



LEHIGH  
UNIVERSITY

Library &  
Technology  
Services

The Preserve: Lehigh Library Digital Collections

# Differences Between Under-achievers And Over-achievers At A Small Liberalarts Women's College.

## Citation

LIDDICOAT, JAMES PATTERSON. *Differences Between Under-Achievers And Over-Achievers At A Small Liberalarts Women's College*. 1972, <https://preserve.lehigh.edu/lehigh-scholarship/graduate-publications-theses-dissertations/theses-dissertations/differences>.

Find more at <https://preserve.lehigh.edu/>

*This document is brought to you for free and open access by Lehigh Preserve. It has been accepted for inclusion by an authorized administrator of Lehigh Preserve. For more information, please contact [preserve@lehigh.edu](mailto:preserve@lehigh.edu).*

72-15,885

LIDDICOAT, James Patterson, 1930-  
DIFFERENCES BETWEEN UNDER- AND OVERACHIEVERS  
AT A SMALL LIBERAL ARTS WOMEN'S COLLEGE.

Lehigh University, Ed.D., 1972  
Education, guidance and counseling

**University Microfilms, A XEROX Company, Ann Arbor, Michigan**

**DIFFERENCES BETWEEN UNDER- AND OVERACHIEVERS  
AT A SMALL LIBERAL ARTS WOMEN'S COLLEGE**

by  
**James P. Liddicoat**

**A Dissertation**

**Presented to the Graduate Committee**

**of Lehigh University**

**in Candidacy for the Degree of**

**Doctor of Education**

**in**

**School of Education**

**Lehigh University**

**1971**

**PLEASE NOTE:**

**Some pages have indistinct  
print. Filmed as received.**

**University Microfilms, A Xerox Education Company**

Approved and recommended for acceptance as a dissertation in partial fulfillment of the requirements for the degree of Doctor of Education.

October 28, 1971  
(date)

Merle W. Fair  
Professor in Charge

Accepted November 16, 1971  
(date)

Special committee directing the doctoral work of James P. Liddicoat

Merle W. Fair  
Chairman

Charles H. Gaudin  
Roy C. Henricks

## ACKNOWLEDGMENT

The writer is indebted to many persons whose assistance made possible the completion of this study: To Dr. Merle W. Tate, Committee Chairman, for his guidance, supervision, and concern; Drs. Alfred Castaldi, Charles Guditus, Roy Herrenkohl, Joseph Kender, and William Stafford, Committee Members, for their suggestions and time; my colleagues, administrators, and students at Cedar Crest College for their co-operation and support; Mrs. Faye Fenstermacher for the excellent preparation of this manuscript; and my wife, Elizabeth, for her understanding, patience, and help.

My appreciation to all.

## TABLE OF CONTENTS

CHAPTER	PAGE
I.	THE PROBLEM . . . . . 5
	Introduction . . . . . 5
	Purpose of the Study. . . . . 6
	Importance of the Study . . . . . 8
II.	REVIEW OF RELATED RESEARCH . . . . . 10
	Academic Achievement and Creativity. . . . . 11
	Academic Achievement and Study Habits and Reading Ability. . . . . 16
	Academic Achievement and Achievement Motivation. . . . . 24
	Academic Achievement and Personality Traits. . . . . 31
	Academic Achievement and Biographical and Home Factors . . . . . 38
	Summary of Research Reviewed . . . . . 48
III.	PROCEDURES FOR COLLECTING AND ANALYZING DATA . . . . . 51
	Sample and Population. . . . . 51
	Selection and Collection of Data. . . . . 51
	Identification of Under-, Normal, and Overachievers . . . . . 53
	Variables Investigated. . . . . 56
	Treatment of Data. . . . . 57

CHAPTER	PAGE
IV. VARIABLES DIFFERENTIATING UNDER-, NORMAL, AND OVERACHIEVERS . . . . .	61
Non-Significant Findings Related to Under-, Normal, and Overachieving Students . . . . .	61
Significant Findings Related to Under-, Normal, and Overachieving Students . . . . .	66
Discussion of Significant Findings . . . . .	67
Other Variables Not Differentiating Under-, Normal, and Overachievers . . . . .	71
Other Variables Differentiating Under-, Normal, and Overachievers . . . . .	72
V. SUMMARY AND CONCLUDING STATEMENTS . . . . .	77
Summary . . . . .	77
Purpose . . . . .	77
Procedure . . . . .	77
Findings . . . . .	79
Concluding Remarks . . . . .	80
APPENDIXES . . . . .	84
A. . . . .	85
B. . . . .	87
C. . . . .	104
SELECTED BIBLIOGRAPHY . . . . .	116
VITA . . . . .	126

## LIST OF TABLES

Table	Page
1. Means, Standard Deviations, and Correlation Coefficients for Freshman Grade-Point Average ( $X_3$ ), High-School Rank ( $X_2$ ), and Total Scholastic Aptitude Score ( $X_1$ ), for 211 Students. . . . .	55
2. Means and Standard Deviations of 70 Under-, achievers, 71 Normal Achievers, and 70 Overachievers on the Various Tests and Inventories. . . . .	58
3. Results of Tests of Significance of Differences Between Means of 70 Underachievers, 71 Normal Achievers, and 70 Overachievers on Various Test and Inventories . . . . .	62
4. Summary of Tests on Contingency Data for 70 Under-, 71 Normal, and 70 Overachievers .	72

**DIFFERENCES BETWEEN UNDER- AND OVERACHIEVERS  
AT A SMALL LIBERAL ARTS WOMEN'S COLLEGE**

by  
**James P. Liddicoat**

**An Abstract**

## ABSTRACT

Purpose. Old and still persistent is the question of why some students achieve well in school and some achieve poorly. Research findings related to the variables associated with academic achievement are conflicting and inconsistent. While it can be said that intelligence is a factor, it must be admitted that intelligence is not the only thing which affects a student's academic achievement. It is common knowledge that some students with lesser measured abilities do better work in school than other students with greater measured abilities.

This discrepancy between potential and achievement signifies a group of students known as underachievers. The purpose of this study was to identify some of the factors which differentiate under- and over-achieving women students at the college level. The results, hopefully, will be used to improve the prediction of academic achievement of students and to suggest needed counseling.

Specifically, this study investigated the relationship between academic achievement and a student's creative thinking ability, study habits and reading ability, achievement motivation, and personality traits. In addition, particular variables from the student's home and personal background were examined as possible factors affecting her academic achievement.

Procedure. A prediction equation was obtained by the regression technique using a student's rank in her high-school graduating class and her total score on the Scholastic Aptitude Test as the predictors and her first semester grade-point average (GPA) as the criterion. Comparison of the predicted GPA with the GPA obtained by the student at the end of the first semester was the basis for identifying the under- and overachievers in the freshman class at Cedar Crest College, Allentown, Pennsylvania, in the fall, 1970. In addition to the groups of under- and overachievers, a group of "normal" achievers was included for the purposes of comparing and contrasting the findings related to under- and overachievement.

To gather data on the possible variables associated with academic achievement the following tests and inventories were used: Remote Associates Test of Creativity, Brown-Holtzman Survey of Study Habits and Attitudes, Davis Reading Test, Herrenkohl's Achievement Motivation Survey, and the Bernreuter Personality Inventory. Additional data dealing with academic, biographical, and home factors were secured from the Office of the Registrar, Office of Admissions, and the background information section of Herrenkohl's Achievement Motivation Survey.

Performance on each of the tests and inventories was compared by the one-way design analysis of variance. Qualitative data which were not appropriate for analysis of variance were classified in con-

tingency tables and tested for significance by Chi-Square.

Findings. Results of the tests and inventories revealed no significant differences between the groups in Reading Speed, Study Habits and Attitudes, the personality traits of Self-sufficiency and Confidence in Oneself, and all but one of the Achievement Motivation factors.

Significant differences ( $P < .05$ ) were found in the results of the tests and inventories in Reading Comprehension, Creativity, the personality traits of Neurotic Tendency, Introversion-Extroversion, Dominance-Submission, and Sociability, and the Achievement Motivation factor of Threat of Failure. Assuming test validity, the typical underachiever can be described as being somewhat emotionally unstable, introverted, submissive, and non-social or independent. She is more creative, feels a higher threat of failure, and is lower in reading comprehension than her overachieving counterpart.

The  $X^2$  test showed significant differences ( $P < .05$ ) in the following variables: "who makes the decisions in the home," "type of secondary school attended," "desired level of education to be completed," and "expected first semester grades." More overachievers than underachievers reported that both parents made the important decisions in the home, while more underachievers than overachievers identified the father as the primary decision maker. More underachievers than overachievers desired to complete a lower level of education and more overachievers than underachievers reported they

had received a private school education.

The difference in "expected first semester grades" was highly significant. Students who were to become the eventual underachievers indicated early in the semester that they expected to receive relatively low grades for the courses they were enrolled in while the students who were to become the eventual overachievers indicated they expected to receive relatively high grades. This particular finding may be useful to educators as they continue to search for ways to improve prediction of academic success and to identify as early as possible those students who might not achieve in accord with their measured abilities.

## CHAPTER I

### THE PROBLEM

#### Introduction

One of the objectives of the National Defense Education Act of 1958 was to provide for every learner, from the day he first enters school, an opportunity to develop his capacities to the fullest. Recently in education much attention has been directed toward the learner who cannot, or who does not, achieve up to his capacity. According to some reports,<sup>1</sup> every second student in American classrooms is not performing up to his abilities. Educators are reminded often that this loss of talent affects the character and productivity of both the individual and the nation.

If a school makes no attempt to determine the factors accounting for that underachievement, the school may well be accused of being negligent when a learner is not progressing in accord with his potential. Teachers, administrators, and counselors would do well to know the nature and correlates of underachievement so that they could provide

---

<sup>1</sup>Helen Hill, "In Defense of the Underachiever," Education Digest, 34:45, November, 1958.

preventive or corrective services.

### Purpose of the Study

Because the underachiever seems ever present, many school personnel have come to believe that identifying such students should be the easiest part of dealing with them. The term "underachiever," however, is highly ambiguous. There are wide differences of opinion regarding the characteristics of underachievers. Two teachers quite often differ in their evaluation and classification of a student's ability.

Underachievement, as used in this study, is performance which falls below that which has been predicted for a student, while overachievement is performance which surpasses that which has been predicted for a student. Therefore, the problem of under- and overachievement is a prediction problem. Were prediction perfect, the concepts of "underachievement" and "overachievement" would be meaningless. Dulles<sup>2</sup> believes that the terms "overpredicted" and "underpredicted" would be better understood and as appropriate as the terms underachievement and overachievement, since achievement has been overpredicted for those students referred to as underachievers, and achievement has been underpredicted for those students referred to as overachievers.

---

<sup>2</sup>Robert J. Dulles, "The Myth of Underachievement," Journal of Educational Sociology, 35: 121-22, November, 1961.

The purpose of this study is to identify some of the factors which differentiate under- and overachieving women students at Cedar Crest College in Allentown, Pennsylvania, which may serve both to improve the prediction of academic achievement of students during their freshman year and to suggest needed counseling. While normal achievers are not the main concern of this study, they will be used for the purposes of comparing and contrasting the findings related to under- and overachievement.

Specifically, this study will investigate the following questions:

Do students who have been identified as underachievers differ in their creative thinking ability from those students who have been identified as overachievers?

Do students who have been identified as underachievers differ in their reading ability and their study habits from those students who have been identified as overachievers?

Do students who have been identified as underachievers differ in their achievement motivation from those students who have been identified as overachievers?

Do students who have been identified as underachievers differ in their personality traits from those students who have been identified as overachievers?

Do students who have been identified as underachievers differ from students who have been identified as overachievers with respect to the variables, type of secondary school attended, size of high-school graduating class, financial aid, advanced placement credit, expected grades for first semester, number of siblings, place in birth order, level of parents' education and occupation, who makes the decisions in the home, religious preference, frequency of church attendance, desired level of education to be completed by the student, and reason for enrolling at Cedar Crest College.

## Importance of the Study

That the freshman year is the most critical in a student's college career is well-documented. According to Iffert,<sup>3</sup> approximately half the withdrawals occur before the sophomore year. In his review of literature on college dropouts, Marsh<sup>4</sup> states that data from all sources point to the freshman year as the most crucial point of attrition. The first year in college for all too many students is a time when frustrations are numerous, when academic failure to any marked degree may be experienced for the first time, and when career ambitions may begin to be threatened. These factors play a substantial role in underachievement and perhaps even withdrawal from college. Included among the dropouts are not only students whose chances of success appear minimal at the time of admission but also many freshmen whose prospects appear bright based upon college board scores, high-school achievement, and recommendations.

An analysis of achievement of recent freshmen classes<sup>5</sup> revealed

---

<sup>3</sup>R. E. Iffert, Retention and Withdrawal of College Students, U. S. Office of Education, Washington, D.C., Bulletin #1, 1958.

<sup>4</sup>L. M. Marsh, "College Dropouts - A Review," Personnel and Guidance Journal, 44:475-81, October, 1966.

<sup>5</sup>Irene M. Bozak, "Summer Project for Underachieving Freshmen," Improving College and University Teaching, 17:208, Summer, 1969.

that an alarming number of freshmen with high-school rank at or above the 70th percentile earned less than a 2.00 grade-point average on the first semester's work. How to assist such underachieving freshmen and how to enhance their educational experience is a very real and important concern on most college campuses. Educators, whether or not they are guilty of promoting the state of underachievement in which so many students find themselves, are morally bound to attempt to solve this serious problem. Therefore, the present study is important in that any variable which would significantly distinguish and identify a group of underachieving students from a group of average or over-achieving students might contribute to the search for a solution to this problem and should be of value to all school personnel, particularly counselors in their attempts to help the underachiever deal with academic difficulties.

## CHAPTER II

### REVIEW OF RELATED RESEARCH

Old and still persistent is the question of why some students achieve well in school and some achieve poorly. It can be said with some assurance that intelligence is a factor in school achievement, but it must be admitted that intelligence is not the only factor. It is common knowledge that some students with lesser measured ability do better work in school than other students with greater measured ability.

Continually, educators are faced with this puzzling question: Why do many students with high aptitudes not attain scholastic records commensurate with their measured abilities? Wilson<sup>1</sup> uses "effort" as the answer. But, a question still remains. Why are some students willing to put forth much effort while other students are not?

In surveying the research related to the problem of under- and overachievement one becomes increasingly aware of the many variables which have been investigated in an attempt to find the correlates of academic success. This chapter will include categories of pertinent research findings concerning the aspects of under- and overachievement

---

<sup>1</sup>Milton Wilson, "Fables of a School Psychologist," California Association of School Psychologists and Psychometrists, 8:8, 1960. (Mimeographed.)

that are being investigated in the present study. For the sake of convenience, the studies will be reviewed in sections; however, there is considerable overlap between sections.

### Academic Achievement and Creativity

Many investigators have sought to describe creativity, and although these descriptions differ in a variety of ways, they are not totally unrelated. Rhodes<sup>2</sup> collected forty definitions in his attempt to identify the term "creativity." As he inspected the collection of definitions he found that they did intertwine and overlap.

The surge of interest in creativity apparently began when Guilford,<sup>3</sup> in 1950, said in his presidential address to the American Psychological Association that he found an appalling lack of research on creativity. Since that time substantial investigation of creativity has yielded results which have some significance for educators.

The work by Shaw and Black suggests that either underachievers are failing through nonconformity or that achievers are succeeding through conformity, or that some combination of the two situations is in operation. Since it is generally assumed that nonconformity and

---

<sup>2</sup>M. Rhodes, "An Analysis of Creativity," Phi Delta Kappan, 42:305-10, April, 1961.

<sup>3</sup>J. P. Guilford, "Creativity," American Psychologist, 5:444-54, September, 1950.

creativity are related, there remains the unanswered question as to whether or not underachievers constitute a reservoir of creative talent whose members are suffering primarily because they will not do routine things which society expects of them.<sup>4</sup>

According to Crutchfield, "Conformers have been found to possess such traits as anxiety, rigidity, low ego-strength, lack of spontaneity, intolerance to ambiguity, conventional attitudes, feelings of personal inferiority, dependence toward others, and orthodox values. These personality characteristics, typical of conformers, correlate negatively with creative thinking."<sup>5</sup>

Allen and Levine<sup>6</sup> examined the relationship between conformity and creative-thinking in a study which involved administering a creative-training program to a group of 76 subjects. This training material was designed to improve problem-solving skills, increase self-confidence, and strengthen positive attitudes toward problem-solving and creativity. The control group consisted of eighty-eight matched students who did

---

<sup>4</sup>M. C. Shaw and Doris M. Black, "The Reaction to Frustration of Bright High School Underachievers," California Journal of Educational Research, 11:120-24, 1960.

<sup>5</sup>R. S. Crutchfield, "Conformity and Character," American Psychologist, 10:629-36, October, 1955.

<sup>6</sup>Vernon L. Allen and John M. Levine, "Creativity and Conformity," Journal of Personality, 36:405-19, September, 1968.

not receive this creative-thinking training. They report that:

Evidence from the present study suggests that the relation between conformity and creativity is complex and perhaps mediated by unconsidered variables. We can conclude, however, that creativity does seem causally related to conformity. Further research will be required to explicate fully the psychological mechanisms linking creativity and conformity.<sup>7</sup>

It has been pointed out consistently that the highly creative person may not be well-rounded in all phases of his development. Some students seem to resist the pressures to become well-rounded because they feel that they can win and maintain respect in more acceptable ways than the commonly expected, and sanctioned, ways of society. These observations take on real significance when one looks at some of the common attributes of the highly creative child.<sup>8</sup> Owens concludes that:

The creative individual creates problems for himself by trying to be different. He may derive a large part of his adjustment problem from his psychological isolation and estrangement from his peers and teachers due to these differences, which are a part of his striving to be unique. Creatives often have conflicting values, or oppositions in their nature; and they have large quantities of tension as they strive for solutions to difficult problems. Projective tests often indicate that the creative individual does not fit the conventional norms. On the Rorschach there is a tendency toward unconventional responses, unreal percepts, and fanciful and imaginative treatments of the ink blots.<sup>9</sup>

---

<sup>7</sup>Ibid., p. 418.

<sup>8</sup>Richard E. Owens, "The Relationship of Creative Thinking Ability to Extreme Over and Underachievement," (unpublished Doctor's dissertation, Colorado State College, 1964), pp. 30-31.

<sup>9</sup>Ibid., pp. 31-32.

There have been a number of studies relating I.Q. to creativity in students. A number of these investigations have statistically partialled out the effect of measured intelligence upon the relationship between originality and other behavioral variables. According to Barron the picture that emerged, once the influencing effect of intelligence had been removed, was that:

Originality was correlated most notably with variables reflecting general level of energy; the ability to entertain diverse and apparently contradictory stimuli and impressions and to make a coherent interpretation of them; a strong preference for complexity and apparent imbalance in phenomena and a dislike of simple and obvious patterns; a disposition toward self-assertion, expression of aggressive and sexual impulses, and independence of judgment in the face of group pressure to reach a consensus.<sup>10</sup>

Holland tested a number of variables which are usually associated with academic and creative achievement and reported that:

- 1) Academic performance appears to be characterized by such traits as perseverance, self-control, good citizenship, rigidity, and influence of parental attitudes.
- 2) Creative performance may be the outcome of being original and of participating in creative hobbies with parental reinforcement.
- 3) Academic achievement is motivated by factors different from creative performance. School achievement seems to be a function of socialization and perseverance, whereas creative performance seems to be a function of conscious concern with high accomplishment, independence, and originality.

---

<sup>10</sup>Frank Barron, "Creativity: What Research Has to Say About It," NEA Journal, 50:17-19, March, 1961.

