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THE RELATIONSHIPS OF SELECTED CHARACTERISTICS OF FINANCIAL
AID AND ACADEMIC ACHIEVEMENT

by

George J. Falk

A Dissertation Submitted to
the Faculty of the Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

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1978

Approved by

Marian Franklin
Dissertation Adviser

APPROVAL PAGE

This dissertation has been approved by the following committee
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One purpose of this study was to examine the relationships between the variables of unmet financial need, types of financial aid, the amount of the student's family income and academic achievement. Another purpose was to determine if relationships exist between the amount of financial aid awarded to the student, his SAT scores, the differences in his GPA between the freshman and sophomore years and the amount of his family income.

The unique aspect of the present study is found in its effort to examine such characteristics of financial aid as unmet financial need and improved academic achievement. While none of the earlier research cited here dealt with these variables, it is also noted that few investigations of the relationships between financial aid and academic achievement were conducted at small private 4-year colleges. The majority of the populations which were studied were in large universities and community colleges.

The subjects were 144 freshmen who attended Averett College from the fall through the spring of the respective 1973-1974, 1974-1975, and 1975-76 school years. One hundred of these students returned for their sophomore year, from the fall through the spring of the respective 1974-75, 1975-76, 1976-77 school years, and they participated in the part of the study concerned with family income. All of the freshman population of the college during the target years who had financial need, had received financial aid, had taken the Scholastic Aptitude Test, and were full-time students were used as subjects of the study.

The continuous data related to the variables of the unmet need and family income were analyzed by using the Pearson Product Moment Correlation with adjustments for ability by partial correlation. The data of the variables in the study of the types of financial aid and achievement were analyzed by analysis of covariance. Further post hoc analyses were required to test the hypotheses related to this study; the Scheffé method of multiple comparison was used. The alpha level of .05 was used as the criterion of significance.

Significant relationships were not found between the amount of unmet student need and academic achievement nor between the types of financial aid and achievement, as was hypothesized. No significant relationship was found between amount of family income and achievement. Significant positive relationships were found between the number of hours worked and achievement and between amount of family income and SAT scores. Significant negative relationships were found between the amount of financial aid and family income and between the amount of family income and the difference in GPA between the freshman and sophomore year.

The results of this study did not provide support for a student aid policy that meets each student's financial need. There was no evidence that academic performance would be thereby enhanced.

Academic achievement did not appear to be affected by the way aid was packaged.

Students from the higher income families received less aid but had higher SAT scores than students from lower income families. These students did not achieve differently when adjustments were made for ability; but over a period of 2 school years, the lower income student's achievement improved more than that of the higher income student.

Based upon the results of this investigation, it appears that financial aid administrators could award amounts of aid which are less than full financial need since academic performance was not found to be related to unmet need. Financial aid could then be extended to offer more students the opportunity for education. The task of supplying the remainder of educational cost would be made easier by the partial award.

The results indicate that a financial aid administrator may make maximum use of student employment resources thus extending aid to more students and reducing the burden of loans. This practice is recommended because no relationships were found between the types of aid students receive and achievement. Among students who worked, those who earned more earned the highest GPA.

When compared to the less financially deprived student, the lower family income student's GPA improved most from the freshmen to sophomore year. For this reason, it appears the financial aid administrator is justified in maintaining financial aid awards to the same students for 4 years, providing they continue to have financial need. The returning student represents an investment in manpower development on which the payoff has already begun.

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CHAPTER I
INTRODUCTION

Background of the Study

The draft report of the National Task Force on Student Aid Problems (1975) states that:

Financial aid to students has been one of the fastest growing segments of the American educational enterprise. Twenty years ago the amount of student aid from all sources, public and private, amounted to less than \$100 million. By last year it had grown to nearly \$6.4 billion, an increase of more than six thousand percent. The number of students receiving aid has also risen dramatically, from an estimated two hundred thousand in 1955 to more than three million in 1974. Today, however, the student aid system is fast becoming a victim of its very success. As the volume and variety of needs has increased, the system has proliferated into a luxuriant tangle of programs, policies, and procedures that has become all but impenetrable even to professional aid administrators, let alone to the students, the system's intended beneficiaries. (p. 1)

The lack of methodical investigation of the financial aid field was pointed out even before the latest multiplication of resources. Prior to 1970 the problem was noted by Gross (1970) in the following manner:

There is a paucity of research on the problems of practice and on the development of theory. This is revealed by the extent to which the literature of this field is "informed" comment and analysis, often not based upon research. There is a primitiveness about the verifiable knowledge in the field. (p. 270)

Considering the 6.4 billion dollar contribution to student financial aid cited by the National Task Force on Student Aid (1975) above, it is incumbent upon the financial aid community to know the effects of its work and to inform the public. Accountability of financial aid administrators is in increasing demand.

Nash (1968) states that the aims of federal aid programs have been to bring higher education to all of American society and not just to the bright middle class. He asks for a degree of accountability on the part of financial aid officers. He asks for proof that aid funds are given to those who need them most.

Van Dusen (1974) calls the transfer student the forgotten minority. He claims the transfer student is not getting his fair share of financial aid awards.

Wilcox (1973-74) describes accusations made against financial aid administrators who allegedly use financial aid as a recruiting tool; he cites this as a violation of the first principle of financial aid administration. To answer charges like these and to defend the action taken in response to applications for aid, the financial aid administrator needs reliable information based upon research.

The need for financial aid studies is emphasized in the Handbook for Financial Aid Administrators (1972):

A body of knowledge must underlie the guiding principles and practices of any profession. Since professionalism in the financial aid field has been a recent development, the accumulation of such a body has been lacking. Research has provided some knowledge, but it must provide even more if student financial aid is to be administered professionally. (p. 4)

It is reasonable to expect that a fast-growing field often must be administered by personnel of diverse backgrounds and training who must be retrained. To accompany the training of financial aid administrators, secondary counselors need to be trained in financial aid practices. Minton (1977), a recent advocate of the improvement of financial aid counseling in secondary schools, cites existing programs and points out the urgent need for more of them:

Data from the National Longitudinal Study, for example, show that a third of the high school seniors who do not continue their education said they thought they could not afford to do so. Another survey found that most students downgraded their college plans because they did not think they could afford the kind of institution they preferred.

By making financial aid counseling a priority, these programs have made higher education a reality for more students. Their counselors seek out unassertive students, help convince parents and students that higher education is a viable option, help them fill out complicated aid application forms, and provide answers to the basic student question: Can I afford to go to college? In some cases, a program also attracts additional financial aid to the community or school. (p. 4)

Training of the financial aid administrators or secondary counselors is made difficult by the inadequacy of research. Research-supported information on the type of decision making that would best serve the individual student is not available. While much research has been done at the national and regional levels to adjust resources to the needs of large segments of the nation, relatively few investigations deal with the effects of financial aid upon the student.

Seymour, Zimmerman, and Donato (1972) note the need for research on the effects of financial aid upon the student. They state:

The literature dealing with the financial aid process is in the early stages of development. The crucial variables which make up the process or that influence the outcomes of that process are either unknown or have not been fully investigated. Baseline data are badly needed. One area that certainly bears further investigation is that of student characteristics as they relate to the assignment of financial assistance and the reciprocal question of how the assignment of financial aid affects the students who receive such assistance. (p. 10)

It was toward this aspect of financial aid that this study was directed.

Statement of the Problem

The unique aspect of the present study is found in its effort to examine such characteristics of financial aid as unmet financial need and improved academic achievement. While none of the earlier research cited here dealt with these variables, it is also noted that few investigations of the relationships between financial aid and academic achievement were conducted at small private 4-year colleges. The majority of the populations which were studied were in large universities and community colleges.

The problems of this study may be stated as follows:

Are amounts of unmet financial need, types of financial aid received, and hours of employment related to the academic achievement of freshmen who received financial aid while enrolled at Averett College from the fall through the spring of the respective 1973-74, 1974-75, 1975-76 school years?

Other basic questions are asked about the students who returned for their sophomore year from the fall of the respective 1974-75, 1975-76, 1976-77 school years. The questions are: (1) Is the amount of family income related to the amount of financial aid the students receive? (2) Is the amount of the family income related to the students' ability? (3) Is the amount of the family income related to the students' academic achievement? (4) Is the amount of family income related to the differences in academic achievement between the freshman and sophomore years of these students? These particular questions are asked because of the frequency with which the variables of the questions appear in the financial aid administrator's daily responsibilities. Because of inadequate financial resources, unmet need is associated with every award. Administrators are instructed to distribute types of aid in a way most beneficial to student achievement, but there is little or no information about the effects of types of aid upon achievement. The study was designed to provide financial aid administrators with information that might improve their decisions.

Ability is defined as the student's potential to succeed in school as measured by the Scholastic Aptitude Tests (SAT). Academic achievement is defined as the student's scholastic performance as measured by the cumulative grade point average (GPA).

To determine what relationships existed, if any, nine hypotheses were formed.

Hypotheses

Amount of unmet need and academic achievement.

1. There is no significant relationship between the amount of student need which was not awarded to the student in the form of financial aid and academic achievement, once differences in ability are statistically controlled.

Types of financial aid and academic achievement.

2. There is no significant difference between the academic achievement of students receiving combinations of financial aid which include loans and those which do not include loans, once differences in ability are statistically controlled.
3. There is no significant difference between the academic achievement of students receiving combinations of financial aid which include grants and those which do not include grants, once differences in ability are statistically controlled.
4. There is no significant difference between the academic achievement of students receiving combinations of financial aid which include employment and those which do not include employment, once differences in ability are statistically controlled.
5. There is no significant relationship between the amount of employment earnings and academic achievement, once differences in ability are statistically controlled.

Improved academic achievement and the amount of family income.

6. There is a significant negative relationship between the amount of the student's family income and the amount of financial aid awarded.
7. There is a significant positive relationship between the amount of the student's family income and academic ability.

8. There is no significant relationship between the amount of the student's family income and academic achievement, once differences in ability are statistically controlled.
9. There is no significant relationship between the amount of the student's family income and the differences in academic achievement from the freshman to the sophomore year, once differences in ability are statistically controlled.

