A COMPARISON OF HOW SELECTED TWO- AND FOUR-YEAR SECTORS OF HIGHER EDUCATION ARE CONTRIBUTING TO THE PROGRESS OF HIGH-RISK STUDENTS

by

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Dissertation submitted to the Faculty of the

Virginia Polytechnic Institute and State University

in partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

in

Community College Education

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April, 1989

Blacksburg, Virginia

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(ABSTRACT)

Recent legislative decisions in at least some states have removed the remedial function from the state university and placed it directly at the doorstep of the community college. Such decisions appear to have been made largely for reasons of parsimony or the mere presumption of the effectiveness with which two-year colleges address the needs of high-risk students. However, there are few empirical indicators of the differential effectiveness with which the two- and four-year collegiate sectors are helping high-risk students to attain their goals. Therefore, this study was designed to provide an empirical grounding for the aforementioned policy issue by determining how selected pairs of two- and four-year colleges are contributing to the progress of high-risk students. Multiple methods were used to address the issues central to this investigation.

An assessment of the effect of remedial programs and other institutional variables on the progress of underprepared students across chosen two- and four-year collegiate sectors in a two-state region of rural Appalachia was performed. Moreover, the impact of residence status on students' progress was considered. Further, the effect of the remedial approaches at separate two- and four-year institutions on the progress of high-risk students was assessed, and a comparison was made of the program orientations preferred by the leaders of participant institutions.

The findings indicated that the redemptive practices at selected two-year colleges were generally more effective than those employed by participant four-year institutions, thus offering hope that recent trends to assign the remedial function to community colleges may be justified by the more effective delivery of services. The advantage accorded the remedial programs in the two-year sector was not primarily a result of differences in remedial approach but largely a function of the relationship between remedial practices and other institutional variables. Residence status had little effect on the educational progress of high-risk students. A tendency was observed among selected two- and four-year sectors to devalue the affective dimensions of development that were integral with more

recent program designs and return to earlier conceptions of basic skills remediation as the primary means of defining existing programs.

Acknowledgements

It is commonly accepted that completion of a project of such large proportions is accomplished only with the considerable assistance of significant others. And so it was with this study. Dr. Darrel Clowes--my advisor, teacher, and friend--provided much inspiration by being the role model that he remains. I am in his debt for the wisdom, encouragment, and frequent humor that he displayed throughout the course of this study. Dr. Gabriella Belli's counsel helped shape the design and method of the study. The importance of her contribution to the completion of this research cannot be overstated. I extend my appreciation to the remaining members of my Committee for their sharp insights and personal investments in me that made my research more meaningful.

A word of thanks is offered to the faculty and administrators of "Brentwood Community College," "Bayberry Community College," "Greentree State University," and "Oak Valley College," who were instrumental in enabling me to collect the requisite data for this investigation. Special consideration is reserved for the students who were the centerpiece of the study--those who refused to give up on themselves or on an educational system that had failed them

in the past. To such students at participant institutions and everywhere, I am indebted for providing the subject matter of this study.

For his interest in my research and the generous offer to share his library, gratitude is expressed to Dr. Michael Parsons. I owe much to for her editorial comments; to and for their computer instruction; and to for her kindness and enthusiasm when they were most urgently needed. Plaudits are due , my typist, for performing her tasks with customary efficiency.

It is with my wife, , that I share most deeply this accomplishment. She unswervingly provided the love, patience, and understanding that sustained the endeavor during a period marked with great personal grief. Moreover, at times when my perspective became cloudy, she was there to restore balance to my life. For her partnership during this study's completion, I will always be grateful. With much love, I also acknowledge my precious daughter, , who sacrificed untold hours of "Uncle Wiggily" stories for the sake of my compulsions. I hope that this work will inspire her to take pride in her accomplishments.

Finally, I wish to recognize my late mother-in-law,

, whose indomitable spirit and courage have aroused in me the feeling that no task is insurmountable. It is to her memory that I dedicate this work.

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Chapter 1

Introduction

American colleges have always had students who lack solid educational underpinnings (Maxwell, 1979). There were early precursors of the need for remedial education. Throughout most of the colonial period, college preparatory training was secured by means of Latin grammar schools and private tutoring (Brubacher & Rudy, 1976). In the 19th century, special collegiate programs were developed to help these "underprepared" students. Harvard University initiated its freshman composition course in 1874 as a result of faculty dissatisfaction with students' preparation in formal writing (Maxwell, 1979). Also, Cross (1976) pointed to Wellesley College as having developed the first remedial course for college students in 1894.

As the 19th century ended, many colleges had developed their own remedial education programs. Rudolph (1977) asserted that in 1895, 40% of entering students emerged from the preparatory programs operated by the colleges and universities themselves. The 20th century has been marked by the nation's community colleges as the principal purveyors of services to high-risk students. Their unyielding commitment to the principle of open access has

attracted many students seeking a second chance at education. By the mid-1960s, higher education's meritocratic era was being replaced by a period infused with egalitarian values. Colleges were now expected to offer every individual a chance to fulfill his or her potential (Newman & Associates, 1973). Two-year colleges were urged by the Carnegie Commission on Higher Education to adopt an "open-door" policy of admissions (Brubacher & Rudy, 1976). As a result, more colleges and universities began relaxing their admissions standards. There was concomitant growth in the number of remedial programs in two- and four-year institutions of higher education during the decade of the 1970s (Cross, 1976; Roueche & Snow, 1977).

The 1980s ushered in a period of stabilizing or declining enrollments for many colleges. Entry requirements were frequently tossed aside, as institutions became desperate to enroll as many students as possible. Riesman (1980) reported that 80% of all American colleges and universities accepted anyone who submitted an application. The access explosion forced college administrators to reshape policies as a response to the glut of high-risk students entering their institutions.

Moreover, those referred to by Roueche and Snow as "problem students" (1977, p. 2) are not likely to go away soon.

Background

The ability to effectively exchange information is now the touchstone of the American workplace. "Now more than 65 percent of us work with information as programmers, teachers, clerks, secretaries, [and] accountants" (Naisbitt, 1982, p. 4). Only those who are able to communicate effectively will reap future rewards. These are ominous truths for increasing numbers of high-risk students leaving secondary schools, as well as for many adults who currently populate the workplace.

Astute college leaders recognize that the solution to the perplexing problems offered by today's high-risk students is not found by denying access to higher education or lowering academic standards. Denying entry to college by raising admissions standards is a simplistic and inappropriate response to the challenges offered by students who seek but are unprepared for higher education. After all, "the American economy needs more, rather than fewer, well-educated individuals" (McCabe, 1982, p. 7). Attempts to lower academic standards to accommodate high-risk students are also ill-advised, as quality reform

of education is now demanded (National Commission on Excellence in Education, 1983). Rather, academic assistance appears to be the favored response, for quality must ultimately be defined in terms of student success.

Piland (1983) avowed that remedial education is the fastest growing part of the college curriculum. A recent national survey of colleges (Lederman, Ryzewic, & Ribaudo, 1983) revealed that a significant percentage of all college freshmen required assistance in basic skills: (a) 28% in reading, (b) 31% in writing, and (c) 32% in mathematics. Also, 80% of the institutions surveyed offered basic skills courses in reading and mathematics, while 90% offered remedial writing courses. In one way or another, developmental educators work with over half of all students entering our nation's colleges and universities (Miles, 1984). It is quite clear that all strata of higher educational institutions have assumed responsibility for addressing the needs of those students who are unprepared for college-level work. Unfortunately, colleges have been "more successful at enrolling new populations than in serving them effectively" (McCabe & Skidmore, 1982, p. 3).

Disputations have long punctuated higher education's efforts to address the needs of its high-risk students. Myriad labels have been used to describe these students

with discernible weaknesses in such basic skills as reading, writing, and mathematics. Terms such as "new," "disadvantaged," "disprivileged," "nontraditional," "remedial," and "developmental," to name a few, have all found their place in the literature. Also, the program designs for ameliorating the educational shortcomings of this cohort have been incredibly diverse. Confusion abounds even with regard to what such programs should be called. The entanglement of descriptors most often has included the terms "remedial," "developmental," and "compensatory."

The rightful place for remedial education now is being debated. While some argue that this function should be found exclusively at community colleges, others sanction its importance in all colleges and universities. Still others maintain the position that remedial education should be found mainly in the adult schools, in the private sector, or in corporate training programs (Cohen, 1987). Seemingly lost within the muddle are many academically underprepared students who persevere by enrolling in college despite past failures.

Statement of the Problem

The current public outcry for accountability strikes at the heart of colleges that presume to meet the needs of those students who have not been served well by education in the past. Society's mandate to all colleges and universities that admit high-risk students is to provide an appropriate and meaningful educational experience (Losak, 1973). In an era of diminished financial resources, legislators are wondering why taxpayers should be assessed twice for the same education. Perhaps more importantly, "the viability of the entire curriculum may be determined by the effectiveness of the remedial program; only if the student body is properly prepared in basic skills can standards be maintained in later courses" (Akst & Hecht, 1980, p. 262). Remedial education is perceived as the means for improving excellence within our colleges (Illinois Association for Personalized Learning Programs, 1985).

Despite these many factors, few remedial programs have been carefully evaluated. Akst and Hecht (1980) reported, "Such studies as have been attempted vary widely in quality; while some appear to be thorough and objective, others are oversimplified or consist of little more than unfounded reassurances" (p. 262). What's more, the limited

research available to measure the worth of remedial endeavors has yielded a global picture that is difficult to evaluate (Sampson, 1975).

Public policy is now being shaped to place responsibility for remedial education strictly at the community college's doorstep (Piland, 1983). For example, the Illinois General Assembly (1979) has enacted legislation that increases the emphasis of the remedial function within the state's community colleges, while curtailing its visibility at the four-year state university. State higher education policymakers in California and Nevada have followed suit (California Postsecondary Education Commission, 1983; University of Nevada System, 1984).

It is generally less expensive for states to provide remedial instruction at the community college than at the four-year level (Cohen, 1987). Also, the popular notion subscribed to by Meeth (1972) suggests that community colleges, because of their proclaimed role as teaching institutions, are likely to be more effective than four-year institutions in coping with the problems of high-risk students. Yet there are few empirical indicators to support this proclamation. As Jennings (1970) so eloquently maintained, "If the 'people's colleges' are ever

to fulfill their role as preeminent teaching institutions, then they will need to do far more than rely on the academic mystique, inherited from above, that says all one need do is profess what one is" (p. 23). Little unobscured evidence exists to confirm that community colleges actually do what they contend they will do (Moore, 1976).

Thus, with little proof of how effectively the two- and four-year sectors of higher education are serving high-risk students, legislators in at least some states are choosing to make community colleges the exclusive custodians of the remedial function. Such policy resolutions should only be fashioned with an adequate understanding of how two- and four-year institutions have responded to the challenge of meeting the educational needs of high-risk students. Therefore, what is needed is an empirical grounding for the policy issue through a determination of how selected two- and four-year sectors of higher education are contributing to the progress of high-risk students.

Purpose of the Study

The purpose of this study was to assess how comparable two- and four-year colleges are addressing the educational needs of high-risk students by documenting differences with

respect to the academic progress of their underprepared cohorts. The comparisons across two- and four-year colleges with similar student populations have helped give required perspective to recent legislative decisions that make remedial education the particular province of community colleges. The study encompassed the following:

1. Compare a group of high-risk students in remedial programs and a control group from the general student population in nonremedial programs on a variety of student progress measures. The performance of the latter group became the standard for judging the progress of high-risk students. The comparison groups were further distinguished by affiliation (i.e., nonresidents at two-year colleges, nonresidents at four-year colleges, and residents at four-year colleges). The multiple-outcome indicators included (a) the grade point averages for those in the groups being studied who completed four semesters, (b) the college credits earned by those in the study groups who completed four semesters, and (c) the proportion of students in the groups being studied who were retained for a period of four semesters following initial entry to college.

2. Compare two- and four-year sectors of higher education with respect to the progress of high-risk

students having different residence status. The relative progress of comparable remedial groups was used to assess apparent program effects within two- and four-year collegiate sectors.

3. Assess the likely impact of the remedial approaches at separate two- and four-year institutions on the progress of high-risk students.

4. Describe the remedial programs that exist in selected two- and four-year colleges.

5. Identify institutional contributors to the progress of high-risk students by gathering supplementary, qualitative data from comparable underprepared cohorts within selected two- and four-year collegiate sectors.

Research Questions

In order to assess how two- and four-year colleges with comparable student bodies are contributing to the academic progress of high-risk students, a series of questions was formulated to guide the collection of data and their subsequent analysis. The questions that were addressed by this research include the following:

1. What is the relationship between type of student (i.e., high-risk student in remedial program vs. regular student) and type of affiliation (i.e., nonresident at

two-year college, nonresident at four-year college, and resident at four-year college) with respect to (a) academic achievement in mainstream college courses at the end of four semesters and (b) persistence, in terms of continued enrollment over four semesters?

2. Do high-risk students with distinct affiliations (i.e., nonresidents at two-year colleges, nonresidents at four-year colleges, and residents at four-year colleges) differ with respect to (a) academic achievement in mainstream college courses at the end of four semesters and (b) persistence, in terms of continued enrollment over four semesters?

3. Does the remedial approach at any one institution appear to contribute unusually to student progress?

4. What are the institutional contributors to educational progress as identified by high-risk students within the two- and four-year sectors of higher education?

Assumptions

The major assumptions underlying this study include the following:

1. The current trend of state legislatures to acknowledge community colleges as the chief providers of remedial education will continue.

2. The pervasiveness of the high-risk "problem" has not lessened. Therefore, there remains a great need for effective remedial programs.

3. Assessment of remedial programs is most appropriate where students emerge from within such programs and begin moving through the regular college curriculum.

4. Multiple indicators of progress are requisite to assessing the effects of remedial programs on students.

5. Remedial program differences are not the major factors influencing student progress within institutions.

6. Cross-institutional comparisons are feasible, as comparable student populations can be found.

7. Students and college staff have the ability to accurately report their insights.

Limitations of the Study

Rigorous experimental design, while the favored research method for the purposes of this study, was unfeasible for ethical as well as practical reasons. The deliberate withholding of treatment from students with academic deficiencies and the protracted period of time that such a method requires for study completion rendered its use untenable. The random assignment of high-risk students to both remedial and nonremedial programs was not,

therefore, possible. Five additional limitations are included:

1. Because this study was guided in part by an ex post facto research design, potentially confounding variables, such as pedagogical practices and motivational levels of students, remained uncontrolled.

2. The institutions included in the study utilized somewhat different criteria for identification and placement of high-risk students in remedial programs.

3. The cooperation received from students and staff at the respective colleges varied.

4. The study incorporated only selected institutions within rural Appalachia. As such, the generalizability of results may be limited.

5. This investigation did not include the effects of remediation within each skills area as part of its definition of progress. The aggregate effect of an institution's remedial program on the progress of its high-risk students may, therefore, have masked existent differences among separate skills areas.

Delimitations of the Study

The focus of the study was narrowed by the following factors:

1. Only two community colleges and two four-year colleges located in rural Appalachia were included in the study.

2. Private colleges were excluded from consideration in this study because of the likely difficulty of sampling sufficient numbers of students appropriate for the purposes of the investigation.

3. All students included in this study must have enrolled initially in college during the fall semester of 1985 as full-time degree aspirants.

4. Measures of student progress were extracted only for those who completed four semesters. No attempt was made to analyze the effects of remedial programs on the progress of high-risk students who departed the college before completion of four semesters, nor were other contributors to their progress sought. Recognizing that some high-risk students may require several semesters to complete required remediation, sufficient time was allowed before examining the effects of "treatment."

Definitions

The following terms that were used in the context of this study are defined with respect to their intended meanings:

Academic achievement: the academic performance of students who complete four semesters. Achievement is measured by cumulative grade point average and college credits earned (excluding remedial course credits).

Comparable two- and four-year colleges: institutions serving the same type of student (with respect to common classificatory variables) in proximate or contiguous geographic areas.

Cumulative grade point average (GPA): a single index of the academic achievement of students who complete four semesters following initial entry to college. It represents the ratio of total quality points earned divided by the total credits attempted (on a 4.0 scale). For the purposes of this study, remedial courses and their associated grades were excluded when calculating this index.

First-time students: those students who enroll for the first time at a two- or four-year college.

Full-time students: those students who enroll for a minimum of 12 course credits during their first semester in college.

High-risk students: those students who lack the basic skills necessary to do freshman college-level work, as determined by low test scores and/or low achievement in

previous coursework. Such students ordinarily have discernible deficiencies in the basic skills areas of reading, writing, mathematics, and study skills. The expression is used interchangeably with the terms underprepared, disprivileged, disadvantaged, nontraditional, and new. For the purposes of this research, the term was more specifically defined by each of the participating institutions.

Nonremedial program: includes courses designated as college level and usually found within a specific curriculum of a college.

Nonresident students: those students who reside off campus throughout their freshman year in college.

Persistence: the proportion of students who are retained for a period of four semesters following initial entry to college.

Progress: refers to the advancement of students toward attainment of a college degree. Educational progress is assessed in terms of the variables of academic achievement and persistence. Although individual outcome measures for high-risk students are required, group mean scores on multiple indicators of progress are used to draw relative comparisons between (a) high-risk students in remedial programs and students not requiring remediation

within two- and four-year colleges and (b) high-risk students in remedial programs at two- and four-year colleges. Thus, progress is judged in relative terms. Residential and nonresidential student status is implicit in four-year institutional affiliations.

Remedial program: special courses and activities designed to remedy a student's basic skills deficiencies in reading, writing, mathematics, and study skills, thereby increasing his or her chances of progress in a college's mainstream curriculum. The expression is used interchangeably with the terms developmental and compensatory.

Resident students: those students who reside on campus throughout their freshman year in college.

Need for the Study

If education is to be a reliable equalizer of social opportunity in the years ahead, the number of remedial education programs that truly help high-risk students meet more rigorous requirements must multiply rapidly. The extent to which American higher education can bring together the principles of access and excellence will be revealed largely through evaluation of its services to academically underprepared students.

America's problem of providing for its high-risk students has been described as epidemic. It is estimated that more than 50% of all students entering community colleges are reading below the eighth-grade level and that 20% to 35% are reading at or below the fourth-grade level (Friedlander & Grede, 1981). Also, 25% of students enrolled in math at public four-year colleges are in remedial courses. In community colleges, 42% of math enrollments are remedial (Feinberg, 1984). Extramural forces, such as a changing workplace, the continued immigration of foreign-born students, and a society having a less stable adult life cycle, portend a wellspring of high-risk students who will be seeking entry to college for years to come.

Akst and Hecht (1980) affirmed that the need for evaluation of collegiate remedial programs has been particularly acute. Such pleas, though constant, have been largely unanswered (Clowes, 1980). Bray (1984) suggested that the recent climate of community colleges in California has been marked by uncertainty; "uncertainty about which students to serve, how to serve them, and how effective are the programs that serve them. . . . A key emerging priority is the evaluation of the remedial programs in higher education" (p. 3). There has been a lack of

systematic procedures for gathering evaluative data and a need for policy changes that emphasize the importance of collecting evidence to assess remedial programs more effectively (Richardson, 1983). Ambiguity and contradiction are often discovered when comparisons of previous research are made.

The present uncertainty regarding the remedial function's proper place in higher education further dramatizes the need to collect evaluative data. Legislative decisions to make community colleges the chief repositories of remedial education must be made for reasons other than parsimony or mere presumption of effectiveness. Rather, such enactments must be based on the proven ability of two- and four-year colleges to address the needs of our nation's underprepared students.

This research attempted to provide a better understanding of the extent to which two- and four-year colleges are furnishing high-risk students with legitimate opportunities to attain their goals. As such, the findings can be helpful to others concerned with program planning and its implementation. Also, little research has attempted to describe and assess the effects of remedial programs across two- and four-year colleges. This aspect of the study can provide useful data for policymakers who

seek to make community colleges an even more prominent source of remedial education.

Organization of the Study

In the present chapter, the problem and its theoretical framework have been formulated. A synthesis of the literature related to this study appears in chapter 2. In chapter 3, the methodology used in the investigation is introduced. The results of the data analysis are presented in chapter 4. In chapter 5, the study is summarized, conclusions are drawn, and recommendations based on the conclusions are made.

Chapter 2

Review of the Literature

Overview

The review of literature presented in this chapter attempts to establish the foundation for the study by describing its theoretical framework. A thorough search of the relevant literature resulted in a critical synthesis of the following dimensions of the problem:

1. A profile of high-risk students, including those from rural Appalachia;
2. The evolution of programs fashioned by American colleges to assist high-risk students;
3. The evaluation methodologies associated with special programs for high-risk students;
4. The effects of residence status on the academic progress of college students; and
5. A review of related research.

The preceding dimensions were chosen for review to shape the most desirable context within which the reader might gain insight to the problem being investigated. The development of commonly accepted descriptors of high-risk students was selected as an appropriate point of departure, for an understanding of who these underprepared learners

are was thought to be fundamental to a thought-provoking analysis of higher education's efforts to serve them.

A chronicle of the unfolding of special programs was designed to add historical perspective to the efforts of contemporary colleges to provide those at academic risk with meaningful opportunities for progress. Moreover, the mercurial form that such programs have assumed was used to symbolize the uncertainty that has characterized higher education's uneasy relationship with high-risk students.