- 4) Parents of creative children appear to be more permissive and receptive of their children's ideas.
- 5) Scholastic achievement and aptitude are generally unrelated to creative performance.<sup>11</sup>

Conclusions drawn by Gilbert<sup>12</sup> based on her research which compared creative and noncreative students are that:

- 1) Creative students performed much better on critical thinking tests than did less creative students.
- 2) Creative students performed better on standardized tests, but not on teacher-made tests.
- 3) When creative and noncreative students were found to be qualified for the honors program, the creative students were not assigned to honors classes as often as the less creative students.<sup>13</sup>

Flescher states "the discovery that creativity is an important determinant of academic achievement, although there is a relatively low correlation between creativity and intelligence, appears destined to have far-reaching educational implications."<sup>14</sup>

---

<sup>11</sup>John L. Holland, "Creative and Academic Performance Among Talented Adolescents," Journal of Educational Psychology, 52:136-47, March, 1961.

<sup>12</sup>Jane M. Gilbert, "Creativity, Critical Thinking, and Performance in Social Studies," Dissertation Abstracts, 22:1906, December, 1961.

<sup>13</sup>Ibid., p. 1906.

<sup>14</sup>Irwin Flescher, "Anxiety and Achievement of Intellectually Gifted and Creatively Gifted Children," Explorations in Creativity, ed. Ross Mooney and Taher Razik (New York: Harper and Row Publishers, 1967), p. 149.

## Academic Achievement and Study Habits and Reading Ability

The belief that study habits are related to academic success is attested by the facts that counselors spend hours with students discussing their study habits, various books and guides have been written on how to study, and some colleges offer courses in effective study techniques.

The majority of the studies which have investigated the relationship between study habits and academic achievement have shown positive results: Brown,<sup>15</sup> Diener,<sup>16</sup> Holtzman, Brown, and Farquhar,<sup>17</sup> Kim,<sup>18</sup>

---

<sup>15</sup>F. G. Brown, "Study Habits and Attitudes, College Experience, and College Success," Personnel and Guidance Journal, 43:287-91, November, 1964.

<sup>16</sup>Charles L. Diener, "Similarities and Differences Between Overachieving and Underachieving Students," Personnel and Guidance Journal, 38:396-400, January, 1960.

<sup>17</sup>W. H. Holtzman, W. F. Brown, and W. G. Farquhar, "The Survey of Study Habits and Attitudes: A New Instrument for the Prediction of Academic Success," Educational and Psychological Measurement, 14:726-32, 1954.

<sup>18</sup>Ki-Suk Kim, "The Use of Certain Measurements of Academic Aptitude, Study Habits, Motivation, and Personality in the Prediction of Academic Achievement," Dissertation Abstracts, 18:150, 1958.

Pauk,<sup>19</sup> Popham and Moore,<sup>20</sup> Prouty,<sup>21</sup> Sie,<sup>22</sup> and Voss.<sup>23</sup>

Of the seventy-one freshmen studied at the University of Pennsylvania Reading Clinic, twenty-eight indicated that concentration was the most pressing problem they faced in the academic realm in college. Schneyer<sup>24</sup> suggested that this lack of concentration may result from anxiety and tension, poor study skills, or a slow reading rate.

---

<sup>19</sup>W. J. Pauk, "An Analysis of Certain Characteristics of Above-Average and Below-Average Male and Female Readers at the Ninth-Grade Level," Dissertation Abstracts, 16:285, 1956.

<sup>20</sup>W. J. Popham and Mary R. Moore, "A Validity Check on the Brown-Holtzman Survey of Study Habits and the Borrow College Inventory of Academic Adjustment," Personnel and Guidance Journal, 38:552-54, March, 1960.

<sup>21</sup>Helen L. Prouty, "Personality Factors Related to Over- and Underachievement of College Students" (unpublished Doctor's dissertation, University of California, Berkely, 1951).

<sup>22</sup>Georgianna Sie, "The Relationship of Two Experimental Measures of Student Motivation to Academic Success in College," Dissertation Abstracts, 15:1556-57, 1955.

<sup>23</sup>Charlotte Voss, "Variables Associated with Overachievement and Underachievement at the School of Nursing, Hospital of the University of Pennsylvania" (unpublished Doctor's dissertation, University of Pennsylvania, Philadelphia, 1956).

<sup>24</sup>J. Wesley Schneyer, "Problems of Concentration Among College Students," Reading Teacher, 15:34-37, September, 1961.

Haggard<sup>25</sup> reported that the three principal academic worries expressed by students at Sarah Lawrence College dealt with concentration, depression, and anxiety about their families.

Ahman and Glock<sup>26</sup> found study habits as well as reading comprehension and speed significantly correlated with a student's GPA. Wrenn and Humber<sup>27</sup> found eleven items (including budgeting study time, working under pressure and reading slowly) on the Wrenn Study Habits Inventory which differentiated high and low scholarship in women.

Lum studied female students who were over- and underachieving at the University of Hawaii. To identify these groups she used the correlation between the total score on the ACE Psychological Exam and the freshman grade-point average for all female sophomores. Those students whose obtained grade-point average fell below their predicted averages by at least one-half standard error of estimate were classified as underachievers. Those students who earned

---

<sup>25</sup>J. Haggard in Lois B. Murphy and Esther Raushenbush (ed.), Achievement in the College Years (New York: Harper & Brothers, 1960), pp. 116-30.

<sup>26</sup>J. Stanley Ahman and Marvin D. Glock, "The Utility of Study Habits and Attitude Inventories in a College Reading Program," Journal of Educational Research, 51:297-303, December, 1957.

<sup>27</sup>C. Gilbert Wrenn and Wilbur J. Humber, "Study Habits Associated with High and Low Scholarship," The Journal of Educational Psychology, 32:611-16, September, 1941.

grade-point averages at least one-half standard error above what had been predicted were classified as overachievers. She used an experimental form of the Brown-Holtzman Survey of Study Habits and Attitudes plus items from the Dale Vocational Sentence Completion Blank. There were significant differences between the over- and underachiever on four subscales of the Brown-Holtzman Survey: Achievement Drive, Procrastination Orientation, Self-Confidence, and Educational Philosophy. When completing the sentence items, there was a trend among the overachievers to give more specific statements regarding the value of an education and for personal success. She concluded that:

Overachievers have a stronger motivation for studying, tend to be more self-confident, and appear to have a greater capacity for working under pressure than underachievers. The latter students show a marked tendency to procrastinate and tend to rely on external pressure to complete assignments.<sup>28</sup>

In a study completed in 1964 at the University of Pennsylvania, Brown<sup>29</sup> found these variables to differentiate over- and underachieving freshmen women: College Entrance Examination Board English

---

<sup>28</sup>Mabel K. M. Lum, "A Psychometric Comparison of Under- and Overachieving Female College Students" (unpublished Master's thesis, University of Hawaii, 1957).

<sup>29</sup>Sara M. Brown, "Variables Associated With Over- and Underachievement" (unpublished Doctor's dissertation, University of Pennsylvania, Philadelphia, 1964).

Achievement Test, vocabulary subscore of the reading portion of the same test, the Preston-Botel Study Habits Checklist, and high-school teachers' ratings of motivation. She reports "the mean of these variables were significantly higher ( $P < .05$ ) for the overachieving group." While not significant at the .05 level, she found differences in reading comprehension and in teachers' ratings of the student's influence, leadership, industry, responsibility, initiative, and concern for others, and the pre-admission interview in favor of the achieving group.

A similar study by Voss,<sup>30</sup> also done at the University of Pennsylvania, used a sample of 243 girls enrolled in the School of Nursing. For her study, Voss designed a fifteen item questionnaire which dealt with the study habits of the students included. Voss found that four study habits differentiated the over- and normal achiever from the underachiever. The over- and normal achievers tended to revise their notes, to associate new material with previous knowledge, to take adequate notes, and to discuss scholastic difficulties with the instructors.

Woodman<sup>31</sup> constructed his own instrument in order to identify the determinants of academic success in college. Selecting one hundred over- and one hundred underachievers from a group of 1500 women

---

<sup>30</sup>Voss, op. cit., pp. 57-59.

<sup>31</sup>Everett M. Woodman, "The Construction of a Measurement of Certain Non-Intellectual Determinants of Academic Success in College" (unpublished Doctor's dissertation, Boston University, Boston, 1949), pp. 136-39.

students enrolled in nine New England colleges, he found that the over-achievers placed more value upon a college education and tended to study more than did the underachiever.

Lin and McKeachie tested the hypothesis that significant differences in academic performance between extreme anxiety groups were due to differences in ability. Their findings confirmed this notion, but for both the male and female samples they found that "student study habits make a substantial contribution to achievement independent of ability. Students with good study habits achieve significantly higher grades than comparable poor study habits groups."<sup>32</sup>

Brown sought information on the effect of college experience on study habits. He reports that the results are "somewhat surprising." Study habits and attitudes of the freshmen in his study became consistently worse rather than better. Interviews with a number of the students indicated that the decrease might be attributed to:

- 1) The fact that they are reacting to high-school experiences on the pre-test and college experiences on the post test;
- 2) Roommates often had a deleterious influence on study habits but rarely had a positive effect;
- 3) Being independent and not having parents and teachers continually checking on them led to a relaxing of study methods;

---

<sup>32</sup>Yi-Guang Lin and Wilbert McKeachie, "Aptitude, Anxiety, Study Habits and Academic Achievement," Journal of Counseling Psychology, 17:306-09, 1970.

- 4) Teachers, especially graduate assistants and young instructors, did not have the personal interest or good teaching methods that high-school teachers had;
- 5) The sheer volume of work required.<sup>33</sup>

One of the conclusions in a report by Entwistle<sup>34</sup> is that "there would seem to be a very strong case for universities and colleges attempting to identify, at an early stage, those students whose study habits are ineffective."

While it is generally agreed that a student's reading ability and his academic success are related, and "although many university counseling centers are responsible for the development and administration of reading and learning skills programs, there is little published research dealing with college-level reading instruction."<sup>35</sup>

Studies referred to in other sections of this chapter (Barrett,<sup>36</sup> Prouty,<sup>37</sup>, Myers,<sup>38</sup>) have shown a positive relationship between a student's reading ability and her academic achievement while studies

---

<sup>33</sup>F. G. Brown, op. cit., p. 90.

<sup>34</sup>N. J. Entwistle and J. D. Wilson, "Personality, Study Methods, and Academic Performance," University Quarterly, 24:147-56, Spring, 1970.

<sup>35</sup>R. P. Whitehall and J. A. Jipson, "Differential Reading Program Performance of Extroverts and Introverts," Journal of Experimental Education, 38:93-6, Spring, 1970.

<sup>36</sup>Barrett, supra, p. 31.

<sup>37</sup>Prouty, supra, p. 21.

<sup>38</sup>Myers, supra, p. 37.

by Bledsoe,<sup>39</sup> Liddle,<sup>40</sup> and the State Departments of Education in Arkansas and Maryland, as cited by Bower (et al.,)<sup>41</sup> list reading difficulties as the primary cause of dropping out of school.

Jackson<sup>42</sup> found the Michigan State College Reading Test to be the best predictor of the first-semester GPA for both men and women students ( $r = .50$  and  $r = .64$ , respectively), followed by the Test of English Usage and the ACE Psychological Exam. Although Robertson and Harrison obtained the following correlations for sub-scores on the Diagnostic Reading Test and GPA: vocabulary .46, comprehension .28, rate .28, vocabulary and comprehension .43, they concluded that the test should not be used for prediction "because the standard error of estimate for each is approximately one letter grade."<sup>43</sup> Williams

---

<sup>39</sup> Joseph C. Bledsoe, "An Investigation of Six Correlates of Student - Withdrawal from High School, " Journal of Educational Research, 53:3-6, September, 1959.

<sup>40</sup> Gordon P. Liddle, "Psychological Factors Involved in Dropping Out of School, " The High School Journal, 45: 276-80, April, 1962.

<sup>41</sup> W. Scott Bower, Joe L. Boyer, and Elinor A. Scheirer, "Research Related to Academic Achievement Motivation, " Theory into Practice, 9:33-46, February, 1970.

<sup>42</sup> Robert A. Jackson, "Prediction of the Academic Success of College Freshmen, " Journal of Educational Psychology, 46:296-301, May, 1955.

<sup>43</sup> Malcolm H. Robertson and Mildred M. Harrison, "Reading Skill as a Predictor of College Achievement, " Journal of Educational Research, 53: 258-62, March, 1960.

found that the CEEB English and Cooperative Reading Test scores differentiated those students obtaining a GPA of 2.3 or above from the other students in his study.<sup>44</sup>

Tiebout, medical doctor at Sarah Lawrence College,<sup>45</sup> listed these as distinguishable characteristics of the "misnamed lazy student" or underachiever: need of strong motivation to study, optimism, need for fun, and poor learning techniques in reading and organizing of material.

#### Academic Achievement and Academic Motivation

Although it is known that there are some common attitudes and behaviors which characterize underachievement, its causes are both varied and complex. At the college level, when a matrix of correlation coefficients composed of College Entrance Examination Board scores, Personal Values Inventory scores (PVI), and performance indices (high-school) record was analyzed, two factors as reported by Finger and Schlessner,<sup>46</sup> that have significant influence on scholastic achieve-

---

<sup>44</sup>Frank B. Williams, "Short-Term Counseling with Certain Freshmen Students at the University of Pennsylvania" (unpublished Doctor's dissertation, University of Pennsylvania, Philadelphia, 1962), pp. 33-42.

<sup>45</sup>Harry M. Tiebout, "The Misnamed Lazy Student," The Educational Record, 24:113-29, April, 1943.

<sup>46</sup>John A. Finger and George E. Schlessner, "Non-Intellectual Predictors of Academic Success in School and College," School Review, 73:14-29, Spring, 1965.

ment were produced. One of these factors was intelligence and the other "achievement motivation." Broadly defined, academic motivation is a "combination of forces which initiate, direct, and sustain behavior toward a scholarly goal."<sup>47</sup> McClelland's extensive research in this field has led him to conclude that a person's ideas about what he will achieve may be quite different from what he actually does produce.<sup>48</sup>

Grande, Simons, and Pallone used the PVI as an instrument for measuring academic motivation at the college level. They report that "the data permit the conclusion that certain variables related to academic motivation vary with the student's perception of the college experience."<sup>49</sup> The perceptions of the college experience employed in their study were based upon the work of Clark and Trow who cite the existence of four college-student subcultures: Academic, a culture which assigns greatest importance to scholarly pursuit of knowledge; Vocational, a culture emphasizing education essentially as preparation for a career; Collegiate, a culture which does not exclude academic activities but emphasizes the extracurricular side of college life; and Non-conformist, a culture which implies a conscious rejection of commonly held value orientations.

---

<sup>47</sup>William Farquhar, *Motivational Factors Related to Academic Achievement*, Cooperative Research Project #846 (East Lansing: College of Education, Michigan State University, 1963).

<sup>48</sup>David McClelland et al., The Achievement Motive (New York: Appleton-Century-Crofts, 1953), p. 327.

<sup>49</sup>P. Grande, Joseph Simons, and Nathaniel J. Pallone, "The Perception of the College Experience and Academic Motivation," Journal of Educational Research, 61:65-67, October, 1967.

Specifically, Grande (et al.,) found these relationships among the student subcultures in their study:

- 1) Academics are higher, collegiates lower, and vocational about even in terms of directions and aspirations.
- 2) Academics are higher while collegiates and vocationals are lower in terms of peer group influence.
- 3) The influence of the home as it relates to academic achievement is more positive as reported by academics than by collegiates.
- 4) Academics report more self-control and deliberateness than collegiates.
- 5) Academics report more persistence than collegiates.<sup>50</sup>

In conclusion they state that:

The practical application suggested here is that admissions officers have a convenient method of assessing student perception of the college experience and, perhaps, can use this data to facilitate either the maintenance of alteration of the student body consistent with the philosophies of the institution. The counselor can utilize these data in his efforts to assist the client in his search for and assignment of meaning to the college experience. It would appear that the assessment of perception of the college experience can be utilized to increase the likelihood that students who have academic motivation, at least the input stage, will be selected.<sup>51</sup>

Other studies have been conducted which relate need for achievement as measured by the Thematic Apperception Test (TAT) to various indices of achievement oriented behavior. It has been found that individuals scoring high in need for achievement learn faster and perform with greater intensity than individuals scoring low in need for achieve-

---

<sup>50</sup>Ibid., p. 66.

<sup>51</sup>Ibid., p. 67.

ment. In addition, high achievement-oriented individuals have been reported to have higher grade-point averages, lower perceptual thresholds for success related words, and better remembrance of incom-  
pleted or failed tasks than subjects low in achievement motivation.<sup>52</sup>  
According to Atkinson,<sup>53</sup> persons scoring high in need for achieve-  
ment-related goals tend to engage in activities which lead to these goals.  
These individuals have a greater ability to delay gratification; they are  
better able to forego a smaller immediate reward to obtain a larger  
reward at a later time. This trait is not exhibited as frequently by  
subjects low in need for achievement.

Uhlinger and Stephens<sup>54</sup> investigated the relationship between  
academic achievement and achievement motivation in freshmen stu-  
dents of superior ability. In addition, they hoped to assess the pre-  
dictive validity of achievement motivation. The Edwards Personal  
Preference Scale, the Goal Preference Inventory, an incomplete  
sentence blank, and three types of student grade-average estimates

---

<sup>52</sup>Bernard Weiner, "The Experimental Study of Achievement  
Motivation," National Association of Secondary School Principal's  
Bulletin, 51:51-68, December, 1967.

<sup>53</sup>J. W. Atkinson, "Motivational Determinants of Risk-Taking  
Behavior," Psychological Review, 64: 359-72, 1957.

<sup>54</sup>Carolyn A. Uhlinger and M. A. Stephens, "Relation of Achieve-  
ment Motivation to Academic Achievement in Students of Superior  
Ability," Journal of Educational Psychology, 51:259-66, October, 1960.

were administered to seventy-two honorary scholarship students. The hypothesis that high achievers evidence greater need for achievement than do low achievers was supported by only one of the four measures. High achievers showed greater need for love and affection than did low achievers. Generally, high achievers had a greater expectancy for academic success and higher minimal grade goals than did low achievers. The investigators concluded that important inadequacies may exist in both the concept and/ or measurement of achievement need. A similar conclusion was reached by Krumboltz. He reviewed studies dealing with measurement of achievement motivation by ratings, inventories, and projective techniques, and stated that "a review of the literature has uncovered many attempts but few successes in finding such a measure. Krumboltz concluded that at the present time, there is no single instrument that a counselor can use with any confidence that he is measuring achievement motivation."<sup>55</sup>

Hall<sup>56</sup> sought to determine whether or not there were identifiable

---

<sup>55</sup> John D. Krumboltz, "Measuring Achievement Motivation - A Review," Journal of Counseling Psychology, 4:196, Fall, 1957.

<sup>56</sup> L. H. Hall, "Selective Variables in the Academic Achievement of Junior-College Students from Different Socioeconomic Backgrounds," Journal of Educational Research, 63:60-62, October, 1969.

variables which would distinguish between academically achieving and nonachieving junior-college freshmen from different economic backgrounds. A two-way analysis of variance was employed to test for significant differences. Results of the McClelland Test of n-Achievement did not lend support to the hypothesis that junior-college students from lower socioeconomic backgrounds experience less academic success because they lack the desire to achieve. The ISA-School Related Experiences and Aspirations Scale, which is also assumed to gauge motivation, further substantiates this conclusion.

Attitude toward academics would appear to be a major factor in a student's career. Finger and Schlessner see an overachiever primarily as someone who has a studious attitude and an underachiever as someone who verbalizes his inadequacies or lowers his aspirations. They have categorized the following characteristic attitudes or behaviors frequently employed by low-achieving students:

- 1) External Forces, Self Not At Fault
- 2) Poor Performance Acknowledged, Changed Behavior Unnecessary
- 3) Expectations Adjusted To Conform To Performance
- 4) Self-Viewed So That High Performance Not Necessary<sup>57</sup>

---

<sup>57</sup>Finger and Schlessner, op. cit., p. 26-27.