Significance of the Study

Amount of unmet financial need and academic achievement. The first issue examined in this study was the relationship between the amount of unmet student financial need and academic achievement. This issue was represented by Hypothesis 1. Unmet student financial need was defined as the difference between financial need as determined by using the Financial Need Analysis Report (FNAR) of the College Scholarship Service and the amount of financial aid awarded to the student. For the purpose of this study, academic achievement was defined as the student's grade point average (GPA) when an adjustment was made for the effect of ability (SAT score). No prior research was found in this area. A psychological basis for a relationship between these two variables was described through reference to anxiety theory. Studies by Gaudry and Spielberger (1971) and Spielberger (1972) found that a significant negative relationship existed between anxiety and academic achievement. These studies claim that perceived threat on the subject's part has the potential to evoke anxiety.

The present study contended that unmet financial need could be perceived as a threat in that the student's education could be terminated

as a result. Further, it was believed that ego involvement, which Gaudry and Spielberg (1971) claim to be a component of the etiology of anxiety, takes place when a student is threatened with the termination of his education and public disclosure that his family is unable to pay the bills.

Bruce Kelly (1970), Assistant Regional Director of the American College Testing Program and formerly a leading financial aid director, strongly urges a thorough research examination of the relationship of grade point average achieved and the various levels of financial assistance. The significance of this part of the study was partly based upon Kelly's reasoning: because of the lack of sufficient funds not all applicants for financial aid receive an award package equal to their need. A question arises as to the way to divide these limited funds in the best interests of the students. Should the neediest students receive awards equal to their full need, while the less needy students receive no awards? Should funds be divided among all students on a percentage of need basis or should some other method be used.

If a significant negative relationship is found between the variables, amount of unmet financial need and academic achievement, financial aid awards amounting to the full financial need of the student might be considered mandatory. An examination of the variables is in order to determine what, if any, relationship exists between them. In either case, some evidence would be available upon which financial aid administrators might base a decision regarding the division of funds as it relates to academic performance.

Types of financial aid and academic achievement. The second issue of this investigation was concerned with the relationships between the three different types of financial aid and achievement. For the purposes of this study, types of aid were defined as employment, loans, and grants. Hypotheses 2, 3, 4, and 5 represented this issue.

Knight (1968) points out the significance and need for research into the influence of the type of financial aid upon success in college:

The present theory of financial aid advocates that the criteria of financial need and academic potential be used in administering the various programs. Determining financial need has developed into a sophisticated practice which is objectively measured. However, the potential for achievement in college has proven to be a problem, as it has been for investigators for years. Research on this problem is abundant but the financial aid administrator is handicapped in his use of much of this research due to the nature of his work and the time element. Little data are available with which to work relative to the influence of the type of financial aid upon success in college. (p. 20)

The financial aid administrator may request funds, for which the school's students qualify, to be used as payment for employment, loans, or grants. Although governmental regulations influence, to some degree, the type of aid a student receives, the financial aid administrator must use his judgement in deciding which type of aid is most beneficial to the student.

This study attempted to determine if relationships existed between different types of financial aid and academic achievement by comparing the achievement of recipients of financial aid combinations containing one of the three types of aid to the achievement of recipients of

combinations not having that type of aid. While there are previous studies into types of financial aid and achievement, they differ in several ways from the present investigation. Studies by Knight (1968) show a significant relationship between combinations of certain types of financial aid and academic achievement. Some of the significant combinations of types in Knight's investigation contained aid given for high academic ability rather than for financial need. Kelly (1970) found no support for packaging financial aid in order to enhance academic performance. Kelly's study was concerned with only high and low ability groups rather than with all recipients of financial aid as was the case in the present study.

One of the types of aid, student employment, was paid according to the hours worked by the student. Each student is offered each type of aid including employment funds, if the student has need, as long as the funds last. Each student has the right to accept or reject any type of aid or any part of the amount of aid. An attempt was made to determine if the financial aid students who worked more hours achieved as well academically as did the students who worked fewer hours. The importance of knowing the relationship between the hours a student works to earn money for his education and achievement is readily understood. Studies into this relationship have been made and they are cited in Chapter II. Few, if any, of these studies were in the same setting or with populations of subjects that were similar to the present study. Continuing efforts must be made to determine whether or not a student who commits non-classroom hours to employment tends to achieve at a lower level.

Improved academic achievement and the amount of family income. The last part of the study contained Hypotheses 6 through 9 and dealt with the question of whether financial aid encourages higher academic achievement among the financially deprived. Godwin (undated) states:

In 1961, the Southern Regional Education Board Commission on Goals for Higher Education in the South called for expanded state support of scholarships and loan programs to diminish the financial barrier and encourage higher academic achievement. (p. iii)

The present study used only subjects who were financial aid recipients whose financial need was certified by the FNAR of the College Scholarship Service. Financial need certification of the subjects was necessary if the findings of this study were to be generalized to the financially deprived student.

Hypothesis 6 was tested in an attempt to determine if the subjects received amounts of financial aid which were inversely related to their family income. Nash (1968) and Wilcox (1973-1974) charge that financial aid is not awarded to the most needy students but is used as a recruiting tool by the educational institution. If the best interests of the students are served, investigations are needed to determine if accusations like those of Nash (1968) and Wilcox (1973-1974) are accurate.

Doerman (1968) found that the potential to succeed in school as measured by SAT correlates positively with the amount of family income of the student. Hypothesis 7, which states there is a significant positive relationship between the amount of the student's family income and academic ability as measured by SAT, was tested in an attempt to determine if the more financially deprived subjects of this study have a lower

potential to succeed in school and to replicate the investigation of Doerman (1968).

Hypothesis 8 stated that there is no significant relationship between the amount of the student's family income and academic achievement, once differences in academic ability are statistically controlled. The question of whether students from lower income families perform as well academically as students from higher income families has been the subject of previous research; for example, Zaccardelli (1968), Snyder (1971), and Winder (1972) reported that no significant differences were found. The purpose of the present investigation was to determine if students from lower income families perform as well as students from higher income families during their freshman year when ability is held constant.

Atkinson and Raynor (1970), in a study of intellectual performance and cumulative achievement, contend that the opportunity to achieve strengthens motivation to achieve which in turn increases efficiency, level of performance, and finally, cumulative achievement. Considering these findings, one might expect the students from the lower income range to exhibit more improvement academically than the students from the higher income range, if they are provided with educational opportunity in the form of financial assistance. The more financially deprived students would be more likely to perceive financial aid as opportunity to achieve than would the students from a higher income family.

Hypothesis 9 was tested in an attempt to determine whether improved academic achievement occurred among the more financially deprived recipients of financial aid. A comparison was made between amount of family

income and the difference in academic achievement from the freshman to sophomore years of the same subjects. Zaccardelli (1968), Winder (1972), and Snyder (1971) report that students from lower income families achieve as well as non-aid recipients. These studies did not address the question of improved academic achievement or inter-recipient achievement.

If the lower income student exhibits more improvement academically than the less deprived, the financial aid administrator could support maximum awards to the most needy student. If larger achievement gains do not come from any point of the income continuum, a broader distribution of funds would allow more students the opportunity for education. Should the student with high unmet need, in the first investigation above, not achieve as well as the student whose need is met, then the broader distribution would not be practical. A good aid packaging decision would require utilization of the findings of both investigations. The investigations are important for these reasons.

Definitions of Terms

Financial aid. Resources that are supplemental to the contribution of the student and his immediate family which may be applied to the student's direct and indirect costs of education.

Financial need. The difference between what a student and his family can pay for an education and the cost of the education.

Financial need analysis report (FNAR). An objective measurement of financial need available from the College Scholarship Service of Princeton, New Jersey. This analysis is accepted by the Office of Education of the Department of Health, Education, and Welfare and the State of Virginia as documentary evidence of student need.

Unmet student financial need. The difference between financial need as determined by FNAR and the amount of financial aid awarded to the student.

Grade point average (GPA). A numerical representation of letter grades given at the end of a semester for academic performance. The subjects in this study were graded on the 4-point basis. They received 4 grade points for an A, 3 for a B, 2 for a C, 1 for a D, and none for a failing grade.

SAT. Scholastic Aptitude Test.

Academic ability. The student's potential to succeed in school as measured by the Scholastic Aptitude Test (SAT).

Achievement. The student's scholastic performance as measured by the cumulative grade point average (GPA).

Full time student. One who attempts 12 semester credit hours during each semester.

Improved academic achievement. When a student earns a higher grade point average in the sophomore year than in the freshman year.

Financially deprived. A student who demonstrated financial need according to the financial need analysis report.

Lower income range and higher income range. The opposite ends of the family income continuum of the subjects of this study.

Types of financial aid. Loans, grants, and employment.

Loans. A sum of money made available to the student on the condition that the money be repaid according to a pre-agreed schedule. The student or parent must sign a note depending on the source of the loan and the age of the student.

Grants. An outright gift of money to be used for educational expenses.

Employment. Work usually performed on campus at times that fitted into the student's classroom schedule and paid for at the rate of \$1.96 for each hour.

Package. An award which contains more than one type of financial aid to the same student.

Family income. The yearly sum of the incomes of all members of the student's immediate family including the student.

School year. The span of time which includes two main academic semesters of 14 weeks each. These 14 weeks are spent attending classes and do not include holidays or breaks.

Attrition. Discontinuing enrollment for any reason.

Scope of the Study

1. Humane treatment of subjects did not allow the formation of treatment groups by withholding or manipulating financial aid funds for the purpose of experimentation. For this reason, the design of this study sought to determine relationships between variables but did not permit causal conclusions.

2. This study was limited to (a) students enrolled in a small private, 4-year, coeducational, liberal arts college, (b) students having had financial need as certified by the financial need analysis report of the College Scholarship Service, (c) students having taken the Scholastic Aptitude Test prior to entering Averett College, (d) students having had financial aid awards, and (e) students having attempted a minimum of 12 semester hours for each of the two regular academic semesters of the regular school year.

3. There were three major investigations in this study which were (a) the relationship between the amount of unmet financial need and academic achievement, (b) the relationships between types of financial aid and academic achievement, and (c) the relationship between the amount of family income and improved academic achievement.

The first two investigations had the limitations outlined in 1 and 2 above. These two investigations were also limited to the 144 freshmen who enrolled during the regular school years 1973-74 through 1975-1976.

The third investigation which also had the limitations outlined in 1 and 2 above was additionally limited to the 100 freshmen enrolled

during the regular school years 1973-74 through 1975-76 who returned for the sophomore years 1974-75 through 1976-77.

4. Limitations were also imposed by the time span of the study. The data were gathered on achievement only during the freshman and sophomore years of the subjects. A 4-year study might have been better for allowing any positive effects of financial aid to take place.