The call for remedial program evaluation is central to this investigation. As such, a required frame of reference for the process of evaluation was sought through a treatment of the origins of evaluation methods related to remedial programs, theoretical constructs, and evaluative designs.

The importance of residence status as a variable that impacts the educational attainment of college entrants has received increased scholarly attention. In the present study, the opportunities for meaningful research findings and resultant conclusions would be undesirably constricted by overlooking the significance of this institutional factor as it relates to the persistence and academic achievement of high-risk students.

A critical examination of relevant studies was offered to inform the reader of what is known with respect to the problem and what remains to be researched. An attempt was made to develop the relationship between previous studies and the present investigation by citing the similarities and differences in such research. An exposition of the strengths and weaknesses in past investigations was judged to be of equal value to the reader.

Profile of High-Risk Students

The "rising tide of mediocrity" (Finn, 1984) that threatens to engulf our nation's colleges and universities speaks directly to the efforts of two- and four-year institutions to serve meaningfully all high-risk students seeking passage to higher education. In spite of the wishes of many educational practitioners to readily identify students unprepared for college through neat descriptive categorizations, these students are not a homogeneous lot. They are young and old, rich and poor, black and white, full and part time, male and female.

The overabundance of labels used to give high-risk students a clearly defined identity has only succeeded in underscoring the diversity that characterizes this cohort. There is no classic prototype of today's high-risk student.

An earlier declaration by Moore (1970) remains relevant today. He affirmed that "the high-risk student is not confined to our slums. He is indigenous to the total class structure. . . . He is among us a marginal discard. And there are more differences among marginal students than there are similarities" (p. 25).

The common thread among high-risk students is their lack of academic success. Implicit in the litany of names used to describe these underprepared students is the notion that they are unique. In truth, except for their academic accomplishments, high-risk students are not significantly different from college students as a whole (Moore, 1970). When juxtaposed with commonly accepted definitions of traditional college students of the past, perhaps they are atypical--so are low-risk students (Moore, 1976).

As proper identification of high-risk students logically precedes needs assessment and successful program development, contemporary leaders of higher education have posited numerous typologies to help profile students most likely to fail. For example, Losak, Jefferson, and Sutton (1969) argued that there are a minimum of four identifiable subgroups within a given population of students perceived as high risk. These include (a) students displaying low achievement but high levels of potential (as assessed by

individual intelligence tests), (b) students displaying low achievement associated with psychopathology, (c) students displaying low achievement associated with mild central nervous system dysfunction, and (d) students displaying low achievement associated with low intelligence. Losak (1973) further suggested that high-risk students are most often assigned in pejorative fashion to the subgroup of students marked by low achievement associated with low intelligence. Yet this underprepared cohort is thought by Cross (1971) to differ from other college students primarily with respect to learning styles and rates, rather than their ability to learn.

Other savants within academia, including Moore (1970), have been inclined to think of high-risk students in ethnic terms and through the utilization of constructs such as "culturally disadvantaged." Black students, especially the denizens of community colleges, are another favored subset of students used to give the high-risk label definition. However, Cross (1971) contended that the majority of underprepared students in the community college are the white sons and daughters of blue-collar workers. Students categorized as poor academic risks on the basis of some presumed disadvantage of culture are most often thought to

be inhabitants of the inner city or a region of the country that gives education short shrift.

The culture and mores of rural Appalachia, for example, may have instilled in its residents a fear of an education that rises very far above the community level (Weller, 1965). McCoy and Watkins (1981) observed that the value of self-sufficiency is fundamental to the Appalachian way of life. Appalachian youth are not likely, therefore, to seek or accept school personnel support, such as sponsorship by a particular teacher or counselor; they attempt to resolve problems in an independent fashion. Familism requires that education be subjugated to the interests of the family. Therefore, parents may encourage Appalachian students toward vocational programs and away from college preparatory or advanced placement classes (McCoy & Watkins, 1981). The low educational attainments of Appalachians complicates parents' commitment to higher education, as college may be viewed as irrelevant (Miller, 1977).

Sullins, Vogler, and Mays (1987) cited the cultural appreciation of the value of education, compounded by the Appalachian sense of fatalism, as a major barrier to adult participation in postsecondary education within a six-state region of southern Appalachia. The geography of the study

included Kentucky, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia. Working with an Appalachian Regional Steering Committee in conducting the research, the authors identified inadequate preparation for postsecondary learning as the major barrier to rural adult participation in postsecondary education. Students in the region under investigation are poorly prepared for college studies and either do not enroll or risk failure by enrolling.

The characterization provided by Farrow (1980) of the factors likely to hamper the ability of what he terms "nontraditional" students to function successfully in college has special meaning for members of the Appalachian culture. He maintained that the nontraditional student

> . . . is often a prisoner of his background and experiences and does not escape them when he enters college. Some students experience severe family and neighborhood problems when they enter college and begin to adapt successfully to college life. When the student moves closer to the college ideal in his behavior and attitudes, he may simultaneously be moving away from family or neighborhood norm; and if this is the case, he is bound to suffer internal, if not interpersonal conflicts. (p. 74)

However, the use of cultural disadvantage as the primary means for explaining the low achievement patterns of high-risk students has been challenged by several educational leaders (Cross, 1971; Moore, 1976; Roueche,

1973). Moore (1976) argued that although the "culturally disadvantaged" hypothesis has been widely accepted throughout higher education, it has not been rigorously tested through original research; several dimensions of the hypothesis appear difficult to measure. Thus, serious academicians concerned with the plight of high-risk students are left to wonder if reliance on the culturally disadvantaged hypothesis has been, by design, an attempt to shift responsibility for this cohort's failings from the institution to the student.

Cross (1971) identified students with learning problems who sought entrance to higher education in the 1970s as "New Students." She conceived of these students as new to higher education because they would have been unlikely candidates for postsecondary education prior to the era of open admissions. To allow for more exact identification of these new students, it was presumed that they ranked in the bottom third of high school graduates on customary tests of academic achievement.

Further attempts to produce a clearer image of these new students were made by distinguishing them from those who were assigned the term nontraditional, with its attendant connotations. Cross (1976) admonished that while adults, minorities, and women seeking higher education

might be considered nontraditional in the sense of being historically underrepresented in postsecondary schools, they may or may not be poorly prepared for postsecondary scholarship.

Evans and Dubois (1972) maintained that high-risk or developmental students represent two types of underachievers: (a) the slow learner and (b) the inadequately prepared student. The slow learner is distinguished by his or her inablility to master developmental tasks as quickly as others having the same chronological age. As a consequence of limited intellectual ability, the slow learner is likely to demonstrate retarded performance in most academic areas. Unlike the slow learner, the inadequately prepared student's educational problems are not the result of cognitive incapacity. This student is more likely to require academic intervention because of "inadequate or inappropriate environmental and educational experiences" (Evans & Dubois, 1972, p. 41).

A separate category of "remedial" students was offered by Beckett (1985) to denote a group of learners whose underpreparedness for higher education results from central nervous system dysfunction or severe psychological maladies. The classification of high-risk students by

Evans and Dubois (1972) and Beckett (1985) is, of course, conspicuous by its similarity to the typology put forward by Losak et al. (1969).

The following classes of high-risk students were described by Ross and Roe (1986) as those most likely to require comprehensive programs in skills development requisite to successful completion of college-level studies:

1. International students, including refugees, who require assistance due to language or cultural barriers;

2. Athletes who, although recruited, have serious academic deficiencies;

3. Minority students who may have been victimized by a home environment that was not conducive to educational attainment;

4. Handicapped students whose deficiencies were not adequately addressed, resulting in inadequate preparation for higher learning; and

5. Other underprepared students who had inadequate educational opportunities in the past or who lacked the motivation to take advantage of existing opportunities.

Roueche and Snow (1977) insisted that the crisis in higher education presented by academically deficient students is not restricted to minority and disprivileged or

to working-class populations. Rather, they affirmed, these students represent all socioeconomic levels and several different ability levels. The problems involve a diversity of students in all types of colleges. High-risk students are presently entering selective four-year institutions as well as open-door community colleges.

Group characterizations of high-risk students may be considered of dubious value, as there is considerable individual variability among this cohort. It is within this frame of reference that usually accepted descriptors of low-achieving students should be viewed. What are the common characteristics ordinarily associated with these students who seek, but are poorly prepared for, postsecondary education? Moore, in his 1970 work, asserted that there often is a significant disparity between the aspirations and abilities of high-risk students:

> Among such students it is common to find those who indicate that they are interested in certain professions and careers but who have demonstrated neither the aptitude, interest, means of financing (in the case of poor students), nor the persistence required to accomplish their goals. (p. 7)

Cross (1971) pointed to the theory of achievement motivation (Atkinson & Feather, 1966) to explain that high-risk students often defend themselves against the threat of failure by selecting tasks that are easily

accomplished or by accepting such difficult challenges that failure is expected and therefore not threatening. It is, perhaps, this latter reaction to the fear of failure that elucidates the unrealistic aspirations of the many high-risk students referred to by Moore (1970).

High-risk students are likely to be deficient in the basic skills areas of language arts (i.e., reading, writing, listening, spelling, speaking, grammar) and mathematics (Moore, 1970). Moreover, they may have developed an intense dislike for courses whose rewards are based on the ability to process language. These poorly prepared students are inclined to learn only that which has immediate utilization and frequently will not respond to pedagogical approaches used with more successful students.

In 1971, Cross reported on research that addressed the affective dimensions of the problems faced by low-achieving students seeking entrance to higher education. She claimed that such students are more likely than their successful peers to say that they feel tense, nervous, or shy in class. They rate themselves "below average" on most characteristics related to school work. Many perceive themselves to be below-average people.

The community college high-risk student has similarly been described by Roueche and Kirk (1973) in the following poignant terms:

> . . . is often a hesitant, conservative low achiever with serious self doubts, lack of confidence, poor mental health, and motivation too low to detect. He asks to be taught but does not really believe he can learn because he has experienced a lifetime of academic failures. While he aspires to self-actualization, he believes he will fail again. (p. 70)

These impassioned words written by Roueche and Kirk (1973) infer a strong relationship between academic self-concept and achievement. However, there is little research to corroborate the conviction of many educational leaders, including Cross (1976) and Roueche and Snow (1977), that high-risk college students nearly always have lower self-concepts than their more successful peers (Maxwell, 1979). There is, in fact, building evidence to suggest that the opposite may be true (Beery, 1975; Klingelhofer & Hollander, 1973).

A causal link between the negative self-concepts of high-risk students and resultant poor academic performance has been suggested by several prominent college leaders (Cohen, Brawer, Lombardi, Boggs, Quimby, & Park, 1971; Monroe, 1972). While this view has been generally widespread throughout higher education, too little research

exists to reliably credit negative self-concept as the primary cause or result of low achievement (Moore, 1976). Also, more current research revealed no significant relationship between academic persistence and the self-concept of students at private New York colleges (Martel & Richman, 1985).

High-risk students were thought by Klingelhofer and Hollander (1973) to share the following traits: (a) limited facility for analytical approaches to problem solving, (b) difficulty in working toward abstract goals, and (c) strong preferences for occupations in the applied professions as opposed to more scholarly pursuits.

That high-risk students are not intrinsically moved to pursue higher learning is verified by Cross (1971) who stated, "For the majority, the motivation for college does not arise from anticipation of interest in learning the things they will be learning in college but from the recognition that education is the way to a better job" (p. 15). Furthermore, she distinguished new students as being most eager to avoid risk situations and considered them to display an unquestioned acceptance of authority.

Maxwell (1979) later chose to define high-risk or "underprepared" students in terms of the context of the particular institution attended. She considered such

students to possess academic ability significantly less than that displayed by the average student in the college or curriculum selected for enrollment. Thus, the notion of underpreparedness is pondered in relative terms.

The high-risk population is ordinarily thought to be devoid of clear life goals. These students probably do not have long-range commitments to higher education and may question the relevance of curricular requirements. Many high-risk students may feel that success and the ability to direct their own destiny are beyond their control. They feel a sense of powerlessness over themselves and their environment (Maxwell, 1979).

A more recent study by Griffin (1980) confirmed that low-achieving students are quite likely to have difficulty avoiding delay when undertaking academic challenges and often have poor work methods and study habits. Roueche (1980) stressed the preference of high-risk students for functions controlled by the right cerebral hemisphere, while Friedlander (1981) has characterized poorly prepared students in community colleges as unlikely to take advantage of programs and assistance that they need to succeed in college-level studies.

Maxwell (1979) has reminded all who empathically share the struggle of high-risk students that in spite of the

efforts of some contemporaries to portray them as unique caricatures, they have the same traits and characteristics as unsuccessful college students in the past. Moreover, as is true of college students in general, high-risk students show much diversity with respect to age, interests, experiences, and skills.

Program Responses to Assist High-Risk Students

Much effort has been expended by college professionals to catalogue the prototypic characteristics of high-risk students. However, Moore (1983) cautioned that

> spending an inordinate amount of time linking academic skill deficiencies in adults to self-worth, cultural factors, race, economics, family dysfunction and disorganization, and past performance has not proved to be a useful exercise in terms of information that will help . . . improve the teaching and learning process. (p. 33)

Rather than emphasizing the needs of students unprepared for higher learning, the leaders of our colleges have too often stressed the characteristics of those most likely to fail. While such information may be useful for predictive purposes, the issue of prevention remains.

Institutional responses to the needs of high-risk students have been marked by their diversity in both form and function. Garner (1980) asserted that such special programs "generally have suffered the disease of transiency

because they were not ever really a part of the college operation" (p. 20). Too often, efforts to help low-achieving students succeed have been made within institutions whose staff looks disparagingly on these learners and the programs designed to serve them. Undeniably, learning assistance activities frequently have been conceived in crisis and implemented with all due expedience (Garner, 1980).

A cautious review of the literature relating to current and past learning assistance programs developed by community colleges elicited the following conclusions:

1. There is little consensus with regard to the structure, management, or efficacy of these programs.

2. A piecemeal approach to helping high-risk students succeed has been used, for the complete range of responses needed is not found within a single program model.

3. A strong commitment from college administrators and faculty to the need for continuing special services for high-risk students has been lacking (Garner, 1980). These same judgments are pronounced when the efforts by four-year colleges and universities to serve high-risk students are considered.

Attempts by American colleges to address the needs of high-risk students can be viewed in a temporal sense,

according to their period of special ascendency. In the early 17th century, Harvard provided tutors in Latin for students who were unprepared for the rigors of collegiate life (Brubacher & Rudy, 1976). This provision of tutorial assistance may be perceived as the first remedial education effort in North America--the earliest antecedent of what is defined as developmental education in American higher education (Boylan & White, 1987).

In response to its many students who were unprepared to do college-level work, the University of Wisconsin established the first preparatory department in American colleges in 1849 (Brier, 1984). Out of necessity as much as concern, the black colleges established in the late 19th and early 20th centuries became pioneers in the struggle to develop the rudimentary academic skills purposely designed for those who now sought further education. The early colleges for blacks were concerned with creating primary departments where reading, writing, and mathematics could be taught. Brubacher and Rudy (1976) affirmed that the principal strategy of the time "seems to have been one of groping, testing, and experimenting, rather than stubbornly seeking to impose an artificial stereotype on unprepared students" (p. 75).

During the 1930s and 1940s, colleges frequently attempted to assist high-risk students through reading and learning skills courses. Although such courses usually did not carry college credit, they were either required of or strongly recommended for students having low entrance test scores, unimpressive high school records, or little evidence of achievement after their initial term in college (Kulik, Kulik, & Shwalb, 1983). The remedial reading courses popularized during this period were often added to the existing "how-to-study" courses (Maxwell, 1979; Roueche & Snow, 1977). Soon thereafter, writing development courses became part of the curriculum at several institutions.

These early efforts to extend meaningful educational opportunities to those with past academic failings occurred in four-year college and university settings, where entrance was based largely on one's ability to pay tuition and fees (Roueche & Snow, 1977). It remains clear, however, that attempts to help high-risk students during this era had a distinctive basic skills emphasis: reading, writing, and study skills remediation. Such courses would soon become a staple in the curricula of both two- and four-year colleges.

The postwar years of the 1950s and 1960s were marked by legions of potential students seeking college admission. Having a surplus of applicants, four-year colleges and universities adopted selective admissions policies, as they moved into the "heyday of the educational meritocracy" (Cross, 1976, p. 26). During much of that era, remedial education consisted of a few courses in study skills. Richardson, Martens, and Fisk (1981) posited that "because these courses were based on the assumption that students had the necessary skills but inadequate study habits, they were geared at a college level and were brief, voluntary, little publicized, and noncredit" (p. 10).

Additional efforts to aid high-risk students during the period of the 1950s and 1960s were distinguished by the new shape that they assumed. It was during this time, for example, that the innovation of programmed instruction gained prominence. This new form of educational technology was designed to enable high-risk students to proceed at their own pace while receiving intermittent positive reinforcement. During the turbulent decade of the 1960s, programs began for the first time to emphasize the affective as well as the cognitive dimensions of student development. Human potential seminars, for example, became popular within American higher education as a means to help

high-risk students develop greater self-regard. At the close of the 1960s, several colleges were offering courses taught by counseling personnel and making available individual counseling sessions for high-risk students (Kulik et al., 1983).

The rapid growth of open-door community colleges during the 1960s offered hope to the many high-risk students who were excluded from higher education by the four-year institutions eager to admit only those students most likely to succeed. The form of programs to serve these marginal students was unavoidably affected by this development. Remedial studies programs that included special courses in basic mathematics, English, reading, and occasionally study skills were offered as a curative for academic deficiencies. The courses that composed these remedial programs were usually full term, credit yielding, and taught by teams of faculty members and counselors (Kulik et al., 1983).

Programs to help high-risk students succeed were underscored with a subject-area emphasis during the 1960s. It was assumed that the way to correct inadequate skills development was to provide "more" (Cross, 1976). Remedial instruction became the particular province of subject matter specialists who often regarded such programs as the

"bonehead" portion of the curriculum (Spann, 1977). Not surprisingly, these early remedial attempts by two-year colleges to ready underprepared students for successful participation in the standard college curriculum were disastrous. Roueche (1968) claimed that these early programs were poorly conceived, badly designed, and unsuccessfully implemented. They were accused of being little more than "watered-down" versions of courses in the regular curriculum.

Alternative programs to support the efforts of high-risk college students during the 1960s were spawned by that decade's civil rights movement. These were federally funded "total-push" programs, designed to extend equal educational opportunity to those groups victimized by social, economic, or educational disfranchisement. Such programs emphasized a more unified approach that included recruitment, tutoring, counseling, financial aid, and remedial courses (Cross, 1976; Kulik et al., 1983). Maxwell (1979) reported that when colleges began to admit large numbers of high-risk students in the 1960s, tutorial services were among the first large-scale programs organized to provide assistance. Under any circumstances, the total-push programs that were popularized in the 1960s and continued to multiply through the early part of the

next decade were harbingers of a trend to employ more comprehensive and integrative approaches to address the needs of high-risk students.

It was during the 1970s that developmental programs were engendered, at least in an identifiable form (Donovan, 1985). The trend was away from the erstwhile collection of disparate courses intended to help high-risk students pass muster simply by overcoming their academic deficiencies. Attempts were now being made in higher education to bring a total "environmental press" to bear on the development of high-risk students. According to Spann (1977), implicit in the concept of environmental press is the assurance that programs designed to serve high-risk students have total systems compatibility; that is, instruction, counseling, and sundry services are student centered and goal oriented. The notion was that such learning systems would maximize the press of the environment and its resources on underprepared learners, thereby offering them the best opportunity to evince successful learning behaviors (Spann, 1977).

Developmental methods progressively merged with more traditional attempts at remediation throughout the 1970s and into the 1980s (McGrath & Spear, 1987). Remediation in basic skills areas was viewed as only a part of what

colleges should be doing to assist high-risk students. The new programs were designed to facilitate the growth of the "whole" person. To this end, the recently integrated models often incorporated specific literacy skills like reading, writing, and mathematics, while focusing on the learner's affective and socialization needs. The aim of developmental programs was to help students form healthier attitudes and values requisite to academic success and personal growth. Fundamental to attaining that goal was a required emphasis on individual strengths in order to correct weaknesses (Cross, 1976).

Throughout the 1970s, colleges increasingly attempted to unify the component parts of their developmental studies curriculum by bringing them together within a distinct department or division. Community colleges, in particular, have advocated this organizational plan (Roueche & Kirk, 1973; Roueche & Snow, 1977). Four-year colleges and universities have favored a scheme wherein remedial courses are housed within academic departments (Richardson et al., 1981). Moreover, while the inclination among colleges to award credit for developmental courses increased during this decade, the number of institutions requiring such program placements of their students declined precipitously (Roueche & Snow, 1977).

The more comprehensive developmental programs formulated in the 1970s incorporated a broad range of educational services and instructional strategies. These programs inspired what Cross (1976) considered to be an "instructional revolution." Undergirding the new teaching strategies were the principles of mastery learning, individualized instruction, and a host of new learning technologies (McGrath & Spear, 1987). Developmental educators had begun to address the qualitative differences in students' learning styles. High-risk learners were sometimes given additional time to complete course requirements, the opportunity to retake examinations, and the option of receiving nonpunitive grades (Richardson et al., 1981).