While there are numerous ways in which students can and do adjust their behavior, attitude, or goals in order to compensate for their unsatisfactory academic achievement, dropping out is probably the most serious manifestation of lack of school motivation. When a student has reached the point of dropping out, his accumulation of negative experiences is probably so great that only massive effort could reverse the outcome. These negative experiences may, in some cases, have little to do with dislike of school work. In general, however, the school experience is a major factor in negative motivation leading to dropping out, along with socioeconomic and personality factors in various combinations.

In a four-year longitudinal study of 127,000 college students in 248 institutions, Panos and Astin<sup>58</sup> found a dropout rate of 35 percent. Primary reasons for this were listed as poor high-school record, low socioeconomic background, and poor academic planning, perhaps reflecting a lack of adequate guidance. The Arkansas Department of Education report, 1962, suggests that the most common reasons for quitting school can be listed under the heading, "lack of motivation."

---

<sup>58</sup>Robert J. Panos and Alexander W. Astin, "Attrition Among College Students," American Educational Research Journal, 5:57-72, January, 1968.

## Academic Achievement and Personality Traits

There seems to be some agreement from study to study concerning the personality characteristics of under- and overachieving students. Studies of underachieving students have often noted the characteristic of negativism toward school.<sup>59</sup> According to a report by Gowan,<sup>60</sup> underachievers are higher on a scale for delinquency and lower in social responsibility and academic motivation. Furthermore, underachievers have been found to show psychotic or neurotic tendencies, to lack dominance or self-confidence and enthusiasm.<sup>61</sup> Quite often underachievers are low in ability to function under pressure, concern for others, responsibility, and self-confidence.<sup>62</sup>

A corroboration of some of these findings may be found in a study by McKenzie.<sup>63</sup> The subjects he used were college students at

---

<sup>59</sup>H. G. Barrett, "Underachievement, A Pressing Problem," Bulletin of the Ontario Secondary School and Teachers' Federation, 36:111-12, 151-52, May, 1956.

<sup>60</sup>J. C. Gowan, "Dynamics of Underachievement of Gifted Children," Exceptional Children, 24:98-101, November, 1957.

<sup>61</sup>Ibid.

<sup>62</sup>C. Burleigh Wellington and Jean Wellington, The Underachiever: Challenges and Guidelines (Chicago: Rand, McNally and Company, 1963), p. 23.

<sup>63</sup>James D. McKenzie, Jr., "The Dynamics of Deviant Behavior," Personnel and Guidance Journal, 42:683-86, March, 1964.

the University of Buffalo. They had all taken the Minnesota Multiphasic Personality Inventory (MMPI) before beginning college. Normal-, under, and overachievers were all compared on the clinical and validity scales of the test. Both deviant groups were found to be more anxious than the normal achievers. The results of his study also characterized the underachievers as being more impulsive, dependent, and hostile. The MMPI was also used by Altus<sup>64</sup> to study a group of psychology students. Test results showed that underachievers exhibit more immaturity, fearlessness, self-assertiveness, and manic tendencies than do achieving students.

A group of forty over- and forty underachieving women students from the University of California were selected by Prouty<sup>65</sup> from each of three ability groupings - high, middle, and low - according to the ACE Psychological Examination. In order to determine personality factors related to over- and underachievement, the Minnesota Multiphasic Personality Inventory (MMPI) was administered to each student in the group. These variables were found to differentiate the over-achiever significantly from the underachiever: freedom from worries,

---

<sup>64</sup>W. D. Altus, "A College Achiever and Nonachiever Scale for the Minnesota Multiphasic Personality Inventory," Journal of Applied Psychology, 32:385-97, August, 1948.

<sup>65</sup>Prouty, op. cit., pp. 150-59.

over-evaluation of self, lack of social conformity, religious skepticism, acceptance of others, indifference to social responsibility, initiative, perseverance, and self-control.

Studying the problem of non-achieving students at the University of California, Clark<sup>66</sup> assigned freshmen women students to the achieving or non-achieving group according to differences in scores on the ACE Psychological Examination and the freshmen honor-point ratios. He then compared the profiles of the achievers and the non-achievers on the MMPI and concluded that "for practical purposes, there were no profile differences to identify achievers as opposed to non-achievers."

During part of the orientation program at the University of San Francisco all freshmen were given the MMPI. Vaughan<sup>67</sup> used these results to examine personality differences of under- and overachieving students when ability is held constant. The subjects were two matched groups of college freshmen, achievers and nonachievers. At the completion of the first year of school, the achievers had GPA's ranging

---

<sup>66</sup>J. H. Clark, "Grade Achievement of Female College Students in Relation to Non-Intellective Factors: MMPI Items," The Journal of Social Psychology, 37:275-81, May, 1953.

<sup>67</sup>Richard P. Vaughan, "Academic Achievement, Ability, and the MMPI Scales," Personnel and Guidance Journal, 45:156-59, October, 1967.

from 2.75 to 4.00 and the nonachievers had GPA's that ranged from .10 to 2.20. In each group there were 115 students who had been matched on the basis of SAT verbal scores. With respect to personality traits, he concluded that the college nonachiever usually differs from the achiever in extraversion, failure to learn from experience, and a disregard for social responsibility.

The MMPI along with the Strong Vocational Interest Blank and the TAT were used by Morgan to study a sample of 132 sophomores at the University of Minnesota. To distinguish the achieving from the nonachieving students he used an honor-point ratio above or below the average ratio for the class. He found that "academic achievement tends to be related to maturity, concern for others, responsibility, self-confidence, and motivation to achieve."<sup>68</sup>

Burgess<sup>69</sup> administered a battery of projective and standardized personality and interest inventories which included the MMPI, the Strong Vocational Interest Inventory, the TAT, the Rorschach, the Bernreuter Personality Inventory, and the College Inventory of Academic

---

<sup>68</sup>Henry Morgan, "A Psychometric Comparison of Achieving and Nonachieving College Students of High Ability," Journal of Consulting Psychology, 16:292-98, August, 1952.

<sup>69</sup>Elva Burgess, "Personality Factors of Over- and Underachievers in Engineering," Journal of Educational Psychology, 47:89-99, February, 1956.

Adjustment to all freshmen engineering students. Her sample included twenty under- and twenty overachievers whose first semester GPA's deviated below and above that which had been predicted by their high-school rank and scores on the Moore-Castor Test of Academic Aptitude. The underachiever, she found, as compared to the overachiever, was less reserved, less emotionally inhibited, less intellectually adaptive, not as highly motivated for college, not as aggressive, and not as well able to budget time.

Rust and Ryan,<sup>70</sup> by using the Strong Vocational Interest Blank, the group Rorschach, and a questionnaire eliciting information about family situations from college samples of high, under-, and over-achievers (equated for general predicted grade score but different in academic performance) obtained support for their hypothesis that a relationship exists between positive deviation from the general predicted grade score and superego strength, i. e., the degree to which certain moral and social values are accepted, may be the factor responsible for persistence favorable to making good grades.

Several studies of personality characteristics related to academic achievement were based upon the Edwards Personal Preference Schedule

---

<sup>70</sup>R. M. Rust and F. J. Ryan, "The Strong Vocational Blank and College Achievement," Journal of Applied Psychology, 38:341-45, October, 1954.

(EPPS). Merrill and Murphy<sup>71</sup> studied a group of college students for whom a GPA of 1.50 had been predicted by their high-school grades and achievement test scores. From this group, students who received a GPA of 2.00 or more for the first semester were classed as over-achieving, and those who received a GPA of 1.00 or below were classed as underachieving. They found the overachieving group to be more ambitious and conforming, less exhibitionistic than the gregarious, outgoing low achiever. Lang, Sferra, and Seymour<sup>72</sup> found that academic achievement of female college students was positively related to Achievement and Dominance, but negatively related to Nurturance on the EPPS. Gebhardt and Hoyt, who studied the relationship of the EPPS scores to over- and underachievement in college freshmen at Kansas State College, found that the overachievers in their sample showed greater drive to complete (Achievement) and to organize and plan (Order), and greater intellectual curiosity (Intracception), while underachievers showed greater need for variety (Change), and higher

---

<sup>71</sup>Reed M. Merrill and Daniel T. Murphy, "Personality Factors and Academic Achievement in College," Journal of Counseling Psychology, 6:207-10, Fall, 1959.

<sup>72</sup>Gerhard Lang, Amedeo G. Sferra, and Marjorie Seymour, "Psychological Needs of College Freshmen and Their Academic Achievement," Personnel and Guidance Journal, 41:359-60, December, 1962.

social motivation (Affiliation).<sup>73</sup>

The so-called "stereotype" of the overachiever was studied through the questionnaire technique by Myers<sup>74</sup> at an Eastern women's liberal arts college. He states, "An academic overachiever may be defined as a student whose grades or marks exceed those of other students having the same ability or aptitude." He used the SAT and the freshman year grade-point average above or below the line of regression of grade-point average on aptitude scores. The extreme cases above and below the line constituted the overachievers and underachievers, respectively. In this manner he identified thirty-seven overachievers and thirty-seven underachievers from a total group of 355. An attitude-interest questionnaire was administered to freshmen after admission to college to find whether there were any differences in responses which would later characterize overachievers or underachievers. Forty-five of the 148 items on the attitude-interest questionnaire were found, through the chi-square technique, to discriminate between the two groups. The "stereotype" of the overachiever was found to be high ambitions, serious friends, consistent study

---

<sup>73</sup> Gary Gebhardt and Donald P. Hoyt, "Personality Needs of Under- and Overachieving Freshmen," Journal of Applied Psychology, 29:125-28, April, 1958.

<sup>74</sup> R. C. Myers, "Academic Overachiever: Stereotyped Aspects," Journal of Experimental Education, 18:229-38, March, 1950.

habits, and concern for world issues.

Voss, in analyzing her data, describes the overachiever as a "dominating, extroverted, emotionally stable, and rather self-sufficient person" and the underachiever as a "submissive, emotionally unstable, introverted, and rather dependent person."<sup>75</sup>

The findings of several recent studies have been summarized by Gowan who reports that the following personality factors are related to underachievement of bright students:

- 1) Lack of clearness and definiteness of academic and occupational choice.
- 2) Weak ego.
- 3) Withdrawal and lack of self-sufficiency.
- 4) Neurotic tendencies.
- 5) Immaturity and irresponsibility.
- 6) Disinterest in other people.
- 7) Lack of dominance, persuasiveness, and self-confidence.
- 8) Apathetic and withdrawing view of life.<sup>76</sup>

#### Academic Achievement and Biographical and Home Factors

The search for a more accurate explanation of underachievement has led to an examination of the educational and occupational status of

---

<sup>75</sup>Voss, op. cit., p. 58.

<sup>76</sup>Gowan, op. cit., p. 101

the families of achievers and underachievers, an appraisal of interpersonal relationships within the family, and an analysis of family attitudes regarding child-rearing practices. More recently, the focus has shifted to more subtle dimensions of family life as extent of parental dominance, power balance within the family, ethnic values, and early training in independence. The expected and rather obvious circumstances, namely that students with a record of successful academic achievement tend to come from the higher educational and socio-economic backgrounds and from homes in which there has been emphasis on cultural pursuits, have been largely, but not completely, substantiated.<sup>77</sup>

Family factors are reflected in a study by McGillivary<sup>78</sup> who found that, among other things, overachievers had more dominant mothers and parents with more college ambition for their children. Shore and Leiman<sup>79</sup> report similar findings in regard to parental

---

<sup>77</sup>Jane B. Raph, Miriam Goldberg, and A. Harry Passow, Bright Underachievers (New York: Teachers College Press, Columbia University, 1966), p. 47.

<sup>78</sup>Robert H. McGillivary, "Differences in Home Background Between High Achieving and Low Achieving Gifted Students," Ontario Journal of Educational Research, Spring, 1964, pp. 2-10.

<sup>79</sup>Milton F. Shore and Alan H. Leiman, "Parental Perceptions of the Student as Related to Academic Achievement in Junior College," Journal of Experimental Education, 33:391-94, Summer, 1965.

valuing of education and status for their children, and add that parents of underachievers tend to see their children's assets and liabilities in terms of personality traits and social ability rather than academic achievement.

Family relationships and underachievement were studied using college freshmen on academic probation who were matched with students of similar aptitude who were not on probation. All were interviewed and completed questionnaires and self-report measures. Based upon these data, two significant findings emerged concerning the relationships of students with their parents. First, the probation students had higher scores ( $P < .05$ ) than the matched students on the item "Extent to which you would prefer to confide in your parents rather than in your fellow students." Second, probation students indicated more often ( $P < .02$ ) that they regard their fathers as "very strict" disciplinarians rather than "moderately strict" or "not at all strict."<sup>80</sup>

The interview was used by Kurtz and Swenson as a means of gathering information on "minus achievers" and "plus achievers" who were identified through scores on intelligence and achievement tests. Interviews were conducted with the students, their parents, and their

---

<sup>80</sup>Charles P. Smith and Miriam T. Winterbottom, "Personality Characteristics of College Students on Academic Probation." Journal of Personality, 38:379-91, September, 1970.

teachers and reports of these sessions show that:

- 1) Plus achievers appear to have a greater desire for an extended education and have more definite plans for attaining it.
- 2) Plus achievers may have less conflict in their lives.
- 3) Plus achievers generally present a good appearance and exhibit leadership qualities and self-confidence. In contrast, minus achievers appear comparatively restless and unhappy. There is a tendency for minus achievers to lack confidence in themselves and in their appearance and sexual adjustment.
- 4) In general, the home conditions of the plus achievers appear to be favorable. The home atmosphere is pleasant. Parents show interest, affection, and pride in their children. Children respond by being happy, respectful, and eager to please their parents.

On the other hand, the home conditions of the minus achievers more often appear to be unfavorable. The home atmosphere is not always pleasant, and there does not seem to be as much exchange of affection. Their parents do not seem to expect much of them.<sup>81</sup>

Similar findings were reported by Flaughner and Rock who studied over- and underachieving students at a large southwestern university utilizing the multiple moderator technique which has been developed principally by Rock. "This technique requires that the investigator hypothesize a number of variables, up to five, that may, either singly or in combination, have a moderating influence on the relationship

---

<sup>81</sup> John J. Kurtz and Esther J. Swenson, "Factors Related to Overachievement and Underachievement," The School Review, 59:472-80, November, 1951.

between a criterion and one or more predictor variables.<sup>82</sup> The predictors were high-school rank and the Verbal and Math scores from SAT; the criterion was the first-year grade-point average. The moderators were: (a) a measure of the student's educational plans, (b) father's education, (c) size of the home town of the student, (d) an outside activity scale, (e) a measure of the amount and breadth of high quality reading. Results show that overachievers were characterized as having average aptitude, yet coming from homes where the father was highly educated; the underachievers were observed as having small town origins and a high interest in social activities.

Garrett,<sup>83</sup> in a review of factors related to college success, points out that size of high school from which students graduated had no effect on their college grades, even though some studies showed a slight tendency for students from smaller schools to receive somewhat lower grades.

---

<sup>82</sup>Ronald L. Flaughner and Donald A. Rock, "A Multiple Moderator Approach to the Identification of Over- and Underachievers," Journal of Education Measurement, 6:223-28, Winter, 1969.

<sup>83</sup>Harley F. Garrett, "A Review and Interpretation of Investigations of Factors Related to Scholastic Success in Colleges of Arts and Sciences and Teachers Colleges," Journal of Experimental Education, 17:91-138, December, 1949.

McQuary<sup>84</sup> studied twenty-seven overachievers and fifty under-achievers at the University of Wisconsin. Respectively, they were students whose first semester GPA deviated one-half sigma above or below the GPA predicted from their ACE profiles. By examining records at the Counseling Center, he found that with respect to high-school record, reason for attending college, vocational choice, and family status, the underachiever tended to have a less fortunate background than the overachiever. A significant difference between the two groups was found in the parents' level of education and occupation, number of parents not born in this country, and the necessity of the student to be financially self-supporting. The author noted that the underachievers reported that they tend to go to college because friends were going or because of the prestige and social benefits associated with college. In corroborating the findings of Dowd,<sup>85</sup> McQuary found the underachiever quite uncertain about a chosen profession. The overachiever, in comparison, tended to have made a choice before entering college.

---

<sup>84</sup>John P. McQuary, "Some Differences Between Under- and Overachievers in College," Educational Administration and Supervision, 40:117-20, January, 1954.

<sup>85</sup>Robert J. Dowd, "Underachieving Students of High Capacity," Journal of Higher Education, 23:327-30, June, 1952.

Regensburg<sup>86</sup> contrasted an educationally successful group with a matched group of educational failures and found that the parents of the successful group had more educational advantages than those of the unsuccessful group. Shaw and Brown likewise noted a tendency among parents of achievers to have carried heavier academic loads than did the parents of equally able nonachievers.<sup>87</sup> Shaw<sup>88</sup> has described the underachiever's family as having less education, little regard for education, and a more distant relationship with the child as compared with the overachiever's family which tends to push the child toward achievement.

Lewis<sup>89</sup> found the group he designated as accelerated had fathers in the higher vocational and socio-economic classifications while "a 1956 National Merit Scholarship Corporation report indicates whereas scholars come from both mansions and hovels alike, the majority come

---

<sup>86</sup> Jeanette Regensburg, "Studies of Educational Success and Failure in Supernormal Children," in R. S. Woodworth (ed.) Archives of Psychology (New York: Columbia University Press, 1931), No. 129.

<sup>87</sup> M. C. Shaw and D. J. Brown, "Scholastic Under Achievement of Bright College Students," Personnel and Guidance Journal, 36:195-99, May, 1957.

<sup>88</sup> M. C. Shaw, Guidance for the Underachiever with Superior Ability, Leonard M. Miller (ed.), United States Department of Health, Education and Welfare, Bulletin #25 (Washington, D.C.: Government Printing Office, 1961), pp. 1-14.

<sup>89</sup> W. D. Lewis, "Comparative Study of Personalities, Interests, and Home Background of Gifted Children of Superior and Inferior Intellectual Achievement," Journal of Genetic Psychology, 59:207-18, 1941.

from homes in the upper business or professional group." Frankel's<sup>90</sup> data, too, showed that achievers at the Bronx High School of Science came from home backgrounds with higher socio-economic status and better educated fathers than did the underachievers. Although MacLachlan and Bennett<sup>91</sup> found that the fathers of the potentially superior students tended to be on the professional or managerial level of occupation, Centi<sup>92</sup> found that neither the occupational nor the educational level of either of the parents differentiated superior and nonsuperior students.

Chopra studied the problem of over- and underachievement in the schools in India to determine whether socio-economic factors were related to differences in the academic achievement of students of high intellectual ability. Collection of data for seventy-six matched pairs of under- and overachievers revealed that:

Fathers of the achievers had comparatively higher levels of education, and a greater proportion of them were engaged in higher occupations. They had higher incomes, lived in better lodgings, had smaller families, and the cultural atmosphere in their homes was more stimulating.

---

<sup>90</sup>E. Frankel, "A Comparative Study of Achieving and Under-achieving Boys of High Intellectual Ability," Journal of Education Research, 53:172-80, January, 1960.

<sup>91</sup>Patricia MacLachlan and Collins Bennett, "Who Are the Superior Freshmen in College?" Personnel and Guidance Journal, 32:345-49, February, 1954.

<sup>92</sup>Paul Centi, "Highest and Lowest Students at the School of Education of a Large Urban University," Personnel and Guidance Journal, 37:357-59, February, 1959.

A significantly larger proportion of the achievers expected to continue their studies, and had done some planning for a future vocation. The overachievers had a higher level of occupational expectation than did the underachievers. Lastly, the achievers attached significantly higher values to good grades.

Ordinal position among siblings did not show any relationship to academic achievement.<sup>93</sup>

It will be seen that Chopra's findings are strikingly similar to findings in this country.

Wellington and Wellington<sup>94</sup> spent two years collecting data through the use of questionnaires and structured interviews with the underachievers in the greater Boston area. In looking at the fathers of the underachievers, they found that in general they were a well-educated group. Slightly over half were professional or white-collar workers, more than three-fourths were classifiable as skilled or above. Furthermore, about one-third were college graduates, and only about one-fifth had not graduated from high school.