CHAPTER II
REVIEW OF RELATED LITERATURE

This review was focused on previous literature on financial aid to college students and the relationships between such aid and academic performance. Part of the review was concerned with research on anxiety, which was believed to link achievement to the unmet financial needs of students. Anxiety is not a variable of specific concern in this study. It is introduced to develop a theoretical base for a relationship between unmet financial need and academic achievement.

Anxiety and Achievement

Several studies on the relationship between anxiety and achievement claimed that a negative correlation existed between the two constructs. One example was given by Gaudry and Spielberger (1971):

The most consistent general finding noted in this chapter is that high anxiety is associated with relatively low performance at both the school and university level. This conclusion is based on the negative correlations that were obtained in a number of different studies. . . (p. 41)

Spielberger (1972) stated:

In general, the experimental literature on anxiety is consistent with the hypothesis that situations which pose direct or implied threats to self-esteem produce different levels of A-State in persons who differ in A-Trait. (p. 39)

A-State or state anxiety is defined as a set of complex emotional reactions that are involved in individuals who judge specific situations

as threatening to themselves. A-Trait is defined as a characteristic of the personality of the individual, a behavioral disposition which is concerned with the degree or intensity of response to anxiety-evoking stimuli. Later in the study cited above, Spielberger (1972) further stated:

Once a stimulus is appraised as threatening it is assumed that: (1) an A-State reaction will be evoked, and (2) the intensity of this reaction will be proportional to the amount of threat the situation poses to the individual. (p. 43)

In a study done by Spielberger (1972), the percentage of high-anxiety students who failed was nearly four times as great as the percentage of low-anxiety academic failures.

Summary. The literature cited supports the hypothesis that academic performance is lowered by the presence of anxiety. The studies claim that perceived threat on the subject's part has the potential to evoke anxiety. The studies also relate the magnitude of the perceived threat to the magnitude of the anxiety state.

The present study contended that unmet financial need could be perceived as a threat in that the student's education could be terminated as a result. Further, it was believed that ego involvement, which Gaudry and Spielberger (1971) claim to be a component of the etiology of anxiety, takes place when a student is threatened with the termination of his education. Ego involvement was thought to be possible for an additional reason. Termination of education because of failure to pay bills is a public disclosure of inadequacy on the part of the student's family.

Many private colleges like Averett, where this study took place, do not require that a student pay for educational costs at the time of

enrollment. The student must pay his educational costs for the semester by the end of the semester. The threat of failure to raise funds could raise anxiety by acting synergistically with the semester's work.

Financial Aid and Academic Achievement

Knox (1973), in a study of the academic performance of junior college transfer students versus native students who received financial aid, concluded that financial aid was not a significant factor in academic performance.

Knox did not use unmet need as an independent variable but used instead the amount of financial aid awarded. The subjects could have had different amounts of unmet need depending upon their individual financial circumstances.

Snyder (1971) compared financial aid recipients with non-recipients in community colleges and concluded that the subjects did not differ significantly in college achievement when high school ranks and family income were held constant. The lower socio-economic status of the recipients had an influence upon Snyder's conclusions. He said there were some positive relationships between financial aid and educational outcome.

Winder (1972) made a comparison of students with and without financial aid at Austin College. He found no significant difference between the mean grade point averages of those with and without financial aid. Winder's finding was not supported by the research of Kaplan (1969), who compared characteristics of undergraduate financial aid recipients and non-recipients at Hunter College. The results of Kaplan's study indicated that the cumulative academic indices of aid recipients were, on the average, significantly higher than those of non-recipients.

Zaccardelli (1968) investigated characteristics of student recipients of financial aid versus those not receiving aid at Wayne State University. He found a larger number of financial aid recipients than non-financial aid recipients on academic probation.

Parker's (1974) work at Northwestern University dealt with the effect of financial assistance and counseling on the educational progress of minority students. He concluded that financial assistance did not affect the rate of student attrition but did contribute significantly to a higher grade point average and resulted in a higher rate of graduation. Parker's conclusion did not consider the part counseling played in the results, however. This study did not have a group receiving financial aid only, with no counseling.

A study by Van Eaton (1970) assessed the effects of differing amounts of financial reward among three levels of aptitude on (a) scholastic performance, (b) the student's attitude toward learning, (c) amount of attrition, and (d) the time spent per week on employment and extracurricular-leisure activities. Three levels of financial reward were put in operation. The levels were (a) a promise of financial credit at the rate of 5% of the expense of the fall semester fees for each tenth of a grade point scored above 2.0 on a 4-point basis, (b) a promise of financial credit at the rate of 2½% of the expense of the fall semester fees for each tenth of a grade point scored above 2.0, and (c) no promise of financial credit.

While financial reward of this nature differs from financial aid as defined in the present study, the relatedness is easily seen. The

investigator found that financial reward did not affect student scholastic achievement or student attitude toward learning. Students performed equally well regardless of the reward treatment group to which they were assigned.

Amount of unmet need and academic achievement. Winter (1972), in an analysis of the effects of tuition and financial aid policies in the State of Illinois, expressed the opinion that the need for studies dealing with the effects of unmet costs in higher education was urgent. He stated that changing tuition levels and increased enrollments were responsible for the increase in student's unmet costs. While Winter's (1972) study was concerned with the economics of education rather than with specific outcomes in student achievement, he brought into focus the implications and importance of unmet financial need.

Types of financial aid and academic achievement. Knight (1968) compared the academic performance of recipients of the different types of financial aids. He found that loan recipients achieved at a significantly lower rate than did employment recipients. Knight pointed out that loan recipients had a lower mean aptitude score than recipients of other types of aid.

The characteristics of recipients and non-recipients of financial aid at Florida State University were investigated by Tully (1953). Data were gathered by interviewing the subjects in order to form opinions as to the traits they possessed. Tully (1953) reported:

This study did not provide a basis for rejecting the hypothesis that the various kinds of aid students have similar traits, as well as traits similar to the no-aid students. The absence of trait differences as revealed by counselor ratings suggests that some of the commonly accepted beliefs

and assumptions about financial aid recipients and non-recipients are not sound. The familiar belief that students who elected to take a competitive examination for a state scholarship to prepare them for a specific profession are more purposeful and goal seeking than students who did not elect to seek a state scholarship was not borne out by the test of this hypothesis. The assumption that the part-time student worker possesses to a great degree initiative and determination associated with the trait of "going ahead without being told" found no support in this investigation. (p. 119)

Kelly (1970) analyzed the relationship between various types of financial aid and academic achievement at the University of Illinois. His findings indicated a difference in achievement between those students who received gift aid and those who received loans and work study. No difference in academic achievement was found between those who received loans and those engaged in work study. Gift aid recipients had to have superior academic performance to qualify for the award.

Zapinski (1973) attempted to determine the characteristics of financial aid students which could be used by a teacher or a counselor to enhance the educational experience which these students sought. He mapped the cognitive style of each student recipient of loans, of grants, and of employment. A collective cognitive style was determined for each of the three groups. These collective styles were compared to determine differences between groups. The investigator found that the grant group had the highest need and exhibited the greatest differences in cognitive style when compared to the loan and employment group. One recommendation from the investigator was that these more deprived students who occupied the grant group be given developmental and remedial instruction.

Reeder and Newman (1939), in a study of the relationship between employment and scholarship commented:

The world places halos over the heads of those individuals who succeed in working their way through school. The stories of their experiences are interesting, but there is another side to this situation. Many of the employed students fail in their school studies and are eliminated from the colleges. No halos are placed over their heads by an acclaiming world.

The presence of so much employment in a college population naturally raises the question of its effect on the workers. Almost universally there is the belief that scholarship is affected. Participation in extra-curricular activities is restricted or totally prohibited. Health may be impaired. Sleep is reduced. Meals are skipped. Worry over the personal financial situation in addition to the economic problems of the home keeps the mind disturbed. Comparisons with the more favored individuals induce feelings of inferiority and resentment. (p. 203)

The findings of the study were that no significant differences existed between the academic performances of those students who worked and those who did not. This result was in relation to students whose hours of employment ranged from 15 to 50 per week. Dropout among employed students equalled that of the non-employed.

John Dykstra (1957), a sociologist at Utica College of Syracuse University, although claiming no intention to minimize the social benefits derived from the American acceptance of the scholar-worker, delineated the undesirable results of following this role. He believed college was a full time job and if a student was employed, something else was left out. Academic work may have suffered, extra-curricular experiences or the opportunity to associate with others may have been omitted.

He urged guidance counselors to help check this tendency to dilute the benefits of the college experience when it was unnecessary.

A study at the University of Washington found that employed students earned academic grades that exceeded those of non-employed students. Dickenson and Newbegin (1959) concluded that employment concurrent with academic effort was not detrimental to some students.

An investigation of students enrolled at Modesto Junior College comparing employed students to non-employed students included such variables as age, sex, academic hours attempted, and marital status. Statistical adjustments were made for the ability of the students. Anderson (1966) found no significant differences between employed and non-employed subject's grades and academic hours attempted or completed. Students who worked 40 hours a week did not differ from those who did not work. He concluded that conditions of employment were probably more important than employment itself when considering which factors influenced academic achievement.

Magoon and Maxwell (1965) report:

The responses of 512 University of Maryland students on 22 select demographic and psychometric variables might differentiate between high and low-achieving groups. The respondents were selected as representatives of four groups: males from arts-science and from engineering, and females from arts-science and from education. Response patterns of high-achieving and low-achieving students from each college group were analyzed using chi-square. Class levels among the male groups of high and low-achievers were comparable, but this was not possible with the female groups. Hence the female analyses, while reported herein, undoubtedly are contaminated.

Part time employment is often viewed as a deterrent of college achievement; hence, it might be hypothesized that the low achieving student would be more likely to be working part-time, as well as attending college. Among successful and unsuccessful engineering students there was no significant difference in the hours of part-time employment.

Among arts and science male groups, part-time employment patterns were significantly different ($\chi^2 = 11.652$, $df = 2$, $p < .01$). Low achievers were twice as likely to be working up to 10 hours per week than were the high achievers. There was no difference in part-time work for arts & science women, but among education women high achievers were more likely be holding part-time jobs than were low-achievers. (pp. 367-368)

Astin, King, and Richardson (1976) compiled the national norms for American freshmen for the fall of 1976. They reported the scope of current college student part-time employment. Table 1 shows the weighted national norms for freshmen in percentage of enrollment, according to the amounts of money expected to be earned for the 1976-1977 school year. Table 1 also allows a comparison between the employment norms of freshmen enrolled in 4-year private colleges and all higher educational institutions.

