven. Some generalizations about a tentative pattern of factors involved in high academic achievement can be formed from this study. High academic achievement seems to involve:

-- collegiate orientation (in contrast to vocational orientation in the pilot study)
-- studying in the dorm (may represent the influence of one specific place of study)
-- following no specific method of study, but that which seems best for you
-- emphasis on quality rather than quantity of time spent in study
--having high general intelligence and previous achievement (as measured in ACT scores and rank in high school graduating class)

--holding a job

These facts, although they supply little support of the main hypothesis or the underlying hypotheses, give only one definite indicator of academic achievement—the variable of high general intelligence*. All the other points, though tentative, are interesting in themselves and should be treated as such until subjected to further study.

Many items were neglected or ignored in this study which could be of value in a further assessment of academic achievement. Some points that could have used further study, in and/or out of this study are:

--the impact of psychological factors

--what students do while they study (evaluation of efficiency of methods used)

--an evaluation of the methods used by students in areas such as science or math, which would require more study and different approaches, compared with those of more liberally-oriented areas

--effect of the number of hours carried

--the importance of sleep and exercise on student achievement

--the depth of the influence of outside reading and research

More statistical work should have been done in standard deviations and confidence levels. This would have insured greater reliability in the findings and would have helped to insure the avoidance of a Type I error, the error of rejecting a true hypothesis.
V. APPENDIX
RESEARCH QUESTIONNAIRE

All answers will be held in strict confidence

CLASS:                                MAJOR:
GRADEPOINT:                           Number of hours
AGE:                                  usually carried:

Rank in high school
graduation class:  _____ out of _____

Do you come from a _____ rural or an _____ urban home?

How would you like to be remembered?  _____ a popular personality
                                          _____ a good student, an intellectual
                                          _____ a dependable worker

What economic class would you say your family belong to?
                                          _____ upper
                                          _____ middle
                                          _____ lower

Which of the two in each pair is normally more important to you?
                                          _____ friend
                                          _____ wealth
                                          _____ position
                                          _____ idea
                                          _____ scholarship
                                          _____ pay
                                          _____ date
                                          _____ boss
                                          _____ useful idea
                                          _____ study
                                          _____ teacher
                                          _____ original idea
                                          _____ football game
                                          _____ popularity
                                          _____ praise
                                          _____ job
                                          _____ grades
                                          _____ power

What do you feel a college education is most valuable for?
                                          _____ social development
                                          _____ intellectual development
                                          _____ vocational development
Where do you do most of your studying?

- dorm
- library
- catacombs
- study rooms
- other place

How much time do you spend on each subject per class hour?

- 0-30 minutes
- 30-60 minutes
- 60-90 minutes
- 90-120 minutes
- more

Do you follow a definite study schedule?

- no
- yes, on 1-2 classes
- yes, on all my classes

Do you generally attend campus lectures?

- yes
- no

How often do you use the library for study or research?

- daily
- often
- seldom
- never

How much outside reading do you do?

- much
- some
- none

When do you study your hardest subject?

- first
- last
- other

I am __ very active in school or town clubs and organizations.

- fairly active
- not very active
- not at all active

How many clubs do you belong to?

Do you have a job?

- yes
- no

What would you say is your basis reason for studying?
B. Previous Literature

1. Coleman

Coleman (1959, 1960) gathered information—opinions, preferences, attitudes—on a large sampling of pre-college adolescents to determine their major values, especially those concerned with academic achievement. He describes what appears to be the pervasive atmosphere of most high schools as one in which the existing patterns of rewards tends to inhibit learning and results in questionable goal orientations.

2. Adolescent Subculture

Coleman in this study starts off with the statement that if educational goals are to be realized in modern society, a fundamentally different approach to secondary education is necessary.

Coleman did research in 10 Midwest high schools, finding that:

--boys tend to shy away from the ideal of a brilliant student

--girls named as best students have fewer friends and are less often in the leading crowd than the boys named as such (somewhat of a double standard)

--in all cases, leading crowd pulls away from the brilliant student ideal

He found that academic achievement ranked least as a criterion for entering the leading crowd. He also found that social rewards are very important to high school students—if there are few rewards for academic achievement, the strivers for

---


this will be few and not necessarily those with the most intellectual ability. In examining the effect of social pressure, relating achievement to IQ, and showing the effect of value systems on the freedom for academic expression, he seems to find that students with high ability are led to achievement only if there are social rewards for it.

Coleman sums up by saying that the relative unimportance of academic achievement suggest that these adolescent subcultures are generally deterrents to academic achievement. Those seen as "intellectuals" and those who think so of themselves are not really those of highest intelligence, but are only the ones willing to work the hardest at a relatively unrewarded activity.
3. Heath

Heath studied personality factors related to academic failure, using a model of ego functioning, revolving around four types—"the reasonable adventurer", "the noncommitter", "the hustler", and "the plunger."

In the accompanying diagram, the X side represents the tendency to hold impulses in check, the Z represents freer impulse expression, and Y is the balance of these two. Better integrated individuals are found in the A section.

Heath's typology is:

A--creative, open, a balance of permissiveness and control independent, having a sense of humor, having wide interests, seldom bored

X--low--friendly, other-directed, noncommittal, cautious about revealing feelings, especially aggressive ones

Y--low--cold, competitive, aggressive

Z--low--chaotic, unstable, moody

In a social situation, low X would try to belong, low Y would strive for esteem, and low Z would want attention, whether favorable or not.

Heath's research at Princeton, Knox, and Pittsburgh show that low X is the type that usually experiences academic failure and drops out. Some evidence shows that those closer to A tend to be more successful.

\[23\] Lindgren, Byrne, and Petrinovich; op. cit., pp. 444-445.
Model of ego functioning as related to behavior in a college setting. (Heath, 1963).
C. Pilot Study

The pilot study was undertaken in the first semester and included only the first two sections of this study—Attitudes and Study Habits. The sample size was deemed too small to verify any of the findings, but a general tentative pattern could be formulated. The findings were that the higher grade-point averages were found among students who:

—were vocationally minded
—emphasized quality rather than quantity of time spent in study
—didn't follow a definite study schedule
—were more active in extracurricular activities
—attended campus lectures frequently

Of the correlations done with different study methods, the results were:

1. time spent in study -0.2006
2. following a definite study schedule -0.159
3. degree of activity -0.174
4. attendance at campus lectures -0.078

From the findings of the pilot study, it was deemed necessary to add some other variables to the study; the first two on attitudes and study methods were kept for comparative purposes. It is evident from both studies that further research in this field of academic achievement, is necessary.
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