Through the use of an in-depth interview which covered sixty-seven items relative to the student's psychosocial background, Smith collected data on freshmen at the University of Kentucky who scored in the top five percent on the College Qualifications Tests but who failed

---

<sup>93</sup> Sukhendra Chopra, "A Comparative Study of Achieving and Underachieving Students of High Intellectual Ability," Exceptional Children, 33:631-34, May, 1967.

<sup>94</sup> Wellington and Wellington, op. cit., p. 46.

to achieve a first semester grade-point average of 2.00. The interview was conducted with thirty nonachievers and thirty-two achievers of high academic potential. Significant differences in attitudes, opinions, and perceptions between achievers and nonachievers in this study were determined by the chi-square method of statistical analysis. The data from twenty-five of the items were found to be significant at the .05 level. The following are some of the pertinent, significant findings based upon those interviews:

- 1) More nonachievers were from cities of 600,000 population and over, while the largest group of achievers came from communities of 50,000 to 100,000.
- 2) More achievers than nonachievers were affiliated with Protestant churches.
- 3) Most achievers graduated from high schools with enrollments between 900 to 1200, while an equally large percentage of nonachievers graduated from high schools of 1300 to 3000 enrollment.
- 4) There was no definite relationship in the number of professionally<sup>95</sup> occupied mothers and fathers between achievers and nonachievers.

---

<sup>95</sup> Leland Smith, "Significant Differences Between High-Ability Achieving and Nonachieving College Freshmen as Revealed by Interview Data," Journal of Educational Research, 59:10-11, September, 1965.

## SUMMARY OF RESEARCH REVIEWED

This chapter has included some of the pertinent research related to academic achievement of college students. Many and varied approaches have been used in an attempt to learn more about this illusive, yet important, concept. Although there has been much research related to academic achievement, there is no general agreement about the variables which differentiate under- and overachieving students.

Creativity has been the focus of considerable research in the past decade. The available evidence is conflicting with regard to underachievers. A number of studies have reported that creative performance is unrelated to scholastic achievement. Other studies have found a negative relationship between creativity and underachievement; still other studies have found a positive relationship.

Most of the studies which have investigated the relationship between academic success and study habits have shown positive results. For the most part overachievers have a stronger motivation for studying, are better able to work under pressure, and are better able to budget their study time, while underachievers generally tend to procrastinate, have difficulty concentrating, and study less than overachievers.

As are study habits, so in most cases is a student's reading

ability a factor in academic success. Most research shows that either comprehension or speed of reading, or both, are related to achievement.

The concept of achievement motivation has been investigated extensively. Generally, high achievers have greater expectancy for success and for higher minimal grade-point averages while under-achievers have lower expectancy for success and lower minimal grade-point averages. Some researchers have found that underachievers experience less success because they lack the desire to achieve and because they feel a higher threat of failure than their overachieving counterparts.

Several investigators who have studied the relationship of personality traits and academic achievement report that underachievers tend to be more submissive, unstable, introverted and non-social than overachievers. Results of other studies characterize underachievers as being more impulsive, immature, and hostile and less assertive, responsible, and self-confident than overachievers.

Reports are not in agreement concerning biographical data related to achievement. Several researchers have found that parents of under-achieving students have more formal education than do parents of over-achieving students; other investigators have found no such relationship. A similar situation has been observed with respect to the occupational level of parents. Some studies report a positive relationship between

occupational level and achievement; other studies report that no significant relationship exists. Another variable which researchers have investigated as a possible correlate of academic success has been the size of the high school a student has attended. Here again discrepancies exist. It is not known whether the size of high school attended has an effect on students' college grades.

As has been shown, the findings related to academic under- and overachievement of college students are often conflicting and inconsistent. Thus, on the basis of this alone, the need for additional study can readily be seen. Any factor which would significantly distinguish a group of underachieving students from a group of normal or overachieving students might contribute to the search for a solution to this problem.

## CHAPTER III

### PROCEDURES FOR COLLECTING AND ANALYZING DATA

Sample and population. The sample of this study is composed of those women who entered the freshman class at Cedar Crest College, Allentown, Pennsylvania, in the fall of 1970. Within this sample the selection of those students who achieved below expectation, "the under-achievers," and those students who achieved above expectation, "the overachievers," is based upon the discrepancy between the grade-point average (GPA) obtained at the end of the first semester of the student's freshman year and the predicted GPA.

Enrollment for the freshman class, September, 1970, at Cedar Crest College was 236 girls. The day students, the foreign students, and several girls who were unavailable for the complete testing program are not included in this study. The final sample consists of 211 female students in the freshman class. These students appeared to be similar to past freshmen at Cedar Crest College, and presumably they fairly represent Cedar Crest freshmen of the foreseeable future.

Selection and collection of data. The prediction of scholastic achievement at the end of the first semester of the student's first year was based upon her rank in her high-school graduating class (HSR) and

her total score on the College Entrance Examination Board Scholastic Aptitude Test (SAT) as the predictors and the first semester grade-point average (GPA) as the criterion. Records found in the Office of Admissions contained this information.

A student's high-school scholastic record, either grade-point average or rank-in-class, has been found to be the best single predictor of college scholastic achievement.<sup>1</sup> However, a student's rank in her high-school class cannot be used directly as a predictor since it is necessary to consider the size of the class or group of which she is a member. This may best be done by converting the student's rank and class size to an "Inverted Percentile Rank." This rank is then converted to a two digit "normalized" score using procedures described by the College Entrance Examination Board.<sup>2</sup>

The College Entrance Examination Board Scholastic Aptitude Test score is very often used as a predictor in regression equations even though it has not been found to be as good a predictor of college success as the high-school record of a student. But, when combined

---

<sup>1</sup>Allen E. Ivey, Floyd E. Peterson, and E. Stewart Trebbe, "The Personality Record as a Predictor of College Attrition: A Discriminant Analysis," College and University, 41:199-205, Winter, 1966.

<sup>2</sup>College Entrance Examination Board. Data Analysis and Interpretation. (Validity Study Service. New York, 1964.)

with the HSR, it (SAT) tends to allow as good a prediction equation as possible with two predictor variables.

The criterion variable is the first semester grade-point average. In that one of the purposes of this study is to identify students who are not performing up to expectation as early in their academic careers as possible, and since it is a policy at Cedar Crest College not to drop students until after the completion of their freshman year, the early identification of underachievers should enable counselors to help these students before they experience additional and possibly more serious academic and emotional difficulties.

To determine the GPA for each student the Registrar assigns numerical values of 4, 3, 2, 1, and 0 to the letter grades of A, B, C, D, and F. For each course taken the numerical equivalents of the letter grades are multiplied by the number of semester hours credited to that course. The total of these values is then divided by the total number of semester hours taken by the student. The first semester GPA was computed for each student in this manner by the Registrar. The GPA's used in this study were obtained from the records in that office.

Identification of under-, normal, and overachievers. The regression technique permits the use of one or more predictors of a dependent or criterion variable; the resultant equation produces a

linear regression plane. Using HSR and SAT, the predicted GPA for each member of the sample may be obtained from the regression equation. If HSR and SAT were the only variables affecting a student's GPA, the predicted and obtained averages would agree perfectly. Deviation of the observed GPA's from the regression plane indicate the extent to which variables other than HSR and SAT affect a student's GPA.

In the present study the comparison of predicted and obtained GPA's is the basis for the selection of under-, normal, and over-achievers. The sample of 211 girls was divided into three groups. Group I, the underachievers, consists of seventy students whose obtained GPA's deviate by a residual of -1.87 to -.25. Group II, the normal achievers, consists of seventy-one students whose obtained GPA's deviate by a residual of -.24 to .33. Group III, the over-achievers, consists of seventy students whose obtained GPA's deviate by a residual of .34 to 1.33. It was arbitrarily decided to assign the extra student to Group II.

Table I contains the means, standard deviations, and coefficients of correlation necessary for the calculation of an equation for the plane of regression of freshman GPA (  $X_3$  ) on HSR (  $X_2$  ) and SAT (  $X_1$  ).

Table 1

Means, Standard Deviations, and Correlation Coefficients for Freshman Grade-Point Average (  $X_3$  ), High School Rank (  $X_2$  ), and Total Scholastic Aptitude Score (  $X_1$  ), for 211 Students

Variable	Mean	Standard Deviation	Coefficients of Correlation		
			$X_1$	$X_2$	$X_3$
Scholastic Aptitude Total Test Score ( $X_1$ )	1033.5592	137.0179	.341	.394	
High-School Rank ( $X_2$ )*	58.5972	7.0179		.424	
Freshman Grade-Point Average ( $X_3$ )	2.2946	.6920			

\*Normalized class ranks

The equation of the plane of regression is

$$X_3 = .00142X_1 + .0323X_2 - 1.07$$

and the coefficient of multiple correlation is .5001.<sup>3</sup>

According to Lannholm and Shrader a coefficient of .5001 may be termed "satisfactory."<sup>4</sup> Working with studies of College Entrance

<sup>3</sup>Merle W. Tate, Statistics in Education (New York: Macmillan Company, 1955), pp. 303-10.

<sup>4</sup>Gerald Lannholm and William B. Shrader, Predicting Graduate School Success (Princeton, New Jersey: Educational Testing Service, 1951), p. 13.

Board Tests, they have developed the following rule-of-thumb in interpreting the effectiveness of prediction:

- a) If the coefficient is .60 or higher, the predictor may be termed effective;
- b) If the coefficient is close to .50, the predictor may be described as satisfactory; and
- c) If the coefficient is in the neighborhood of .40, the predictor may be termed useful.

The square of the coefficient of multiple correlation ( R ) indicates the total variance of the GPA accounted for by HSR and SAT. Therefore,  $.5001^2$  or 25 percent of the variance of the student's GPA is explained by the predictors and 75 percent of the total variance is unexplained by the predictors used in the regression equation. The coefficient of correlation indicates that this is a "satisfactory" technique for the prediction of a freshman's GPA, according to Lannholm and Shrader's rule-of-thumb in interpreting the effectiveness of prediction.

Variables investigated. The following data for the seventy under-achievers, seventy-one normal achievers, and seventy overachievers were obtained from records found in the Office of Admissions, the Office of the Registrar, and from the Background Data section of Herrenkohl's Achievement Motivation Survey: financial aid, size of high-school graduating class, religion, religious attendance, number of siblings, order of birth, level of parents' occupation and education, desired level of education to be completed by the student, advanced

placement credit, expected grades for the first semester, who makes the decisions in the home, reason for enrolling at Cedar Crest College, and type of secondary school attended.

Additional data were obtained from the Davis Reading Test, Bernreuter Personality Inventory, Remote Associates Test of Creativity, Brown-Holtzman Survey of Study Habits and Attitudes, and Herrenkohl's Achievement Motivation Survey which were administered to all freshmen during the early part of their first semester. The reported reliability coefficients for each of these tests and inventories are shown in Appendix A.

Treatment of data. The means and standard deviations of the above tests and inventories are shown in Table 2. Performance of the three groups - under-, normal, and overachievers - was compared in each of these tests and inventories by the conventional one-way design of analysis of variance as described by Fried.<sup>5</sup> For data under consideration, an F value of 3.04 indicated significance at the .05 level. Where significant F values were found, the Scheffé procedure was then employed.<sup>6</sup>

---

<sup>5</sup>Robert Fried, Introduction to Statistics (New York: Oxford University Press, 1969), pp. 124-43.

<sup>6</sup>H. A. Scheffé, The Analysis of Variance (New York: Wiley Press, 1960).

Table 2

Means and Standard Deviations\* of 70 Underachievers,  
71 Normal Achievers, and 70 Overachievers  
on the Various Tests and Inventories

Test	Under- ACHIEVERS	Normal	Over- ACHIEVERS
Davis Reading Level	21.29 (7.35)	24.06 (5.58)	23.89 (5.77)
Davis Reading Speed	35.27 (13.93)	40.14 (12.17)	41.46 (12.07)
Brown-Holtzman Study Habits	54.77 (15.02)	50.92 (14.08)	56.21 (16.40)
Study Attitudes	61.14 (12.99)	58.41 (11.21)	60.23 (14.90)
Herrenkohl's Achievement Motivation Survey Test Anxiety	9.14 (4.57)	9.79 (4.82)	8.94 (4.19)
Threat of Failure	3.61 (2.88)	3.34 (2.74)	2.40 (1.91)
Parental Encouragement	7.54 (2.84)	7.46 (2.47)	7.39 (2.53)
Unwillingness to Risk Failure	3.37 (2.51)	3.28 (2.46)	2.76 (2.48)
Dislike of Those Who Do Better Than Oneself	1.16 (1.51)	.82 (1.31)	1.24 (1.29)
Concern About Primary Roles	5.86 (2.36)	5.75 (2.68)	5.56 (2.63)
Desire to Excel	22.57 (4.69)	23.20 (3.65)	22.80 (4.79)
Sensitivity to Others Knowing of One's Failure	5.77 (3.93)	5.38 (3.50)	4.80 (3.44)

Table 2 (continued)

Test	Under-	Normal	Over-
	ACHIEVERS		
Exerting Effort to Do Well	9.69 (3.14)	9.80 (3.97)	10.41 (3.27)
Value of Competition	5.16 (2.67)	5.31 (2.21)	5.09 (2.57)
Remote Associates Test of Creativity	18.74 (5.64)	16.69 (5.81)	16.39 (6.45)
<b>Bernreuter Personality Inventory<sup>1</sup></b>			
Neurotic Tendency	193.19 (71.10)	158.52 (72.61)	155.39 (67.46)
Self-sufficiency	193.66 (47.25)	197.51 (51.81)	196.69 (50.82)
Introversion-Extroversion	201.83 (42.84)	183.70 (43.67)	179.69 (43.02)
Dominance-Submission	213.00 (53.84)	237.32 (56.64)	235.57 (59.52)
Confidence in Oneself	218.79 (78.96)	194.59 (76.59)	192.37 (73.76)
Sociability	171.27 (62.22)	153.58 (50.64)	148.36 (52.09)

\*Standard deviations are shown in parenthesis.

<sup>1</sup>Constant of 200 was added to original score for computational purposes.

Qualitative data, such as size of graduating class, reason for attending (Cedar Crest) college, which were not appropriate for analysis of variance were classified in contingency tables. The relationship of such variables to under-, normal, and overachievement was tested for significance by the  $X^2$  test.

## CHAPTER IV

### VARIABLES DIFFERENTIATING UNDER-, NORMAL, AND OVERACHIEVERS

In Chapter III underachievers, normal achievers, and over-achievers were identified in terms of the deviations of their GPA (grade-point-average) for the first semester of their freshman year from the regression plane of the first semester GPA on HSR (high-school rank) and SAT (Scholastic Aptitude Test) total score. In this chapter those three groups will be compared with respect to the variables under consideration in this study. The data are shown in Appendix B.

Results of the analysis of variance of differences between the means of the three groups for each of these tests and inventories are shown in Table 3.

#### Non-Significant Findings Related to Under-, Normal, and Over-achieving Students

Results in Table 3 show that there are no significant differences between the three groups at the .05 level in the following variables:

Davis Reading Test  
Reading Speed

Table 3

Results of Tests of Significance of Differences Between Means of 70 Underachievers,  
71 Normal Achievers, and 70 Overachievers on Various Tests and Inventories

Test or Inventory	Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio	Significance Level
Davis Reading Test-Level	Between Groups	338.48	2	169.24		.05 > P > .01
	Within Groups	8205.14	208	39.45	4.29	
	Total	8543.63				
Davis Reading Test-Speed	Between Groups	641.62	2	320.81		P > .10
	Within Groups	33809.81	208	162.54	1.97	
	Total	34451.42				
Bernreuter-Neurotic Tendency	Between Groups	61717.03	2	30858.52		P < .01
	Within Groups	1031828.89	208	4960.72	6.22	
	Total	1093545.92				
Bernreuter-Self-Sufficiency	Between Groups	578.01	2	289.01		P > .10
	Within Groups	520198.60	208	2500.95	.12	
	Total	520776.61				
Bernreuter-Introversion-Extroversion	Between Groups	19504.09	2	9752.05		P < .01
	Within Groups	387863.82	208	1864.54	5.23	
	Total	407367.91				
Bernreuter-Dominance-Submission	Between Groups	25839.74	2	12919.87		.05 P < .01
	Within Groups	669040.69	208	3216.54	4.02	
	Total	694880.44				

Table 3 (continued)

Test or Inventory	Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio	Significance Level
Bernreuter-Confidence in Oneself	Between Groups	30106.75	2	15053.38		.10 > P > .05
	Within Groups	1216135.28	208	5846.80	2.57	
	Total	1246242.04				
Bernreuter-Sociability	Between Groups	20209.70	2	10104.85		.05 > P > .01
	Within Groups	633903.24	208	3047.61	3.32	
	Total	654112.24				
Remote Associates Test of Creativity	Between Groups	230.46	2	115.23		.05 > P > .01
	Within Groups	7427.14	208	35.71	3.23	
	Total	7657.60				
Brown-Holtzman-Study Habits	Between Groups	1059.90	2	529.25		P > .10
	Within Groups	47965.62	208	230.60	2.30	
	Total	49025.53				
Brown-Holtzman-Study Attitudes	Between Groups	273.56	2	136.78		P > .10
	Within Groups	35772.07	208	171.98	.79	
	Total	36045.63				
Herrenkohl-Test Anxiety	Between Groups	27.61	2	13.80		P > .10
	Within Groups	4278.17	208	20.57	.67	
	Total	4305.78				

63

Table 3 (continued)

Test or Inventory	Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio	Significance Level
Herrenkohl-Threat of Failure	Between Groups	56.76	2	28.38		$.05 > P > .01$
	Within Groups	1347.27	208	6.48	4.38	
	Total	1404.04				
Herrenkohl-Parental Encouragement	Between Groups	.86	2	.43		$P > .10$
	Within Groups	1423.62	208	6.84	.06	
	Total	1424.48				
Herrenkohl-Unwillingness to Risk Failure	Between Groups	15.43	2	7.72		$P > .10$
	Within Groups	1283.58	208	6.17	1.25	
	Total	1299.01				
Herrenkohl-Dislike of Those Who Do Better Than Oneself	Between Groups	7.17	2	3.59		$P > .10$
	Within Groups	392.76	208	1.89	1.90	
	Total	399.93				
Herrenkohl-Concern About Primary Roles	Between Groups	3.22	2	1.61		$P > .10$
	Within Groups	1363.28	208	6.55	.25	
	Total	1366.50				
Herrenkohl-Desire to Excel	Between Groups	14.15	2	7.08		$P > .10$
	Within Groups	4029.58	208	19.37	.36	
	Total	4043.73				

Table 3 (continued)

Test or Inventory	Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio	Significance Level
Herrenkohl-Sensitivity to Others Knowing of One's Failures	Between Groups	33.45	2	16.72		P > .10
	Within Groups	2742.28	208	13.18	1.27	
	Total	2775.73				
Herrenkohl-Exerting Effort to do Well	Between Groups	21.46	2	10.73		P > .10
	Within Groups	2521.31	208	12.12	.89	
	Total	2542.77				
Herrenkohl-Value of Competition	Between Groups	1.85	2	.93		P > .10
	Within Groups	1289.94	208	6.20	.15	
	Total	1291.79				

65

Brown-Holtzman Survey of Study Habits and Attitudes  
Study Habits  
Study Attitudes

Herrenkohl's Achievement Motivation Survey

Test Anxiety  
Parental Encouragement  
Unwillingness to Risk Failure  
Dislike of Those Who Do Better Than Oneself  
Concern Over Primary Roles  
Desire to Excel  
Sensitivity to Others Knowing of One's Failure  
Exerting Effort to Do Well  
Value of Competition

Bernreuter Personality Inventory

Self-sufficiency  
Confidence in Oneself

In other words, the scores on these sub-tests do not discriminate between underachievers, normal achievers, and overachievers in the population of concern here.

Significant Findings Related to Under-, Normal, and Overachieving Students

Further inspection of Table 3 shows that the following sub-tests brought out significant differences ( $P < .05$ ) between the three groups.