According to the data in Table 1, 50.5% of freshmen expected to have employment earnings in all institutions as compared to 49.4% in 4-year private colleges.

Baker (1941) made a study of 332 students attending Butler University. In one aspect of the study he compared the number of hours of classroom work which was added to the hours of employment to the grade point average of the student. The coefficient of correlation for the

Table 1

American Council on Education and University of California at
 Los Angeles Cooperative Institutional Research Program:
 Fall 1976 Weighted National Norms for All Freshmen

Support From Part-Time Employment	All Institutions	4-Year Private Colleges
None	50.5	49.4
\$1-\$499	31.5	28.3
\$500-\$999	12.4	15.6
\$1,000-\$1,999	4.4	5.3
\$2,000-\$4,000	1.0	1.1
over \$4,000	.2	.2

relationship was $-.099$. Baker (1941) also pointed out that extracurricular activities did not vary as the load of employment and classwork hours changed.

Trueblood's (1956) study of students in the University of Indiana School of Business compared the grade point averages of students who were employed to those who were not employed. He also investigated the relationship between employment related to academic objective and academic achievement. His conclusions were as follows:

On the basis of the original two hypotheses, the evidence rather clearly showed that the effects of current employment on the academic achievement of the college students used as subjects in this study were not conclusive. (p. 212)

The difference found in the relationship between achievement and employment related to academic objective was large enough to suggest further research.

Carter and McGinnis (1952) studied high- and low-achieving students at Western Michigan College of Education. They stated:

Employment in college although more common among poor students does not differentiate superior or inferior individuals except those employed more than four hours per day. (p. 221)

Kane (1970) reported there were no significant differences in achievement between financial aid and non-financial aid recipient subgroups for students who worked up to 15 hours per week. His two main groups of recipients and non-recipients had two subgroups consisting of overachievers and underachievers.

In summarizing the investigations of the relationship between the types of financial aid and academic achievement, Knight (1968) found the

achievement of loan recipients to be lower than that of employment and grant recipients. Zapinski (1973) found grant recipients to be more financially deprived than employment and loan recipients. He found grant recipients needed more developmental learning experiences; although, another investigator found grant recipients achieved at a higher level than employment and loan recipients (Kelly, 1970). Tully (1970) found no significant differences between the achievement of recipients of the three types of aid. One type of aid, employment, was investigated more frequently than other types. Five investigations which compared the achievement of student workers with non-workers found no significant differences (Anderson, 1966; Carter & McGinnis, 1952; Kane, 1970; Reeder & Newman, 1939; and Trublood, 1956). Magoon and Maxwell (1965) found low-achieving males majoring in arts and science were twice as likely to be working than high-achieving males but he found no differences in the work patterns of women in arts and sciences. Among education majors, women high-achievers were more likely to be holding jobs than were low-achievers. Dickerson and Newbegin (1959) reported that employed students achieved at a significantly higher level than non-employed students. Baker (1941) found no significant relationship between hours worked and achievement.

Attention is called to the potential for confounding the results of the studies of the types of financial aid and achievement. The criterion by which the different types of aid are distributed to the students rather than the types of aid themselves might produce the results. In the present study all students are awarded all types of aid including employment funds if the student has need, as long as the funds last.

Each student has the right to accept or reject any type of aid or any part of the amount of aid.

Improved academic achievement and the amount of family income.

Smith (1965) found no significant relationship between academic achievement and family income. His study dealt with high ability achievers and non-achieving college freshmen.

Doermann (1968) made an extensive investigation of 1.5 million men graduating from high school. He found that family income correlated positively with their scores on the Scholastic Aptitude Test.

Russ (1973) studied the relationship between ability, family income, and amount of financial aid received by students and their persistence in college. He found that the amount of financial aid had the most significant relationship to persistence in college. He also found ability to be significantly related to family income. The number of subjects in the study was 224. The critical region for the correlation of ability to family income with 222 degrees of freedom, at the .05 level, was .132. The point biserial coefficient was .15.

An investigation by Stephenson (1975) was made of the effects of varying degrees of financial aid, with and without supportive services, on the academic success of black disadvantaged college freshmen. One major conclusion of this study stated that whether or not black disadvantaged students who received larger amounts of financial aid achieved higher mean grade averages than similar students who received smaller amounts of financial aid depended on whether they had supportive services.

When treatment did not include counseling, there was no significant relationship between the amount of aid and achievement.

Mares (1973) reported that the typical profile of the minority learner included such factors as lower educational level of parents, lower family income, lower occupational status of parents, broken families, working mothers, and low academic achievement.

Baird (1967) studied family income and characteristics of the college-bound students. He indicated that three-fourths of the students from families with low income expected to work in support of their education. He also indicated that the time and energy spent on employment could have been used more constructively in study, social activities, or extracurricular activities. He thought financial aid services should be aware of the necessity to prevent the excessive work loads of financially deprived students.

Baird (1967) also pointed out that more students from low-income families than high-income families have been influenced by offers of financial aid in their choice of college. More students from low-income families were also influenced by the cost of college and by its nearness to their home. He suggested that financial aid services could go beyond merely helping students attend college and help them to have a wider choice of colleges which could meet the students' particular needs.

Baird and Holland (1968) stated that the student from a low-income family more likely than not came from a rural home. He received good grades in high school, but he might have been an overachiever since his ability test scores were lower than his college classmates. The student

from the low-income family did not earn as many non-academic accomplishments as his classmates. He was not highly oriented to social opportunities, fraternities, or sororities. He was likely to live in his home or in a dormitory. He did not expect to have a car while receiving his education, and he expected to be employed while at college. He expected to participate in as many extracurricular events as other students, but not in athletics or student government.

Holland (1960) determined that the college student who achieved well was usually one who was unlikely to express his own individuality. He believed that achievement was related to the student's positive relations with the teacher and the student's personality.

Kaplan (1969) compared recipients and non-recipients of financial aid in a tuition-free municipal college to determine if a relationship existed between acceptance of student employment and the family income of the student. He found that whether or not a student accepted employment was not significantly related to the income level of the family.

Summary. Because of the large dollar volume of financial aid attested to by reports like that of the draft report of the National Task Force on Student Aid Problems (1975), there can be little doubt that governmental programs have been successful in supplying money to needy students. The effects of these aids on the student have not yet been determined by the few studies which have been completed at this time.

Many of the investigations pointed out the limitations of the studies that have been made and urged further research into the area of financial aid and its relationship to academic achievement.

Some of the studies cited on the relationship between financial aid and achievement disclosed various degrees of significance and some reported no significance at all. The findings may be summarized as follows:

1. Several studies compared the academic achievement of subjects who received financial aid to subjects who received no aid, and found no significant differences (Snyder, 1971; Winder, 1972; Zaccardelli, 1968). Kaplan (1969) found the student recipients of financial aid had achieved at a significantly higher level than the non-recipients of financial aid.

2. No investigations of the relationship between the amount of unmet need and academic achievement were found in the research of literature; although, Winder (1972) mentioned the need to consider the unmet cost variable.

3. Types of financial aid and their relationships to academic achievement were the subjects of several investigations. Knight (1968) found the achievement of loan recipients to be lower than that of employment and grant recipients. Zapinski (1973) found grant recipients to be more financially deprived than employment and loan recipients. He found grant recipients needed more developmental learning experiences; although, another investigator found grant recipients achieved at a higher level than employment and loan recipients (Kelly, 1970). Tully (1953) found no significant differences between the achievement of recipients of the three types of aid.

Attention is called to the potential for confounding the results of the studies of the types of financial aid and achievement. The criterion by which the different types of aid are distributed to the students rather

than the types of aid themselves might produce the results. In the present study each student is offered each type of aid including employment funds if the student has need, as long as the funds last. Each student has the right to accept or reject any type of aid or any part of the amount of aid.

4. One type of aid, employment, was investigated more frequently than other types. Five investigations which compared the achievement of student workers with non-workers found no significant differences (Anderson, 1966; Carter & McGinnis, 1952; Kane, 1970; Reeder & Newman, 1939; Trueblood, 1956). Magoon and Maxwell (1965) found low-achieving males majoring in arts and science were twice as likely to be working than high-achieving males but he found no differences in the work patterns of women majoring in arts and sciences. Among education majors, women high-achievers were more likely to be holding jobs than were low-achievers. Dickenson and Newbegin (1959) reported that employed students achieved at a significantly higher level than non-employed students. Baker (1941) found no significant relationship between hours worked and achievement.

5. The relationship of several variables to the amount of family income was reported by some of the studies. Three investigations found the potential to succeed in school significantly related to the amount of family income (Baird & Holland, 1968; Doerman, 1968; Russ, 1973). Russ (1973) also found the amount of financial aid received by the student to be negatively related to the amount of the student's income. Mares (1973) reported that academic achievement was significantly related to the amount of family income.

The unique aspect of the present study is found in its effort to examine such characteristics of financial aid as unmet financial need and improved academic achievement. While none of the earlier research cited here dealt with these variables, it is also noted that few investigations of the relationships between financial aid and academic achievement were conducted at small private 4-year colleges. The majority of the populations which were studied were in large universities and community colleges.

CHAPTER III

PROCEDURES

Setting of the Study

The data for this investigation were collected at Averett College, Danville, Virginia. Averett is a private, non-sectarian, coeducational, senior college. The college was founded in 1859 and enrolled only women until 1968 when it became coeducational. The enrollment in the fall of 1976 was 1,000. One third of the students were male. Sixty percent of the students were residents of Virginia. The places of residence of the remaining 40% were located throughout the Eastern part of the United States. Averett is governed by a Board of Trustees, whose members select the new members to replace those having served 4 years. The college is eligible to receive financial aid for its students from both the state and national governments and has a small private source of student financial aid.

Selection of Subjects

There were 144 subjects who were selected for the first and second investigations of this study. These two investigations were concerned with whether or not there was (a) a relationship between the amount of unmet student financial need and academic achievement, represented by Hypothesis 1, and (b) a relationship between the types of financial aid and academic achievement, represented by Hypotheses 2 through 5.

These 144 subjects were all of the freshmen financial aid recipients at Averett who met the following criteria: They (a) attended during the school years 1973-1974 through 1975-1976, (b) were taking a minimum of 12 semester hours for credit, (c) had demonstrated financial need as certified by the Financial Need Analysis Report of the College Scholarship Service, and (d) had taken the Scholastic Aptitude Test prior to entering college.

There were 100 subjects who were selected for the third investigation of this study which was concerned with whether or not there was a relationship between the amount of family income and improved academic achievement, represented by Hypotheses 6 through 9.