The rush to revise the curricula of two- and four-year colleges was dramatized by the open admissions experiences of the City University of New York (CUNY). As CUNY labored to find effective responses for many students who sought but were unprepared for higher education, other institutions felt similar pressures (Donovan, 1985).

Cross (1976) declared that the number of underprepared students entering colleges, although burgeoning, had little effect on instructional practices until the 1970s. At that point, greater attention was given to the processes of

teaching. Learning laboratories, competency-based education, self-paced learning, and media-assisted instruction were rather dramatic additions to time-honored pedagogical methods (Cross, 1982).

The 1970s have been characterized by a proliferation of learning centers across the collegiate world. Higher education's shifting response to all that ailed high-risk students was to use multiple institutional resources to address their problems. Brawer (1982) described the attempts of community colleges to assist high-risk students during this period in the following terms:

> Perhaps the most prominent development in compensatory education in the 1970s was the integrated program that combined instruction in the three Rs with special attention to individual students. Self-pacing procedures, tutoring, counseling, study skills assistance, and reproducible media were all brought together in various combinations for especially identified low ability students. (p. 14)

The hub of these activities was indisputably the learning center, or "learning laboratory" as identified by Cohen and Brawer (1982). A survey of learning centers by Sullivan (1980) represented them as "an amalgam of some or all of the following elements: instructional resources; instructional media; learning skills development; tutoring and instructional development" (p. 1). The findings of his study revealed a total of 1,778 distinct learning center

programs in operation, including the involvement of 50% of both two- and four-year colleges numbered among the 2,713 U.S. institutions surveyed. Clearly, these facilities and their associated programs represented higher education's latest attempt to provide high-risk students with the learning supports necessary to persist.

While program diversity continues as the norm, several trends have emerged in the 1980s to distinguish higher education's continuing effort to maximize the opportunities for progress of high-risk students. For instance, more colleges are developing programs with a decided special education emphasis, for students described as learning disabled are seeking higher learning in increasing numbers. In the vanguard of contemporary approaches to meeting the multiple needs of high-risk students are those having an integrated or comprehensive emphasis. Combinations of all the above approaches are currently used by most two- and four-year colleges to address the learning complexities of underprepared students. Community colleges, in particular, have taken a lead role in the development of learning assistance programs.

Although a leading critic of the mission of community colleges, Lombardi (1979) has credited educators for continuing to search for solutions to the multidimensional

problems presented by high-risk students. Likening their struggle to that of cancer researchers, he declared that "they juggle the components of learning and teaching strategies in the hope of finding a permutation with a reasonable degree of success" (p. 69).

An enduring issue within higher education concerns the organization of programs targeted for high-risk students. The position advocated by Roueche and Snow (1977) calling for separate remedial or developmental departments is being challenged by many, including Richardson, Fisk, and Okun (1983), who argued that such practices lead to discontinuities between remedial and nonremedial courses. Also, colleges have shown a rather pronounced leaning during the 1980s toward required placement in basic skills classes for students unable to meet institutional standards and away from the issuance of credit for completion of such courses (Cohen & Brawer, 1982; Wright, 1985).

The noteworthy efforts in the 1970s to promote literacy development in college-level courses through writing-across-the-curriculum projects presaged modern trends to incorporate basic process skills into the instructional fabric of content courses. Such efforts toward curricular integration presently abound. The City Colleges of Chicago, for example, have successfully

stressed basic skills development within regular college courses (Barshis, 1979). The University of Wisconsin at Eau Claire has developed an extensive program of adjunct courses that integrates the basic skills required to successfully complete parallel content courses (Harding, 1980). Maxwell (1979) acknowledged that several colleges are requiring high-risk students enrolled in college-level courses to complete learning skills modules in a learning assistance center.

The comprehensive programs that exist at many contemporary community colleges have given prominence to the learning assistance function. Increasingly, colleges are becoming more refined at assessment in order to match skills-deficient students with an expanded list of direct support services, including remedial coursework, peer tutoring, peer counseling, and instruction in the use of educational technology (Carbone, 1987).

Instructional technologies that include mastery learning and competency-based instruction have made further inroads in the remedial function of colleges during the 1980s. The sophisticated use of computer technology for improving student persistence and achievement by bellwethers such as Miami-Dade Community College

illuminates the new possibilities for all American colleges struggling with literacy issues.

New collaborations designed to help least-prepared students progress in higher education have emerged in the present decade. Colleges are more frequently seeking to establish curricular partnerships with area secondary schools to provide a more exact "fit" between precollege work and higher learning. Also, greater emphasis is being placed on the creation of interdisciplinary courses that promote critical thinking and independent learning (Donovan, 1985).

The multiplicity of responses within higher education to address the problems of high-risk students resulted, in part, from a rather fervent need to develop "innovative" programs. This fact was not lost on Lombardi (1979), who questioned the strategy of diffuse attacks on the plight of low-achieving students. He stated, "Perhaps more effort should be directed toward encouraging the intervention of reasonably successful programs in other colleges. . . . Among the hundreds of experiments and programs, there should be a reasonable chance of finding elements that could be used by other colleges" (p. 70). The discovery of successful programs, of course, is predicated on carefully selected evaluation methodologies.

Evaluation Methods Related to Remedial Programs

The rather youthful origins of the phenomenon of evaluation should be acknowledged before reviewing past attempts to evaluate remedial programs in higher education. Somers (1987) contended that the rise of the measurement movement and the burgeoning social science disciplines during the 1920s and 1930s were portents of today's concept of educational program evaluation. As a process that continues to emerge, evaluation's brief development has been underscored by its shifting methods.

Given the relative novelty of the field of evaluation, it is not surprising that evaluative methods related to remediation in postsecondary education often have been judged inadequate. Cross (1976) assailed program evaluations during the 1940s and 1950s, noting that "the criteria for the success of the programs were poorly formulated, the research designs were naive, and the data interpretations and implications for improvement were weak" (p. 32).

If anything, attempts at evaluation of remedial programs during the 1960s were even more spurious. Rather than identifying the inadequacies in programs and seeking improvements through objective analyses, program administrators felt obliged to defend existing responses as

providing meaningful opportunities for the many ethnic minorities who sought higher education. Evidence offered for the efficacy of remediation was more likely to be in the form of testimonials from students (Cross, 1976).

Many program evaluations have been subjective and anecdotal. Inherent in others are crippling methodological flaws. Weaknesses commonly exposed include the absence of a comparison group, the use of questionable measuring devices, and the failure to employ tests of statistical significance (Anderson, 1973). Frequently, samples of students are too small, and attempts to replicate results are too few. Evaluative studies of individual remedial programs often are confined to a particular discipline, the results of which are lost on researchers in other basic skills areas. Evaluators rarely have ascertained which student, program, or staff factors contribute to the success or failure of the program (Basonic, 1982). Moreover, the majority of studies focus on the evaluation of students rather than on the program (Bynum, Gordon, Garrahan, & Lewis, 1972).

There are encouraging signs that more refined approaches are emerging from the welter that has characterized remedial program evaluation. For instance, multiple methods that include the use of quantitative as

well as qualitative measures are being employed. Also, longitudinal projects that involve follow-through and replication are becoming more visible (Richardson et al., 1981). It is only since the 1970s that the design and evaluation of research related to remedial education programs has improved (Ross & Roe, 1986).

Nevertheless, the diversity that characterizes high-risk students and the remedial programs designed with them in mind has left trails of program evaluations that are sadly lacking in comparability. Richardson et al. (1981) exhorted, "It is difficult to advance any generalizations about the effectiveness of programs when the literature reveals so much unsystematic variation on students' characteristics, the content and method of instruction, program organization, and even in the criteria for measuring success" (p. 36). Furthermore, there have been few attempts to systematize the diversity in current evaluation procedures (Akst & Hecht, 1980).

Although more remedial program evaluations are including careful controls, for the most part, programs targeted for high-risk students have been evaluated haphazardly. An analysis of recent studies of postsecondary institutions by Roueche, Baker, and Roueche (1984) revealed that few institutions are employing sound

evaluative strategies. As a result, the credibility of reported program impact on selected measures of student progress remains uncertain. Data collected are typically of remedial program completion only and not of student performance in the mainstream curriculum (Roueche, 1984).

Against this backdrop, current research offers mixed conclusions with respect to the efficacy of remedial education programs. Many two-and four-year institutions are reporting successful remedial programs. Yet such proclamations must be tempered with the knowledge that the evaluation methodologies used to report these findings often are flawed. However, Cohen and Brawer (1982) reported that several of these programs do seem to increase student persistence. They stated that "when special treatment is applied, when students are given supplemental counseling, tutoring, and learning aids, when they are singled out for additional work, they tend to remain in school. . . . Special treatment of any sort yields special results" (p. 234).

Early evaluators went about their work with more clarity, in the sense that true evaluation was thought to rest primarily on quantitative measurement and experimental design. Program effectiveness was determined by the extent to which consensual and measurable goals were attained.

Adding to the muddle of modern program evaluation are the numerous typologies of evaluation designs. Dressel (1976) has proposed an evaluative schema that includes four types: planning, input, process, and output. Moreover, he affirmed that all four types of evaluations can be formative, summative, or a mix of both, depending on the purposes to be served (Somers, 1987). House (1978) has developed a comprehensive taxonomy that includes eight models of evaluation. Guba and Lincoln (1981) succeeded in reducing those eight models into two types: countenance evaluation and responsive evaluation designs.

Implicit in the Stufflebeam context, input, process, and product (CIPP) model is the notion that the goals and results of the evaluation are influenced by the setting (Clowes, 1981). Tuckman (1979) classified evaluation as being of three kinds: formative, summative, and ex post facto. A four-stage model of program evaluation recently designed by Clowes (1984) holds promise for remedial education practitioners. A salient feature of this model is the continuous reassessment of goals against which program effectiveness is measured.

The formative-summative distinction has become an elemental typology of evaluation, as Scriven's (1967) terms are being used more broadly than in their original context

(Patton, 1980). While formative evaluation is utilized to determine how results were achieved by examining a program's component parts, summative evaluation more commonly is concerned with measurable outcomes as indicators of the value of the program in its entirety. Patton (1980) acknowledged that the purpose of any program evaluation can be examined in formative and summative terms.

Indeed, some educational practitioners, including Spann (1977), regard evaluation related to educational programs as being essentially of two types: formative and summative. Akst and Hecht (1980) reported that, in practice, most program evaluations are of the latter type. They asserted that "most remedial evaluations have focused on the effectiveness of instruction: whether students are learning the remedial content, and whether their performance in subsequent coursework is improved as a result" (p. 265).

More educators are renouncing the assumption, often at the urging of legislators, accreditation teams, and taxpayers, that programs are successful if students are enrolled in them. Some academicians have even accepted the notion that architects of effective remedial programs find a place for evaluation during the early design stages of

program development. Yet, how does one begin to select the best evaluation methodology for programs designed to assist high-risk students?

Clowes (1981) advised that programs for high-risk students and evaluation should be viewed as multidimensional concepts. This is to say, while there is no single best way to evaluate, there are at least appropriate ways. Seeking to reduce the jumble facing program evaluators, he proposed a scheme for classifying learning assistance programs and evaluation models to aid the process of selecting an appropriate method of evaluation. The linchpin of his plan is the idea that a logical relationship exists among the classifications of programs, evaluation models, and methods.

All program evaluators, including those partial to remedial programs, are faced with the tasks of determining the types of data most appropriate for a given evaluation and identifying which kinds of data are, in fact, collectible (Clowes, 1984). There are certain occasions that enjoin the use of either quantitative or qualitative methods in program evaluation. For example, Patton (1980) and Clowes (1981) have offered the following distinctions with respect to the appropriate use of quantitative and qualitative methods in program evaluation:

1. Quantitative methods may have more relevance where evaluation is designed to elucidate the program's final outcomes.

2. Qualitative methods are particularly useful when the purpose of evaluation is to improve the program operations or processes.

3. Quantitative methods are favored if breadth of information is desirable for the purposes of the evaluation.

4. Qualitative methods are more appropriate when an evaluator wishes to study chosen issues in depth and detail.

Where these distinctions blur or overlap, both quantitative and qualitative methodologies likely are appropriate. Patton (1980) confessed that "in the real world of program evaluators, it may be necessary and desirable to mix different types of measurement, design, and analysis" (p. 110). Every program evaluator faces the prospect of using both quantitative and qualitative data (Clowes, 1984).

It is not always likely that the use of multiple methods will lead to more credible explanations in easy and complementary ways. In fact, the collection of different kinds of data may lead to conflicting explanations of the

issues at hand. Yet Trend (1978) suggested that the growth of rival explanations should be encouraged. A third explanation that represents the desired result will hopefully emerge from areas of disagreement to account for all of the facts.

The choice of evaluation designs for remedial education programs is inextricably tied to the types of students served and the mission and goals of the institution. However, as Ross and Roe (1986) admonished, "the bottom line in evaluating a developmental program is whether it enables underprepared students to acquire skills necessary to complete college. Many program components can be evaluated, but most important is the success rate of developmental students in their regular academic courses" (p. 22).

The theory of program evaluation formulated by Clowes (1984) rests on the conviction that true evaluation of remedial programs is focused on the students' progress through the mainstream curriculum after completing necessary remediation. Quantitative indicators judged appropriate to measuring the quality of the remedial program include the number of college courses completed, the rate of course and program completion, and student

grade point averages; qualitative data gathering is also fitting.

In practice, divergent criteria often are used to assess the quality of remedial education programs. Institutions with selective admissions standards have measured the worth of their remedial programs according to the number of students who emerge from such programs with eligibility to enter regular curricula (Richardson et al., 1981). The success of other programs frequently is determined on the basis of basic skills improvement or positive changes in students' self-concept.

Remedial program evaluators have converged primarily on the achievement and persistence rates of high-risk students as measures of program worth (Basonic, 1982). A majority of programs utilize grade point average as the primary or only criterion of success (Roueche & Snow, 1977). While some programs helped raise students' grade point averages during the period of remediation, a significant decrease in academic performance was discovered during the intitial term in the mainstream curriculum (Roueche & Kirk, 1973).

Although rarely used as a measure of program effectiveness before 1970, retention or persistence in college frequently has been reported since then (Emond,

1976). Prediger (1965) urged that more attention be given to persistence in college as a criterion of success, for ultimately students will be judged in terms of program completion rather than grade point average. However, the use of persistence as a criterion of program quality must be interpreted with respect to the mission and sector of the institution, as well as the objectives of its students. Two- and four-year commuter colleges, for example, are reported to have the highest dropout rates (Smart, 1985). This is commonly attributed to the inability of such institutions to blend primarily part-time and commuting students into the social and intellectual culture of the college (Tinto, 1975).

Kulik et al. (1983) declared that among the best of the evaluations of programs for high-risk students are those that examine such outcome measures as grade point averages in follow-up courses or persistence rates. It appears that at least some remedial program evaluators have heeded the words spoken long ago by Robinson (1950) with regard to the right stuff of which evaluation is made. He asserted, "Academic performance is clearly the sine qua non for the validation of remedial courses. . . . In the final analysis remedial instruction must necessarily stand or fall on the basis of this single criterion, however

ingeniously alternative standards of comparison are defended" (p. 83).

A remedial program evaluator's choice of short- or long-range postprogram measures of what students know is often a matter of debate (Akst & Hecht, 1980). Results based on short-term measures, such as a grade on a final examination, are usually positive; those based on long-term measures, which typically include grade point average, credits earned, and persistence in college, are more likely to be equivocal (Piesco, 1978). The more successful evaluations of remedial education programs are predicated on the use of several postprogram measures, including both short- and long-range indicators of effectiveness (Roueche & Snow, 1977).

More attention is now being given to the "value-added" concept of remedial program evaluation. That is to say, proponents of accountability in higher education increasingly are advocating an evaluative scheme wherein programs are judged not only by their outputs, but by their outputs relative to their inputs. The net increase in students' learning has become a more fundamental concern in evaluation.

The call for evaluation of remedial programs has not abated. That is as it should be, for evaluation is an

ongoing process. It can hardly be otherwise, as long as colleges remain committed to addressing the uncertain needs of students at risk. Richardson et al. (1981) exhorted, "We are beyond the state of having to use such evaluations to justify the existence of programs. What is needed now is concrete information on what approaches are successful in which types of settings" (p. 40). An increasing number of researchers are accepting that challenge.

Effects of Residence Status on Student Progress

Many scholars have urged that on-campus residence is an important contributor to the educational progress of college students (Astin, 1977; Karabel, 1972; Tinto, 1975). They have offered evidence that the impact of college on a resident student's beliefs, behavior, and orientation is likely to be more substantial than the influence an institution might wield with commuting students. A student's peer group remains the primary vehicle for transmitting the college's impact, and nowhere is this peer influence greater than among on-campus residents (Baird, 1976).

Baird (1976) proposed that several desirable outcomes can be derived by students who establish on-campus residence. They include the following effects:

1. Resident students can experience an assortment of values, interests, and personal styles.

2. Residential experiences provide opportunities for learning how to cooperate and work with others.

3. On-campus residence may furnish students with the emotional and social supports requisite to task mastery and goal attainment.

Resident students are more likely to be retained for longer periods of time than their nonresident peers (Astin, 1975). On-campus residence enhances student success by promoting relationships with faculty and fellow students, involvement in the college's extracurriculum, and overall satisfaction with the college experience. Moreover, residing on campus may provide additional time to focus on one's educational purpose by eliminating the time-consuming obligations that often are a consequence of living at home (Astin, 1977; Tinto, 1975; Velez, 1985). An authoritative study by Astin (1977) of how college affects students revealed that on-campus residence increases the likelihood of students aspiring to graduate or professional degrees and improves grade point average, at least among men.

The importance of the residential experience relative to student persistence was further underscored by Dougherty (1987) who declared that during the first two years of

college, institutional factors produce a higher rate of attrition among community college students than among comparable learners at four-year institutions. A key determinant of this truth is the general lack of residential facilities among two-year colleges. Astin (1977) acknowledged that after entering characteristics and other environmental variables are controlled, on-campus residence, compared with commuting behavior, increases a student's probability of completing college by nearly 12%. Such positive effects of residential living apply to men and women and students of different ability.

The human costs endured by college students living at home are well documented. Chickering (1974) stated, "Residents have access to and are forced to encounter diverse experiences and persons who spur them on their way. Access, discovery, and encounter occur much less for commuters and they continue in circumstances that add weight to their pre-existing handicaps" (p. 85). These differences in the development of residents and nonresidents are presumed to multiply throughout the college years. The notion of person-environment fit as a determining factor in student persistence is illuminated by such findings.

Review of Related Research

A growing amount of research that examines such remedial program outcomes as academic achievement (often measured by grade point average) and persistence rate in college has been performed since the 1970s. While one can yet produce empirical evidence to support opposing points of view regarding the efficacy of collegiate remedial programs, studies of recent vintage more often have documented successes.

Such studies relevant to the problem under investigation were frequently undergirded by the use of control groups. The comparisons were primarily of two sorts: (a) the remediated-unremediated comparison wherein the remedial population was divided into two comparable groups, one of which received the remedial instruction while the other did not, and (b) the remediated-exempted comparison wherein the progress of the remediated students was measured by using the performance of the exempted group as a criterion. Also noteworthy are a few selected studies that failed to employ control or comparison groups. The related research was aimed at two- and four-year sectors of higher education. A review of studies germane to community colleges and other two-year institutions is, therefore,

followed by an examination of research relative to four-year colleges.

An early investigation by Gaither (1968) was designed to evaluate the effect of the remedial program at Fresno City College, California, on students' progress. Comparisons were sought between high-risk students in the remedial program and an underprepared group enrolled in the mainstream curriculum. Measured outcomes included grade point averages and persistence rates after two years of initial college entrance. While the unremediated group (n = 68) had a higher mean grade point average than their remediated peers (n = 41), statistical significance was not found at the .05 alpha level. This was true in spite of the questionable method of including grades in remedial courses when calculating grade point averages. A persistence rate of 66% was discovered for both groups. The conclusion reached, therefore, was that the remedial program did not contribute to the progress of high-risk students based on chosen indicators of progress.

Snyder and Blocker (1970) attempted to measure the worth of the developmental education program at Harrisburg Area Community College, Pennsylvania, by examining the academic achievement and persistence patterns of three high-risk cohorts entering the college from 1965 through

1967. A total of 456 high-risk students, each carrying a minimum of two remedial courses, was studied through the 1969-1970 academic year. The mean cumulative grade point average at study's end was 1.78. The researchers discovered that between 33% and 40% of the aggregate of students failed to persist beyond the initial year of enrollment. The average number of credits earned was 40, and 27% of the students completed associate degree requirements.

The percentage of graduates once thought to be at academic risk compared favorably with overall graduation rates at Harrisburg Area Community College and other open-door institutions. It was principally this latter finding that led the investigators to ascribe success to the program under scrutiny. However, the reported results have been attenuated by the failure to use control groups and the inclusion of remedial course grades and credits earned within the chosen indices of program worth.