Davis Reading Test

Level of Comprehension

Herrenkohl's Achievement Motivation Survey

Threat of Failure

Remote Associates Test of Creativity

Bernreuter Personality Inventory

Neurotic Tendency  
Introversion-Extroversion

Dominance-Submission  
Sociability

As stated in Chapter III, where significant F values were found, the Scheffé procedure was used. This technique indicates whether a significant difference exists between Group I, the under-achievers, and Group II, the normal achievers; between Group I, the underachievers, and Group III, the overachievers; or between Group II, the normal achievers, and Group III, the overachievers.

Discussion of Significant Findings

The Level of Comprehension score of the Davis Reading Test shows significant differences between the three groups of students. This score "indicates the depth of understanding displayed by a student in reading the kinds of material he is ordinarily required to read in college."<sup>1</sup> A significant difference in reading comprehension was found between the underachievers and the normal achievers and between the underachievers and the overachievers. No significant difference was found on this sub-test between the normal and the over-achievers. Therefore, from these results it can be stated that the average underachieving freshman student at Cedar Crest College had a significantly lower reading comprehension score than did the normal and the overachieving students. Similar results have been

---

<sup>1</sup>Davis Reading Test Manual (New York: The Psychological Corporation, 1962 edition), p. 5.

reported from other studies which have investigated the relationship between reading skills and academic achievement.

The Threat of Failure sub-test of Herrenkohl's Achievement Motivation Survey also proved significant. "The items on this dimension are keyed so that a high score indicates a high degree of feeling that one gains little recognition for doing something well. The general tenor is that of feeling like a failure."<sup>2</sup> Threat of failure discriminated between underachievers and overachievers, but no significant difference was found between the underachievers and normal achievers or between the normal and overachievers. This means that the average underachieving student feels a higher threat of failure than her overachieving counterpart. Friedenberg coined a phrase when he said that the student who fails in school, having discovered that she is good at nothing, stands a strong chance of becoming good for nothing.<sup>3</sup> Educators are aware that constant failure breeds nothing but failure. The results of this study are in agreement with other research findings which show a positive relationship between a high threat of failure and academic underachievement.

---

<sup>2</sup>Herrenkohl's Achievement Motivation Survey, "A Factor Analytic Study of Achievement Motivation," p. 21.

<sup>3</sup>Edgar Z. Friedenberg, The Vanishing Adolescent (Boston: Beacon Press, 1959), p. 17.

The Remote Associates Test of Creativity is a measure of the ability to think creatively. It is an "instrument designed to measure individual differences in an ability considered to be fundamental to the creative thinking process."<sup>4</sup> Creative individuals and the processes by which they manifest their creativity have excited a good deal of interest, curiosity, and investigation. The Remote Associates Test was found to discriminate the underachiever from the overachiever, but no significant difference was found between the underachievers and normal achievers or between the normal achievers and overachievers. On this measure the underachieving students in the freshman class at Cedar Crest College proved to be more creative than their over-achieving counterparts. Findings of other studies which have investigated the relationship between creativity and academic achievement are conflicting. Holland<sup>5</sup> found creative performance to be generally unrelated to scholastic achievement. Owens<sup>6</sup> reported that overachievers scored significantly higher than underachievers on flexibility, originality, and adequacy of response. However, there was no significant difference between the groups on total creativity. Karnes<sup>7</sup> found a

---

<sup>4</sup>Remote Associates Test Manual (Boston: Houghton Mifflin Company, 1967), p. 1.

<sup>5</sup>Holland, op. cit., p. 145.

<sup>6</sup>Owens, op. cit., p. 88.

<sup>7</sup>M. B. Karnes, "Factors Associated with Underachievement of Intellectually Gifted Children," Exceptional Children, 28: 167-75, December, 1961.

positive relationship between creativity and overachievement. This suggests that the relationship between creativity and academic achievement varies with the methods of measurement and/or the sampled populations.

Four of the six sub-tests of the Bernreuter Personality Inventory indicated real differences between the groups. These measures are: Neurotic Tendency, Introversion-Extroversion, Dominance-Submission, and Sociability. Bernreuter<sup>8</sup> describes these traits as:

Neurotic Tendency. Persons scoring high on this scale tend to be emotionally unstable. Those scoring low tend to be very well balanced emotionally.

Introversion-Extroversion. Persons scoring high on this scale tend to be introverted; that is, they are imaginative and tend to live within themselves. Those scoring low are extroverted; that is they rarely worry, seldom suffer emotional upsets, and rarely substitute daydreaming for action.

Dominance-Submission. Persons scoring high on this scale tend to dominate others in face-to-face situations. Those scoring low tend to be submissive.

Sociability. Persons scoring high on this scale tend to be non-social, solitary, or independent. Those scoring low tend to be sociable and gregarious.

Neurotic tendency was found to differentiate underachievers from normal and overachievers, but no significant difference was found

---

<sup>8</sup>Bernreuter Personality Inventory Manual (Palo Alto, Calif., Consulting Psychologists Press, 1958), p. 4.

between overachievers and normal achievers. Introversion-extroversion differentiated over- and normal achievers from underachievers, but did not show a real difference between over- and normal achievers. The trait of dominance-submission was found to discriminate underachievers from normal and overachievers, but did not discriminate between normal and overachievers. Sociability was found to discriminate underachievers from overachievers but no significant difference was found between the underachievers and normal achievers or between normal achievers and overachievers. Using Bernreuter terminologies and interpretations, the average overachieving freshman girl at Cedar Crest College tends to be emotionally well-balanced, seldom worries or suffers emotional upsets, tends to dominate others in face-to-face situations, and tends to be sociable and gregarious. The average underachiever, on the other hand, tends to be more emotionally unstable, introverted, submissive, and non-social or independent. It will be noted that the mean scores (see Table 2) on three of the four significant traits for the normal achievers lie between those of the under- and overachievers. This fact suggests important trends.

#### Other Variables Not Differentiating Under-, Normal, and Over-achievers

Results of the  $X^2$  tests for those data which were classified in contingency tables are shown in Table 4. The contingency tables are shown in Appendix C. There were no significant differences between

the three groups at the .05 level with respect to financial aid, size of high-school graduating class, religion, religious attendance, number of siblings, birth order, level of occupation of father and mother, level of education of father and mother, advanced placement credit, and reason for enrolling at Cedar Crest College. In other words, these variables do not discriminate between underachievers, normal achievers, and overachievers in the population of concern here.

Other Variables Differentiating Under-, Normal, and Overachievers

Further inspection of Table 4 shows that the following variables brought out significant differences ( $P < .05$ ) between the three groups. These were expected first semester grades, type of secondary school attended, desired level of education to be completed, and who makes the important decisions in the home.

Table 4

Summary of Tests on Contingency Data for 70 Under-,  
71 Normal, and 70 Overachievers

Data	$X^2$	d.f.	Significance Level
Type of Secondary School Attended	16.76	8	P < .05
Financial Aid	.91	2	P > .10
Size of High School Graduating Class	3.31	6	P > .10
Religion	3.35	6	P > .10

Table 4 (continued)

Data	$\chi^2$	d. f.	Significance Level
Religious Attendance	10.42	6	P > .10
Number of Siblings	11.82	10	P > .10
Birth Order	6.97	8	P > .10
Level of Occupation - Father	6.50	10	P > .10
Level of Occupation - Mother	6.31	8	P > .10
Level of Education - Father	11.21	10	P > .10
Level of Education - Mother	4.31	8	P > .10
Desired Level of Education to be Completed	13.38	6	P < .05
Advanced Placement Credit	.99	2	P > .10
Expected First Semester Grades	29.89	4	P < .01
Who Makes Decisions in the Home	13.04	6	P < .05
Reason for Enrolling At Cedar Crest College	7.25	8	P > .10

Regarding first semester grades, thirty-eight of the over-achieving students expected to receive a grade of B for the first semester while only twenty-eight of the normal achievers and twelve of the underachievers expected this grade. Thirty-one of the over-achievers expected a grade of C or less while a total of forty-three normal achievers and fifty-eight underachievers expected a C or less. A number of studies have reported that the underachieving students are unrealistic in their expectations and aspirations concerning grades.

However, the results of this study would tend to contradict these findings. The underachievers in the freshman class expected lower first semester grades and, in fact, did receive lower grades. The overachieving group expected higher grades and had their expectations matched by their performance. This would seem to indicate that the students in the population of concern here were quite realistic with respect to their expected and obtained levels of academic achievement. Although relatively little data have been reported on the use of the self-estimate as a predictor, Keefer<sup>9</sup> found that "self-prediction of academic success was a stable and significant variable which proved to be as reliable as the high-school record and standardized achievement test results in the prediction of academic success."

The variable, "type of secondary school attended" was significant at the .05 level. Nine of the overachieving students reported they had attended only a private day-school. Only four underachievers and one normal achiever responded in this way. Sixty-five underachievers, sixty normal achievers, and fifty-seven overachievers reported they had attended only a public school. These results tend to contradict the findings of a number of other studies concerned with the variable "type of school attended." This may be due to the fact that many of the

---

<sup>9</sup>Karl E. Keefer, "Self-Prediction of Academic Achievement by College Students," Journal of Educational Research, 63:53-6, October, 1969.

studies were conducted with all "male" or "male - female" samples.

Another variable significant at the .05 level was "who makes the decisions in the home." Thirty-two of the overachievers reported that both parents made the decisions in the home. Nineteen normal achievers and sixteen underachievers gave the same response to this item. Forty-five underachievers, forty normal achievers, and thirty-four overachievers reported the father as the decision-maker in the home. Research studies dealing with parental dominance and power balance within the family have reported conflicting and inconsistent results. A number of studies claim authoritarianism fosters submissiveness to parent and teacher achievement values such that school achievement is enhanced. Other studies report an authoritarian home as contributing to a low achievement drive in students. Still other studies show a positive relationship between a democratic home and academic achievement, while others show that a democratic family life is associated with low achievement. The results of this study show that twice as many of the overachieving students as compared with their underachieving counterparts indicated that both parents made the important decisions in the home.

One other variable, "desired level of education to be completed" was significant at the .05 level. A total of five underachievers indicated they desired to complete three years of college or less. No normal or

overachievers responded in this fashion. Since the great majority of underachievers were essentially similar to the normal and over-achievers, this finding, although of statistical significance, seems of little practical importance.

## CHAPTER V

### SUMMARY AND CONCLUDING STATEMENTS

#### SUMMARY

Purpose. Academic failure is one of the major problems confronting educators. However, not all academic failures are the result of lack of ability or aptitude - mental or intellectual ability is not the exclusive determinant of academic achievement. The discrepancy between potential and achievement signifies a group of students known as underachievers. The purpose of this study was to identify some of the variables which differentiate underachieving and overachieving college women. Hopefully the results will be of value to counselors as they attempt to help those students who are not performing in accord with their measured abilities and predicted performance.

Procedure. The first step was to identify those students who were underachieving and those who were overachieving in the freshman class that enrolled at Cedar Crest College in September, 1970. The prediction of the freshman grade-point average (GPA) for the first semester was based upon the regression plane of GPA (  $X_3$  ) on High School Rank (  $X_2$  ) and Scholastic Aptitude Test total Score (  $X_1$  ). The

regression equation was

$$X_3 = .00142X_1 + .0323X_2 - 1.07$$

The coefficient of multiple correlation was .5001.

The final sample of 211 girls was divided into three groups. Group I, the underachievers, consisted of seventy students whose obtained GPA's deviated from the regression plane by residuals of -1.87 to -.25. Group II, the normal achievers, consisted of seventy-one students whose obtained GPA's deviated by residuals of -.24 to .33. Group III, the overachievers, consisted of seventy students whose obtained GPA's deviated by residuals of .34 to 1.33. While normal achievers were not the main concern of this study, they were included for the purposes of comparing and contrasting the findings related to under- and overachievement.

To gather data on the possible variables associated with under- and overachievement which were investigated in this study - reading skill, study habits, creative ability, achievement motivation, and personality traits - the following tests and inventories were used: Davis Reading Test, Brown-Holtzman Survey of Study Habits and Attitudes, Herrenkohl's Achievement Motivation Survey, Remote Associates Test of Creativity, and the Bernreuter Personality Inventory. Additional data dealing with academic, biographical, and home factors were secured from the Office of the Registrar, Office of Admissions, and

the background information section of Herrenkohl's Achievement Motivation Survey.

Performance on each of the tests and inventories was analyzed by conventional one-way analysis of variance. Where significant F values were found, Scheffé procedure was employed. Qualitative data, which were not appropriate for analysis of variance, were classified in contingency tables and tested for significance by the  $X^2$  test.

Findings. There were no significant differences at the .05 level between the three groups with respect to the following variables: Davis Reading Test (Reading Speed), Brown-Holtzman Survey of Study Habits and Attitudes, Herrenkohl's Achievement Motivation Survey (Test Anxiety, Parental Encouragement, Unwillingness to Risk Failure, Dislike of Those Who Do Better Than Oneself, Concern Over Primary Roles, Desire to Excel, Sensitivity to Others Knowing of One's Failure, Exerting Effort to Do Well, and Value of Competition), and the Bernreuter Personality Inventory (Self-sufficiency and Confidence in One-self).

There were significant differences at the 5 percent or better level with respect to the following variables: Davis Reading Test (Level of Comprehension), Herrenkohl's Achievement Motivation Survey (Threat of Failure), Remote Associates Test of Creativity, and four traits on the Bernreuter Personality Inventory (Neurotic Tendency,

Introversion-Extroversion, Dominance-Submission, and Sociability).

The  $X^2$  test of contingency data showed that one variable "expected first semester grades" was significant at the .01 level. Three other variables were significant at the .05 level. They were: "type of secondary school attended," "desired level of education to be completed," and "who makes the decisions in the home." Variables not differentiating included financial aid, size of high-school graduating class, religion, religious attendance, number of siblings, order of birth, level of occupation of father and mother, level of education of father and mother, advanced placement credit, and reason for enrolling at Cedar Crest College.

#### CONCLUDING REMARKS

It has been observed that the father of the low achiever has less education and ranks lower in occupational status than the father of the high achiever. Yet another study states the opposite - more education and higher occupational levels among fathers of low achievers. And a third study finds no difference in educational or occupational level between the two groups.<sup>1</sup> Research on underachievement is characterized by inconsistent findings. This has been shown in detail in the

---

<sup>1</sup>John Peterson, "The Researcher and the Underachiever: Never the Twain Shall Meet," Phi Delta Kappan, 44:379:81, May, 1963.

review of the literature. The inconsistencies and discrepancies related to the findings regarding under- and overachievement suggest that until more conclusive data are available, it is necessary for schools to conduct their own research.

The present study was conducted at Cedar Crest College, a small liberal arts college for women in Allentown, Pennsylvania. Based upon the results of this study, the typical underachieving student at Cedar Crest College can be described as being somewhat emotionally unstable, introverted, submissive, and non-social or independent. She is more creative, feels a higher threat of failure, and is lower in reading comprehension than the normal and overachiever. Her overachieving counterpart is emotionally better balanced, less likely to worry or suffer emotional upsets, tends to dominate others in face-to-face situations, and tends to be sociable and gregarious. The average overachiever is less creative, feels a lower threat of failure, and is higher in reading comprehension than the underachiever. Of course, these conclusions assume validity of the instruments.

In college, admissions officers are still confronted with the problem of selecting potentially successful students. Yet the accurate prediction of academic success remains a problem. Sizeable numbers of students achieve at a lower level than predicted, whereas other students achieve well above the predicted level. High school rank and scores on

Scholastic Aptitude Tests are frequently used as predictors of college grades. Even the addition of other variables to the prediction equation fails to raise the validity coefficients much above the .50 level. It seems, at least for the present, that educators are unable to make substantial improvement in the prediction of a student's academic achievement.

One item contained in the background section of Herrenkohl's Achievement Motivation Survey was "expected first semester grades." This Survey was completed by all freshman girls early in the first semester. The differences between responses of under- and over-achievers to this item proved to be highly significant. The students responded prior to evaluations of their academic performance (before major tests, mid-term exams, semester projects, and term papers and reports) and therefore the students had received little "feedback" or "clues" concerning their class progress. Analyses of the responses revealed that those students who were to become the eventual under-achievers indicated early in the first semester that they anticipated "low" grades for the courses they were enrolled in. Similarly, those students who were to become the eventual overachievers indicated early in the first semester that they expected "higher" grades for the courses they were enrolled in.

Simply by asking students early in the first semester what grades

they expect to receive may be a way in which educators can identify potential underachievers. This early identification should enable counselors to assist such students before they experience severe academic difficulties or failure.

Although the findings of this study can only be generalized to present and future freshman students at Cedar Crest College, the implications may be of some value to other educators who are faced with the problem of underachievement.

## APPENDIXES

## APPENDIX A

APPENDIX A

\*ESTIMATED RELIABILITY COEFFICIENTS FOR EACH OF THE TESTS AND INVENTORIES USED IN THIS STUDY

Test/Inventory	r
<u>Bernreuter Personality Inventory</u>	
Neurotic Tendency	.91
Self-Sufficiency	.92
Introversion-Extroversion	.89
Dominance-Submission	.89
Confidence in Oneself	.86
Sociability	.78
<u>Brown-Holtzman Survey of Study Habits and Attitudes</u>	.80
<u>Davis Reading Test</u>	
Level of Comprehension	.83
Speed of Comprehension	.80
<u>Herrenkohl's Achievement Motivation Survey</u>	
Test Anxiety	.84
Threat of Failure	.77
Parental Encouragement	.77
Unwillingness to Risk Failure	.76
Dislike of Those Who Do Better Than Oneself	.73
Concern About Primary Roles	.79
Desire to Excel	.81
Sensitivity to Others Knowing of One's Failure	.82
Exerting Effort to Do Well	.71
Value of Competition	.74
<u>Remote Associates Test of Creativity</u>	.92

\*Based upon data reported in the manuals of each of the tests and inventories.