These 100 subjects were sophomores and they constituted the number of the original 144 freshmen who met the following criteria: They (a) returned to Averett for their second year of college during the school years 1974-1975 through 1976-1977, (b) were taking a minimum of 12 semester hours for credit, (c) demonstrated financial need as certified by the Financial Need Analysis Report of the College Scholarship Service, and (d) received financial aid.

Data Source

Data for financial aid recipients were made available by the Financial Aid Office at Averett College.

The grade point averages of the subjects were taken from the permanent records of the subjects in the Office of the Registrar at Averett College. The Scholastic Aptitude Test scores were taken from the cumulative folders of the subjects in the Office of Admissions.

The Financial Need Analysis Report (FNAR), from which the subjects' financial needs were determined, was supplied to the Financial Aid Office by the College Scholarship Service of Princeton, New Jersey. This information was made available by Averett's Financial Aid Office.

Information about the reasons why 44 of the original 144 subjects failed to return for the sophomore year of their education was gathered from the records of the Registrar and the Dean of Students. In cases where these records were missing or inadequate, letters were sent to the students asking for the reasons for discontinuing. Each copy of this letter was mailed with an addressed and stamped return envelope. The letter (Appendix) was signed by the investigator.

Amount of Unmet Need and Academic Achievement

Hypothesis 1 represented this investigation. All freshmen financial aid recipients at Averett who met the selection criteria were assigned as subjects to the investigation of whether or not a significant relationship existed between the amount of unmet financial need and academic achievement. The school years of attendance, a full course load, a demonstrated financial need, and the possession of SAT scores constituted the selection criteria. There were 144 subjects.

Unmet financial need was determined by computing the difference between the subject's need and the amount of financial aid received. The subject's need was reported from an analysis of family income, assets, liabilities, and the cost of education at Averett, by the College Scholarship Service.

The academic achievement of each subject was numerically represented in the data by the student's grade point average (GPA). The subjects in the study were graded on a 4-point basis. Students received 4 grade points for an A, 3 for a B, 2 for a C, 1 for a D, and none for a failing grade.

Hypothesis 1 was tested by the Pearson Product Moment Correlation with ability partialled out. The criterion of significance was the alpha level of .05.

Types of Financial Aid and Academic Achievement

The subjects of this study were offered each type of aid including employment funds if the student had need, as long as the funds last. Each student had the right to accept or reject any type of aid or any part of the amount of aid.

Hypotheses 2 through 5 represented this investigation. Hypotheses 2, 3, and 4 were tested together by analysis of covariance. For this reason, the procedures for these hypotheses were described separately from Hypothesis 5.

Hypothesis 2 states that there is no significant difference between the academic achievement of students receiving combinations of financial aid which include loans and those which do not include loans, once differences in ability are statistically controlled.

Hypothesis 3 states that there is no significant difference between the academic achievement of students receiving combinations of financial aid which include grants and those which do not include grants, once differences in ability are statistically controlled.

Hypothesis 4 states that there is no significant difference between the academic achievement of students receiving combinations of financial aid which include employment and those which do not include employment, once differences in ability are statistically controlled.

All of the 144 freshmen students in the unmet need study above were also assigned to this investigation. When students who had received identical types of financial aid were assigned to a group, five groups were formed. The five groups which were used as levels of the independent variable were: Group 1 -- grants and loans, $n = 36$; Group 2 -- grants and employment, $n = 22$; Group 3 -- grants, loans, and employment, $n = 45$; Group 4 -- loans and employment, $n = 8$, and Group 5 -- grants, $n = 33$. The subject's grade point average was the dependent variable. The subject's SAT score was used as the covariate.

Since significant differences were obtained as a result of the analysis of covariance, the Scheffé technique was used to locate the comparison which was related to the significant difference. Using the Scheffé method, each single group that received a certain combination of types of aid was tested against each other single group for significant differences.

To test Hypothesis 2, Groups 1, 3, and 4, listed above, which contained loans were tested against Groups 2 and 5 which did not contain loans. To test Hypothesis 3, Groups 1, 2, 3, and 5 which contained grants were tested against Group 4 which did not contain grants. To test Hypothesis 4, Groups 2, 3, and 4 which contained employment were tested against Groups 1 and 5 which did not contain employment. A further search for

significant differences between combinations of groups had no basis of a priori logic and was not done.

Hypothesis 5 states that there is no significant relationship between the amount of employment earnings and academic achievement, once differences in ability are statistically controlled.

Of the 144 subjects assigned to the investigation of types of aid and achievement, 75 received employment. They were the subjects of the investigation represented by Hypothesis 5. The total of actual employment earnings for the subject's freshman school year was used as the amount of employment earnings. The student's earned GPA for the freshman year was used as the numerical measure of his academic achievement. The SAT score of the subject was used as the value of his ability.

Hypothesis 5 was tested by the Pearson Product Moment Correlation with ability partialled out.

In testing all of the hypotheses of the investigation of types of aid and achievement, the criterion for significance was the alpha level of .05.

Improved Academic Achievement and the Amount of Family Income

Hypotheses 6 through 9 were related to this investigation. The alpha level of .05 was chosen as the criterion of significance.

The 100 sophomore subjects assigned to this part of the study were the freshmen of the two prior studies who continued their education and met the selection criteria. Forty-four of the original 144 freshmen did not qualify. The reasons for their failure to qualify were acquired by a search of their records or by a letter of inquiry. An attempt was made to determine the effects of the 44 dropouts upon the results, by computing

the coefficients of correlation for a combined group containing the 44 dropouts and the 100 non-dropouts.

Hypothesis 6 states that there is a significant negative relationship between the amount of the student's family income and the amount of financial aid awarded.

Hypothesis 7 states that there is a significant positive relationship between the amount of the student's family income and academic ability.

Both of these hypotheses were constructed in a directional manner because of the substantial supporting evidence found in the review of literature (Baird & Holland, 1968; Doerman, 1968; Russ, 1973). These two hypotheses were designed to assure the investigator that the lowest income subjects had the lowest ability and received the most financial aid.

The family income variable was computed by summing all of the wages or other monies received in one calendar year by all members of the student's immediate family, including the student. The amount of financial aid variable was computed by summing all loans, grants, and employment awards given to the subjects. The SAT scores were used as the numerical values for the ability variable.

Hypotheses 6 and 7 were tested by the Pearson Product Moment Correlation.

Hypothesis 8 states that there is no significant relationship between the amount of family income and academic achievement, once differences in ability are statistically controlled.

Hypothesis 9 states that there is no significant relationship between the amount of the student's family income and the difference in academic achievement from the freshman to the sophomore year, once differences in ability are statistically controlled.

The ability and family income variables for Hypotheses 8 and 9 were determined in the same manner as described for Hypotheses 6 and 7. The numerical value used for the achievement variable in Hypothesis 8 was the GPA earned by the subject during the freshman school year. The numerical value used for the difference in academic achievement variable was computed by subtracting the GPA earned during the freshman year for each subject from the sophomore year GPA.

Hypotheses 8 and 9 were tested by the Pearson Product Moment Correlation with ability partialled out.

CHAPTER IV

DATA AND ANALYSIS

Analyses of the data were made using the Wang Computer Model 2200 WCS-30-B which was located at Averett College. Input data were entered directly into the computer and proofed by comparing the original data with computer print-out.

The design of the study was dictated by the necessity of using in vivo data since legal and ethical considerations do not allow assignment of treatment conditions or the creation of financial aid categories. The investigator was limited to the situation as he found it and to noncausal conclusions. The statistical procedures were selected because of the questions which were asked and the nature of the data. Where the question asked about relationships between variables and the data were continuous, correlation was used since it can account for total variance. When questions were asked about the differences between groups with discrete data and it was necessary to statistically control a variable, analysis of covariance was selected.

Test of Hypotheses 1, 5, 8, and 9

The methods for the statistical analyses of data related to Hypotheses 1, 5, 8, and 9 were identical. The Pearson Product Moment Correlation was used to compute the coefficient of correlation (r) between the predictor and criterion variables. The ability variable was then

partialled out by using the technique described by Quinn and McNemar (1962). The partial r obtained by this technique was then subjected to the t test of significance for partial correlation coefficients. The results of these comparisons are shown in Tables 2, 3, 4, and 5.

No significant relationship was found between the variable amount of unmet need and academic achievement of Hypothesis 1, or between the variables amount of family income and academic achievement of Hypothesis 8.

The t value of the test of significance of the partial coefficient of correlation related to Hypothesis 5 was considered significant at the .001 level. A significant positive relationship was found between the variables amount of employment earnings and academic achievement.

The t value of the test of significance of the partial coefficient of correlation related to Hypothesis 9 was considered significant at the .01 level. A significant positive relationship was found between the variables amount of family income and improved academic achievement.

Test of Hypotheses 2, 3, and 4

Hypotheses 2, 3, and 4 were tested together by analysis of covariance. There were five groups of subjects each of whom received a different combination of types of financial aid. These five groups which were used as levels of the independent variable were: Group 1 -- grants and loans, $n = 36$; Group 2 -- grants and employment, $n = 22$; Group 3 -- grants, loans, and employment, $n = 45$; Group 4 -- loans and employment, $n = 8$; and Group 5 -- grants, $n = 33$. The subject's GPA was the dependent variable. The subject's SAT score was used as the covariate.

Table 2
 Correlations of the Variables of Hypothesis 1 With and Without
 Ability Partialled Out^a and the Results of
 the t Test of Significance

CORRELATIONS				
Predictor Variables	Criterion Variables	<u>N</u>	<u>r</u>	Partial <u>r</u>
Amount of Unmet Need	GPA	144	-.121	-.111
Amount of Unmet Need	SAT	144	-.052	
SAT	GPA	144	.508	

RESULTS OF THE <u>t</u> TEST OF SIGNIFICANCE ^a		
<u>df</u>	<u>t</u>	Critical Value of <u>t</u> ^b
141	-1.321*	1.970

^aQuinn and McNemar (1962).

^bAt the .05 level of significance.

* $p > .05$.

Table 3
 Correlations of the Variables of Hypothesis 5 With and Without
 Ability Partialled Out^a and the Results of
 the t Test of Significance

CORRELATIONS				
Predictor Variables	Criterion Variables	<u>N</u>	<u>r</u>	Partial <u>r</u>
Amount of Earnings	GPA	75	.419	.471
Amount of Earnings	SAT	75	.024	
SAT	GPA	75	.500	

RESULTS OF THE <u>t</u> TEST OF SIGNIFICANCE ^a		
<u>df</u>	<u>t</u>	Critical Value of <u>t</u> ^b
72	4.573*	3.433

^aQuinn and McNemar (1962).