The notion that remedial instruction improves academic skills more than regular college-level coursework was examined by Losak (1972) at Miami-Dade Community College. High-risk students were identified on the basis of low scores on the School and College Ability Test. While 427 students were randomly assigned to the college's remedial

English course, 73 high-risk students were similarly placed in the regular college-level English course. Chosen measures of program effectiveness included cumulative grade point average and persistence rate, ascertained after the first two terms of enrollment. The remediated group earned a significantly higher grade point average ($p < .001$) at the end of the first term but failed to achieve a significant advantage the following term, where evaluation was, perhaps, more meaningful. Also, a statistically significant difference ($p < .001$) favoring the unremediated group was found in the persistence rates of those who started and finished the second term. Only 3 of the 56 unremediated students withdrew before the end of the winter term, while 89 of the 377 remediated students failed to persist that long.

Losak (1972) reproved the remedial program at Miami-Dade Community College, citing its failure to provide meaningful academic advantage over comparable high-risk students who chose not to participate in the program. A blemish in the research of Gaither (1968), Snyder and Blocker (1970), and Losak (1972) was the proclivity to assess remedial programs using measures that were only inherent to the program.

An early attempt by Roueche and Kirk (1973) to assess the effect of innovative remedial programs on the progress of high-risk students at five community colleges in Texas, North Carolina, and New Jersey attracted the attention of many academicians. The chosen colleges had established reputations for implementing effective programs for underprepared students. Narrative descriptions of each program were provided by the authors with data obtained primarily from interviews with program staff. The relative effectiveness of the programs investigated was judged in terms of the resultant achievement and persistence of program participants. Also, students' satisfaction with remedial programs was determined with data gathered through an attitude assessment instrument.

A random sample of students was stratified with respect to American College Test scores, ethnicity, and year of matriculation. Only full-time matriculants having composite ACT scores of 15 or less were considered for inclusion in the study. Students receiving remedial instruction must have completed a minimum of nine credits of such coursework during their initial semester in college to be eligible for selection as subjects. The high-risk students constituting the populations from which samples were drawn were identified by the participating

institutions to include three freshman cohorts covering the 1969-1971 academic years. Control groups of underprepared students enrolled in the regular college curriculum were used for comparative purposes.

Roueche and Kirk (1973) determined that students enrolled in remedial programs had a significantly higher grade point average ($p < .01$) than comparable students who did not receive remedial instruction. The mean grade point averages for the two groups ($N = 172$) were 2.66 and 1.96. However, this discovery was weakened by the revelation that the remediated-unremediated comparison was based only on first-semester data collected from the 1971-1972 cohort when one group of subjects was receiving remedial instruction while the other was enrolled exclusively in college-level courses. One must question the propriety of program evaluation at this stage, for the worth of a remedial program should be assessed in terms of its ability to move participants through the mainstream curriculum (Clowes, 1984). The authors disclosed that the grades of remediated students dropped significantly after they entered regular college courses, often being in the D range.

The cross-program comparisons made by Roueche and Kirk (1973) revealed significant differences ($p < .01$) in the

grade point averages of the remediated groups at the participating colleges. However, such differences were found only during semesters of remedial program participation. Also, students enrolled in remedial programs persisted in college, at least during the initial year, to a significantly greater degree ($p < .05$) than comparable unremediated students. Of the 192 subjects constituting the sample, 82% of remediated students completed at least two semesters, while only 70% of high-risk students forgoing remediation persisted that long. Moreover, 35% of the students in remedial programs who constituted the 1969-1970 cohort completed two years of college. Although generally satisfied with the remedial programs at participating colleges, remediated students expressed greater satisfaction with the instructional component than they did with the counseling segment.

The research performed by Craig (1975) was a modification of the inquiry of Roueche and Kirk (1973). She assessed the developmental education programs in three urban community colleges in the Commonwealth of Virginia using the same indicators of program quality: academic achievement, persistence, and student attitudes toward the program. From the population of high-risk students as defined by each institution, a random sample of 100

students was drawn to form each of the two research groups: remediated and unremediated.

No significant differences were discovered between the two groups with respect to their grade point averages and persistence rates, measured over a six-quarter time frame. While not statistically significant, the grade point averages and persistence rates of high-risk students not enrolled in developmental programs generally were higher than those of students placed in such programs. When averaged across the three colleges, remediated students failed to attain a mean grade point average of 2.00 for any quarter of enrollment. Students in developmental programs usually were more satisfied with the instruction they received than they were with the counseling services provided.

Inherent weaknesses in the research design employed by Craig (1975) make valid comparisons with the more favorable findings of Roueche and Kirk (1973) difficult. For example, the control groups used in her research were comprised of many underprepared students who received some measure of instruction in developmental education. Such "partial treatment" effects make her findings and conclusions more suspect. Also, few attempts were made to control for other potentially confounding variables in this

study. It was difficult to measure with confidence, therefore, the true effect of selected developmental programs on the progress of high-risk students.

An attempt to discover if the remedial reading and writing courses at Queensborough Community College of the City University of New York were effective in preparing high-risk students for the rigors of college-level coursework was made by Bergman and Gerace (1974). More than 2,000 high-risk students who were required, as a result of low scores on the Cooperative English Examination, to complete a remedial reading and/or writing course became research subjects. The academic performance of this freshman cohort in college-level courses completed during the semester subsequent to remediation was then compared with the achievement of an equal number of nonremedial students from the same freshman class. The equivalent procedure was employed the following year with a new class of entering freshmen. Thus, the scholastic records of more than 4,000 students were searched in each year of the study.

The grades earned by the two remediated cohorts were quite comparable to those received by the students exempted from remediation. The percentage of passing grades in the mainstream curriculum accorded those who completed remedial

instruction increased from 65% during the first year of the investigation to 69% the following year. The remedial efforts at Queensborough Community College were judged as helping to narrow the gap in achievement between high-risk students and their more able peers. However, the use of a second control group of comparable underprepared students lacking remediation may have led to even more meaningful findings.

The impact of the remedial education program at Middlesex Community College, Massachusetts, on high-risk students was measured by Lee (1974). The 53 underprepared freshmen who received remedial instruction prior to entering mainstream courses were matched with a like number of students exempted from remediation on the basis of town of residence, age, and sex. The high-risk students were recognized by low test scores and inferior achievement in high school coursework. The persistence rate of remediated students after two years was 45%. On the other hand, 55% of the exempted group had completed two years of college. The extent to which this difference may have reached statistical significance was not stated by the author.

Using academic achievement (expressed as grade point average) and persistence as indicators of program worth, Rosella (1975) examined the effect of the developmental

studies program at Bucks County Community College, Pennsylvania, on the progress of high-risk students. This institution's model combined the literacy skills of reading, writing, and mathematics. Those judged to be at academic risk who formed the population for this inquiry ranked in the lower 40% of their high school graduating class and scored in the first quartile on the Comparative Guidance and Placement Test. Each of the 86 subjects who received remedial instruction enrolled in a minimum of two basic skills courses. A control group was formed to include 97 high-risk students who entered college-level courses without prior remediation. The full-time students who met the study criteria were randomly assigned to the two research groups. Thus, potential threats to internal validity were minimized.

At the end of one academic year, the group that received basic skills instruction earned a mean grade point average of 2.28, while the unremediated students displayed a scholastic average of 1.77. The difference was highly significant ($p < .001$). However, as with many related investigations, the grades received in these basic skills courses joined with those earned in mainstream courses to form the quality point averages of remediated students. It has been argued that an institution's remedial effort

cannot be properly assessed using measures that are strictly inherent to the program (Clowes, 1984). Underprepared students who participated in Bucks County Community College's Basic Studies Program also had a higher rate of persistence than their high-risk but nonparticipatory peers. Of the 86 students attempting to remedy their academic deficiencies, 75 (87%) were in school after one academic year. Conversely, of the 97 high-risk students who were randomly assigned to the mainstream curriculum, 59 (61%) remained at the college at the end of one academic year.

A well-conceived study to quantify the impact of the developmental program at Westmoreland County Community College, Pennsylvania, on the persistence and academic performance of high-risk students was executed by Cicco and Associates (1979). The cornerstone of this institution's developmental model was the integration of basic skills instruction to include English, reading, and mathematics. All high-risk students, identified by low scores on the Comparative Guidance and Placement Test, who entered the college during the academic years 1975-1976 through 1978-1979 were included in the investigation. Long-range measures of the effect of remediation included grade point average, number of semesters enrolled, graduation rate, and

college credits earned. The foregoing postprogram measures were used to compare remediated and unremediated students from the underprepared population.

When the aggregate data collected over the four-year life cycle of this research were considered, the benefits derived from participation in the college's developmental program became apparent. The remediated students averaged an 18% higher grade point average, persisted at a 34% higher rate, graduated at a 32% higher rate, and acquired 30% more college credits than the high-risk students who chose to forgo redemptive efforts.

While the mean grade point average of program participants was 1.99, the unremediated students earned an academic average of 1.69. The mean number of semesters completed by students who received remedial instruction was 3.38, whereas their high-risk counterparts who entered directly into the mainstream curriculum had an average rate of persistence of 2.52 semesters. Although 21% of the remediated subjects graduated, only 16% of those in the control group received certificates or degrees. The average high-risk student who participated in the developmental program accrued 30.68 credits, exclusive of developmental coursework. Underprepared students who did not become program participants completed an average of

23.61 credits. The academic advantage enjoyed by those enrolled in the developmental program at Westmoreland County Community College was consistent, regardless of the freshman cohort receiving basic skills instruction.

Promising findings relative to the effect of remedial programs on the persistence of high-risk students in the two-year collegiate sector have been reported by Starks (1982). Using similar unremediated students as a control group, several two-year colleges discerned significantly higher rates of continuance for students participating in remedial programs. Included among these institutions were Glendale Community College in California, Forest Park Community College in St. Louis, Los Angeles City College, and Pierce Junior College in Philadelphia.

An inquiry by Miller (1982) was spurred by the desire to determine through empirical evidence if the developmental program at Stark Technical College, Ohio, was helping high-risk students to attain academic success. Chosen indicators of success included grade point average, credits earned, and persistence, expressed as quarters enrolled. The subjects included in this research were identified as in need of remediation on the basis of low composite scores on a battery of preadmission tests that included mathematics, reading, and English and a survey of

study habits. An ex post facto research method was employed to track the progress of 284 high-risk students over a seven-quarter period.

The freshman cohort selected for inclusion in this study entered the college in the fall quarter of 1980; each student enrolled in a minimum of nine credits of coursework. The recommended developmental studies curriculum was pursued by 82 underprepared students, while the remaining 202 subjects determined to be at academic risk opted for direct entry into mainstream courses. The developmental studies curriculum at Stark Technical College was shaped, in part, to ameliorate the academic shortcomings of students through basic skills improvement in areas such as reading, mathematics, and study skills.

Several findings favoring the remediated group of students were reported by Miller (1982). The mean grade point average of remediated students, measured over the study's seven-quarter time frame, was 2.6; the unremediated group earned a mean grade point average of 1.8. While high-risk students receiving basic skills instruction completed an average of 63.5 credits, those who shunned the college's developmental program accrued but 35.9 credits. Students emerging from developmental coursework were retained for an average of 5.2 quarters, whereas those who

formed the comparison group persisted for 3.5 quarters. The between-group differences on the foregoing indices of academic success were significant at the .001 alpha level.

Although the use of several long-range postprogram measures of the quality of the developmental program at Stark Technical College is laudatory, the reliance on grades and credits earned in developmental coursework to calculate the aforementioned indices of program worth has skewed the reported findings. The academic advantage granted high-risk students who participated in this institution's developmental program would most likely have been reduced without the use of measures that were only intrinsic to the program. This debility in research design has been observed in several of the previous investigations chosen for review. The present study, however, assessed remedial programs in terms of the ability of their students to function primarily in college-level coursework.

Several studies related to the problem being investigated were consummated in four-year collegiate settings. Roueche and Snow (1977) completed a comprehensive national survey of remedial education programs in two- and four-year colleges. Seeking to identify trends as well as successful program responses relative to redemption in college, the authors' analysis

was founded on data gathered from 139 two- and 134 four-year institutions. Nearly 85% of the two- and 67% of the four-year colleges reported that an evaluation system for their redemptive efforts was in place.

Among the most common indicators used to determine program quality was persistence. While 67% of the two-year colleges that employed evaluation examined persistence rate as a program outcome, only 58% of the four-year colleges used such a measure. Of the institutions that evaluated their remedial education programs, 45% of the two- and 31% of the four-year colleges stated that more than 70% of their high-risk students persisted to the second semester. While 10% of the two-year colleges indicated that greater than 70% of their underprepared students persisted to the third semester, 19% of the four-year institutions revealed that a like percentage of high-risk students persisted that long. Approximately 12% of the two-year institutions reported that more than 70% of their underprepared students received a certificate or degree; 9% of the four-year colleges affirmed that more than 70% of their high-risk students completed a degree or certificate program.

However, the research of Roueche and Snow (1977) was diluted by the following factors:

1. Many survey respondents favored the "no response" category when reacting to several of the items that constituted the evaluation segment of the research instrument. Thus, conclusions regarding the effectiveness of selected remedial programs remain equivocal.

2. The authors simply asked program directors if their programs were successful. That blemish weakened their answers.

3. The research interpretations were rather subjective and anecdotal.

An examination of the academic achievement and persistence of high-risk students at the University of Toledo by Holman (1977/1978) resulted in the conclusion that the institution's remedial program was less than successful. The indicators used to determine the quality of the university's redemptive model included grade point average, persistence, and credits earned. The author made remediated-unremediated comparisons of the progress of three underprepared freshman cohorts by employing the foregoing outcome measures. It was generally concluded that the students who did not enjoy remedial services outperformed their remediated peers. The differences were not, however, statistically significant. Yet, these

findings that depreciate the worth of remedial education are consistent with those reported by Craig (1975).

Martin and Blanc (1981) studied the effect of developmental program participation on the academic achievement of high-risk students at the University of Missouri-Kansas City. Comparisons were made over a two-year period of the grade point averages of 72 underprepared students who enrolled in developmental coursework and a matched group of 131 high-risk students who received no special assistance. The authors indicated that markedly higher grades were earned by those who completed basic skills instruction.

Several indicators of program effects and multiple designs were employed by Dumont, Bekus, and Tallon (1981) to assess the quality of basic skills programs found at a regional university and a community college within a statewide system of higher education in the southeast. Included among the evaluative designs was the cross-program comparison. American College Test scores and faculty-developed achievement tests were used to ensure the initial comparability of remediated groups. Nearly 1,700 first-time freshmen who enrolled in the fall quarter of 1979 were included in the research.

Interinstitutional comparisons of performance gains in separate skills areas suggested superior program elements in writing and mathematics at the two-year institution, while the reading program at the university was considered more effective. Substantial program success was discovered at both institutions, as improvement was seen in the three most common areas of basic skills development. However, conclusions regarding program quality are more appropriately derived by focusing on events subsequent to program completion. The authors reported that such analyses were yet in progress.

A meta-analysis of findings from 60 evaluation studies of the effects of special college programs on high-risk students was performed by Kulik et al. (1983). All studies accepted for analysis utilized control groups comprised of unremediated high-risk students. Achievement, measured by grade point average, and persistence, expressed as the proportion of students retained during the period of study, were the predominant indicators of program worth intrinsic to each study. Grades received only in mainstream courses were used to calculate grade point averages. Also, the evaluation period in most investigations extended well beyond the time of enrollment in special programs. Outcomes were quantified by measuring size of effect. In

this way, a clearer snapshot of the influence of special programs could be provided.

Kulik et al. (1983) determined that special programs designed for high-risk students raised grade point averages 0.25 points higher than the index of similar students without such assistance. Moreover, in the typical study, the rate of persistence was 60% for students enrolled in special programs; those constituting the control group persisted at a 52% rate. Such statistically reliable findings induced the authors to conclude that special college programs for high-risk students have produced positive results. Yet the remedial/developmental programs closely associated with community colleges had little effect on students' grade point averages and persistence rates.

A case study of the remedial education program at Louisiana Tech University was completed by Pace (1984/1985). The control group design selected to provide evidence of program effects was the remediated-unremediated comparison. The academic progress of students in remedial programs (n = 205) was compared with that of similar underprepared students who did not receive basic skills instruction (n = 205). Chosen measures of academic progress during a five-quarter evaluative period were

cumulative grade point average, persistence rate, and credits earned.

Pace (1984/1985) discovered no statistically significant difference at the .05 alpha level between the mean grade point averages of the two groups. However, a significant difference ($p < .05$) was found between the persistence rates of the remediated and unremediated groups. The students who participated in remedial coursework were enrolled an average of 3.61 quarters, while the control group's mean rate of persistence was 3.40 quarters. The remediated group earned an average of 28.93 credits; the unremediated group acquired an average of 25.05 credits. This difference in credits earned was reported as highly significant ($p < .001$). The author was correct to exclude basic skills courses when computing the grade point averages of subjects. Consequently, this index of scholastic achievement in the mainstream curriculum offered a truer measure of the quality of the remedial program. On the other hand, a more valid indicator of academic progress may have been derived by excluding remedial coursework when determining the cumulative credits earned by study participants.

The New Jersey Basic Skills Council (1986) assessed the effectiveness of remedial programs within separate

skills areas in the state's public colleges and universities. The data gathered from each college were only for the cohort of full-time freshmen who enrolled in the fall of 1983 and persisted through the spring of 1985. The decision to include in the investigation only students who persisted through four semesters was in recognition of those high-risk learners who required protracted time to complete remediation. Underprepared students were identified through system-wide deployment of the New Jersey College Basic Skills Placement Test.

Eschewing an experimental design for a causal-comparative or ex post facto method, the council used multiple measures to compare each of three groups within the colleges: (a) students who did not require remediation, (b) students who needed and completed remediation in the appropriate skills area, and (c) students who did not complete necessary remedial coursework. Included among the multiple indicators of the worth of remedial programs when observed at the system-wide level were grade point average, persistence rate, and college credits earned.

The authors concluded from their findings that remediated students in New Jersey's institutions of higher education have two to three times the chance of college

success as unremediated high-risk students. Also, the grade point averages, persistence rates, and total college credits earned of students who completed remediation were considered satisfactory relative to the performance of those who did not require remedial instruction.

At the community colleges of New Jersey, the grade point averages across all skills areas for the three groups under examination were 2.53 (exempted students), 2.19 (remediated students), and 2.01 (unremediated students). The respective grade point averages at the four-year state colleges were 2.70, 2.41, and 2.15. The three study groups at Rutgers University earned averages of 2.69, 2.24, and 2.31, respectively.

The most consistent finding of this inquiry, across two- and four-year collegiate sectors and in all skills areas, related to persistence as a measure of program quality. Students determined to be at academic risk who completed remediation had similar or higher persistence rates than peers exempted from basic skills instruction. Moreover, remediated students persisted at much higher rates than those who required but did not complete remediation. The persistence rate for students completing remediation in the state colleges was 72%, while 69% of exempted students persevered over four semesters. In the

community colleges, the rates of persistence for the same two groups, respectively, were 56% and 52%. Conversely, only 31% of unremediated high-risk students in the state colleges were retained over four semesters; 21% of the unremediated students at academic risk in the community colleges persisted that long. A comparable pattern was discovered at the state university.

With respect to college credits earned after completion of four semesters, the differences between exempted students and their remediated peers were as follows:

1. Students exempted from remedial coursework in the state colleges earned an average of 51 credits, while remediated students acquired 46 credits.

2. Students freed from remediation in the community colleges accrued a mean of 44 credits, whereas remediated students earned 34 credits.

3. Students exempted from remedial instruction at Rutgers University obtained an average of 56 credits, while remediated students gained 49 credits.

The evaluative study of remedial programs in the colleges and universities of New Jersey was rooted in systematic empirical methods. Members of the New Jersey Basic Skills Council (1986) exercised unerring judgment by

employing short- and long-range postprogram measures of the effectiveness of selected remedial programs. The use of quantitative indicators of the success of remediated students in the mainstream curriculum to assess the quality of remedial programs was an effective strategy. Also, the adoption of manifold control-group designs and the examination of program effects within separate skills areas were commendable research procedures.

Summary

A review of the literature associated with the present investigation has underscored the complexities faced by all who have sought effective methods of educating high-risk students in two- and four-year colleges. The enormity of that task is apparent when one considers that the only constant found within an otherwise diverse cohort is a history of low academic achievement. The literature has chronicled how the leaders in American higher education have attempted to address the educational failings of underprepared students through program reform.

Evaluative studies of the effects of remedial programs on the progress of high-risk students have imparted varying degrees of success. Since the late 1970s, two-year colleges have rivaled four-year institutions with respect

to research efforts in remedial education (Boylan, 1983). Yet comparisons of past evaluations have been difficult, since few programs have matching populations, placement procedures, content, and criteria for success. The quality of these attempts at evaluation, however, has improved with time. Reformed research designs have added credibility to more recent findings that validate the effectiveness of remedial education. Moreover, increased attention has been given to other factors that impact student progress, such as residence status, as two- and four-year colleges have mounted a more vigorous attack on the problem of student attrition.