## APPENDIX B

APPENDIX B

STUDENT IDENTIFICATION NUMBER, HIGH SCHOOL RANK (NORMALIZED), SCHOLASTIC APTITUDE TOTAL TEST SCORE, 1ST SEMESTER GRADE-POINT AVERAGE, AND SCORES FROM THE DAVIS READING TEST, BROWN-HOLTZMAN SURVEY OF STUDY HABITS AND ATTITUDES, HERRENKOHL'S ACHIEVEMENT MOTIVATION SURVEY, REMOTE ASSOCIATES TEST OF CREATIVITY, AND THE BERNREUTER PERSONALITY INVENTORY

1	2	3	4	5	6	7	8	9	10	11	12	13
Student Number	High School Rank	S.A.F. (Total)	G.P.A. (1st Semester)	Davis Reading Test: Level	Davis Reading Test: Speed	Brown-Holtzman Study Habits	Brown-Holtzman Study Attitudes	Test Anxiety	Threat of Failure	Parental Encouragement	Unwillingness to Risk Failure	Dislike of Those Who Do Better Than Oneself
183	56	966	.24	20	27	40	57	17	2	11	5	0
26	68	1023	.94	23	40	62	71	6	2	3	9	0
181	56	990	.51	21	42	50	60	11	5	8	3	1
148	68	1080	1.06	19	30	50	56	16	6	11	3	7
203	54	948	.47	15	36	41	65	13	6	6	6	1
130	51	1180	.79	28	60	38	67	4	0	3	3	0
193	53	1065	.97	19	32	27	50	11	7	13	4	2
												Herrenkohl's Achievement Motivation Survey

APPENDIX B (Continued)

Student Number	14	15	16	17	18	19	20	21	22	23	24	25	26	
		Concern About Primary Roles	Desire to Excel	Sensitivity to Others Knowing of One's Failure	Exerting Effort to Do Well	Value of Competition	Creativity (R.A.T.)	Neurotic Tendency	Self-Sufficiency	Introversion-Extroversion	Dominance-Submission	Confidence In Oneself	Sociability	
		Herrenkohl's Achievement Motivation Survey ) ( Bernreuter Personality Inventory )												
183	2	23	13	9	7	4	17	- 93	+ 61	- 51	+ 31	- 24	44	
26	1	18	5	10	8	4	25	+ 11	- 41	- 6	+ 10	+ 41	74	
181	6	24	6	11	1	8	21	- 59	+ 1	- 51	+ 26	- 10	89	
148	7	25	14	13	1	1	19	+ 105	+ 12	+ 70	- 41	+ 140	71	
203	5	24	8	7	3	3	19	+ 51	+ 34	+ 30	- 35	- 109	34	
130	9	15	3	2	3	3	27	- 3	- 45	+ 6	+ 40	+ 58	47	
193	9	24	5	8	4	4	25	- 21	+ 3	- 37	- 5	+ 40	21	

APPENDIX B (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	13
38	57	979	1.00	22	34	65	58	7	2	11	4	0
2	55	975	.92	26	44	42	85	8	3	5	3	0
208	51	1025	.94	4	6	59	67	5	2	8	0	0
186	58	1032	1.25	29	37	64	80	7	2	7	2	0
153	80	968	1.94	18	31	51	52	9	5	5	4	1
165	58	1000	1.28	22	31	60	76	8	3	9	0	2
47	57	986	1.25	28	48	55	75	16	8	7	5	1
129	47	826	.71	16	29	41	49	15	3	9	0	1
126	55	1002	1.24	23	35	34	57	4	3	9	5	1
110	63	1080	1.62	29	54	50	40	16	2	9	2	0
89	54	845	1.00	20	26	70	68	4	8	8	6	2
205	62	865	1.31	6	10	64	68	13	4	6	3	1
122	61	1225	1.82	23	25	51	63	8	1	10	2	2
102	64	1026	1.65	20	44	73	68	4	0	7	0	6
174	58	1130	1.61	23	29	62	60	7	3	9	8	0
50	59	1145	1.71	23	28	63	40	5	2	6	2	1
64	51	1194	1.54	29	47	44	61	4	4	10	3	0
195	64	1332	2.20	30	60	54	40	4	4	0	2	0
119	46	984	1.18	30	61	48	67	6	0	7	2	0
67	73	1102	2.25	18	43	73	58	14	1	13	3	0
91	57	874	1.41	21	38	49	70	5	1	8	1	0
32	63	725	1.41	16	37	80	58	11	1	1	1	0
78	53	966	1.43	20	29	57	90	11	6	1	0	1
100	60	835	1.47	11	25	44	61	17	1	5	2	0
21	55	958	1.50	28	57	21	42	7	4	8	6	0
60	64	1151	2.08	30	52	64	63	4	2	0	3	0
191	47	916	1.20	16	32	65	74	6	7	6	1	1
158	55	957	1.53	21	31	46	52	13	2	5	1	0
76	58	1035	1.78	28	39	23	60	18	6	12	6	0
82	51	976	1.47	23	41	49	55	4	1	7	1	0
36	57	1005	1.71	21	48	44	72	12	5	10	3	0
73	60	1318	2.25	33	52	66	71	5	1	8	7	0
97	57	990	1.69	25	49	71	50	6	2	7	3	0

APPENDIX B (Continued)

14	15	16	17	18	19	20	21	22	23	24	25	26
38	3	24	3	11	9	19	- 74	6	- 41	9	- 16	87
2	7	17	0	4	9	25	+ 93	- 21	+ 63	- 61	+ 157	+ 41
208	5	24	3	10	2	25	+ 78	- 107	+ 43	- 66	+ 166	- 69
186	2	21	1	9	1	19	+ 33	- 82	+ 11	- 9	+ 47	- 90
153	8	24	5	11	6	20	+ 9	- 57	4	+ 12	+ 38	- 79
165	5	25	8	8	1	13	- 126	+ 91	61	+ 94	- 116	+ 54
47	7	26	7	14	3	14	- 108	+ 51	- 41	+ 112	- 101	4
129	6	27	14	7	7	17	+ 29	- 81	2	8	+ 48	93
126	9	27	9	8	8	23	+ 95	- 19	+ 65	- 57	+ 161	37
110	8	23	2	7	5	24	- 75	- 1	- 41	+ 87	- 16	85
89	7	26	13	13	9	17	- 25	- 31	+ 29	- 27	+ 25	29
205	5	29	5	15	8	12	+ 13	- 15	+ 16	+ 10	+ 64	79
122	7	18	6	19	4	23	- 82	- 8	- 29	+ 78	+ 6	59
102	7	26	4	11	4	28	+ 29	- 84	+ 5	- 11	+ 51	89
174	9	25	6	7	4	17	- 70	- 28	- 35	+ 34	+ 3	- 183
50	5	22	8	13	3	16	- 32	- 25	- 16	+ 57	+ 24	30
64	3	11	2	5	1	23	- 31	- 26	- 34	+ 47	+ 48	81
195	6	16	3	6	1	16	- 85	- 5	- 25	+ 74	+ 10	55
119	2	21	6	9	6	20	+ 3	+ 61	+ 6	- 19	+ 26	60
67	5	23	2	9	7	18	+ 49	- 31	+ 32	- 47	- 109	38
91	6	22	12	15	8	16	- 113	+ 29	- 71	+ 121	- 67	38
32	2	14	1	11	2	20	+ 126	- 72	+ 91	- 63	- 124	13
78	1	10	2	8	5	14	+ 99	+ 8	+ 69	- 43	+ 138	67
100	7	9	13	13	0	3	- 13	+ 8	+ 39	+ 68	+ 19	34
21	8	24	11	4	6	26	- 35	- 37	- 15	+ 80	+ 5	55
60	8	22	4	12	7	15	+ 93	- 19	+ 63	- 61	+ 159	37
191	4	22	8	4	5	10	+ 119	+ 75	+ 88	- 58	- 126	15
158	4	22	6	10	5	10	- 21	- 19	3	+ 20	+ 27	26
76	8	27	9	11	6	13	- 33	- 29	32	- 50	+ 51	77
82	7	20	3	10	8	18	- 78	- 64	- 31	+ 81	- 21	99
36	9	29	10	13	8	16	+ 97	- 21	+ 63	- 59	+ 164	40
73	1	25	3	12	4	25	+ 91	- 33	+ 64	- 1	+ 109	42
97	3	12	2	6	1	17	- 33	- 1	+ 11	+ 58	- 31	30

APPENDIX B (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	13
163	63	922	1.81	19	23	62	56	13	6	8	5	0
173	53	1107	1.75	26	37	71	80	9	2	8	3	0
14	56	1257	2.06	32	56	50	74	1	2	7	3	0
168	59	934	1.71	14	31	31	29	16	10	8	4	5
93	68	1115	2.28	22	26	76	57	2	2	12	2	1
22	60	932	1.78	11	12	50	54	11	0	6	3	1
34	63	981	1.94	18	38	88	84	10	6	10	1	5
104	55	727	1.32	10	17	49	44	9	2	12	5	1
12	61	1019	1.94	20	43	43	27	17	7	3	8	1
178	54	1215	2.00	24	54	70	58	15	9	8	3	1
84	50	1057	1.66	16	26	62	55	15	8	7	2	1
135	65	1101	2.22	26	45	87	70	2	1	9	2	1
164	60	1251	2.28	23	40	33	63	5	5	4	4	0
128	64	1121	2.23	25	47	85	88	5	0	3	6	0
194	58	861	1.69	6	18	37	43	17	8	9	0	2
103	52	1034	1.75	33	64	53	62	5	0	8	0	1
107	48	1100	1.72	29	35	45	43	4	1	4	0	2
115	71	959	2.28	24	36	55	68	15	3	11	0	2
39	61	1025	2.06	20	35	58	70	9	4	12	7	2
62	56	679	1.41	4	11	52	61	14	5	11	5	0
20	59	1199	2.25	26	50	79	47	6	0	5	2	1
25	60	1170	2.24	23	48	34	70	14	5	6	1	0
94	56	712	1.47	10	10	70	67	8	5	6	2	0
109	75	1353	3.00	35	69	50	56	9	3	8	0	2
131	57	1059	2.00	25	38	35	63	7	0	8	0	2
151	49	997	1.65	19	44	56	58	7	3	11	0	2
18	59	769	1.65	9	20	57	45	7	12	10	4	0
161	60	1206	2.32	21	50	68	67	4	1	6	6	0
150	61	910	1.94	27	37	48	60	14	17	11	0	4
146	63	1105	2.29	16	30	69	71	12	7	10	4	1
175	46	1115	1.76	28	64	25	56	10	10	10	0	4
87	60	874	2.03	15	25	50	56	16	5	4	1	2
88	68	1247	2.67	35	67	68	56	16	2	9	1	0

APPENDIX B (Continued)

14	15	16	17	18	19	20	21	22	23	24	25	26
163	5	24	4	11	6	19	15	1	14	29	49	70
173	8	26	3	12	9	22	19	39	-	57	1	55
14	7	28	5	10	7	15	13	57	-	18	47	77
168	4	28	9	11	2	9	20	1	-	4	37	19
93	7	20	0	10	9	28	90	29	+	7	+111	39
22	1	24	6	10	8	21	-115	-33	-	+126	-75	44
34	5	25	3	15	7	10	-130	96	-	+98	-117	49
104	6	25	5	13	7	20	21	55	-	+37	+45	70
12	9	29	4	9	8	18	7	59	-	+2	+39	79
178	3	24	2	6	6	21	72	78	-	+87	57	30
84	8	24	5	6	4	12	68	82	-	+92	54	27
135	5	25	2	12	6	25	98	61	+	-79	+151	81
164	5	10	1	4	3	14	1	59	+	-19	+28	60
128	8	20	5	11	7	12	4	45	-	+35	+60	51
194	8	25	12	7	9	16	29	79	-	-11	+49	89
103	5	24	2	11	6	25	+108	17	+	-34	+139	65
107	6	21	5	9	3	17	1	16	+	+9	+65	79
115	9	29	17	13	8	2	29	25	+	+54	+25	29
39	3	24	1	10	8	17	73	30	-	-34	1	179
62	6	23	11	14	5	23	31	29	-	+26	-16	30
20	7	23	2	7	2	27	-106	46	-	+117	-97	1
25	9	26	10	6	3	24	1	62	-	-18	+27	59
94	5	21	3	13	7	23	33	49	+	+50	+14	73
109	8	19	4	4	1	22	27	74	-	-14	+53	89
131	5	27	6	5	8	22	+54	29	+	-37	+99	33
151	3	22	4	12	2	19	-111	1	-	+10	-23	119
18	7	22	5	12	0	17	+112	14	+	-44	+146	69
161	9	26	7	11	7	28	64	9	-	+59	-24	49
150	9	22	7	10	3	14	-140	60	-	-1	-36	119
146	7	28	11	14	7	25	+54	29	+	-35	-116	33
175	9	23	13	14	5	24	74	2	-	-6	-17	90
87	9	20	4	5	6	22	-18	1	+	+28	+51	71
88	4	29	4	4	0	17	71	31	-	+35	+3	183

APPENDIX B (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	13
149	61	1114	2.26	23	44	48	56	14	5	9	3	0
198	53	984	1.81	20	22	49	41	15	3	5	3	0
46	52	814	1.56	16	22	34	38	15	10	7	4	3
167	55	1232	2.25	28	29	16	42	3	4	4	10	4
111	50	1017	1.79	28	36	21	50	10	1	6	3	1
192	55	1048	2.00	23	45	39	56	13	1	7	4	0
160	56	945	1.89	25	46	58	72	16	4	7	2	1
27	62	915	2.06	14	24	41	45	13	6	10	10	1
63	59	1176	2.33	10	37	36	68	14	2	8	1	2
143	50	1127	1.97	29	49	36	52	6	3	7	1	0
7	51	967	1.78	20	26	49	65	17	12	11	2	1
92	64	1111	2.42	26	51	54	60	14	7	8	6	0
142	63	1117	2.41	28	46	71	78	6	2	11	1	0
180	64	977	2.25	29	25	48	45	12	4	6	1	0
9	67	1008	2.39	16	33	59	60	14	3	10	2	1
51	56	1016	2.06	19	27	49	39	7	6	12	5	0
24	62	1004	2.24	18	47	69	71	13	3	11	4	0
176	53	937	1.86	19	29	61	62	15	0	4	3	0
52	73	1093	2.76	18	28	62	52	8	0	5	2	0
83	56	948	2.00	20	46	66	80	15	0	7	8	0
1	57	912	2.00	21	21	35	58	11	4	8	1	0
19	59	1070	2.29	33	48	53	56	15	4	9	2	0
6	62	1143	2.50	35	64	42	50	3	1	9	6	1
95	60	1062	2.21	26	43	56	63	8	1	8	2	0
188	57	1122	2.31	18	44	57	44	2	1	6	9	0
202	57	1130	2.32	20	35	55	52	13	1	7	6	0
147	60	831	2.00	23	31	29	42	14	9	4	4	0
179	56	1079	2.25	24	46	43	61	9	5	11	7	0
10	60	871	2.09	19	32	34	54	10	1	7	4	0
49	61	974	2.27	19	25	62	65	3	0	4	7	0
137	65	1204	2.72	29	61	64	72	12	1	10	3	0
44	55	1278	2.53	30	54	67	58	14	4	10	2	0
136	56	1167	2.41	30	47	27	57	14	8	10	2	1

APPENDIX B (Continued)

14	15	16	17	18	19	20	21	22	23	24	25	26
149	8	28	4	10	4	16	-19	3	38	6	+33	21
198	8	24	3	12	7	22	+124	+75	+93	-65	-119	9
46	4	22	6	9	4	13	-22	-19	+4	+21	+26	30
167	7	24	4	5	7	13	+101	-20	+59	-58	+161	37
111	6	28	5	11	7	20	-133	+100	-63	+101	-116	51
192	7	26	12	12	8	26	-80	-71	-32	+79	-17	97
160	4	23	1	11	6	28	+6	-57	+1	-3	+41	82
27	7	26	6	7	4	17	+30	-82	-5	-12	+52	91
63	9	25	8	9	3	28	-55	-39	-20	+70	-	60
143	6	13	4	7	4	14	-167	+7	-102	+123	-86	58
7	9	20	4	12	4	12	-20	+21	-3	+22	+26	28
92	8	27	3	9	7	15	-55	-37	-20	+69	-4	61
142	9	27	8	8	0	15	-152	+28	-92	+58	-76	78
180	1	20	3	12	5	14	+53	+32	+31	-37	-112	34
9	1	25	8	12	8	28	-34	-52	-15	+49	+15	74
51	7	22	9	9	3	14	-94	+124	-49	+98	-122	73
24	9	28	8	14	8	12	-34	+5	+10	+59	-34	27
176	9	24	7	12	6	15	-127	-45	-65	+119	-121	68
52	6	23	7	13	4	13	-104	+20	-41	+120	-101	2
83	6	22	2	10	3	23	-89	+59	-50	+29	-23	46
1	8	27	2	12	8	13	-56	+42	-19	+68	-	58
19	6	28	11	11	1	16	-65	+10	-26	+61	+26	51
6	4	22	4	4	8	25	-30	-30	-35	+51	+49	78
95	7	26	7	11	6	14	+82	-99	+41	-71	+174	68
188	7	17	2	11	8	20	-16	-3	+25	+32	+53	67
202	9	28	3	10	8	11	-99	+128	-45	+113	-122	80
147	7	25	1	8	2	13	-11	-60	+1	+28	+51	76
179	7	23	7	7	5	8	+103	-42	+50	-66	+147	15
10	9	22	3	8	8	17	-38	-39	-18	+76	+15	57
49	1	19	3	11	6	5	+9	-43	-8	+9	+38	75
137	8	27	13	15	7	23	-75	+81	-12	+91	+60	28
44	3	27	10	13	5	16	-60	-2	-49	+27	-8	91
136	8	26	13	14	4	19	-113	-6	-69	+7	-25	127

APPENDIX B (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	13
187	53	1073	2.20	20	36	29	52	11	3	4	3	1
79	70	1252	3.00	33	63	75	75	4	0	9	1	0
152	63	1046	2.49	19	39	61	78	13	2	10	2	0
65	57	975	2.22	31	50	33	70	16	4	4	1	0
120	53	923	2.06	26	39	66	66	10	2	7	6	0
41	63	1188	2.76	26	50	57	62	8	1	6	5	0
190	72	1092	2.94	27	36	49	73	11	4	9	2	1
66	66	1031	2.67	22	22	72	61	12	3	8	1	0
5	59	890	2.25	20	26	60	44	6	6	10	6	0
197	66	1238	3.00	31	54	52	49	6	1	7	4	0
189	54	1116	2.43	26	41	26	42	12	0	5	0	0
118	64	1073	2.72	28	47	77	64	4	0	10	5	0
48	76	825	2.75	21	24	44	71	16	3	4	10	0
182	59	1043	2.52	30	46	42	59	1	2	6	1	0
169	57	1070	2.50	25	40	69	61	3	1	10	2	0
106	35	1044	1.76	15	23	55	56	10	5	4	3	0
45	49	921	2.03	23	42	57	59	0	7	12	1	5
16	62	898	2.43	28	41	39	24	15	1	6	3	3
4	63	1116	2.75	31	49	39	58	13	4	4	1	0
185	55	1080	2.47	25	46	57	60	2	2	7	2	0
86	64	1200	2.94	27	39	55	70	3	0	12	3	4
53	58	1038	2.51	31	45	36	56	4	5	5	4	2
35	59	679	2.03	16	28	31	53	11	4	4	4	1
166	67	1304	3.21	35	69	49	61	10	4	13	4	0
196	64	1010	2.71	29	49	54	69	17	6	8	2	1
96	56	1045	2.50	25	47	55	59	3	4	4	2	0
85	61	918	2.48	10	41	58	59	14	2	9	3	1
3	70	1248	3.24	32	42	70	57	9	3	10	4	0
199	52	1000	2.30	29	56	60	52	5	0	10	3	0
37	62	926	2.53	20	27	50	68	8	3	10	3	0
74	62	1072	2.75	29	35	59	79	12	0	6	0	2
204	58	1157	2.75	19	43	76	76	12	1	7	0	0
132	61	865	2.44	23	25	66	69	13	2	7	0	0

APPENDIX B (Continued)

14	15	16	17	18	19	20	21	22	23	24	25	26
187	6	20	2	7	6	22	- 33	- 24	- 6	+ 55	+ 8	- 32
79	0	20	2	13	7	18	- 20	- 31	- 27	+ 31	+ 8	- 32
152	4	24	1	11	5	27	- 27	- 54	+ 6	+ 40	+ 42	- 72
65	7	28	8	8	7	11	- 161	+ 41	- 65	+ 121	+ 109	- 61
120	2	26	6	10	8	21	- 15	+ 8	- 39	+ 64	+ 19	- 40
41	6	21	5	18	6	13	- 19	+ 44	- 1	+ 60	+ 1	- 57
190	2	23	3	13	2	8	- 168	+ 8	- 98	+ 126	- 85	- 62
66	6	26	14	9	7	15	- 2	+ 59	- 77	- 20	+ 26	- 61
5	4	22	0	9	9	14	- 5	- 46	- 7	+ 36	+ 59	- 49
197	0	24	2	9	5	28	- 116	- 29	- 68	+ 131	- 74	- 39
189	3	18	5	7	5	13	- 102	+ 131	- 46	+ 111	- 125	- 77
118	8	26	8	12	2	13	+ 99	- 60	+ 81	- 83	+ 151	- 77
48	8	21	6	6	5	7	- 83	+ 1	- 25	+ 77	- 11	- 49
182	2	9	1	5	2	13	- 138	+ 59	- 67	+ 5	- 35	- 121
169	5	21	2	8	5	14	- 1	- 16	- 15	+ 4	+ 71	- 79
106	6	21	5	9	3	12	+ 91	- 29	+ 67	+ 4	+ 115	- 45
45	6	23	9	14	4	22	- 74	- 6	+ 41	+ 2	- 21	- 88
16	9	26	6	11	9	15	+ 33	- 79	- 7	- 12	+ 55	- 88
4	9	27	7	8	2	11	+ 105	- 58	+ 78	- 85	+ 149	- 78
185	7	24	3	12	8	23	- 114	- 7	- 70	+ 11	- 24	- 124
86	2	25	3	12	7	21	- 8	- 60	- 5	- 1	+ 40	- 78
53	6	27	5	4	6	14	- 81	- 65	- 31	+ 88	- 9	- 102
35	7	18	5	8	4	26	- 21	+ 41	- 5	+ 58	- 2	- 56
166	6	26	6	12	8	25	- 127	+ 101	- 63	+ 102	- 116	- 51
196	9	26	12	14	7	16	+ 101	- 19	+ 101	- 63	+ 159	- 38
96	4	22	4	9	3	12	- 19	- 18	- 2	+ 21	+ 30	- 31
85	5	24	12	13	2	20	- 33	- 49	- 14	+ 51	+ 16	- 71
3	1	27	0	10	4	23	- 150	+ 32	- 93	+ 61	- 77	- 75
199	4	21	3	11	7	12	+ 49	+ 29	- 28	- 40	- 108	- 35
37	3	23	3	7	3	7	- 35	- 1	+ 11	+ 62	- 29	- 31
74	8	24	1	10	7	13	- 131	- 20	+ 71	+ 119	- 114	- 69
204	2	22	1	13	7	13	- 105	+ 50	- 39	+ 120	- 101	- 2
132	7	18	1	13	8	20	- 91	+ 59	- 49	+ 41	- 23	- 45