^bAt the .001 level of significance.

*p < .001.

Table 4
 Correlations of the Variables of Hypothesis 8 With and Without
 Ability Partialled Out^a and the Results of
 the t Test of Significance

CORRELATIONS					
Predictor Variables	Criterion Variables	<u>N</u>	<u>r</u>	Partial <u>r</u>	
Amount of Family Income	GPA	100	.057	-.070	
Amount of Family Income	SAT	100	.215		
SAT	GPA	100	.535		

RESULTS OF THE <u>t</u> TEST OF SIGNIFICANCE ^a		
<u>df</u>	<u>t</u>	Critical Value of <u>t</u> ^b
97	-.693*	1.987

^aQuinn and McNemar (1962).

^bAt the .05 level of significance.

* $p > .05$.

Table 5
 Correlations of the Variables of Hypothesis 9 With and Without
 Ability Partialled Out^a and the Results of
 the t Test of Significance

CORRELATIONS				
Predictor Variables	Criterion Variables	<u>N</u>	<u>r</u>	Partial <u>r</u>
Amount of Family Income	GPA Difference	100	-.263	-.300
Amount of Family Income	SAT	100	.215	
SAT	GPA Difference	100	.128	

RESULTS OF THE <u>t</u> TEST OF SIGNIFICANCE ^a		
<u>df</u>	<u>t</u>	Critical Value of <u>t</u> ^b
97	-3.090*	2.639

^aQuinn and McNemar (1962).

^bAt the .01 level of significance.

* $p < .01$.

Prior to conducting the analysis of covariance, the data were subjected to a test of the homogeneity of variance. This was done to determine whether or not the data conformed to the assumption of homogeneity of variance, required by the analysis of covariance technique.

The data and results of the test of homogeneity of variance are shown in Table 6. The value computed for chi-square was not significant. No significant differences were found between variances of the type of aid groups. The assumption of homogeneity of variance required by the analysis of covariance method appears to have been met.

The data and results of the analysis of covariance can be found in Table 7; the means and adjusted means by type of aid recipient group, in Table 8. The computed F ratio shown in Table 7 was considered significant at the .05 level. Significant differences were found between the achievement of groups of students who received different types of financial aid.

By inspection of the adjusted means of the grade point averages of each type of aid recipient group shown in Table 8, differences between groups were observed. The adjusted mean of the loans and employment group has the lowest value while grants and employment and the grants group had adjusted means with the highest value. In order to locate the groups between which significant differences existed and to test Hypotheses 2, 3, and 4, an analysis of the adjusted means was made using the Scheffé technique. The results of this analysis are found in Table 9.

Table 9 shows the F values of each single group compared to each other single group. The only F value which approached the critical region

Table 6
 Summary of Data for Test of Homogeneity of Variance:
 Hypotheses 2, 3, and 4 Relating to
 Types of Aid Recipient Groups

Variable	Pooled Estimate of Variance	B^a	χ^2	Critical Value of χ^2 ^b
GPA	.608	-30.067	.333*	9.488
SAT	29,725.013	621.764	2.983*	9.488

Note. Bartlett's Method, Ostle (1963).

^aThe \log_{10} of the pooled estimate of variance times the sum of the degrees of freedom.

^bAt the .05 level of significance and 4 degrees of freedom.

* $p > .05$.

Table 7

Analysis of Covariance of Grade Point Averages Earned by Students in Types of Aid Recipient
 Groups With SAT Scores as the Covariate: Hypotheses 2, 3, and 4

	Between	Within	Total
Sum of Squares: SAT	50,929.803	4,130,952.753	4,181,882.556
Sum of Squares: GPA	5.115	85.029	90.144
Sum of Products	16.039	9,850.621	9,866.660
Degrees of Freedom	4	139	143
Adjusted Sum of Squares: GPA	5.326	61.539	66.865
Degrees of Freedom for Adjusted Sum of Squares	4	138	142
Variance Estimates	1.331	.446	

Note. $F = 2.986$; $F_{.05, df = 4, 138} = 2.435$ $p < .05$.

Table 8

Means and Adjusted Means of Types of Aid Recipient Groups:

Hypotheses 2, 3, and 4

Groups	<u>N</u>	SAT Mean	GPA Mean	Adjusted GPA Mean
Grants and Loans	36	835.111	2.423	2.480
Grants and Employment	22	884.545	2.722	2.661
Grants, Loans, and Employment	45	858.667	2.390	2.391
Loans and Employment	8	903.750	2.016	1.910
Grants	33	858.485	2.706	2.707

Table 9

Results of an Analysis of Adjusted Means of Types of Aid Recipient
Groups to Identify Significant Differences Using the
Scheffé Method^a: Hypotheses 2, 3, and 4

Groups Compared	F Value
1 ^b vs 2 ^c	.990
1 vs 3 ^d	.343
1 vs 4 ^e	4.752
1 vs 5 ^f	1.988
2 vs 3	2.437
2 vs 4	7.404
2 vs 5	.063
3 vs 4	3.504
3 vs 5	4.158
4 vs 5	9.060
1, 3, 4 vs 2, 5	7.154
1, 2, 3, 5 vs 4	6.627
2, 3, 4 vs 1, 5	2.417

Note. $F'_{.05} = 9.732$

^aFerguson (1971).

^bGrants and loans.

^cGrants and employment.

^dGrants, loans, and employment.

^eLoans and employment.

^fGrants.

of F' at the .05 level of significance was that F value found for comparing groups receiving loans and employment with grants. In Table 9 this comparison of groups is represented by the numbers 4 versus 5 and the computed F value is 9.060. The F value of 9.060 did not reach the F' value of 9.732, at the .05 level of significance.

Comparison of Groups 1, 3, and 4 to Groups 2 and 5 was a test of the variables related to Hypothesis 2. In this hypothesis, the achievement of groups receiving types of aid which contained loans was compared to the achievement of groups of aid recipients who did not receive loans. The computed F value for the comparison of these groups, shown in Table 9 was not significant. No significant differences were found between the achievement of students receiving loans and the achievement of those who did not receive loans.

Comparison of Groups 1, 2, 3, and 5 to Group 4 was a test of the variables related to Hypothesis 3. In this hypothesis, the achievement of groups receiving types of aid which contained grants was compared to the achievement of groups of aid recipients who did not receive grants. The computed F values for the comparison of these groups, shown in Table 9 was not significant. No significant differences were found between the achievement of students receiving grants and the achievement of those who did not receive grants.

Comparison of Groups 2, 3, and 4 to Groups 1 and 5 was a test of the variables related to Hypothesis 4. In this hypothesis, the achievement of groups receiving types of aid which contained employment was compared to the achievement of groups of aid recipients who did not receive

employment. The computed F value for the comparison of these groups, shown in Table 9 was not significant. No significant differences were found between the achievement of students receiving employment and the achievement of those who did not receive employment.

Test of Hypotheses 6 and 7

The same method of statistical analysis was used with the data related to Hypotheses 6 and 7. Both hypotheses were constructed in a directional manner.

The Pearson Product Moment Correlation was used to compute the coefficient of correlation (r) between the predictor and criterion variables. The correlation coefficient obtained by this technique was then subjected to the t test of significance of correlation coefficients. A one-tailed test of significance was used as the hypotheses were directional. The correlation coefficients and the results of the t test of significance are found in Table 10.

The t value of the test of significance of the correlation coefficient related to Hypothesis 6 was considered significant at the .025 level. A significant negative relationship was found between the amount of the student's family income and the amount of financial aid awarded.

The t value of the test of significance of the coefficient of correlation related to Hypothesis 7 was considered significant at the .01 level. A significant positive relationship was found between the amount of the student's family income and his SAT scores.

Table 10
 Correlations of the Variables of Hypotheses 6 and 7 and the Results
 of the t Test of Significance

CORRELATIONS				
Hypothesis	Predictor Variable	Criterion Variable	<u>N</u>	<u>r</u>
6	Amount of Family Income	Amount of Financial Aid	100	-.251
7	Amount of Family Income	SAT	100	.215

RESULTS OF THE <u>t</u> TEST OF SIGNIFICANCE ^a			
Hypothesis	<u>df</u>	<u>t</u>	Critical Values of <u>t</u>
6	98	-2.567*	-2.368 ^b
7	98	2.179**	+1.987 ^c

Note. Hypotheses are directional.

^aFerguson (1971).

*p < .025.

^bAt the .025 level.

**p < .01.

^cAt the .01 level.

Analysis of Dropouts

The number of the original 144 freshman subjects who failed to return for their sophomore year at Averett College was 44. The school year during which they were enrolled as freshmen, the percentage of freshmen who did not return by school year, and the reasons for discontinuing their education are shown in Table 11. Table 11 also indicates that the investigator was unable to determine the reasons for discontinuing education from 10 of the dropouts.

Records were available which provided the GPA, SAT scores, and the amount of family income of the 44 dropouts during their freshman year; therefore, it was possible to determine the relationships between the variables of Hypothesis 6, 7, and 8 for a combined group which contained the 100 non-dropouts and the 44 dropouts. Data required to test Hypothesis 9, as it related to dropouts, included the sophomore year GPA. Since the dropouts did not complete the sophomore year, these data were not available.

To determine whether or not the findings of the investigation might have been biased as a result of the 44 dropouts, Hypotheses 6, 7, and 8 were tested using the data of the combined group. The coefficients of correlation and the t tests of significance for the coefficients of the 100 non-dropouts were compared to those of the combined group of 144 subjects containing both dropouts and non-dropouts. The methods used for the analyses of data were the same as were described when Hypotheses 6, 7, and 8 were tested using the data for the 100 non-dropouts.

Table 11
 A Comparison of the Number of the 44 Dropouts by
 Freshman Class Year and the Reasons for
 Discontinuing Their Education

DROPOUTS BY FRESHMAN CLASS YEAR			
Year	Original Number of Freshman Subjects	Number of Dropouts	Percent of Dropouts
1973-1974	28	6	21.429
1974-1975	39	11	28.205
1975-1976	77	27	35.065

REASONS FOR DISCONTINUING EDUCATION	
Reason	Number
Transfer to Another College for Sophomore Year	12
Did Not Meet Full-Time Course Requirements of this Study During the Sophomore Year	5
Stopped School to be Married	3
Financial Problems	3
Medical Problems	2
Disliked Averett College	2
Academic Suspension	2
Various Other Reasons	5
Unable to Determine Reason	10
TOTAL	44

The results of the tests of Hypotheses 6 and 7 using the data of the combined group and their comparison to the results of the same tests using the data of the non-dropout group are shown in Table 12.