The link between participation in special programs for high-risk students and an increase in grade point average is being strengthened by more consistent findings. Still, the usual equivocations made when addressing this relationship suggest that remedial programs may be less successful at raising an underprepared student's grades than prolonging his or her enrollment in college. In fact, there is building evidence that of all the measures studied, persistence most consistently favors high-risk students in remedial programs compared with better prepared students in college-level programs (Boylan, 1983). The debate raging over the proper habitat of remedial education

requires comparisons of such program outcomes across higher education's two- and four-year sectors.

Chapter 3

Research Design and Method

This study was designed to provide empirical evidence of how selected two- and four-year sectors of higher education are contributing to the progress of high-risk students. To this end, an assessment of remedial programs and other institutional variables as contributors to the educational progress of underprepared students across two- and four-year colleges was performed.

Both ethical and practical considerations precluded the use of a true experimental design for the purposes of this study. Instead, a multimethod research perspective was developed that brought a variety of data and methods to bear on the problem at hand. This notion of triangulation, as conceived by Denzin (1978), was perceived as producing more cogent explanations of how comparable two- and four-year colleges are contributing to the academic progress of high-risk students. Patton (1980) asserted that a variety of data sources and design approaches could be used for many evaluation problems. He confirmed that "multiple methods and triangulation of observations contribute to methodological rigor" (p. 18). The use of a

single method of inquiry could mask important findings as related to this study.

The research strategies undergirding this investigation involved, therefore, mixes of design, measurement, and analysis. The outcomes under study were believed to require such an integrated approach, although a neat juxtaposition of data derived from varied sources was not altogether anticipated.

A trifurcated plan guided the performance of this research. At the heart of the inquiry was the proposition that initial comparability of selected college populations could be established. The method and structure of affirming that notion are discussed in the following section of this chapter. Forming the final two elements of the plan were the quantitative and qualitative methods thought to be most appropriate to address the research questions offered in chapter 1. Details of these two methods are used to shape the concluding portions of the present chapter.

Establishing the Comparability of Selected Colleges

An attempt to eliminate often overlooked methodological weaknesses was necessary if this evaluative study was to yield credible research findings. Examined

for reasonableness, therefore, was the assumption that the rural Appalachian region within which the participating institutions were located would help control for classificatory variables of the students composing the population and sample of this study.

Demographic comparisons of the population at selected two- and four-year colleges were made by analyzing institutional research reports of entering freshman classes. Moreover, descriptive data for the entire sample were used to establish the comparability of chosen colleges. The extent to which the institutions mirrored one another was determined by a discerning comparison of the age, scholastic aptitude, race, and gender of their students.

Population and Sample

The general population of this study included more than 3,000 new entrants to selected pairs of two- and four-year colleges during the fall semester of 1985. Public two- and four-year institutions located within the rural Appalachian region in and around the Middle Atlantic States were surveyed for possible participation in the investigation. The region within which the colleges were located was thought to contribute many economically and educationally disadvantaged students. As a consequence,

the need to remedy basic skills deficiencies most likely would be paramount. Only institutions having remedial programs that remained relatively unchanged since the entrance of the cohort selected for study were considered for participation. Finally, accessibility for the purpose of this research helped determine the final selection of participating colleges.

The participant colleges were identified throughout the study by the pseudonyms of Brentwood, Bayberry, Greentree, and Oak Valley. Brentwood Community College and Bayberry Community College are two-year public institutions whose unique geographic locations have allowed them to be counted among the leading purveyors of postsecondary education for the residents of a tristate region. Each college has established the sort of comprehensive curriculum that often is used to lend definition to the notion of open-door institutions. Included among the chief curricular functions are the following: (a) transfer, (b) occupational, (c) remedial, (d) community, and (e) general education.

Brentwood Community College is located in a county with a population exceeding 100,000. Approximately 2,500 full- and part-time students constitute the college's credit enrollment. The college is committed to offering

programs and services at convenient times and places for its consumers. To this end, numerous off-campus centers have been established.

At Bayberry Community College, the occupational programs are quite specialized to address the identifiable needs of the community. Nearly 2,000 credit-carrying students are enrolled. Although situated in a rural area, the school is quite accessible to the county's population center. The college is found within a county that has approximately 80,000 inhabitants.

Greentree State University is located in a town with a population of nearly 8,000. However, close to 80,000 live within the borders of the local county. The institution also lies within a 150-mile radius of three metropolises. Although first established as a state normal school, the university has become a comprehensive institution, blending liberal education with professional and preprofessional programs. Almost 90% of its nearly 3,200 undergraduates are full-time students.

Oak Valley College, like Greentree State University, is a publicly supported four-year institution whose curriculum is marked by comprehensiveness of programs that extend beyond the central campus. The college is found in a bucolic setting whose environs have great historical

significance. While the county within which the college is situated has fewer than 30,000 inhabitants, two major metropolitan areas are within 65 miles of the institution. The college currently enrolls more than 3,800 students.

The total sample (N = 622) was equally divided between remedial and nonremedial freshman students. The 311 high-risk subjects who met the aggregate criteria specified below in the section on quantitative methods represented the population of that group as defined, and all were included in the investigation. However, a random sample from the larger population of nonremedial students as defined below was drawn at each college to equal the number of subjects included in the same institution's remedial group.

Procedures

The initial step in the performance of this study was to obtain the consent for participation from representatives of the participant colleges within the target region of rural Appalachia, thereby ensuring an adequate data base for the research. To this end, letters soliciting the participation of institutions meeting the requirements of this study were mailed to the appropriate college administrators (see Appendix A). In accordance with the Family Educational Rights and Privacy Act of 1974,

these letters pledged to protect the personal identities of study participants whose records were to be reviewed.

A comprehensive strategy was employed to establish that the chosen colleges were comparable with respect to the students whom they served. It involved viewing those who formed the population and sample at the respective colleges from a variety of perspectives, while searching for meaningful differences among groups on common control variables that included age, scholastic aptitude, race, and gender. Data relative to the foregoing variables and applicable to the students constituting the population of this study were gleaned from research reports offered by administrators of participant colleges. Appropriate comparisons were then made among this broadly defined population of new entrants, distinguished by college of attendance.

A narrower definition was applied to the subjects eligible for participation in the study. The extent to which they and their affiliated colleges were suitable for comparison was the focus of a separate inquiry, answerable by pertinent data gathered from student files at the respective colleges.

Moreover, the subjects selected for participation in this investigation were viewed as members of the primary

comparison groups, characterized by student affiliation. Descriptive data for the selected control variables were used to establish the similarities among such groups, distinguished by their enrollment in two- and four-year colleges as well as by their residence status.

Data Analysis

The descriptive data used to establish that the participant colleges were comparable with respect to the students they served included means, standard deviations, and proportions for selected variables. The resultant profiles of chosen colleges embraced the age, scholastic aptitude, race, and gender of students forming the study's population and sample.

Because the population descriptors of all new entrants at selected colleges were fashioned from institutional research reports, descriptive statistics alone were employed to argue the case for similarity of separate college populations. To that end, the most meaningful comparisons on chosen control variables were sought among students forming the total population as defined at participant colleges.

Inferential statistical procedures were used to determine the comparability of subjects composing the sample at pairs of two- and four-year colleges. These

statistical techniques included one-way analyses of variance (ANOVAs), *t* tests, and chi-square tests. When required with selected analyses, the assumptions on which the parametric statistical procedures are based, including homogeneous variances and normality, were examined and found to be reasonable. With ANOVA procedures, a Cochran's C test was used to test for equal variances among groups. Those group differences that were statistically significant and most meaningful to the study are highlighted. A .01 alpha level was chosen as the standard for identifying significant differences in this portion of the inquiry.

A one-way ANOVA was used to resolve if significant differences existed among the comparison groups that varied along the dimension of college of attendance. Comparisons were made among the four colleges' remedial and nonremedial groups as well as among the total subjects, using age and ACT scores as dependent variables. Chi-square analyses of college by race and by gender also were performed with the above comparison groups.

Further statistical procedures were applied to the data with the intention that a tenable declaration of the comparability of the study's primary comparison groups might result. The comparisons selected for scrutiny were judged to be the most meaningful, in light of research

findings. A one-way ANOVA was employed to test for significant differences with respect to the dependent variables of age and ACT scores among remedial groups with distinct student affiliations. Chi-square analyses of student affiliation by race and by gender also were completed with remedial group members. The use of *t* tests on the age and ACT scores of the remedial and nonremedial groups, incorporating all dimensions of student affiliation, was inspired by the data. It was for the same reason that chi-square analyses of group by race and by gender were performed.

Quantitative Methods

Design

A causal-comparative or ex post facto research method was appropriate to this investigation, as quantitative data related to the educational progress of high-risk students were collected before searching for plausible causal factors. This method also permitted an examination of the interaction of factors as they related to given outcomes. Isaac and Michael (1985) reported that factorial designs have become increasingly prominent, permitting research where multiple factors are free to vary at a time.

Thus, a simple 2 x 3 factorial design allowed several questions related to the progress of high-risk students across two- and four-year colleges to be addressed. It corresponded to the following paradigm:

	Affiliation		
	Two-year nonresidential	Four-year nonresidential	Four-year residential
Group: Remedial			
Group: Nonremedial			

The two independent variables were group and affiliation. The group factor was varied in two ways: remedial and nonremedial. The three levels of the affiliation factor included an implicit nesting of residential and nonresidential student status within the four-year institutions. All two-year affiliations were nonresidential. The dependent variables appropriate to this design that represent measures of student progress included college credits earned and cumulative grade point average. They are discussed further in the Instrumentation portion of this section.

Students who did not require remediation at the institutions selected for this study served as a comparison

group for the high-risk students enrolled in remedial programs. This comparison, therefore, assessed the effects of remedial programs at two- and four-year colleges relative to nonremedial student outcomes. The use of nonremedial students for the purpose of comparison was judged acceptable after learning that placement of high-risk students in remedial programs was obligatory at the participating institutions. Thus, opportunities to form a comparison group of high-risk students who needed, but did not receive, remediation were foreclosed.

The use of a random sample of the general student population as a control group for a comparative analysis of students in a remedial program has been sanctioned by O'Hear and Pherson (1982). The importance of using a college's own standard--its nonremedial student outcomes--as a fundamental aspect of remedial program evaluation has not been lost on today's leaders of higher education. A more complete picture of program effects can be drawn by including this important dimension within selected research designs.

Population and Sample

As mentioned above, the subjects chosen for study formed two separate and distinct groups: (a) an aggregation of high-risk students who completed remedial

coursework and (b) a comparison group of students who did not require remediation. The remedial group included those identified and placed in remedial programs by the respective institutions. The following criteria for this group's inclusion in the study applied:

1. To have enrolled for the first time in college during the fall semester of 1985;

2. To have entered college with full-time student status;

3. To have identified the completion of a degree as a personal goal;

4. To have earned a minimum of three credit hours of remedial coursework during the initial semester in college;

5. To have obtained American College Test (ACT) composite scores of 16 or less or comparable Scholastic Aptitude Test (SAT) scores; and

6. To have been identified as a resident or nonresident student in accordance with the established operational definition.

Because student progress measures were to be obtained only for those who completed four semesters, the criterion of degree expectancy provided motivation to persist at least that long. The use of ACT scores was designed to make the high-risk group more homogeneous with respect to

scholastic aptitude. A reliable data base from which to report findings and draw conclusions was provided by the 311 students composing the remedial group.

The nonremedial group had as its criteria for inclusion the following:

1. To have enrolled initially in college during the fall semester of 1985;

2. To have entered college with the status of full-time student;

3. To have been identified as a degree pursuer;

4. To have enrolled directly in the college's mainstream program without accruing any credit hours of remedial coursework;

5. To have completed the ACT or SAT; and

6. To have been identified as a resident or nonresident student, conforming to the operational definition set forth.

The random sample of 311 subjects forming the comparison group was drawn from an eligible population of 874 students. The total sample of 622 students studied across selected two- and four-year colleges was sufficiently large to make valid, if only limited, generalizations.

Instrumentation

Chief among the instrumentation germane to this study was a Data Recording Form used to preserve the relevant data as they applied to prospective subjects (see Appendix B). The Data Recording Form was designed to summarize the data pertinent to the study. This provided a means to distinguish the students eligible for inclusion in the investigation from those who were not. Included among these data were the multiple criterion measures that were employed to provide cumulative evidence of how selected two- and four-year sectors of higher education are contributing to the progress of high-risk students. The chosen indicators of student progress, expressed quantitatively, included (a) college credits earned, (b) cumulative grade point average, and (c) persistence. (Remedial coursework was not used to calculate the earned college credits and GPA of those selected for participation.) Moreover, the foregoing data, together with the cumulative credit hours of remedial coursework earned by students in the remedial group, were registered only for subjects who persisted over four semesters.

Several other units of information were recorded on the Data Recording Form. Name, social security number, age at college entry, college of attendance, date of initial

college entry, remedial credits earned in the fall of 1985, ACT composite score or equivalent of SAT total, and SAT total score (if available) were among the variables included. Others were recorded as two-way nominal variables. These included race, gender, full-time student, degree-seeking student, high-risk student, eligible subject, group of membership, and four-semester persistence rate. Residence status was registered as a three-way nominal variable.

Procedures

After the administrators of the colleges targeted for incorporation in the study consented to participate, the task at hand was to identify the cohort of students at each institution that conformed to the criteria governing participation. The elected point of departure for accomplishing that chore was to obtain a computerized report of all first-time, full-time, degree-seeking students in the fall of 1985 from the computer staffs and sundry others at the selected colleges. Inherent in this report was a comprehensive register of all such students who participated in remedial programs during the fall of 1985. This roll was then cross referenced with each college's placement test file to ensure proper identification of high-risk students. Where appropriate

criteria for inclusion in the research were satisfied, these students became members of the study's remedial group. This determination was made by a search of student records at the respective institutions.

Each college's student files also were used to determine the number of students meeting the criteria for admission to the nonremedial group. As mentioned, this population was sampled randomly so that an equal number of subjects within each college constituted the two study groups. Over 1,800 student files were searched to derive the final count of 622 subjects. Only infrequently was the requisite information accessible through a participant college's computerized data base. Nearly all the required units of information were gathered through the perusal of student files. One exception was the information relative to the residence status variable at the pair of four-year colleges. Students were identified as residents or nonresidents by data obtained from the Office of Residence Life at the respective institutions. Pertinent data were then recorded on the Data Recording Form. Where students were eliminated from consideration as study participants after the first few data entries, the search for remaining units of information was aborted. Of course, only the multiple outcome measures for subjects who were retained

for a period of four semesters were recorded and subjected to further analysis.

Data Analysis

The inferential statistical procedures used in this segment of the study were varied and many. They included one- and two-way ANOVAs, one-way analyses of covariance (ANCOVAs), *t* tests, and chi-square tests. Where required, the critical assumptions on which the chosen analyses depended were examined and found to be plausible. Subjected to scrutiny were the assumptions of equal variances, normality, and common slopes, specific to certain parametric statistical procedures. When appropriate, the analyses of variance and covariance were followed by multiple comparison tests. An alpha level of .05 was used to determine statistical significance of all analyses in this segment of the study.

The statistical procedures are described in this section according to the research questions with which they are affiliated. A distinct combination of statistical techniques was required to address each question. The quantitative data gathered as measures of student progress were analyzed with the aid of the Virginia Polytechnic Institute and State University computer system, using the Statistical Package for the Social Sciences (SPSSX). A

discussion of the specific procedures used with each question and justification for their employment ensues.

Question 1. What is the relationship between type of student (i.e., high-risk student in remedial program vs. regular student) and type of affiliation (i.e., nonresident at two-year college, nonresident at four-year college, and resident at four-year college) with respect to (a) academic achievement in mainstream college courses at the end of four semesters and (b) persistence, in terms of continued enrollment over four semesters?

Two-way ANOVAs were used to address question 1 by contrasting academic achievement across remedial and nonremedial groups having two-year nonresident, four-year nonresident, and four-year resident affiliations. The specific dependent measures--college credits earned and GPA--were treated as ratio- and interval-scale variables, respectively. The independent factors that included group and student affiliation were nominal-scale variables. Thus, a two-way ANOVA was an appropriate statistical technique to address the foregoing research question. However, the affiliation main effect was of little value in answering this question, considering the stated purpose below.

Chi-square tests of independence also were employed to answer question 1. To this end, the SPSSX procedure Crosstabs was used to analyze the relations between group and persistence within each dimension of student affiliation. The chi-square test was an appropriate procedure since the two items considered were nominal-scale variables: remedial/nonremedial group and persistence/nonpersistence.

The purpose in answering question 1 was to assess the performance of the remediated students in relation to the progress of the exempted students (nonremedial group). Thus, the latter served as a yardstick for the former in considering the likely effect of remediation on the progress of high-risk students within two- and four-year collegiate sectors, controlling for residence status.

Question 2. Do high-risk students with distinct affiliations (i.e., nonresidents at two-year colleges, nonresidents at four-year colleges, and residents at four-year colleges) differ with respect to (a) academic achievement in mainstream college courses at the end of four semesters and (b) persistence, in terms of continued enrollment over four semesters?

A one-way ANCOVA was used to answer question 2, as comparisons were made of the number of college credits

earned by three groups of high-risk students with distinct affiliations (i.e., nonresidents at two-year colleges, nonresidents at four-year colleges, and residents at four-year colleges). As a statistical control for differences in initial level of college aptitude, ACT score was employed as the covariate. Since the affiliation factor was a nominal-level variable and the level of measurement of the dependent variable (college credits earned) was the ratio scale, the ANCOVA procedure was an appropriate choice to address this question.

A one-way ANOVA also was used to answer question 2, wherein the dependent variable (GPA) was contrasted across three groups of high-risk students having the aforementioned affiliations. The ANOVA technique was selected when ACT score proved to be an ineffective covariate in a planned ANCOVA procedure. The chosen method was suitable, as the affiliation factor was a three-way nominal variable and the dependent variable of GPA was regarded as an interval-scale variable.

Further, in answering question 2, a chi-square test was used to determine if a significant relationship existed between the affiliation of high-risk students (i.e., nonresidents at two-year colleges, nonresidents at four-year colleges, and residents at four-year colleges)

and persistence. The chi-square analysis was an appropriate statistical procedure, because the affiliation and persistence variables were measured on the nominal scale with data reported as frequencies.

Question 2 was answered by using as a standard of success the progress of comparable remedial groups that differed with regard to affiliation (i.e., nonresidents at two-year colleges, nonresidents at four-year colleges, and residents at four-year colleges). A comparison of the likely effects of different remedial programs on high-risk students with the preceding affiliations was, therefore, desirable.

Question 3. Does the remedial approach at any one institution appear to contribute unusually to student progress?

The comparisons central to research question 2 were reshaped but remained, nevertheless, of fundamental importance in answering question 3. The affiliation factor used in the statistical procedures for addressing question 2 was altered to answer the present question. In retrospect, the three levels of this factor in the aforementioned procedures compared high-risk students composing more broadly defined two- and four-year collegiate sectors according to residence status. Question

3, however, was addressed by comparing high-risk students according to their specific college of attendance. Therefore, the one-way ANCOVA, one-way ANOVA, and chi-square procedures used to answer the third research question incorporated the four levels of the college factor. The outcome measures that included college credits earned, GPA, and persistence remained unchanged in the new analysis.

Moreover, since residence status remained a variable of interest, *t* tests were employed to answer question 3. This procedure was used to compare high-risk residents and nonresidents at each four-year college with respect to measures of progress that included college credits earned and GPA. The *t* test was a proper statistical procedure to answer this question, because the foregoing dependent variables were measured on a ratio scale and an interval scale, respectively.

Question 3 was further addressed through chi-square analyses, used to resolve whether a significant relationship existed between the residence status of high-risk students and persistence at each four-year college. As the factors under scrutiny were nominal-scale variables, the chi-square test was a defensible procedure to employ.

Research question 3 was posed to determine how the progress of high-risk students is likely influenced by the remedial approaches found at separate institutions. Thus, this comparison used the progress of comparable remedial populations at other colleges as a criterion of success. A further purpose in answering question 3 was to ascertain whether the remedial approaches had a differential effect on the progress of high-risk residents and nonresidents at four-year colleges.

Qualitative Methods

Design

Qualitative research methods also were used to gather credible information regarding the attempts of selected two- and four-year sectors of higher education to contribute to the academic progress of high-risk students. A case study approach was utilized to collect qualitative data that helped enrich the quantitative analysis by providing a more complete examination of remedial program outcomes. Using high-risk students as the unit of analysis, the case study method allowed for the identification of other institutional variables that contributed to student progress within comparable two- and four-year colleges.

Moreover, case study methods helped frame the particular orientations of two- and four-year colleges toward remedial education, as the programs found within chosen institutions were described. This research procedure was appropriate, for "the mandate to generate an accurate and detailed description of program operations particularly lends itself to the use of qualitative methods" (Patton, 1980, p. 60).

Population and Sample

A sample of high-risk students was drawn within each of the participating colleges for the purpose of collecting qualitative data from which to derive sounder explanations of the contributors to the academic progress of those at academic risk. Random sampling techniques were precluded by the notion that the small number of subjects sought for this portion of the inquiry would necessarily reduce the ability to generalize results. Thus, accessibility became a more important criterion for selecting the subjects to be queried. Interviews were conducted with 16 students, including 4 from each college, who helped form the study's remedial group. At each of the four-year institutions, two resident students and two nonresident students were interviewed. All 16 subjects had completed a minimum of four semesters of college. High-risk students who were

retained for at least four semesters after initial entry to college in the fall of 1985 were presumed to have had adequate time to judge the relative effects of remedial programs and other variables on whatever degree of academic progress they enjoyed. To ensure accessibility, only students living within close proximity of their college of attendance were chosen to be interviewed.