APPENDIX B (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	13
127	60	1226	2.94	28	46	46	46	5	1	3	2	4
40	53	939	2.31	16	22	50	67	12	5	5	5	7
154	57	1281	2.94	38	75	32	58	5	4	10	7	4
145	59	1116	2.76	34	63	64	69	10	1	4	2	1
77	54	869	2.26	9	8	63	65	11	3	7	4	1
43	59	1107	2.76	28	53	39	54	11	4	5	1	3
28	65	1157	3.03	28	47	31	53	7	2	7	2	0
30	71	1170	3.25	24	46	53	62	7	1	9	0	1
75	52	853	2.18	19	35	53	61	5	3	5	1	4
211	56	978	2.50	24	41	51	50	16	5	7	7	0
177	80	1462	3.98	36	69	77	74	3	1	7	0	1
98	62	1011	2.75	20	32	92	75	7	2	10	1	0
15	50	776	2.03	14	29	57	63	9	3	9	3	4
56	54	1006	2.50	18	31	75	52	7	3	8	5	1
121	58	1115	2.78	10	36	54	52	11	1	9	0	4
140	37	867	1.75	11	23	67	64	13	1	6	0	1
17	42	924	2.00	13	19	53	59	7	0	5	4	0
155	62	1130	2.94	30	53	59	78	5	2	6	4	1
184	55	979	2.50	20	35	60	61	17	5	10	5	2
206	56	810	2.29	15	27	66	77	11	1	10	2	0
29	59	985	2.65	20	43	87	68	5	0	5	0	1
23	65	1138	3.06	24	44	54	65	10	3	5	1	0
116	57	943	2.53	26	30	20	30	10	2	5	1	0
156	65	1071	3.00	26	59	70	74	13	1	10	1	0
162	62	941	2.72	26	37	55	75	16	5	4	1	1
133	56	958	2.55	16	38	65	75	5	3	8	2	0
71	68	1189	3.27	28	40	72	70	4	1	9	0	0
172	67	1173	3.24	26	51	33	63	7	1	2	0	0
117	60	1010	2.79	24	34	43	51	7	1	10	0	0
114	64	1237	3.24	29	52	57	65	0	0	7	0	0
171	54	913	2.46	18	28	31	31	15	9	4	4	2
134	57	1039	2.75	25	39	43	54	7	1	4	6	3
105	52	795	2.25	26	43	36	34	14	1	12	3	3

APPENDIX B (Continued)

14	15	16	17	18	19	20	21	22	23	24	25	26
127	0	19	8	5	6	6	57	-41	21	72	3	61
40	7	19	5	7	4	4	64	-11	27	65	-30	48
154	1	24	7	3	2	2	29	-32	35	48	+47	82
145	5	17	2	10	6	6	14	+3	45	4	+35	21
77	3	8	0	11	5	5	74	-27	40	33	+7	178
43	9	28	12	6	3	3	25	-2	24	28	+49	70
28	4	24	3	10	9	9	9	-60	4	20	+51	74
30	4	23	5	10	5	5	72	-29	37	25	+4	181
75	3	23	2	11	2	2	37	+38	70	+125	-117	63
211	1	23	5	11	7	7	75	+77	9	91	-55	29
177	4	24	3	14	6	6	40	-42	17	81	+16	60
98	1	21	3	13	8	8	62	-2	49	25	-9	92
15	6	24	4	8	7	7	28	+33	29	27	+16	29
56	5	25	3	13	6	6	29	-2	56	56	+25	31
121	9	29	11	8	7	7	90	+28	65	7	+111	39
140	6	19	3	13	5	5	98	+129	45	+114	-126	82
17	5	11	4	8	7	7	128	-19	68	+120	-115	72
155	2	19	6	10	6	6	73	+7	43	14	-19	85
184	3	28	10	16	3	3	21	-54	11	40	+46	71
206	7	26	5	13	7	7	11	+12	38	66	+19	34
29	6	22	1	11	6	6	158	+40	66	+123	-114	58
23	9	19	10	6	4	4	86	-6	24	71	-12	52
116	3	21	0	11	5	5	170	+7	-102	+131	-79	61
156	8	24	3	16	8	8	114	-28	67	+130	-76	39
162	9	24	11	13	8	8	1	-51	6	34	+60	57
133	2	18	3	11	2	2	106	+125	40	6	-119	82
71	7	26	2	12	6	6	132	-23	72	+116	-113	67
172	8	23	3	10	7	7	97	+128	51	+108	-119	81
117	9	27	3	9	1	1	90	-19	71	+111	+114	39
114	6	24	12	10	2	2	37	-18	2	57	+24	33
171	8	20	11	10	2	2	29	-32	31	26	+12	33
134	2	8	1	1	2	2	140	+57	65	1	-33	119
105	9	27	6	9	3	3	49	+31	28	39	-108	37

APPENDIX B (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	13
113	57	1160	2.94	32	50	28	25	26	4	10	11	4
138	37	941	2.00	21	37	32	16	12	0	0	6	0
139	56	1028	2.75	23	38	56	64	11	4	0	4	1
101	58	1159	3.00	29	38	57	86	16	6	0	5	1
70	48	1033	2.50	26	54	23	47	4	4	1	3	0
201	56	1000	2.71	29	37	50	55	4	2	1	2	4
207	55	1064	2.78	19	38	66	49	6	2	0	8	2
159	66	1149	3.27	33	34	54	35	4	1	2	1	0
11	73	1254	3.64	30	65	74	79	9	2	0	3	2
123	55	1042	2.76	18	33	56	62	12	0	3	2	0
59	56	1163	2.97	26	36	43	54	10	3	1	2	0
210	62	1201	3.24	26	54	74	73	2	1	2	6	1
125	57	799	2.53	13	29	49	39	13	2	6	1	2
108	55	1174	3.00	29	58	31	43	11	6	1	1	1
57	56	1114	3.00	21	49	46	41	6	1	1	1	1
170	55	1131	3.00	24	47	65	70	3	1	1	1	0
68	63	1009	3.11	28	41	62	50	14	1	1	4	0
42	46	1109	2.71	26	38	63	72	5	1	2	0	0
80	73	1038	3.50	23	47	71	58	4	2	1	2	0
69	50	1039	2.75	21	25	52	66	7	1	2	5	0
72	59	1021	3.03	18	33	81	80	14	2	2	0	1
200	66	1154	3.46	29	56	53	54	7	2	3	2	1
54	58	837	2.77	26	39	63	57	8	2	2	1	1
61	53	1120	3.03	24	39	58	60	6	2	1	1	0
141	55	856	2.72	26	46	64	74	9	1	3	3	1
112	64	1151	3.47	28	58	70	68	8	3	3	1	0
31	65	953	3.25	23	46	43	38	13	2	3	3	1
144	68	1085	3.53	31	64	61	59	6	5	0	2	2
8	73	1253	3.97	30	45	78	73	8	0	1	0	0
113	55	909	2.94	29	51	79	91	10	2	5	0	2
81	56	891	3.00	26	37	63	86	13	0	8	6	0
55	65	1012	3.50	20	37	65	47	10	2	0	2	0
209	65	983	3.50	25	31	81	69	6	0	5	7	1

APPENDIX B (Continued)

14	15	16	17	18	19	20	21	22	23	24	25	26
13	4	27	7	11	7	19	+ 89	- 32	+ 66	+ 8	+112	+ 42
138	7	11	1	6	2	25	-159	+ 9	-102	+141	-138	- 59
139	4	15	1	8	6	20	- 64	+ 5	- 30	+ 57	- 31	- 47
101	8	26	8	9	1	18	- 60	- 38	- 23	+ 72	- 3	- 62
70	8	28	12	7	6	26	- 87	+ 58	- 48	+ 29	- 19	- 39
201	7	26	11	6	2	13	- 99	+ 45	- 44	+121	-100	- 2
207	3	24	6	14	8	14	- 37	- 1	+ 11	+ 62	- 29	- 30
159	6	11	3	9	0	12	-145	+ 29	- 97	+ 57	- 80	- 71
11	7	25	9	13	7	19	+ 3	- 17	+ 18	+ 10	+ 66	- 82
123	1	19	3	4	5	26	- 29	- 48	- 17	+ 53	+ 12	- 68
59	4	23	5	8	0	21	- 19	- 17	+ 2	+ 19	+ 31	- 31
210	7	25	6	11	9	22	+101	- 19	+ 59	- 58	+167	- 35
125	8	22	3	8	9	16	-127	+101	- 63	+104	-123	- 54
108	6	25	10	4	2	23	- 17	+ 38	+ 2	+ 60	+ 4	- 53
57	7	29	8	13	7	28	- 83	- 70	- 29	+ 84	+ 24	- 94
170	6	25	3	7	3	17	+ 11	- 62	+ 1	+ 3	+ 43	- 76
68	7	26	1	11	5	21	-109	- 11	- 66	+ 7	- 19	- 121
42	1	20	1	12	8	18	-117	- 25	- 71	+136	- 79	- 44
80	7	23	4	12	5	3	+ 35	- 77	+ 2	- 13	+ 49	- 92
69	7	27	10	11	7	19	- 72	+ 4	- 29	- 11	- 22	- 90
72	9	24	1	13	8	13	- 55	- 4	- 53	+ 30	- 7	- 88
200	6	23	1	12	3	26	- 40	+ 41	- 17	+ 81	- 5	- 60
54	2	23	4	14	8	4	- 69	+ 84	- 12	+ 83	- 53	- 26
61	4	21	0	9	1	21	+ 8	- 38	+ 2	+ 11	+ 38	- 68
141	9	26	9	14	8	6	- 31	- 34	- 29	- 41	+ 49	- 78
112	3	29	9	13	7	17	+ 95	- 47	+ 45	- 71	+140	- 26
31	9	22	2	15	5	25	- 79	- 67	- 33	+ 84	- 28	- 100
144	1	26	1	14	5	21	- 67	- 33	- 43	- 37	- 2	- 174
8	9	28	8	15	9	8	- 75	- 3	- 43	- 7	- 28	- 87
113	7	23	3	16	7	28	+ 9	- 61	+ 4	+ 20	- 51	- 74
81	3	19	3	6	2	16	- 12	+ 4	+ 30	+ 28	+ 55	- 66
55	3	24	4	12	8	11	- 21	+ 3	- 39	+ 4	+ 38	- 16
209	3	28	2	11	6	14	+121	+ 71	+ 86	- 64	-121	- 8

APPENDIX B (Continued)

	1	2	3	4	5	6	7	8	9	10	11	12	13
90		49	778	2.76	22	37	43	62	18	5	9	9	2
58		54	819	3.00	18	33	53	59	17	3	7	3	3
157		59	1184	3.76	25	46	32	48	12	3	4	2	1
33		40	897	2.75	19	37	50	52	13	4	6	4	0
124		57	851	3.24	21	33	74	74	5	1	10	3	1
99		58	916	3.44	21	26	70	56	14	5	6	1	2

APPENDIX B. (Continued)

14	15	16	17	18	19	20	21	22	23	24	25	26
90	9	25	3	9	4	16	- 27	- 31	- 29	- 47	+ 53	- 83
58	3	27	7	14	5	11	+ 77	- 98	+ 39	- 71	+ 166	- 68
157	8	17	4	3	0	15	- 21	- 60	+ 4	+ 44	+ 41	- 64
33	5	26	4	14	8	4	- 14	+ 9	+ 42	+ 65	+ 20	+ 36
124	4	23	4	12	8	27	- 171	+ 4	- 102	+ 121	- 81	- 57
99	9	26	8	9	1	13	- 194	+ 125	- 41	+ 106	- 119	- 81

## APPENDIX C

APPENDIX C

OBSERVED FREQUENCIES, CHI-SQUARE, AND SIGNIFICANCE  
LEVEL OF TESTS ON CONTINGENCY DATA FOR 70  
UNDERACHIEVERS, 71 NORMAL ACHIEVERS  
AND 70 OVERACHIEVERS

TYPE OF SECONDARY SCHOOL ATTENDED

Classification <sup>a</sup>	Under- Achievers	Normal Achievers	Over- Achievers	Total
1	65	60	57	182
2	0	3	2	5
3	4	1	9	14
4	0	3	1	4
5	0	2	0	2
6	0	1	1	2
7	1	0	0	1
8	<u>0</u>	<u>1</u>	<u>0</u>	<u>1</u>
Total	70	71	70	211

$X^{2b} = 16.76$       d.f. = 8

Significance       $P < .05$   
Level

- <sup>a</sup>
- 1 Public School Only
  - 2 Parochial School Only
  - 3 Private Day School Only
  - 4 Private Boarding School Only
  - 5 Both Public and Parochial School
  - 6 Both Public and Private School
  - 7 Both Parochial and Private School
  - 8 Both Private Day and Boarding School

<sup>b</sup> Classes 5, 6, 7 and 8 were combined before applying the  $X^2$  test.

APPENDIX C (continued)

FINANCIAL AID

Classification <sup>a</sup>	Under-Achievers	Normal Achievers	Over-Achievers	Total
1	19	15	15	49
2	<u>51</u>	<u>56</u>	<u>55</u>	<u>162</u>
Total	70	71	70	211
$X^2 = .91$	d.f. = 2			
Significance Level	P > .10			
<sup>a</sup> 1	On Financial Aid			
2	Not on Financial Aid			

SIZE OF HIGH SCHOOL GRADUATING CLASS

Classification <sup>a</sup>	Under-Achievers	Normal Achievers	Over-Achievers	Total
1	15	19	23	57
2	22	18	15	55
3	26	28	25	79
4	<u>7</u>	<u>6</u>	<u>7</u>	<u>20</u>
Total	70	71	70	211
$X^2 = 3.31$	d.f. = 6			
Significance Level	P > .10			
<sup>a</sup> 1	500 - and above			
2	300 - 499			
3	100 - 299			
4	Under 100			106

APPENDIX C (continued)

RELIGION

Classification <sup>a</sup>	Under-Achievers	Normal Achievers	Over-Achievers	Total
1	6	5	10	21
2	40	36	33	109
3	14	17	15	46
4	<u>10</u>	<u>13</u>	<u>12</u>	<u>35</u>
Total	70	71	70	211

$X^2 = 3.35$       d.f. = 6

Significance Level       $P > .10$

- <sup>a</sup> 1 Jewish  
 2 Protestant  
 3 Roman Catholic  
 4 Other (Eastern Orthodox, Oriental, Unitarian, Agnostic, None)

RELIGIOUS ATTENDANCE

Classification <sup>a</sup>	Under-Achievers	Normal Achievers	Over-Achievers	Total
1	9	17	8	34
2	25	21	28	74
3	23	19	13	55
4	<u>13</u>	<u>14</u>	<u>21</u>	<u>48</u>
Total	70	71	70	211

$X^2 = 10.42$       d.f. = 6

Significance Level       $P > .10$

- <sup>a</sup> 1 Not at all  
 2 Less than once monthly  
 3 Once or twice monthly  
 4 Weekly

APPENDIX C (continued)

NUMBER OF SIBLINGS

Classification <sup>a</sup>	Under-Achievers	Normal Achievers	Over-Achievers	Total
1	3	7	10	20
2	24	22	21	67
3	23	20	23	66
4	14	8	9	31
5	3	10	6	19
6	<u>3</u>	<u>4</u>	<u>1</u>	<u>8</u>
Total	70	71	70	211
$X^2 = 11.82$	d.f. = 10			
Significance Level	P > .10			
<sup>a</sup> 1	None			
2	One			
3	Two			
4	Three			
5	Four			
6	Five or more			

BIRTH ORDER

Classification <sup>a</sup>	Under-Achievers	Normal Achievers	Over-Achievers	Total
1	4	7	10	21
2	33	28	22	83
3	20	22	26	68
4	9	12	10	31
5	<u>4</u>	<u>2</u>	<u>2</u>	<u>8</u>
Total	70	71	70	211
$X^2 = 6.97$	d.f. = 8			
Significance Level	P > .10			
<sup>a</sup> 1	Only child	3 Second born	5 Fourth born or above	
2	First born	4 Third born		



APPENDIX C (continued)

LEVEL OF FATHER'S EDUCATION

Classification <sup>a</sup>	Under-Achievers	Normal Achievers	Over-Achievers	Total
1	2	3	2	7
2	21	23	16	60
3	4	10	6	20
4	31	26	25	82
5	6	5	13	24
6	<u>6</u>	<u>4</u>	<u>8</u>	<u>18</u>
Total	70	71	70	211

$X^2 = 11.21$       d. f. = 10

Significance Level       $P > .10$

- <sup>a</sup>1 Did not graduate from H.S.      4 Graduated from college  
 2 Graduated from H.S.              5 Graduate School (1-3 yrs.)  
 3 Attended college (1-3 yrs.)      6 Doctorate

LEVEL OF MOTHER'S EDUCATION

Classification <sup>a</sup>	Under-Achievers	Normal Achievers	Over-Achievers	Total
1	1	1	1	3
2	31	35	29	95
3	19	20	16	55
4	15	14	20	49
5	4	1	4	9
6	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	70	71	70	211

$X^{2b} = 4.31$       d. f. = 8

Significance Level       $P > .10$

- <sup>a</sup>1 Did not graduate from H.S.      4 Graduated from college  
 2 Graduated from H.S.              5 Graduate School (1-3 yrs.)  
 3 Attended college (1-3 yrs.)      6 Doctorate

<sup>b</sup>Classes 5 and 6 were combined before applying the  $X^2$  test.

APPENDIX C (continued)

LEVEL OF FATHER'S OCCUPATION

Classification <sup>a</sup>	Under-Achievers	Normal Achievers	Over-Achievers	Total
1	19	22	25	66
2	18	15	14	47
3	16	15	20	51
4	10	12	5	27
5	5	3	4	12
6	2	4	1	7
7	<u>0</u>	<u>0</u>	<u>1</u>	<u>1</u>
Total	70	71	70	211

$X^2$ <sup>b</sup> = 6.50

d.f. = 10

Significance Level

$P > .10$

- <sup>a</sup>
- 1 Higher Executives, Proprietors of Large Concerns, and Major Professionals
  - 2 Business Managers, Proprietors of Medium Businesses, and Lesser Professionals
  - 3 Administrative Personnel, Small Independent Businesses, and Minor Professionals
  - 4 Clerical and Sales Workers, Technicians, and Owners of Little Businesses
  - 5 Skilled Manual Employees
  - 6 Machine Operators and Semi-Skilled Employees
  - 7 Unskilled Employees

<sup>b</sup>Classes 6 and 7 were combined before applying the  $X^2$  test.