The coefficient of correlation between the amount of family income and amount of financial aid for the non-dropout group was $-.251$ which was significant at the $.01$ level. The coefficient of correlation between the same variables for the combined group was $-.264$ which was significant at the $.005$ level.

The coefficient of correlation between the amount of family income and SAT for the non-dropout group was $.215$ which was significant at the $.025$ level. The coefficient of correlation between the same variables for the combined group was $.195$ which was significant at the $.01$ level.

The result of the test of Hypothesis 8 using the data of the combined group and its comparison to the result of the same test using the data of the non-dropout group is shown in Table 13.

The partial coefficient of correlation between the amount of family income and the GPA for the non-dropout group was $.070$ which was not significant. The partial coefficient of correlation between the same variables for the combined group was $.056$ which was also not significant.

The coefficients of correlation between the variables of Hypotheses 6, 7, and 8 when using non-dropout data differed only slightly from those coefficients obtained when the data of the combined group was used. The test of significance of the coefficients of correlation between the variables of Hypotheses 6 and 7 indicated a greater significance for the combined groups which was mainly due to the increase of N from 100 to 144.

Table 12

Correlations of the Variables of Hypotheses 6 and 7 and the Results of the t Test of Significance for the Groups of 100 Non-Dropouts Compared to the Correlations of the Combined Group,

$N = 144$, of the Non-Dropouts and the Dropouts

CORRELATIONS				
Hypothesis	Predictor Variable	Criterion Variable	Non-Dropout Group r	Combined Group r
6	Amount of Family Income	Amount of Financial Aid	-.251	-.264
7	Amount of Family Income	SAT	.215	.195

RESULTS OF THE t TEST OF SIGNIFICANCE ^a						
Hypothesis	Non-Dropout Group			Combined Group		
	df	t	Critical Value of t	df	t	Critical Value of t
6	98	-2.567**	-2.368 at .01 level	142	-3.262***	-2.576 at .005 level
7	98	2.179*	+1.987 at .025 level	142	2.369**	+2.326 at .01 level

Note. Hypotheses are directional.

* $p < .025$.

*** $p < .005$.

^aFerguson (1971).

** $p < .01$

Table 13

Correlations of the Variables of Hypothesis 8 With and Without Ability Partialled Out^a and the Results of the t Test of Significance for the Group of 100 Non-Dropouts Compared to the Correlations of the Combined Group, N = 144, of the Non-Dropouts and the Dropouts

CORRELATIONS						
Predictor Variable	Criterion Variable	Non-Dropout Group		Combined Group		
		<u>r</u>	Partial <u>r</u>	<u>r</u>	Partial <u>r</u>	
Amount of Family Income	GPA	.057	.070	.052	.056	
Amount of Family Income	SAT	.215		.195		
SAT	GPA	.535		.508		

RESULTS OF THE <u>t</u> TEST OF SIGNIFICANCE ^a					
Non-Dropout Group			Combined Group		
<u>df</u>	<u>t</u>	Critical Value of <u>t</u>	<u>df</u>	<u>t</u>	Critical Value of <u>t</u>
97	-.693*	1.987 at .05 level	141	-.667*	1.960 at .05 level

^aQuinn and McNemar (1962).

*p > .05

The result of the dropout analysis disclosed that the 44 subjects who did not return for their sophomore year had little effect on the results of Hypothesis 8. Their effect upon Hypothesis 9 cannot be determined. The information provided in Table 11 shows only two subjects whose academic performance was so inadequate that they were suspended. Had they returned for the sophomore year, it is likely they could not have improved their academic performance.

CHAPTER V
SUMMARY AND CONCLUSIONS

Laws have been passed which implement the longstanding dream of equal educational opportunity for all socioeconomic levels of our society. A tangible result of these laws is found in the large amounts of money for loans, grants, and employment available to students who demonstrate financial need. Statements have been made that financial aid to students facilitates higher achievement and financial aid administrators attempt to make maximum use of the different types of financial aids for this purpose.

Summary

The general purpose of this study was to assess the relationships between certain characteristics of financial aid and academic achievement. The primary concern of the investigation was: how did the assignment of financial aid affect the students who received this assistance?

One hypothesis was investigated to determine if the educational performance of college students was affected by unmet financial need. Four other hypotheses were tested to find out if the types of financial aid were related to academic performance. Four hypotheses were designed and tested to assess the relationship between the amount of family income and (a) the amount of financial aid received by the student, (b) the ability to succeed in school as measured by SAT scores, (c) academic

achievement, (d) the difference between the grade point average of the freshman and sophomore year.

A review of the literature on other investigations of the problems of awarding financial aid indicated that the problems have not undergone enough thorough experimental study. Governmental studies and those of individual investigators emphasized the need for research evidence pertinent to a clarification of procedures and practices of financial aid administration. This lack of methodical investigation was found in a context of expanding financial aid services and multi-billion dollar appropriations for student aid.

The setting of this study was a small private college. The total student population was 1000. Averett College is located in Danville, Virginia and has awarded the baccalaureate degree for 10 years. For 100 years prior to being a 4-year college, Averett was a junior college. Students attending the college are eligible for both state and federal financial aid.

There were 144 freshmen subjects assigned to the studies on unmet need and types of financial aid. Of this original 144 subjects, 100 returned for their sophomore year and were assigned to the investigation of the relationship between the amount of family income and improved academic achievement.

In order to qualify as subjects, a student had to demonstrate financial need and have received financial aid. The subjects had to be full-time students who had taken the Scholastic Aptitude Test before entering college. All of the freshmen at Averett College who met these criteria

in the 1973-1974 through the 1975-1976 school years were the original subjects of the study. An analytical comparison of the non-dropouts was made to a combined group containing both dropouts and non-dropouts.

The method of statistical analysis used to test the continuous data related to Hypotheses 1, 5, 6, 7, 8, and 9 was the Pearson Product Moment Correlation. For Hypotheses 1, 5, 8, and 9, a statistical adjustment was made for ability using the partial correlation method. SAT scores were used as values to represent the student's ability. The method of statistical analysis used to test the discrete data related to Hypotheses 2, 3, and 4 was the analysis of covariance. The student's GPA was used as the dependent variable and his SAT score as the value of the covariate. Further post hoc analyses were necessary to test these hypotheses. The Scheffé method of multiple comparisons was used. Prior to applying the analysis of covariance procedure, the within-group variance was tested and found to be homogeneous.

An analysis of the data of the 44 dropouts was made which indicated that the effect of the dropouts was to increase the significance of the relationships found between amount of family income and the amount of financial aid, and between amount of family income and SAT scores. The dropouts had no effect upon the relationship between the amount of family income and academic achievement. The effects of the dropouts upon the percent of variance explained by the predictor variable of Hypothesis 9 could not be determined.

As a result of the analysis of data, no significant relationship was found between the variables of Hypotheses 1 and 8.

As a result of the analysis of data, no significant differences were found between the adjusted means of the groups which represented Hypotheses 2, 3, and 4.

As a result of the analysis of data, significant relationships were found between the variables of Hypotheses 5, 6, 7, and 9.

Conclusions and Discussion

Hypothesis 1. The first hypothesis states that there is no significant relationship between the amount of student need which was not awarded to the student in the form of financial aid and academic achievement, once differences in ability are statistically controlled.

The amount of unmet student financial need served as the predictor variable while the student's grade point average served as the criterion. The value of the partial r was negative and indicated that the predictor variable explained only 11.1% of the total variance. The test of significance indicated that the partial r was not significant at the .05 level of confidence. The results of this study were consistent with the hypothesis; therefore, the conclusion was that no relationship existed between the amount of unmet financial need and academic achievement.

The results of this study do not provide support for a student aid policy that would meet each student's financial need. There is no evidence that academic performance would be thereby enhanced.

It would be helpful to a financial aid administrator to know that awards could be given to more students but in smaller amounts, since unmet need did not appear to harm academic performance. This could be done with the assumption that the student's family could provide the

remainder of the student's support, a task made easier by the partial award. More studies need to be made to determine the effect of unmet need upon attrition. If more students were enticed into college by partial awards, but dropped out because of inability to secure the remainder of funds, no purpose would be served.

Another use for the information from this study lies in its enabling the financial aid administrator to assist the Department of Health, Education and Welfare with policy-making decisions. Administrators are allowed a voice in formulation of policy, to some degree, but without research support their recommendations bear little weight.

Hypotheses 2, 3, and 4. Hypotheses 2, 3, and 4 were tested together by analysis of covariance.

Hypothesis 2 states that there is no significant difference between the academic achievement of students receiving combinations of financial aid which include loans and those which do not include loans, once differences in ability are statistically controlled.

Hypothesis 3 states that there is no significant difference between the academic achievement of students receiving combinations of financial aid which include grants and those which do not include grants, once differences in ability are statistically controlled.

Hypothesis 4 states that there is no significant difference between the academic achievement of students receiving combinations of financial aid which include employment and those which do not include employment, once differences in ability are statistically controlled. It is necessary to control for the effects of ability when trying to determine if a

relationship exists between types of aid and achievement. If ability were not controlled, and a larger number of high, or low ability students accidentally received a certain combination of aids, the resulting relationship would be confounded. It would not be possible to know if the relationship was between types of aid and achievement, or between ability and achievement, or both. Legal and ethical considerations of the distribution of financial aid do not permit assignment of students to aid types according to personal characteristics or other methods of control.

Students who received common types of financial aid were grouped together. These groups served as levels of the independent variable. The student's GPA was the dependent variable, and his SAT score the covariate.

The difference found between the grade point averages of the groups receiving different types of aid were found to be significant at the .05 level of confidence. The Scheffé Test of Multiple Comparisons was used to determine the groups between which the significant difference occurred. The result of the Scheffé test indicated that none of the three F values for the differences between groups representing Hypotheses 2, 3, and 4 were significant at the .05 level of confidence. The results of the study were consistent with these hypotheses; therefore, the conclusion was that no significant differences existed between the academic achievement of students who received the combinations of types of financial aid described in Hypotheses 2, 3, and 4.

The criteria used in this investigation to measure the effects of packaging or combining the various types of financial aid on academic

achievement did not give any support for packaging aid in order to improve achievement.