The sources for remedial program descriptions within the four colleges included selected staff closely associated with each program designed to address the needs of high-risk students. To ensure accuracy when describing program operations, the administrator most closely aligned with the remedial program and an English instructor were queried at each institution taking part in the study. Where significant discrepancies existed in the data, additional staff were interviewed. They were selected from among a counselor, a reading instructor, and a mathematics instructor. The administrator chosen at each college to participate in this portion of the study recommended the remaining desirable informants.

Instrumentation

A highly focused interview was conducted to help determine what high-risk students within selected two- and four-year collegiate sectors regard as primary contributors

to their scholastic progress. The research questions framing this study helped guide the development of a measurement tool that included a relatively small number of pertinent questions (see Appendix C). In this way, qualitative data could be gathered from a larger sample, and studied in greater depth.

In addition, a separate interview guide was used to elicit descriptive information from selected staff within each institution regarding remedial program operations (see Appendix D). The descriptive categories of remedial/developmental education used in a survey by Roueche and Snow (1977) formed the underpinnings of this instrument. These categories included (a) context, (b) philosophy, (c) rationale, (d) placement of students, (e) organizational structure, (f) support services, (g) curriculum, (h) staffing, and (i) evaluation.

The items that shaped the interview instruments were open ended, allowing the respondents a framework for replying without leading them in a forced-choice direction.

Procedures

Essential to the gathering of qualitative data was an acknowledgement of the conditions governing participation in the study by the students and staff who consented to be interviewed. Therefore, an Informed Consent Document was

constructed to verify the terms of which subjects agreed to be questioned (see Appendix E). The research devices that facilitated the collection of qualitative data were field tested in the winter of 1987 at New River Community College in Dublin, Virginia. This procedure was followed to ensure greater question reliability and validity. Modifications to these instruments were effected to achieve improved measurement for the aims of this investigation.

The use of student interviews to identify variables contributing to the progress of those at academic risk was meant to enhance the quantitative data collected in the study. The interview guide that served as a vehicle for the collection of data from student informants was reshaped after the quantitative data were analyzed. This procedure permitted more incisive questions to be asked, as lines of inquiry suggested by the quantitative data analysis were pursued. The 16 student representatives of higher education's two- and four-year sectors were interviewed individually and privately. Each interview was conducted at the convenience of the student, on the campus at which he or she had been matriculating.

As a preliminary, letters of introduction were written by the administrators having close association with the remedial programs at the colleges attended by desirable

informants. Such letters were used to solicit the cooperation of students earmarked for inclusion in this portion of the inquiry. Shortly thereafter, these high-risk students received a follow-up letter wherein they were invited to become research subjects (see Appendix F). When necessary, the telephone also was used to obtain a sufficient response from prospective informants. The nature and purpose of the research were disclosed to all student and staff informants before interviews were initiated. The time required to complete each student interview did not exceed 30 minutes. A tape recorder was used to accurately preserve the individual perspectives of interviewees. The use of a tape recorder increased the accuracy of data collection and permitted complete attention to be devoted to the respondents.

The data used to provide "broad-brush" descriptors of the remedial programs within each pair of two- and four-year colleges were derived primarily through tape-recorded interviews with selected staff. The interview guide that gave focus to the collection of such data was distributed for the respondents' edification in advance of the personal interviews. Each interview required approximately 40 minutes. A secondary source of data relative to remedial program operations was available

institutional literature. College catalogs, handbooks, brochures, and sundry materials that illuminated the efforts of participant colleges to serve those unprepared for higher education were useful referents.

Data Analysis

The "soft" data used in this portion of the study were based on the perceptions of selected high-risk students relative to their learning experiences and on the insights of staff members at participant colleges regarding remedial program operations. The method of analysis employed with the qualitative data gathered from student informants is described in accordance with the research question that follows.

Question 4. What are the institutional contributors to educational progress as identified by high-risk students within the two- and four-year sectors of higher education?

Student interviews were categorized according to the two- and four-year collegiate sectors represented by the high-risk informants. The students with four-year affiliations were further identified by residence status. The raw data from the interviews were analyzed by positing a number of assertions through analytic induction after careful review of tape-recorded conversations. Evidence to support these assertions was obtained by searching the

recorded interviews for supportive quotations. However, evidence also was sought from the data to refute the assertions set forth. Assertions whose discrepant cases exceeded those that supported such declarations were not, therefore, justified by the data (Erickson, 1986). Thus, assertions were reformulated as the analysis proceeded so that all assertions made by the primary comparison groups were supported by available data.

The assertions verified by quotations from student informants were coded with the initials of respondents and the institutions that they represented. They were then grouped and filed under the rubric of the primary themes that they suggested, in accordance with the students' affiliation. Where assertions might properly have related to more than one theme or subject, they were sorted accordingly. Similar assertions, categorized thematically, were grouped closely together. (An example of the method for data analysis is provided in Appendix G.)

Groups of similar assertions that represented interactions between high-risk students and remedial programs, as well as other institutional variables that affected educational progress, were identified by label and used to generate discussion. The strongest assertions were

those supported by the most items of data and were the first to be discussed.

The intent of question 4 was to make the presumption of a remedial program effect more tenable by using a different form of data to permit alternative explanations of the chief contributors to the progress of high-risk students within the chosen two- and four-year sectors of higher education.

The analysis of the data obtained from staff informants for the purpose of describing the remedial programs at participating two- and four-year colleges also relied on the use of empirical assertions. This is to say, declarations made by staff members regarding program operations that found much support in the body of data, including available college literature, were viewed as accurate descriptors of the remedial programs.

Summary

This chapter offered a detailed description of the design that guided the execution of this research. The general population and the procedures for selecting those to participate in the study were described. The instruments that furnished the data for the study have been identified and discussed. Procedures followed in the

conduct of the investigation have been elucidated, including the methods of data collection. The propriety of employing certain statistical techniques in data analysis was argued, and strategies for the analysis of qualitative data were presented.

Chapter 4

Findings

The results of the data analysis are presented in this chapter. The organizers used to report the findings include the summary descriptive data for the population and sample, the research questions put forth in chapter 1, and the descriptive categories of remedial practices at participating two- and four-year colleges.

In order to produce justifiable conclusions, it was necessary to minimize the many biases that could distort the results of this investigation. Because preferred techniques for controlling individual differences are impossible in a retrospective comparative analysis, an effort was made to establish the initial comparability of populations germane to this study by a thoughtful analysis of selected variables.

The research questions are grouped according to the type of data (i.e., quantitative or qualitative) used to resolve each query. Results of appropriate inferential statistical procedures and qualitative methods that address the questions are reported.

Differences of approach were sought among participant colleges to describe the remedial practices therein. By

highlighting program differences against a backdrop of shared ideologies, a more meaningful context for understanding selected institutional responses to high-risk students was created.

Descriptive Data--Population and Sample

The plausibility of the assumption that the institutions included in this study were comparable with respect to the type of students served was examined. Common classifying variables, including age, aptitude, race, and gender, were employed to assess the extent to which new students entering the respective colleges during the period under examination shared similar characteristics.

The profile of first-time freshmen at the chosen colleges in the fall of 1985 on the basis of the foregoing descriptors is presented in Table 1. When the age of new students at the four colleges was considered, a younger and more homogeneous cohort was found at Greentree. Closer inspection of the data revealed that all but 11 of the college's 768 new freshmen were full-time students. While the mean age of Greentree students was nearly 18, the larger number of part-time entrants at the remaining three institutions raised the age statistic, comparatively.

Table 1

Population Descriptors of First-Time Freshmen (Full- and Part-Time) at Selected Two- and Four-Year Colleges--Fall 1985 (N = 3,133)

	Two-year colleges				Four-year colleges			
Variable group	Brentwood (n = 747)		Bayberry (n = 636)		Greentree (n = 768)		Oak Valley (n = 982)	
Age[a] (M, SD)	24.33	10.88	23.13	9.48	17.85	0.74	23.73	10.83
ACT[b] (M, SD)	17.11	5.16	16.17	4.83	19.23	4.65	18.96	4.62
Race[c] (n, %)								
White	700	93.7	615	96.7	671	87.4	921	93.8
Nonwhite	47	6.3	21	3.3	97	12.6	61	6.2
Gender (n, %)								
Male	377	50.5	268	42.1	376	49.0	355	36.2
Female	370	49.5	368	57.9	392	51.0	627	63.8

[a]At four-year colleges, mean age values are based on 37% (Greentree) and 41% (Oak Valley) of enrolled students. A median value of 18 was recorded for the age variable at Greentree. Median and modal age values of 19 and 18, respectively, were registered for all remaining groups. [b]ACT = American College Test. Mean ACT composite scores are based on about one third of total students enrolled. [c]Nonwhite category includes Blacks, American Indians, Hispanics, Asians, and others.

However, these age distributions were quite comparable, with mean values approximating 23 at Bayberry and 24 at Brentwood and Oak Valley.

Further examination of Table 1 discloses that each pair of two- and four-year colleges was similar when ACT scores of the population scrutinized were compared. Somewhat higher and less variant scores, however, were found in the four-year college sector. Whereas mean ACT scores of 19 were representative of new freshmen in the four-year institutions, scores of 17 and 16 helped define the populations at Brentwood and Bayberry, respectively. Comparative data regarding the race and gender of this population of new pupils depict the four colleges as serving predominantly white students, while enrolling a somewhat comparable proportion of males and females. An aberration as relates to the gender variable, Oak Valley recorded nearly two females for each male among its group of entering freshmen.

Similar comparisons of the total sample at selected two- and four-year colleges appear in Table 2. The students constituting the four college groups were rather youthful, aged 18 on the average. Generally, subjects entering the pair of four-year colleges obtained higher and less variable ACT scores. On the average, a composite

Table 2

Descriptive Data for the Total Sample at Selected Two- and Four-Year Colleges (N = 622)

	Two-year colleges				Four-year colleges			
Variable group	Brentwood (n = 132)		Bayberry (n = 104)		Greentree (n = 202)		Oak Valley (n = 184)	
Age[a] (M, SD)								
Remedial	18.55	1.91	18.21	0.78	18.00	0.84	18.14	1.22
Nonremedial	18.33	1.70	18.27	2.86	17.74	0.52	18.04	1.06
Total	18.44	1.81	18.24	2.08	17.87	0.71	18.09	1.14
ACT[b] (M, SD)								
Remedial	12.12	2.60	12.12	2.65	13.56	2.35	13.53	2.39
Nonremedial	20.83	4.04	17.27	4.80	21.66	4.01	21.49	3.87
Total	16.48	5.53	14.70	4.64	17.61	5.22	17.51	5.12
Race[c] (n, %)								
Remedial								
White	55	83.3	48	92.3	60	59.4	85	92.4
Nonwhite	11	16.7	4	7.7	41	40.6	7	7.6
Nonremedial								
White	64	97.0	52	100.0	94	93.1	91	98.9
Nonwhite	2	3.0	0	0.0	7	6.9	1	1.1
Total								
White	119	90.2	100	96.2	154	76.2	176	95.7
Nonwhite	13	9.8	4	3.8	48	23.8	8	4.3
Gender (n, %)								
Remedial								
Male	38	57.6	34	65.4	44	43.6	36	39.1
Female	28	42.4	18	34.6	57	56.4	56	60.9
Nonremedial								
Male	33	50.0	18	34.6	51	50.5	31	33.7
Female	33	50.0	34	65.4	50	49.5	61	66.3
Total								
Male	71	53.8	52	50.0	95	47.0	67	36.4
Female	61	46.2	52	50.0	107	53.0	117	63.6

[a]The median and modal age values of 18 were recorded for all groups. [b]ACT = American College Test. (Data were based on composite scores.) [c]Nonwhite category includes Blacks, American Indians, Hispanics, Asians, and others.

score of 18 was earned by subjects attending the four-year colleges, while a score of 16 more accurately represented the scholastic aptitude of those in the community colleges. More specifically, the total sample of students at Greentree, Oak Valley, Brentwood, and Bayberry obtained mean scores of 17.6, 17.5, 16.5, and 14.7, respectively. Subjects at academic risk who formed the remedial group in the community college sector produced an average ACT score of 12, while their high-risk counterparts in four-year colleges earned a mean score of 14. Those attending separate institutions within each sector of higher education obtained virtually identical mean scores. With few exceptions, ACT scores showed considerable stability for all groups across each pair of two- and four-year institutions. Students with unimpressive ACT scores at Bayberry were more likely than peers at the remaining three colleges to avoid the remedial program. The lower mean score of nonremedial group members is a testament to that fact.

The criterion for the identification of significant differences among selected colleges on the four control variables (see Table 2) was the .01 level of statistical significance. Using a one-way ANOVA, significant differences were found in the ACT scores of the four groups

composing the total sample [$F(3, 618) = 8.75$, $p < .001$]. A post hoc Scheffé's test found that the mean scores of students attending Greentree and Oak Valley were significantly higher than the average score of students at Bayberry. The four remedial groups also differed significantly on the ACT variable [$F(3, 307) = 8.20$, $p < .001$]. Using a post hoc Scheffé's procedure, it was discovered that ACT scores for high-risk students at the pair of community colleges were significantly lower than those of remedial peers at the pair of four-year institutions.

Table 2 further reveals that the total sample of new freshmen was principally white, with slightly more females matriculating than males. The largest proportion of nonwhite subjects was found at Greentree. Nearly 41% (n = 41) of the high-risk students in that college's sample were nonwhite students seeking to correct their academic deficiencies. On the other hand, the share of nonwhite students included among the remedial groups at Brentwood, Bayberry, and Oak Valley was 17% (n = 11), 8% (n = 4), and 8% (n = 7), respectively. A chi-square test was used to determine that there was a relationship between the college of attendance and race of remedial group members [$X^2(3)$ =

40.58, $p < .001$]. However, this was a relatively weak association (corrected phi coefficient = .36).

Using a chi-square analysis, a relationship between college of attendance and gender of those forming the remedial groups also was discovered [$X^2(3) = 12.31$, $p < .01$]. This was not, however, a robust association (corrected phi coefficient = .20). While the majority of subjects requiring remediation in the two-year college sector were males (61%), the four-year institutions were helping a larger proportion of females (59%) to remedy their academic deficiencies (see Table 2). The largest percentage of female subjects composing the remedial and nonremedial groups was at Oak Valley.

Tables H-1 and H-2 of Appendix H contain the summary results of several one-way ANOVAs and chi-square analyses employed to identify significant differences among the groups forming the total sample at selected colleges with respect to age, aptitude, race, and gender.

Descriptive data for the aforementioned variables in the comparison groups central to the study's design are introduced in Table 3. The age distribution of subjects with resident and nonresident status who attended chosen two- and four-year colleges portrayed this group of matriculants as uniformly young. Such was the case for all

Table 3

Descriptive Data for the Total Sample by Comparison Group (N = 622)

Variable group	Student affiliation					
	Two-year nonresidential (n = 236)		Four-year nonresidential (n = 130)		Four-year residential (n = 256)	
Age[a] (M, SD)						
Remedial	18.40	1.53	18.20	1.34	18.00	0.84
Nonremedial	18.31	2.27	18.11	1.20	17.77	0.54
ACT[b] (M, SD)						
Remedial	12.12	2.61	13.55	2.40	13.55	2.35
Nonremedial	19.26	4.72	21.05	3.97	21.85	3.90
Race[c] (n, %)						
Remedial						
White	103	87.3	62	95.4	83	64.8
Nonwhite	15	12.7	3	4.6	45	35.2
Nonremedial						
White	116	98.3	65	100.0	120	93.8
Nonwhite	2	1.7	0	0.0	8	6.3
Gender (n, %)						
Remedial						
Male	72	61.0	26	40.0	54	42.2
Female	46	39.0	39	60.0	74	57.8
Nonremedial						
Male	51	43.2	25	38.5	57	44.5
Female	67	56.8	40	61.5	71	55.5

[a]The median and modal age values of 18 were recorded for all groups. [b]ACT = American College Test. (Data were based on composite scores.) [c]Nonwhite category includes Blacks, American Indians, Hispanics, Asians, and others.

groups, encompassing each dimension of student affiliation. An average age of 18 was recorded for all clusters, regardless of the preferred measure of central tendency.

Continued scrutiny of Table 3 affirms that subjects having four-year resident and nonresident status were rather comparable with respect to college aptitude. Such was the case when comparisons of either the remedial or nonremedial groups were made. However, the ACT scores of subjects attending community colleges were somewhat lower and more variable. For subjects with remedial group membership, average scores ranged from 12 in the two-year sector to 14 for resident and nonresident students at selected four-year institutions. Using an alpha level of .01 in this segment of the study, a one-way ANOVA indicated that significant differences existed among the mean ACT scores of the three remedial groups with distinctive student affiliations [$F(2, 308) = 12.34$, $p < .001$]. A post hoc Scheffé's test determined that the scores of underprepared four-year resident and nonresident students were significantly higher than those of high-risk peers attending community colleges. The likely impact of such differences as relates to the present study is attenuated, however, by the knowledge that this variable was used as a covariate in an analysis of covariance design. Nonremedial

students with two-year nonresident, four-year nonresident, and four-year resident affiliations earned mean scores of 19, 21, and 22, respectively.

Table 3 also shows that when the ACT scores of students requiring remediation were compared with those of exempted counterparts across each level of the affiliation factor, substantial differences abounded. This discovery was not unanticipated, since it was these differences that helped define the two groups in accordance with the chosen research design.

Moreover, Table 3 reveals that the total sample of new entrants was comprised of selected comparison groups whose members were fundamentally white and female. There were, however, a few anomalies in the data that deserve mention. For example, a comparatively larger proportion of nonwhite students requiring remediation were residents of four-year colleges. Whereas 35% (n = 45) of the four-year resident affiliates with remedial group membership were nonwhite students, 13% (n = 15) and 5% (n = 3) of the high-risk subjects having two- and four-year nonresident affiliations, respectively, were nonwhite students. Further, while mostly females sought to remedy their academic deficiencies in the four-year sector, their underprepared counterparts in community colleges were

primarily males. Exactly 61% of the high-risk students who sought to strengthen their basic skills in community colleges were males. An almost equivalent proportion of underprepared resident and nonresident students composing the remedial groups at chosen four-year colleges were females.

A chi-square analysis indicated that a relationship existed between group membership and race for the four-year resident students depicted in Table 3 [$X^2(1) = 32.57$, $p < .001$]. While the largest proportion of nonwhite students sought remediation as residents in four-year colleges, the existent relationship was still modest (phi coefficient = .36). With respect to the three remedial groups, there was a relationship between affiliation and race [$X^2(2) = 31.59$, $p < .001$]. This was, however, another weak association (corrected phi coefficient = .32). A relationship also was found between the affiliation and gender of high-risk students forming the three remedial groups [$X^2(2) = 11.30$, $p < .005$]. Yet, the corrected phi coefficient was only .19.

The summary results of the statistical analyses used to determine the comparability of subjects composing the primary comparison groups on common control variables

(i.e., age, aptitude, race, and gender) are presented in Tables H-3 through H-6 of Appendix H.

In general, the assumption that the groups selected for this study came from intrinsically similar populations was confirmed. While statistically significant differences occasionally were found, in most instances those differences were judged as having little meaningful significance to this investigation. Moreover, such statistical analyses were completed with the understanding that very small differences often can be statistically significant with the large sample used (N = 622). Additionally, the several analyses conducted make it possible to achieve statistical significance on at least some of them by chance alone.

Findings Based on Quantitative Data

The first three research questions presented in chapter 1 were answered by an analysis of the quantitative data gathered in this study. Much of the data used to address these questions are displayed in tables in this chapter. However, summary results of the selected inferential statistical procedures employed to answer such questions are presented in Tables I-1 through I-10 of Appendix I.

Question 1: What is the relationship between type of student (i.e., high-risk student in remedial program vs. regular student) and type of affiliation (i.e., nonresident at two-year college, nonresident at four-year college, and resident at four-year college) with respect to (a) academic achievement in mainstream college courses at the end of four semesters and (b) persistence, in terms of continued enrollment over four semesters?

College credits earned. The mean college credits earned as a function of group and student affiliation are reported in Table 4. When the college credits earned over four semesters were contrasted across remedial and nonremedial groups having two-year nonresident, four-year nonresident, and four-year resident affiliations, the 2 x 3 ANOVA failed to disclose a significant Group x Affiliation interaction [$F(2, 388) = 0.16$, $p > .05$]. In terms of this specific measure of academic achievement, the extent to which high-risk students lagged behind regular students did not vary as a function of affiliation. That is to say, the same credit differential favoring the nonremedial or regular group existed across the three dimensions of student affiliation.