APPENDIX C (continued)

LEVEL OF MOTHER'S OCCUPATION

Classification <sup>a</sup>	Under-Achievers	Normal Achievers	Over-Achievers	Total
1	0	1	0	1
2	15	12	17	44
3	11	7	6	24
4	15	20	15	50
5	0	0	0	0
6	1	1	2	4
7	0	0	2	2
8	<u>28</u>	<u>30</u>	<u>28</u>	<u>86</u>
Total	70	71	70	211

$X^{2b} = 6.31$       d.f. = 8

Significance Level       $P > .10$

- <sup>a</sup> 1 Higher Executives, Proprietors of Large Concerns, and Major Professionals  
 2 Business Managers, Proprietors of Medium Sized Businesses, and Lesser Professionals  
 3 Administrative Personnel, Small Independent Businesses, and Minor Professionals  
 4 Clerical and Sales Workers, Technicians, and Owners of Little Businesses  
 5 Skilled Manual Employees  
 6 Machine Operators and Semi-Skilled Employees  
 7 Unskilled Employees  
 8 Housewife exclusively

<sup>b</sup> Classes 1 and 2 were combined as were classes 5, 6 and 7 before applying the  $X^2$  test.

APPENDIX C (continued)

EXPECTED FIRST SEMESTER GRADES

Classification <sup>a</sup>	Under-Achievers	Normal Achievers	Over-Achievers	Total
1	0	0	1	1
2	12	28	38	78
3	48	40	31	119
4	10	3	0	13
5	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	70	71	70	211

$X^2{}^b = 29.89$       d.f. = 4

Significance Level       $P < .01$

- <sup>a</sup>1    Expected A Grade Average
- 2    Expected B Grade Average
- 3    Expected C Grade Average
- 4    Expected D Grade Average
- 5    Expected F Grade Average

<sup>b</sup>Classes 1 and 2 were combined as were classes 4 and 5 before applying the  $X^2$  test.

APPENDIX C (continued)

WHO MAKES THE DECISIONS IN THE HOME

Classification <sup>a</sup>	Under-Achievers	Normal Achievers	Over-Achievers	Total
1	45	40	34	119
2	7	11	3	21
3	16	19	32	67
4	2	1	1	4
5	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	70	71	70	211

$X^2{}^b = 13.04$       d.f. = 6

Significance Level       $P < .05$

- <sup>a</sup>
- 1    Father
  - 2    Mother
  - 3    Both Parents
  - 4    All
  - 5    Other (No one, Self, Grandmother, Grandfather, Siblings)

<sup>b</sup> Classes 4 and 5 were combined before applying the  $X^2$  test.

APPENDIX C (continued)

REASON FOR ENROLLING AT CEDAR CREST COLLEGE

Classification <sup>a</sup>	Under-Achievers	Normal Achievers	Over-Achievers	Total
1	15	16	12	43
2	29	31	27	87
3	4	8	8	20
4	15	14	20	49
5	<u>7</u>	<u>2</u>	<u>3</u>	<u>12</u>
Total	70	71	70	211

$X^2 = 7.25$       d. f. = 8

Significance Level       $P > .10$

- <sup>a</sup>1 Academic Program
- 2 Small Liberal Arts Women's College
- 3 Campus
- 4 Recommendations
- 5 Location

## SELECTED BIBLIOGRAPHY

## BIBLIOGRAPHY

- Ahmann, J. Stanley and Marvin Glock. "The Utility of Study Habits and Attitude Inventories in a College Reading Program," Journal of Educational Research, 51:297-303, December, 1957.
- Allen, Vernon L. and John M. Levine. "Creativity and Conformity," Journal of Personality, 36:405-19, September, 1968.
- Altus, William D. "A College Achiever and Nonachiever Scale for the Minnesota Multiphasic Personality Inventory," Journal of Applied Psychology, 32:385-97, August, 1948.
- Atkinson, J. W. "Motivational Determinants of Risk-Taking Behavior," Psychological Review, 64:359-72, 1957.
- \_\_\_\_\_, and Norman T. Feather (ed.). A Theory of Academic Achievement. New York: John Wiley and Sons, 1966.
- Barrett, H. G. "Underachievement, a Pressing Problem," Bulletin of the Ontario Secondary School and Teachers' Federation, 36:111-12, 151-52, May, 1956.
- Barron, Frank. "Creativity: What Research Has to Say About It," NEA Journal, 50:17-19, March, 1961.
- Bernreuter Personality Inventory Manual. Palo Alto, Calif.: Consulting Psychologists Press, 1958, p. 4.
- Bledsoe, Joseph C. "An Investigation of Six Correlates of Student Withdrawal from High School," Journal of Educational Research, 53:3-6, September, 1959.
- Bower, W. Scott, Joe L. Boyer, and Elinor A. Scheirer. "Research Related to Academic Achievement Motivation," Theory into Practice, 9:33-46, February, 1970.
- Bozak, I. M. "Summer Project for Underachieving Freshmen," Improving College and University Teaching, 17:208-11, Summer, 1969.
- Brown, F. G. "Study Habits and Attitudes, College Experience, and College Success," Personnel and Guidance Journal, 43:287-91, November, 1964.

- Brown, Sara. "Variables Associated With Over- and Under achievement." Unpublished Doctor's dissertation, The University of Pennsylvania, Philadelphia, 1964.
- Burgess, Elva. "Personality Factors of Over- and Underachievers in Engineering," Journal of Educational Psychology, 47:89-99, February, 1956.
- Centi, Paul. "Highest and Lowest Students at the School of Education of a Large Urban University," Personnel and Guidance Journal, 37:357-59, February, 1959.
- Chopra, Sukhendra. "A Comparative Study of Achieving and Underachieving Students of High Intellectual Ability," Exceptional Children, 33:631-34, May, 1967.
- Clark, J. H. "Grade Achievement of Female College Students in Relation to Non-Intellectual Factors: MMPI Items," Journal of Social Psychology, 37:275-81, May, 1953.
- College Entrance Examination Board. Data Analysis and Interpretation. Validity Study Service. New York, 1964.
- Crutchfield, R. S. "Conformity and Character," American Psychologist, 51:629-36, October, 1955.
- Davis Reading Test Manual. New York: The Psychological Corporation, 1962 edition, p. 5.
- Diener, Charles L. "Similarities and Differences Between Overachieving and Underachieving Students," Personnel and Guidance Journal, 38:396-400, January, 1960.
- Dowd, Robert J. "Underachieving Students of High Capacity," Journal of Higher Education, 23:327-330, June, 1952.
- Dulles, Robert J. "The Myth of Underachievement," Journal of Educational Sociology, 35:121-22, November, 1961.
- Entwistle, N. J. and J. D. Wilson. "Personality, Study Methods, and Academic Performance," University Quarterly, 24:147-56, Spring, 1970.

- Farquhar, William. Motivational Factors Related to Academic Achievement. Cooperative Research Project, #846. East Lansing, Michigan: College of Education, Michigan State University, 1963.
- Finger, John A. and George E. Schlessler. "Non-Intellectual Predictors of Academic Success in School and College," School Review, 73:14-29, Spring, 1965.
- Flaugher, R. L. and D. A. Rock. "Multiple Moderator Approach to the Identification of Over and Underachievement," Journal of Measurement, 6:223-28, Winter, 1969.
- Frankel, E. "A Comparative Study of Achieving and Underachieving Boys of High Intellectual Ability," Journal of Educational Research, 53:172-80, January, 1960.
- Fried, Robert. Introduction to Statistics. New York: Oxford University Press, 1969.
- Friedenberg, Edgar Z. The Vanishing Adolescent. Boston: Beacon Press, 1959.
- Garrett, Harley F. "A Review and Interpretation of Investigations of Factors Related to Scholastic Success in Colleges of Arts and Sciences and Teachers Colleges," Journal of Experimental Education, 17:91-138, December, 1949.
- Gebhart, G. Gary and Donald P. Hoyt. "Personality Needs of Under- and Overachieving Freshmen," Journal of Applied Psychology, 29:125-28, April, 1958.
- Gilbert, Jane M. "Creativity, Critical Thinking, and Performance in Social Studies," Dissertation Abstracts, 22:1906, December, 1961.
- Gowan, J.C. "Dynamics of Underachievement of Gifted Children," Exceptional Children, 24:98-101, November, 1957.
- Grande, P., Joseph Simons, and Nathaniel J. Pallone. "The Perception of the College Experience and Academic Motivation," Journal of Educational Research, 61:65-67, October, 1967.
- Guilford, J. P. "Creativity," American Psychologist, 5:444-54, September, 1950.

- Hall, L. H. "Selective Variables in the Achievement of Junior College Students from Different Socio-Economic Backgrounds," Journal of Educational Research, 63:60-62, October, 1969.
- Herrenkohl's Achievement Motivation Survey. "A Factor Analytic Study of Achievement Motivation," p. 21.
- Hill, Helen. "In Defense of the Underachiever," Education Digest, 34:45-47, November, 1968.
- Holland, J. L. "Creative and Academic Performance Among Talented Adolescents," Journal of Educational Psychology, 52:136-47, March, 1961.
- Holtzman, W. H., W. F. Brown, and W. G. Farquhar. "The Survey of Study Habits and Attitudes: A New Instrument for Prediction of Academic Success." Educational and Psychological Measurement, 14:726-32, 1954.
- Iffert, R. E. Retention and Withdrawal of College Students. U. S. Office of Education, Bulletin #1. Washington, D. C.: Government Printing Office, 1958.
- Ivey, Allen E., Floyd E. Peterson, and E. Stewart Trebbe. "The Personality Record as a Predictor of College Attrition: A Discriminant Analysis," College and University, 41:199-205, Winter, 1966.
- Jackson, Robert A. "Prediction of the Academic Success of College Freshmen," Journal of Educational Psychology, 46:296-301, May, 1955.
- Karnes, M. B. "Factors Associated with Underachievement and Overachievement of Intellectually Gifted Children," Exceptional Children, 28:167-75, December, 1961.
- Keefer, Karl E. "Self-Prediction of Academic Achievement by College Students," Journal of Educational Research, 63:53-56, October, 1969.
- Kim, Ki-Suk. "The Use of Certain Measurements of Academic Aptitude, Study Habits, Motivation, and Personality in the Prediction of Academic Achievement," Dissertation Abstracts, 18:150, 1958.

- Krumboltz, John D. "Measuring Achievement Motivation - A Review," Journal of Counseling Psychology, 4:156, Fall, 1957.
- Kurtz, John J. and Esther W. Swenson. "Factors Related to Overachievement and Underachievement," The School Review, 59:472-80, November, 1951.
- Lang, Gerhard, Amedeo G. Sferra, and Marjorie Seymour. "Psychological Needs of College Freshmen and Their Academic Achievement," Personnel and Guidance Journal, 41:359-60, December, 1962.
- Lannholm, Gerald and William Shrader. Predicting Graduate School Success. Princeton, New Jersey: Educational Testing Service, 1951.
- Lavin, D. E. The Prediction of Academic Performance: A Theoretical Analysis and Review of Research. New York: Russell Sage Foundation, 1965.
- Lewis, W.D. "Comparative Study of Personalities, Interests, and Home Background of Gifted Children of Superior and Inferior Intellectual Achievement," Journal of Genetic Psychology, 59:207-18, 1941.
- Liddle, Gordon, P. "Psychological Factors Involved in Dropping Out of School," The High School Journal, 45:276-80, April, 1962.
- Lin, Y. G. and W. J. McKeachie. "Aptitude, Anxiety, Study Habits, and Academic Achievement," Journal of Counseling Psychology, 17:306-9, July, 1970.
- Lum, Mabel K. "A Psychometric Comparison of Under- and Overachieving Female College Students." Unpublished Master's thesis, University of Hawaii, 1957.
- MacLachlan, Patricia and Collins Bennett. "Who are the Superior Freshmen in College?" Personnel and Guidance Journal, 32:345-49, February, 1954.
- Marsh, L. M. "College Dropouts - A Review," Personnel and Guidance Journal, 44:475-81, October, 1966.

- McClelland, David, et. al. The Achievement Motive. New York: Appleton-Century-Crofts, 1953.
- McGillivray, Robert H. "Differences in Home Background Between High Achieving and Low Achieving Gifted Students," Ontario Journal of Educational Research, Spring, 1964, pp. 2-10.
- McKenzie, James D., Jr. "The Dynamics of Deviant Behavior," Personnel and Guidance Journal, 42:683-86, March, 1964.
- McQuary, John P. "Some Differences Between Under- and Over-achievers in College," Educational Administration and Supervision, 40:117-20, January, 1954.
- Merrill, Reed M. and Daniel T. Murphy. "Personality Factors and Academic Achievement in College," Journal of Counseling Psychology, 6:207-10, Fall, 1959.
- Miller, Leonard M. (ed.). Guidance for the Underachiever with Superior Ability. United States Department of Health, Education, and Welfare, Bulletin #25. Washington, D. C.: Government Printing Office, 1961.
- Mooney, Ross and Taher Razik (ed.). Explorations in Creativity. New York: Harper and Row Publishers, 1967.
- Morgan, Henry. "A Psychometric Comparison of Achieving and Non-achieving College Students of High Ability," Journal of Consulting Psychology, 16:292-98, August, 1952.
- Murphy, Lois R. and Esther Raushenbush (eds.). Achievement in the College Years. New York: Harper & Brothers, 1960.
- Myers, R. C. "Academic Overachievers: Stereotyped Aspects," Journal of Experimental Education, 18:229-38, March, 1950.
- Owens, Richard E. "The Relationship of Creative Thinking Ability to Extreme Over- and Underachievement." Unpublished Doctor's dissertation, Colorado State College, 1964.
- Panos, Robert J. and Alexander W. Astin. "Attrition Among College Students," American Educational Research Journal, 5:57-72, January, 1968.

- Pauk, W. J. "An Analysis of Certain Characteristics of Above-Average and Below-Average Male and Female Readers at the Ninth-Grade Level," Dissertation Abstracts, 16:285, 1956.
- Peterson, John. "The Researcher and the Underachiever: Never the Twain Shall Meet," Phi Delta Kappan, 44:379-81, May, 1963.
- Popham, W. J. and Mary R. Moore. "A Validity Check on the Brown-Holtzman Survey of Study Habits and Attitudes and the Borrow College Inventory of Academic Adjustment," Personnel and Guidance Journal, 38:552-54, March, 1960.
- Prouty, Helen L. "Personality Factors Related to Over- and Underachievement of College Students," Unpublished Doctor's dissertation, University of California, Berkeley, California, 1951.
- Raph, Jane B., Miriam Goldberg, and A. Harry Passow. Bright Underachievers. New York: Teachers College Press, Columbia University, 1966.
- Remote Associates Test Manual. Boston: Houghton, Mifflin Company, 1967, p. 1.
- Rhodes, M. "An Analysis of Creativity," Phi Delta Kappan, 42:305-10, April, 1961.
- Robertson, Malcolm H. and Mildred M. Harrison. "Reading Skill as a Predictor of College Achievement," Journal of Educational Research, 53:258-62, March, 1960.
- Rust, R. M. and F. J. Ryan, "The Strong Vocational Blank and College Achievement," Journal of Applied Psychology, 38:341-45, October, 1954.
- Scheffe', H. A. The Analysis of Variance. New York: Wiley Press, 1960.
- Schneyer, J. Wesley. "Problems of Concentration Among College Students," The Reading Teacher, 15:34-37, September, 1961.
- Shaw, Melville C. "The Self-Concept of Bright Underachieving High School Students as Revealed by an Adjective Checklist," Personnel and Guidance Journal, 39:193-96, November, 1960.

- \_\_\_\_\_, and Doris M. Black. "The Reaction to Frustration of Bright High School Underachievers," California Journal of Educational Research, 11:120-24, 1960.
- \_\_\_\_\_, and D. J. Brown. "Scholastic Underachievement of Bright College Students," Personnel and Guidance Journal, 36:195-99, May, 1957.
- Shore, Milton F. and Alan H. Leiman. "Parental Perceptions of the Student as Related to Academic Achievement in Junior College," Journal of Experimental Education, 33:391-94, Summer, 1965.
- Sie, Georgiana. "The Relationship of Two Experimental Measures of Student Motivation to Academic Success in College," Dissertation Abstracts, 15:1556-57, 1955.
- Smith, Charles P. and Miriam T. Winterbottom. "Personality Characteristics of College Students on Academic Probation," Journal of Personality, 38:379-91, September, 1970.
- Smith, Leland. "Significant Differences Between High-Ability Achieving and Nonachieving College Freshmen as Revealed by Interview Data," Journal of Educational Research, 59:10-11, September, 1965.
- Tate, Merle W. Statistics in Education. New York: The Macmillan Company, 1955.
- Thorndike, Robert L. The Concepts of Over- and Underachievement. New York: Teacher College Press, Columbia University, 1963.
- Tiebout, Harry M. "The Misnamed Lazy Student," The Educational Record, 24:113-29, April, 1943.
- Uhlinger, Carolyn A. and M. A. Stephens. "Relation of Achievement Motivation to Academic Achievement in Students of Superior Ability," Journal of Educational Psychology, 51:259-66, October, 1960.
- Vaughan, Richard P. "Academic Achievement, Ability, and the MMPI Scales," Personnel and Guidance Journal, 45:156-59, October, 1967.

- Voss, Charlotte. "Variables Associated with Overachievement and Underachievement at the School of Nursing, Hospital of the University of Pennsylvania." Unpublished Doctoral dissertation, University of Pennsylvania, Philadelphia, Pennsylvania, 1956.
- Weiner, Bernard. "The Experimental Study of Achievement Motivation," National Association of Secondary School Principals' Bulletin, 51:51-68, December, 1967.
- Wellington, C. Burleigh and Jean Wellington. The Underachiever: Challenges and Guidelines. Chicago: Rand, McNally & Company, 1963.
- Whitehall, R. P. and J. A. Jipson. "Differential Reading Program Performance of Extroverts and Introverts," Journal of Experimental Education, 38:93-96, Spring, 1960.
- Williams, Frank B. "Short-Term Counseling with Certain Freshmen Students at the University of Pennsylvania." Unpublished Doctor's dissertation, University of Pennsylvania, Philadelphia, Pennsylvania, 1962.
- Wilson, Milton. "Fables of a School Psychologist," California Association of School Psychologists and Psychometrists, 8:8, 1960. (Mimeographed.)
- Woodman, Everett M. "The Construction of a Measurement of Certain Non-Intellectual Determinants of Academic Success in College." Unpublished Doctor's dissertation, Boston University, Boston, Massachusetts, 1949.
- Woodworth, R. S. (ed.). Archives of Psychology: Studies of Educational Success and Failure in Supernormal Children. No. 129. New York: Columbia University Press, 1931.
- Wrenn, C. Gilbert and Wilbur J. Humber. "Study Habits Associated with High and Low Scholarship," Journal of Educational Psychology, 32:611-16, September, 1941.

## VITA

James Patterson Liddicoat was born on March 14, 1930, in Delano, Pennsylvania, the home of his mother Joanna Patterson Liddicoat, and his father, the late Clifton Liddicoat.

Mr. Liddicoat attended the public schools in Delano and was graduated from the high school in 1948. He was awarded a B.S. in Secondary Education with majors in Social Studies and Geography from East Stroudsburg State College in 1952. In 1960 he received an M.A. in Education from Lehigh University.

His professional educational experiences include eight years of teaching at the Parkland Junior-Senior High School, the last year of which he served as head-teacher for the seventh grade. He was elected principal of Northwestern High School, New Tripoli, Pennsylvania, in 1962 and served four years in that capacity. Following that he held the position of Instructor in the School of Education, Lehigh University. Since 1967 he has been an Assistant Professor at Cedar Crest College in Allentown.

He holds membership in American Association of University Professors, Pennsylvania State and National Education Association, Association for Supervision and Curriculum Development, and Phi Delta Kappa.

His wife, Elizabeth Kraynick Liddicoat, also holds graduate degrees from Lehigh University and is on the faculty at Kutztown State College.