The fact that a student's academic achievement was not harmed by employment could be useful information when packaging financial aid. While the design of this study does not permit causal conclusions, there may be some evidence that the student's aid package may include employment without ill effects. Limited grant funds and the undesirability of burdening a student with the debt of excessive loans often requires the inclusion of employment in a financial aid package; also, by combining various types of financial aid, the financial aid administrator is able to help a larger number of students.

Hypothesis 5. Hypothesis 5 states that there is no significant relationship between the amount of employment earnings and academic achievement, once differences in ability are statistically controlled.

The amount of employment earnings served as the predictor variable while the student's grade point average served as the criterion. The value of the partial r was positive and indicated that the predictor variable explained 47.1% of the total variance. The test of significance indicated that the partial r was significant at the .001 level of confidence. The results of this study were not consistent with the hypothesis; therefore, the conclusion was that a significant positive relationship existed between the amount of employment earnings and academic achievement. This result supports the practice of allowing a student to participate in part-time employment involving up to half of a regular work week of 40 hours. Since students of this study were employed up to 20

hours a week, this fact should be considered when interpreting the results.

Information provided in this study seems to reject the almost universal belief that hours spent working have a negative effect on scholarship as described by several investigators (Dykstra, 1957; Reeder & Newman, 1939) These writers cited loss of rest, lack of opportunity to associate with others, and worry over financial problems as the underlying reasons for these beliefs. Employment experiences can frequently expose the student to more real world associations with other people than hours spent studying. This concept becomes more acceptable if the academic performance of the student worker is equal to that of the non-worker. It seems even more credible when those who work more hours make better grades.

If academic performance is thought to be a criterion that reflects the lack of rest and worry over financial problems faced by a student who is required to work for his education, the evidence of this study does not agree. The results of the study would encourage the financial aid administrator to utilize fully all employment resources that are available.

It may be well to note a circumstance which may tend to bias the conclusion of this study. When awards of any type of aid are made to students, they have the right to accept or reject any part or type of the award. A process of self-selection may operate to assign only the more able or those with an achieving attitude to the employment group. This process may also serve to allow the more able to work more hours. Future research is needed into this aspect of the employment-achievement relationship.

Hypothesis 6. The sixth hypothesis states that there is a significant negative relationship between the amount of the student's family income and the amount of financial aid awarded.

The amount of family income of the student served as the predictor variable while the amount of financial aid awarded to the student served as the criterion. The value of r was negative and explained 25.1% of the total variance. The test of significance indicated that the r was significant at the .025 level of confidence. The results of this study were consistent with the hypothesis; therefore, the conclusion was that a significant negative relationship existed between the amount of the student's family income and the amount of financial aid that was awarded to him.

This part of the study attempted to furnish evidence which would refute the claims that financial aid was not given to the most needy students but was used as a recruiting tool (Nash, 1968; Wilcox, 1973-1974). While correlational data cannot be used to infer cause and the percentage of total variance explained by r was not large, a relationship between the variables did exist. Because of the variance for which this study could not account, the charges like those of Nash and Wilcox could not be called completely inaccurate. All of the subjects of the study had at least some financial need as certified by the College Scholarship Service and could be classified as needy students.

Hypothesis 7. Hypothesis 7 states that there is a significant relationship between the amount of the student's family income and academic ability.

The amount of family income served as the predictor variable while the student's SAT score served as the criterion. The value of r was positive and explained 21.5% of the total variance. The test of significance indicated that the r was significant at the .01 level of confidence. The results of this study were consistent with the hypothesis; therefore, the conclusion was that a significant relationship existed between the amount of the student's family income and his SAT score. An assumption of this study was that there is a significant positive correlation between Scholastic Aptitude Test Scores and academic ability. Although the evidence was not strong, it was concluded that among the subjects of this study, a positive relationship existed between the amount of family income and the ability to succeed in school. This finding was consistent with the findings of other previous investigations (Baird & Holland, 1968; Doerman, 1968; Russ, 1973).

Hypothesis 8. Hypothesis 8 states that there is no significant relationship between the amount of the student's family income and academic achievement, once differences in ability are statistically controlled.

The amount of the student's family income served as the predictor variable while the student's grade point average served as the criterion. The value of the partial r was positive and indicated that the predictor variable explained only 7.0% of the total variance. The test of significance indicated that the partial r was not significant at the .05 level of confidence. The results of this study were consistent with the hypothesis; therefore, the conclusion was that no relationship existed between the amount of the student's family income and academic achievement, once differences in ability were statistically controlled. These results

imply that the students from families with lower incomes perform as well academically as do students from higher income families, during the freshman year, when ability is held constant.

Hypothesis 9. Hypothesis 9 states that there is no significant relationship between the amount of the student's family income and the difference in academic achievement from the freshman to the sophomore year, once differences in ability are statistically controlled.

The amount of the student's family income served as the predictor variable while the difference in grade point averages from the freshman to sophomore year served as the criterion. The value of the partial r was negative and indicated that the predictor variable explained 30.0% of the total variance. The test of significance indicated that the partial r was significant at the .01 level of confidence. The results of this study were not consistent with the hypothesis; therefore, the conclusion was that a significant negative relationship existed between the amount of the student's family income and the difference in the grade point average from the freshman to the sophomore year, once differences in ability were statistically controlled.

Hypothesis 8 implies that there is no difference between the academic performance of high and low income family students during the freshman year when ability is held constant. Hypothesis 9 indicates that the student from the lower income family improves more academically from the freshman to the sophomore year than does the student from the higher income family. The design of this study allows the identification of relationships between variables but does not permit casual conclusions. Other

factors such as summer experiences, difficulty of academic content, and instructor differences might have influenced the results of this investigation.

Opinions like those expressed by the Southern Regional Education Board Commission on Goals for Higher Education in the South which claim that financial aid encourages higher academic achievement are supported by the results of the study.

The results of the study might also serve to encourage the financial aid administrator to continue the practice of maintaining financial aid awards to the same students for 4 years, providing they continued to have financial need. Four years of financial aid would be justified by the continued improved achievement or development of the student. The alternate practice of aiding a new student with more need than the returning student might interrupt the developmental process of the returning student. The returning student represents an investment in manpower development on which the pay-off has already begun.

If the more deprived subject of this study did in fact improve more in achievement than the less deprived subject, the question might be asked: did the student whose achievement improved also have an improved ability to succeed in school as measured by the SAT score? The implications of this question are vital to society and to education but are beyond the scope of this investigation. Further research is needed on this question.

Suggestions For Financial Aid Officers

Based upon the results of this investigation, it appears that financial aid administrators could award amounts of aid which are less than full financial need since academic performance was not found to be related to unmet need. Financial aid could then be extended to offer more students the opportunity for education. The task of supplying the remainder of educational costs would be made easier by the partial award.

The results indicate that a financial aid administrator may make maximum use of student employment resources thus extending aid to more students and reducing the burden of loans. This practice is recommended because no relationships were found between the types of aid students received and achievement. Among students who worked, those who worked more hours earned the highest GPA. Because of this evidence, the aid administrator might wish to change his policy if he has been restricting the earnings of the students who want to work more hours but do not have high academic ability.

When compared to the less financially deprived student, the lower family income student's GPA improved most from the freshman to sophomore year. For this reason, it appears the financial aid administrator is justified in maintaining financial aid awards to the same students for 4 years, providing they continue to have financial need. The returning student represents an investment in manpower development on which the payoff has already begun. The administrator might include this evidence in his defense of financial aid as an encouragement to higher educational achievement.

Research Implications

The data for this investigation were gathered only on achievement during the freshman year, with the exception of the investigation of improved academic achievement and the amount of the student's family income which encompassed 2 years. A 4-year study would allow for the positive effects of financial aid to take place, if there are positive effects.

One criteria of student eligibility for this study was that students must have taken at least 12 credit hours each semester. These subjects are the major subpopulation of financial aid recipients. Full-time students might be more motivated than part-time students and less motivated than students who take 18 credit hours or more each semester. It is also possible that a part-time student has more time to spend on homework and makes better grades than the student who takes more credit hours. The results of this investigation do not apply to part-time students. Research is needed which would attempt to determine the effect of different credit hour loads upon achievement.

The present study attempted to determine the relationship between the number of hours of student employment and academic achievement. In this study, a student was able to accept or reject employment. The student was also able to determine, to some degree, the amount of hours worked. This process amounted to self-selection of subjects and may have contaminated the findings. A study is needed which seeks to determine the same relationships while controlling for self-selection of subjects. A study might also attempt to determine the effects of the method of offering financial aid packages upon the findings of investigations into relationships between types of aid and achievement.

Further research is needed to replicate the part of this study which determined that a significant relationship existed between the amount of the family income of the student and improved academic achievement. Further research is recommended because of the size of the population studied, $N = 100$, and the limited amount of the total variance explained by the partial coefficient of correlation. New research into this area should be designed to administer the SAT as a posttest if it is found that a significant negative relationship exists between the amount of the student's family income and the difference in the student's GPA between the freshman and sophomore years. The purpose of the SAT as a posttest would be to determine if the SAT score increases when achievement increases. If this were found to be true, it might be reasoned that financial aid indirectly enhances the ability to succeed in school.

Research is recommended on all aspects of the study within different types of educational institutions and with larger sample sizes. An increased number of findings are needed to improve the accuracy of prediction and decision making in the financial aid field.

Further research is recommended to examine the effects of employment on student health, participation in extracurricular activities, social activities, and student attitudes. A study might be designed to determine whether or not needy students who accept employment are overachievers or if they possess attributes that are different from those of needy students who do not accept employment.

It is recommended that future studies of the characteristics of financial aid include such variables as dormitory students, commuter

students, students who are dependent upon parents, students who are independent of parents, sex, race, rural students, and urban students. If all of these variables are considered, the chances of biased results will be reduced.

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Appendix

Letter of Inquiry Mailed to Students to Determine Why They Discontinued
Their Education After the Freshman Year at Averett College

July 7, 1977

Dear Jane:

After all these years, I have gotten around to collecting a doctoral degree. As a final requirement, I was asked to write a dissertation. Part of this dissertation is concerned with trying to determine why students discontinued enrollment at Averett.

May I ask a favor of you? Please complete the unfinished sentence on the attached sheet of paper which reads: "I discontinued enrollment at Averett College because. . ." Return this sheet unsigned in the self-addressed stamped envelope which is enclosed.

Your comments are, of course, anonymous and completely confidential. Your kindness in making this effort will be appreciated.

Sincerely yours,

George J. Falk
Director of Financial Aid

GJF/lg