The Group x Affiliation ANOVA produced a significant main effect for the grouping factor with respect to the

Table 4

Mean College Credits as a Function of Group and Student Affiliation (N = 394)

	Student Affiliation			
Group	Two-year nonresidential	Four-year nonresidential	Four-year residential	M
Remedial	46.15 (n = 65)	43.82 (n = 33)	47.73 (n = 82)	46.44
Nonremedial	58.74 (n = 85)	55.40 (n = 43)	59.00 (n = 86)	58.17
M	53.29	50.37	53.50	

college credits earned after four semesters [$F(1, 388) = 122.89$, $p < .001$]. As shown in Table 4, the mean college credits accrued over the study period by the remediated students was 46, while nonremedial or regular students earned an average of 58 credits over the same four-semester time frame. Moreover, a significant main effect for affiliation also was evident [$F(2, 388) = 3.39$, $p < .05$]. On the average, two-year nonresident, four-year nonresident, and four-year resident students collected 53, 50, and 54 college credits, respectively (see Table 4). A post hoc Fisher's LSD procedure found a significant difference between the college credits earned by nonresidents and residents of four-year colleges.

GPA attained. The mean GPAs achieved as a function of group and student affiliation are presented in Table 5. Using the dependent measure of GPA attained after four semesters, the two-way ANOVA failed to find a significant Group x Affiliation interaction [$F(2, 388) = 0.33$, $p > .05$]. Across the three dimensions of student affiliation, comparable differences existed between the GPAs of remediated students and those exempted from remediation. In each case, the differences favored the nonremedial or regular group.

Table 5

Mean GPAs as a Function of Group and Student Affiliation (N = 394)

	Student Affiliation			
Group	Two-year nonresidential	Four-year nonresidential	Four-year residential	M
Remedial	2.51 (n = 65)	2.20 (n = 33)	2.22 (n = 82)	2.32
Nonremedial	2.98 (n = 85)	2.78 (n = 43)	2.68 (n = 86)	2.82
M	2.78	2.53	2.45	

Note. GPA = Cumulative Grade Point Average.

As before, a significant main effect for the grouping factor was found with GPA as the measure of academic achievement [$F(1, 388) = 85.63$, $p < .001$]. Table 5 indicates that the mean GPA attained by remediated students after four semesters was 2.3, while regular students earned a mean GPA of 2.8 over the same time interval. A significant main effect for affiliation also was revealed [$F(2, 388) = 13.38$, $p < .001$]. On the average, two-year nonresident, four-year nonresident, and four-year resident students earned GPAs of 2.8, 2.5, and 2.5, respectively (see Table 5). A post hoc Scheffé's test revealed that the mean GPA of two-year nonresident students was significantly different from that of students with four-year nonresident and four-year resident affiliations.

Persistence. Using a chi-square analysis, a relationship was discovered between persistence, in terms of continued enrollment over four semesters, and group membership for two-year nonresident students [$X^2(1) = 7.32$, $p < .01$]. However, this was a relatively weak relationship (phi coefficient = .18). As shown in Table 6, more nonremedial students persisted over four semesters than did remedial students. While 85 (72%) of the students exempted from remediation in the two-year sector remained in school,

Table 6

2 x 2 Contingency Table of Group by Persistence for Two-Year Nonresident Students (N = 236)

	Persistence		
Group	Yes	No	Total
Remedial	65 (55.1)[a] (43.3)[b]	53 (44.9) (61.6)	118 (50.0)
Nonremedial	85 (72.0) (56.7)	33 (28.0) (38.4)	118 (50.0)
Column Total	150 (63.6)	86 (36.4)	236 (100.0)

[a]Row percentage. [b]Column percentage.

65 (55%) of the remedial group students persisted over the designated time frame.

Chi-square tests failed to find any significant relationships between persistence and group membership for four-year nonresident and four-year resident students [$X^2(1) = 3.17$, $p > .05$; and $X^2(1) = 0.28$, $p > .05$, respectively]. That is to say, the persistence rates of high-risk students with the foregoing affiliations did not differ substantially from those of their exempted counterparts. Overall, 76 (58%) of the four-year nonresident students and 168 (66%) of the four-year resident students remained enrolled for four semesters.

Question 2: Do high-risk students with distinct affiliations (i.e., nonresidents at two-year colleges, nonresidents at four-year colleges, and residents at four-year colleges) differ with respect to (a) academic achievement in mainstream college courses at the end of four semesters and (b) persistence, in terms of continued enrollment over four semesters?

College credits earned. The means and standard deviations of the college credits and ACT scores earned by high-risk students with different affiliations appear in Table 7. With ACT score as the covariate, a one-way ANCOVA failed to find a significant main effect for student

Table 7

Means, Adjusted Means, and Standard Deviations of ACT Scores and College Credits for High-Risk Students by Student Affiliation (N = 180)

				College credits		
		ACT		Obtained		Adjusted
Student affiliation	n	M	SD	M	SD	M
Two-year nonresident	65	12.02	2.82	46.15	12.97	47.76
Four-year nonresident	33	13.48	2.44	43.82	13.67	43.21
Four-year resident	82	13.77	2.22	47.73	9.01	46.69

Note. ACT = American College Test. (Data were based on composite scores.)

affiliation when comparisons were made of the mean college credits earned after four semesters by the three groups of high-risk students [$F(2, 176), = 1.91, p > .05$]. After adjusting for between-group differences in college aptitude, significant differences were not found among the college credits earned by high-risk students with two-year nonresident, four-year nonresident, and four-year resident affiliations.

GPA attained. A summary of the means and standard deviations of the GPAs earned by high-risk students with distinct affiliations is reported in Table 8. A one-way ANOVA found a significant main effect for student affiliation, using GPA as the dependent variable [$F(2, 177), = 7.69, p < .001$]. A post hoc Scheffé's procedure revealed that high-risk students who commuted to community colleges earned significantly higher GPAs than remediated nonresident and resident students at four-year institutions. Table 8 indicates that the mean GPAs were 2.5, 2.2, and 2.2 for nonresidents at two-year colleges, nonresidents at four-year colleges, and residents at four-year colleges, respectively.

Persistence. Employing a chi-square test of significance, there was no apparent relationship between the affiliation of high-risk students and persistence over

Table 8

Means and Standard Deviations of GPAs for High-Risk Students by Student Affiliation (N = 180)

	Student affiliation								
	Two-year nonresidential			Four-year nonresidential			Four-year residential		
Variable	M	SD	n	M	SD	n	M	SD	n
GPA	2.51	0.53	65	2.20	0.60	33	2.22	0.38	82

Note. GPA = Cumulative Grade Point Average.

four semesters [$X^2(2) = 3.73$, $p > .05$]. Overall, 180 (58%) of the high-risk students who completed remedial coursework persisted over the criterion period. Although no statistically significant relationship was evident, there did appear to be a slight edge for four-year resident students, 82 (64%) of whom remained enrolled over four semesters.

Question 3: Does the remedial approach at any one institution appear to contribute unusually to student progress?

College credits earned. Table 9 presents the means and standard deviations of the college credits and ACT scores earned by high-risk students attending separate colleges. A one-way ANCOVA, using ACT score as the covariate, revealed no significant main effect for the college factor when comparisons were made of the college credits accrued over four semesters by the four groups of high-risk students [$F(3, 175) = 1.96$, $p > .05$]. The high-risk students who completed remedial coursework at Brentwood Community College, Bayberry Community College, Greentree State University, and Oak Valley College did not differ significantly with respect to college credits earned after four semesters, based on adjusted group means.

Table 9

Means, Adjusted Means, and Standard Deviations of ACT Scores and College Credits for High-Risk Students by College (N = 180)

				College credits		
		ACT		Obtained		Adjusted
College	n	M	SD	M	SD	M
Two-year						
Brentwood	36	11.64	2.82	44.03	13.58	46.17
Bayberry	29	12.48	2.80	48.79	11.88	49.68
Four-year						
Greentree	58	13.69	2.36	48.29	8.76	47.39
Oak Valley	57	13.68	2.21	44.89	12.11	44.00

Note. ACT = American College Test. (Data were based on composite scores.)

GPA attained. The group means and standard deviations of the GPAs attained by high-risk students attending separate colleges are included in Table 10. When the GPAs attained after four semesters by the high-risk students at participant colleges were subjected to a one-way ANOVA, a significant main effect for college was found [$F(3, 176) = 5.46$, $p < .005$]. While a mean GPA of 2.5 was earned by remediated students at each of the community colleges--Brentwood and Bayberry--a mean of 2.2 was obtained by comparable underprepared students at Greentree State University and Oak Valley College (see Table 10). A post hoc Fisher's LSD test found that, with respect to GPA, high-risk students at the pair of community colleges differed significantly from their underprepared counterparts at the pair of four-year institutions included in this study. However, the two community college groups did not differ from each other on this measure of academic achievement.

Persistence. A chi-square analysis failed to disclose a significant relationship between the persistence of high-risk students over four semesters and college attended [$X^2(3) = 1.03$, $p > .05$]. As a whole, 180 (58%) of the high-risk students who received remedial assistance at participating institutions remained enrolled over four

Table 10

Means and Standard Deviations of GPAs for High-Risk Students by College (N = 180)

	Two-year colleges						Four-year colleges					
	Brentwood			Bayberry			Greentree			Oak Valley		
Variable	M	SD	n	M	SD	n	M	SD	n	M	SD	n
GPA	2.47	0.55	36	2.54	0.52	29	2.24	0.42	58	2.17	0.49	57

Note. GPA = Cumulative Grade Point Average.

semesters. Still, the persistence rate of students requiring remediation in this investigation was independent of the college they attended.

Inherent in question 3 was the notion that an institution's remedial approach may have a differential effect on the progress of high-risk students, depending on their residence status. Accordingly, mean comparisons for the academic achievement variables representing the progress of four-year resident and nonresident students are reported in Table 11.

College credits earned. As shown in Table 11, t tests revealed no significant differences in the college credits earned after four semesters by high-risk resident and nonresident students at Greentree State University and Oak Valley College [$t(56) = 0.64$, $p > .05$; and $t(55) = 1.12$, $p > .05$, respectively].

GPA attained. As indicated in Table 11, t tests revealed no significant differences in the GPAs earned at the end of the criterion period by high-risk resident and nonresident students at Greentree State University and Oak Valley College [$t(9) = 0.48$, $p > .05$; and $t(38) = -0.55$, $p > .05$, respectively].

Table 11

Comparison of Mean College Credits and GPAs Earned by High-Risk Resident and Nonresident Students at Four-Year Colleges (N = 115)

	Resident students			Nonresident students			
Variable	M	SD	n	M	SD	n	t
	Greentree State University (n = 58)						
College credits	48.61	8.29	49	46.56	11.41	9	0.64
GPA	2.26	0.36	49	2.16	0.66	9	0.48
	Oak Valley College (n = 57)						
College credits	46.42	9.98	33	42.79	14.52	24	1.12
GPA	2.14	0.41	33	2.22	0.59	24	-0.55

Note. GPA = Cumulative Grade Point Average.

Remediated resident and nonresident students did not differ with respect to academic achievement at the end of four semesters at participating four-year institutions.

Persistence. Using chi-square analyses, statistically significant relationships were not evident between the residence status of high-risk students and persistence over four semesters at Greentree State University and Oak Valley College [$X^2(1) = 2.30$, $p > .05$; and $X^2(1) = 1.97$, $p > .05$, respectively]. Overall, 58 (57%) of the remediated students at Greentree State University persisted over the criterion period, while 57 (62%) of those at Oak Valley College remained enrolled over four semesters. Although significant relationships were not discovered, a slight advantage was maintained by high-risk residents over nonresidents at each of the four-year institutions. At Greentree State University, 49 (61%) of the high-risk resident students persisted to criterion, while 33 (69%) of the high-risk residents remained enrolled over four semesters at Oak Valley College.

In summary, there was little evidence to support the notion that the remedial approach adopted by any one of the participant institutions contributed unusually to the progress of high-risk students. That is to say, based on the selected postprogram measures of academic achievement

and persistence, the apparent superiority of any one remedial approach could not be established when comparisons were made with comparable high-risk populations at other colleges. Further, the remedial program effect at participating four-year institutions was apparently independent of residence status, using the same measures of student progress.

Findings Based on Qualitative Data

The final research question introduced in chapter 1 was answered by a thoughtful analysis of the qualitative data collected from the 16 student informants in this study. The plausibility of that analysis was demonstrated by uncovering general patterns within the data whose richness varied according to the volume of confirming evidence available to support emergent variables as important contributors to the progress of high-risk students.

Question 4: What are the institutional contributors to educational progress as identified by high-risk students within the two- and four-year sectors of higher education?

A summary of the major contributors to academic progress as perceived by high-risk students attending two- and four-year colleges is presented in Table 12. The

Table 12

Primary Institutional Contributors to Academic Progress as Perceived by High-Risk Students in Two- and Four-Year Collegiate Sectors (N = 16)

Factor	Two-year sector (n = 8)	Four-year sector (n = 8)
Attention from instructors	(1)	(2)
Attitudes of instructors/staff	(2)	(1)
Remedial education program	(3)	(3)
College environment	(4)	(5)
Class size	(5)	(7)
Peer relationships	(6)	(4)
College curriculum	(7)	(6)

Note. Factors influencing students' progress are ordered according to the amount of confirming evidence gathered where (1) equals the most and (7) equals the least.

institutional variables judged to have the greatest impact on the progress of high-risk students in the two- and four-year collegiate sectors were (a) attention from instructors, (b) attitudes of instructors and staff, (c) remedial education program, (d) college environment, (e) class size, (f) peer relationships, and (g) college curriculum.

Attention from instructors. The considerable personal attention from community college instructors was identified by students in the two-year sector as an eminent contributor to their academic progress. Those at academic risk in the study's community colleges--Brentwood and Bayberry--did not wish to be treated as "a number," preferring instead that attention be focused on their specific pattern of weaknesses. One student felt gratified that she was attending a college where teachers could spend more time with those enrolled. Another student credited her teachers with being able to work "person to person" with her. Moreover, another matriculant cited the added time that her instructors gave her as a distinguishing feature between two- and four-year colleges. The evidence to warrant the assertion that personal attention from instructors was an important contributor to the progress of high-risk students in the community college sector was

imposing. The breadth of evidence included comments similar to those cited above from every student informant.

Underprepared students matriculating at selected four-year institutions also declared that the attention to their academic struggles by instructors was an important contributor to their progress. It was significant to the four-year student informants that instructors explained things in terms that they could understand. One student referred to the good rapport established between his instructors and students. He asserted that instructors found time for students notwithstanding their publishing and other assorted responsibilities. Another student reported that her instructors "got more personal with her." A peer affirmed that he was able to approach his instructors for help in a "one-on-one" fashion. The evidence to confirm the importance of this factor to the progress of high-risk students in the pair of four-year colleges was gathered from several informants.

Attitudes of instructors and staff. The nurturing attitudes of instructors and staff in two-year colleges were considered by high-risk students to be important factors contributing to their scholastic progress. Those students who were unprepared for higher education's rigors when first admitted to school perceived the charitable

attitudes of community college staff as evidence that they were a worthy investment. One student admitted that the encouragment she received from instructors was an important factor in her decision to remain in school. An underprepared peer pointed to how caring his instructors were and asserted that their willingness to take an interest in him was an important contributor to his progress. Another student argued that if she had "trouble" or missed a class, the instructors would really try to help. The majority of student informants in the two-year collegiate sector identified this attitudinal variable as an important factor contributing to their academic progress.

The solicitous attitudes of faculty and staff also were identified by high-risk students in the selected four-year sector of higher education as an important factor that contributed to their scholastic progress. One underprepared student stated that her instructors, although demanding, were always willing to give assistance when needed. A peer referred to the staff at his institution as "all anyone could ask." He confided that they were quite willing to help students with "things." Another affirmed that his instructors tried to help as much as they could and often "went out of their way." A majority of

informants attending Greentree State University and Oak Valley College perceived the staff as supportive of them and their efforts to succeed.

Remedial education program. The remedial education programs operating in the selected two-year sector of higher education were viewed by a majority of high-risk students as important elements that aided academic progress. One informant stated that his institution's remedial education program helped him "brush up" on his skills because he had fallen so far behind at college entry. Another student declared that he learned to read "closely," taking in everything as he read. An at-risk peer credited the remedial program with making him aware of things that he had forgotten but was able to "relearn." Similar evidence of how the remedial education program strengthened students' basic skills was gathered from every community college informant.

While the remedial education programs in the study's community colleges contributed to the progress of students at risk largely by strengthening their basic educational skills, a majority of two-year informants also asserted, with rather strong conviction, that remedial coursework raised their confidence and prepared them for the stern test offered by the mainstream curriculum. Some students

spoke of how the remedial program proved that success was attainable and provided the confidence to attempt other things. Another matriculant felt that what he learned in his remedial coursework helped him prepare for "higher" classes, while a peer confirmed that the improvement in his basic skills "showed up" in later courses.

Although the same preponderance of evidence was not present to support the assertion, remedial education programs offered by selected two-year colleges also contributed to the progress of students by fostering a sense of "community." For example, one student declared that he became close with others in class, which helped him move forward at the college.

High-risk students attending participant community colleges usually completed remedial coursework at assigned times during the day. Still, the remedial education programs at two-year institutions were described by underprepared students as allowing maximum flexibility with respect to course completion. While one student spoke of attending an alternate section of her teacher's class when she was unable to appear at the assigned time, another lauded the opportunity to complete the coursework at his chosen pace.

It was quite clear that students at academic risk in the two-year collegiate sector failed to take maximum advantage of the total system of services, limited though it was, that bolstered the remedial education programs at their respective institutions. Of the instructional supports available to high-risk students enrolled at Brentwood and Bayberry Community Colleges, tutorial services were enlisted most often. Several students reported using such assistance.

The programmatic efforts of selected four-year institutions to address the needs of students at academic risk were noted by several high-risk informants as major contributors to their educational progress. Underprepared students attending Greentree State University and Oak Valley College declared that the learning assistance programs at their institutions helped strengthen their basic educational skills. While one student contended that his background had been "refreshed," another related how she learned to comprehend and remember written material more successfully. Moreover, a peer confirmed that the remedial program improved her writing skills and enabled her to develop more effective study techniques.

Several four-year students extolled their colleges' remedial education programs for preparing them for the

rigors of the regular curriculum. The ability to "read between the lines" and achieve greater depth of understanding in mainstream courses was attributed by one student to his experience in the remedial program. Another student insisted that the success he enjoyed in a surveying course and a research methods course was largely a result of the opportunity to refine his algebra skills in his college's remedial education program. Yet, unlike their high-risk counterparts in the two-year collegiate sector, remediated students at four-year institutions did not indicate that their learning assistance programs had an uplifting effect on their confidence or self-esteem. In fact, there was a modicum of evidence that the opposite was true in the chosen four-year sector. That is to say, a few students felt "insulted," believing that their self-esteem had been lowered as a result of program participation.

Remedial coursework was completed by students at selected four-year institutions, primarily at designated hours during the day. The body of evidence confirmed that underprepared students enrolled at Greentree State University and Oak Valley College also failed to capitalize on the total system of services that supported the remedial coursework. One student, for example, stated that he didn't take total advantage of all learning supports

because he was confident that he could do the work on his own. Several students affirmed that, among the auxiliary options, the tutorial services provided by peers and staff were used most often in concert with the remedial coursework in the chosen four-year collegiate sector.

College environment. The small two-year college environment was thought by underprepared students to be a key ingredient in the progress they demonstrated while matriculating at the community college. The familiarity or intimacy that pervades the two-year campus aided their struggle to achieve and persist in college. One student described the atmosphere as "very easy going." He confessed to knowing many other students, which made him feel more comfortable. Another student declared that because his college was small, it was very "personal." Several students attending participant community colleges identified the small environment as a contributing factor to their educational progress.

High-risk students within the chosen four-year sector of higher education described the small and friendly atmosphere of their institutions as having a positive impact on their ability to move closer to their educational goals. The evidence to confirm this assertion was offered by a few students. One learner construed that his small

school gave him a feeling of "hominess," which aided his progress. An underprepared peer further elaborated on the advantages of attending a small college. He felt that being in a relaxed atmosphere where he knew everyone was a definite asset with respect to his academic progress.

Class size. The small class size that characterized the study's two-year colleges was an important institutional variable that contributed to the progress of those having experienced limited academic success. The increased ability of instructors to use their pedagogical skills to address assorted educational problems and learning styles was a stimulant to students' progress. While one student felt fortunate that his classes were not of "gigantic" size, a peer claimed that it was advantageous to have small classes because he was not "swallowed up" by other students as might be the case at a four-year college. Several students matriculating at the pair of community colleges cited the small class size as an important factor contributing to their educational progress.

The relatively small class size that was characteristic of the selected four-year institutions also was regarded as a factor that helped students advance toward their goal of a college degree. A few high-risk students affirmed that sharing a class with a reasonably

small number of peers resulted in a more effective teacher-student relationship. From that association apparently emerged increased cognitive growth.

Peer relationships. Although the weight of evidence was not as great as that behind other perceived contributors to the progress of high-risk students, the nearness of friends in the two-year college environment remained a contributing factor to students' success. One community college student declared that the presence of friends "kept him going." He stated that entering an environment that included familiar peers was a first step to feeling "at home." An underprepared peer believed that the presence of friends and the amicable competition that ensued had a positive impact on his GPA. Several students referred to this factor as important to their educational progress.

The establishment of peer relationships was cited by students at academic risk in four-year colleges as an important contributor to their academic progress. The importance of being with peers for the purpose of studying was emphasized by one student. Another declared that he and his friends "helped each other out." The evidence to confirm the significance of this factor relative to

students' educational progress was gathered from a few informants, most of whom resided on campus.

College curriculum. The diverse community college curriculum was perceived as an important institutional factor that contributed to the scholastic progress of high-risk students. The evidentiary warrant was given by a few students attending participant two-year colleges. One student praised his college for offering a "wide span" of different subjects. An underprepared peer declared that his institution's curriculum was equal to that at four-year colleges, for it offered many choices.

The four-year college curriculum was depicted by high-risk students as a contributing factor to the academic progress they made while matriculating at chosen institutions. Although the aggregate evidence to support the importance of this factor was not as hardy as that used to confirm the significance of other contributors, it was substantial enough to warrant the assertion. A few students expressed their approval of the statement that their institution was attempting to make through its curriculum. One student spoke of how her coursework helped her advance toward her goal. Another declared that her courses were good, particularly those in her specialty area.

Inherent in question 4 and having emerged as important evidence to this study were the principal factors that affected the GPAs of high-risk students and the effect of residence status on the persistence of those within selected two- and four-year collegiate sectors. Consequently, the related assertions that came forth from the interview data were used to develop the sections that follow.

Factors affecting students' GPAs. The leading contributors to educational progress, as identified by high-risk students within higher education's two- and four-year sectors, also were the factors that significantly affected students' GPAs. An amount of evidence equal to that used to confirm the chief contributors to students' progress also was gathered to convincingly establish such factors as having a significant effect on a specific measure of progress--GPA.

The following institutional variables were supported by the broadest evidentiary base as those having a meaningful impact on the grades of high-risk students within two- and four-year collegiate sectors: (a) attention from instructors, (b) attitudes of instructors and staff, and (c) remedial education program. One student stated that she didn't want to disappoint her instructors

who gave her considerable personal attention. Another reported that his instructors had the greatest effect on his grades because they "cared." A peer believed that the review offered by the remedial program had a positive effect on his grades.

Effect of residence status on persistence behavior. Students at academic risk who commuted to two-and four-year colleges perceived that living with parents allowed them to become the beneficiaries of timely encouragement and also provided them with an effective environment for studying. Such factors had a positive effect on the ability of off-campus residents to remain in school. One student reported that his parents pushed him to continue in college, while another confirmed that he could study in quiet by living at home. The majority of student informants who commuted to two- and four-year colleges considered such products of their residence status to be important contributors to their ability to persist in college.

On the other hand, the inability of off-campus residents to develop a strong identification with chosen two-and four-year colleges adversely affected their enrollment patterns. Several students reported this to be the case. An underprepared pupil who traveled to a

two-year college referred to his commuting behavior as "sort of like an eight-hour job." A peer who commuted to a four-year institution admitted that he was "never in touch with school."

While the act of commuting did not jeopardize the likelihood of community college students to remain enrolled, it placed students at four-year colleges at risk. Evidence to confirm such assertions was provided by a majority of the nonresident informants in both collegiate sectors. One community college student declared that he didn't mind the drive--it had no bearing on his ablility to remain in school. A nonresident peer attending a four-year college, however, resented having to drive "all the way" to campus and confessed her reluctance to make the commute in inclement weather.

The persistence behavior of high-risk students who lived on selected four-year campuses was enhanced by their becoming active in school, which resulted in closer institutional attachments. One student stated that being on campus allowed him to remain "in the mainstream." Another verified that living on campus permitted him to "get into school." He asserted that he wanted to remain in college because he liked it.

The sense of fraternalism that developed among resident students was a primary factor affecting their continued enrollment in school. A resident student at Greentree State University insisted that he was continually reminded of his chief purpose in college by the studious behavior of peers. An underprepared counterpart at Oak Valley College referred to the "family effect" that was experienced by resident students. The evidence to confirm the importance of this variable to the persistence of high-risk students was obtained from every on-campus informant.

Summary

High-risk students in higher education's two- and four-year sectors shared similar perceptions of the most meaningful contributors to their educational progress. The breadth of evidence provided by underprepared students matriculating at two- and four-year institutions established most convincingly the following factors as important contributors to educational progress: (a) attention from instructors, (b) attitudes of instructors and staff, and (c) remedial education program. Student-centered faculty and staff were observed to be key ingredients in building a climate of success for high-risk students in two- and four-year colleges. The remedial

functions within selected two- and four-year collegiate sectors also were recognized for their role in bringing opportunity closer to those who had struggled in past educational environments. However, while the redemptive models in both collegiate sectors were valued primarily for their skill building and preparation for the mainstream curriculum, only the community college programs appeared to raise students' confidence. Students at two- and four-year institutions used the remedial programs and related services in similar fashion.

While less confirming evidence was available to support their importance relative to students' progress, other institutional factors that helped high-risk students move closer to their chosen goals included (a) college environment, (b) class size, (c) peer relationships, and (d) college curriculum. The small college environment and class size that helped characterize participant two- and four-year institutions permitted the attendant needs of underprepared students to be more fully addressed. The opportunity to establish friendships with peers increased students' satisfaction with the college environment. For many community college students, those friendships were simply preserved from earlier days. Moreover, the choices offered by the community college curriculum and the careful

program construction in the four-year sector helped high-risk students move forward in their quest for a college degree.

The college factors most frequently identified as having the greatest effect on the GPAs of underprepared students were (a) attention from instructors, (b) attitudes of instructors and staff, and (c) remedial education program.

The residence status of those at academic risk within higher education's two- and four-year sectors had variable effects on persistence in school. The ability of commuters to persist at two- and four-year colleges was enhanced primarily by parental encouragement and the provision of an appropriate study environment. On the other hand, the inability to identify strongly with their institutions and the need to commute, at least among those at four-year colleges, had a detrimental effect on the struggle to persist. On-campus residence most clearly aided persistence by facilitating students' involvement with, and resultant attachment to, their institutions. Moreover, the sense of community among peers was an important contributor to the retention of four-year resident students.

Description of Remedial Practices at Participant Colleges

Data used to depict program operations at participating colleges were gathered from staff informants who were knowledgeable of the remedial procedures at the respective institutions. Table 13 provides a summary of the remedial practices employed at the institutions taking part in this study. The separate orientations of participant colleges toward remedial education provided an appropriate framework for considering how selected two- and four-year sectors of higher education are contributing to the progress of high-risk students. Favored remedial practices were described in accordance with the following descriptive categories: (a) context, (b) philosophy, (c) rationale, (d) placement, (e) organization, (f) support services, (g) curriculum, (h) staffing, and (i) evaluation.

Context

Rural Appalachia provided the setting within which the institutions selected for study were located. The range of students enrolled in credit programs at the four public colleges was small--from a low of 2,000 at Bayberry Community College to a high of 3,800 at Oak Valley College. While the prototypic student at Greentree State University

Table 13

Summary of Remedial Practices at Participant Colleges

Descriptive category	Two-year colleges		Four-year colleges	
	Brentwood	Bayberry	Greentree	Oak Valley
Context	Public, small rural; 2,500 students.	Public, small rural; 2,000 students.	Public, small rural; 3,200 undergrads.	Public, small rural; 3,800 undergrads.
Philosophy	An evolving philosophy--the open door must not become a revolving door.	Champion the open door by helping students tap their potential.	A meritocratic philosophy among many; others suggest a chance to succeed.	Divided loyalties among staff; supporters speak of a "moral" obligation.
Rationale	Strengthen basic skills so college's curricula are a viable career ladder for high-risk students.	Increase students' cognitive growth leading to success in mainstream curriculum.	Build academic skills so students can successfully complete undergraduate requirements.	Brush up on basic skills so students can be successful in mainstream curriculum.
Placement	Diagnostic battery testing and counseling used; remedial coursework required; guarded entry to mainstream curriculum.	Test battery primary placement tool; required placement in remedial courses; guarded entry to mainstream curriculum.	Battery of basic skills tests used; required placement in special sections of college-level courses and support activities; open entry to mainstream curriculum.	Test battery used to effect placement; required placement in remedial coursework; guarded entry to mainstream curriculum.

Table 13 (Continued)

Descriptive category	Two-year colleges		Four-year colleges	
	Brentwood	Bayberry	Greentree	Oak Valley
Organization	Disparate set of remedial courses attached to Humanities & Math Divisions of the college.	Remedial courses attached to college's Humanities & Math Divisions.	Special sections of college-level courses offered by Departments of English & Math; adjunct labs required in LAC.	Remedial courses tied to college's Divisions of Languages & Literature, Education, & Math; such courses woven into distinct remedial "program."
Support services	Limited in scope; LAC the hub; consultative capability in English & math.	Kernel of support services is extensive tutorial program; LAC offers some computer-assisted instruction.	Cornerstones of support are reading/ writing labs and peer-tutoring services; LAC centerpiece for support activity.	Tutorial program employing students and staff lends chief support; microcomputer lab used to support instruction; LAC focal point.
Curriculum	Multiple levels of remedial instruction in English, reading/study skills, & math; degree credit not awarded.	Single levels of remedial instruction in English, math, & reading/ study skills; degree credit not awarded.	Special sections of college-level courses in English, math, & reading; degree credit awarded.	Multiple levels of remedial coursework in English & math; solitary courses in reading & study skills; limited degree credit awarded.

Note. LAC = Learning Assistance Center.

Table 13 (Continued)

Descriptive category	Two-year colleges		Four-year colleges	
	Brentwood	Bayberry	Greentree	Oak Valley
Staffing	Teaching assignments voluntary; counselors having special interest/ training employed.	Voluntary teaching assignments; specialists in certain curricular areas; counseling function not emphasized.	Instructors self-selected; some program staff are generalists with degrees in content areas as well as counseling.	Assignments given to those with most interest; certain staff are certified developmental educators; no special counseling provisions.
Evaluation	Dearth of evaluative studies; students evaluate indirectly (i.e., only instructors).	Rigorous program evaluation missing; indirect evaluation by students to include instructors, tutors, & instructional assistants.	Rigorous program evaluation missing; indirect evaluation by students to include instructors & support personnel.	No stringent program evaluation; students evaluate instructors & tutors, if not program effect.

was a full-time resident, the majority of students attending Oak Valley College--the remaining four-year institution--commuted to campus.

The ratio of part- to full-time students at Brentwood Community College was approximately 2:1. A similar ratio favoring full-time students was discovered at Bayberry Community College. Although nearly 30% of the students enrolled at Oak Valley College were financial aid recipients, close to 50% of the students at each of the remaining three institutions received financial support. Many of these financially disadvantaged students were discovered to be at an academic disadvantage as well.

Philosophy

Perhaps mindful of their legacy as champions of the open door, the staffs at Brentwood Community College and Bayberry Community College were quite egalitarian in their views toward high-risk students and their rightful place in higher education. The responsibility to offer students a second chance despite past educational failures was widely accepted by the staffs of the two community colleges.

However, the propriety of admitting high-risk students to Greentree State University and Oak Valley College was questioned by a much larger proportion of educators at these four-year institutions. While the program staffs

most clearly responsible for addressing the needs of the underprepared cohorts at these institutions were determined to provide meaningful opportunities for progress, many colleagues were unabashedly critical of the presence of such students in academia.

Under any circumstances, the prevailing feeling among those most supportive of the admission of high-risk students to the four campuses was that they deserved an opportunity to succeed. Implicit in this notion of equal access appeared to be an institutional responsibility to prevent premature exit. The latter objective was underscored by the perceived importance of rigorous assessment and placement activities. In fact, the required assessment and placement practices at the participant colleges spoke volumes about the philosophies of institutional leaders toward students admitted at risk. Although high-risk students were welcomed by a larger proportion of community college staff members, few differences in recruitment strategies among the four colleges were discovered. That is to say, special efforts to attract underprepared students have not been made in recent years.

Rationale

The primary objective of the remedial approaches used at the selected pairs of two- and four-year colleges was to strengthen basic academic skills, thereby improving the chances of high-risk students' success in the mainstream curriculum. While program completion was a common yardstick for measuring success at all four institutions, the two community colleges were more willing to include in their definition of success the development of saleable skills by underprepared students, short of degree or certificate acquisition.

Moreover, it was expected that the delivery of services to high-risk students at each of the four institutions would influence the affective dimensions of their development. The improvement of students' attitudes toward education, for example, was a desirable goal at Brentwood Community College. Bayberry Community College staff were concerned with improving students' self-confidence. Officials at Greentree State University spoke of attempts to develop healthier attitudes and values among their most academically unprepared students, while staff members at Oak Valley College argued the importance of helping such students feel good about themselves. Although the institutional responses to high-risk students

were designed for reasons other than the promotion of cognitive growth, the refinement of basic educational skills was unmistakably the sine qua non of the remedial practices at all four colleges.

The origins of current programmatic efforts at Brentwood Community College, Bayberry Community College, and Greentree State University were traced to the late 1960s and early 1970s when early attempts to accommodate high-risk students were undergirded by grants from state and federal agencies. The gestation period for current remedial practices at Oak Valley College followed that at the remaining three institutions. However, financial support also was provided by a grant from the State Board of Regents.

Placement

The testing and placement methods relative to remedial programming at the pairs of two- and four-year colleges included in this investigation shared certain similarities, yet were distinguished by notable differences. For example, ACT or SAT scores were used as an initial screening tool at Brentwood Community College, Greentree State University, and Oak Valley College. However, examination of the past educational performance of recent high school graduates appeared to play a more prominent

role in determining whose basic skills required further assessment at Brentwood Community College and Oak Valley College. Showing far less reliance on ACT or SAT scores, basic skills assessment at Bayberry Community College simply was required of all full-time, degree-seeking students. The basic skills of part-time entrants in this two-year college were assessed where students anticipated enrolling in English and/or mathematics coursework.

Across the four colleges, diagnostic battery testing was the preferred method of determining whether students possessed adequate entry-level skills requisite to successful pursuit of their goals. The choice of instruments to assess abilities in reading and writing was remarkably consistent among the selected institutions. In all cases, the Nelson-Denny Reading Test was employed. The Test of Standard Written English (TSWE) was favored by three of the colleges to assess the writing ability of new entrants. Only Brentwood Community College demurred, preferring instead the English component of the College Board's instrument: Assessment and Placement in Community Colleges. Subjectively scored writing samples also were used at the pair of community colleges to supplement the more objective criteria for English placement.

A much greater variety of math instruments was employed by the chosen colleges to ensure proper placement of students. In fact, no two institutions used the same means to assess students' math abilities. For example, the Cooperative Math Tests of the Educational Testing Service, the Math Association of America test, the math subtest of the California Achievement Test, and institutionally developed math instruments were adopted, respectively, by Brentwood Community College, Bayberry Community College, Greentree State University, and Oak Valley College.

A moderate amount of variability existed among the four colleges with respect to the criterion scores established for course placement when the same assessment instruments were used. For example, the special programmatic responses in reading at the two community colleges and Greentree State University were designed for students scoring below the approximate 30th percentile on the comprehension portion of the Nelson-Denny Reading Test. However, the staff at Oak Valley College was disposed to think of students scoring below the 40th percentile on the same test as requiring further development in reading. Moreover, the criterion scores on the TSWE for course placement in English showed somewhat greater variance across the three institutions using this measure.

Criteria for exiting remedial coursework were established as satisfactory posttest scores and/or course grades by the pairs of two- and four-year colleges. The community colleges used satisfactory scores on posttests and demonstrated class performance as evidence that students were ready to meet more rigorous academic challenges. Greentree State University chose to define such criteria in terms of posttest scores on selected assessment instruments, unlike Oak Valley College where satisfactory course completion was held to be the more telling determinant.

To ensure that students at academic risk had responsive programs in which to participate and that institutional resources were used efficiently, the four colleges mandated placement in remedial activities. What differed sharply, however, were the views of institutional leaders regarding how their colleges could most effectively contribute to the progress and goal attainment of high-risk students. To that end, students at Brentwood Community College, Bayberry Community College, and Oak Valley College were placed in the remedial curriculum and judiciously advised to enter only selected areas of the mainstream program. On the other hand, underprepared students at Greentree State University were not shielded from the

mainstream curriculum but were required to participate in special sections of regular college courses along with supplemental learning laboratories in specific subject areas.

Organization

Organizationally, the special courses for high-risk students offered at each of the chosen institutions were added to existent coursework in related disciplines and attached to the appropriate divisions or departments on campus. However, a somewhat stronger coordinating function appeared to undergird the remedial practices at the pair of four-year institutions--Greentree State University and Oak Valley College. While instructors attached to the Departments of English and Mathematics at Greentree State University were responsible for teaching the courses designed for high-risk students, a companion office was created to administer diverse programs of academic support that would, hopefully, augment the possibilities of student progress. Much of the remedial coursework at Oak Valley College was used to form a discrete curriculum for underprepared students. As was true at Greentree State University, the administrator overseeing this program of academic support often interacted with instructional personnel loyal to separate disciplines and divisions in

the struggle to achieve both institutional and student goals.

The organizational structure of the remedial efforts at participant colleges generally elicited mixed reviews from the staffs working most closely with high-risk students. Representatives of each college recognized the increased identification with the mainstream curriculum resulting from their present organizational structure as a primary strength. Yet, these same practitioners seemed to lament not having a stronger integrating force for the remedial practices at their institutions. The program staff at Oak Valley College were most outspoken in decrying their present organizational structure. They clearly favored a separate division or department of remedial studies wherein they would have the freedom to plan the instructional and support program while exercising budgetary control.

Support Services

The staple of learning support at the institutions under study was the learning assistance center. However, the shape and number of other services supporting the remedial programs at the colleges participating in the study showed considerable variance.

Brentwood Community College, by any measure, offered a limited menu of support services. Although consultative capability existed in the instructional areas of English and math, few provisions were made for tutorial assistance, peer counseling, or computer-assisted instruction.

The services undergirding the remedial curriculum at Bayberry Community College included a comprehensive peer-tutoring program, computer-assisted instruction, and child care services. The tutorial services represented the cornerstone of this college's attempt to bolster the instructional program. A restricted number of microcomputers and remedial software were other chosen supplements to in-class activities.

At the heart of the remedial plan at Greentree State University were required reading and writing laboratories directed by tutors and staff specialists in the context of small groups. Moreover, peer tutors were available to assist students with math and other coursework in the mainstream program. Many peer tutors indirectly provided counseling support.

A comprehensive peer-tutoring program, designed to offer assistance in many curricular areas, was implemented at Oak Valley College. Further, staff members served as tutors to students enrolled in remedial coursework. To a

lesser extent, a microcomputer laboratory was used to support instruction in certain academic areas.

Curriculum

The remedial coursework at Brentwood Community College included multiple levels of instruction in English, reading/study skills, and mathematics. Of the four colleges, this institution's curriculum was the most comprehensive and diverse. At the core of Bayberry Community College's response to the students who were unprepared for the rigors of the mainstream program were single layers of coursework in English, reading/study skills, and mathematics. Included within the boundaries of the curricular field at Greentree State University were special sections of college-level courses in the content areas of English, reading, and mathematics. The aforementioned instructional laboratories were required appendages to the English and reading courses. A separate course--Introductory Algebra--also was developed to enhance the skills of those contemplating enrollment in discipline curricula requiring such rudimentary proficiencies. At Oak Valley College, multiple layers of remedial coursework in English and mathematics were discovered along with single courses in reading and study skills.

The participating community colleges were more willing than the pair of four-year institutions to include flexible time frames for course completion among their instructional practices. While the two-year colleges were favorably disposed to offer the requisite time for content mastery, the four-year colleges established a two-semester time limit for the attainment of selected criteria to exit the remedial program. Students failing to attain the required proficiencies within this time frame faced dismissal from the college.

Diversity was the watchword characterizing the instructional strategies used with underprepared students at each of the chosen colleges. Individualized, small-group, and lecture methods of instruction formed the underpinnings of the remedial curricula at the four institutions. Media-assisted instruction in the form of audio tapes and slides was a more prominent feature of the delivery system at Brentwood Community College.

Letter grades affecting students' grade point averages were awarded to those enrolled in remedial curricula at the four institutions. One exception to that procedure was at Greentree State University where students registered in the Introductory Algebra course were judged simply as having passed or failed. Deferred grades were awarded more

frequently to those students in the two-year sector who, in spite of diligent efforts, required additional time for course completion. Criterion-referenced tests were employed by remedial practitioners across the four institutions.

Although the importance of fostering the affective dimensions of high-risk students' development was a recognizable goal at each of the colleges taking part in this study, such students were generally bereft of structured course experiences inherent in the remedial designs to further that end. The most notable exceptions were in the four-year college sector. As part of the reading course at Greentree State University, "personal development" workshops were presented. Moreover, included among the objectives of the study skills course at Oak Valley College was the desire to contribute to the personal/social aspects of student development.

The credit awarded at the pairs of two- and four-year colleges for remedial course completion was generally of an institutional sort, inapplicable to a degree. This was not, however, always the case. As noted, the coursework for high-risk students at Greentree State University, excluding Introductory Algebra, was part of the mainstream curriculum. Although special provisions were made for

underprepared students, degree credit was granted for satisfactory completion of such mainstream courses. Further, degree credit was issued at Oak Valley College for satisfactory completion of that institution's most advanced levels of remedial coursework in English and mathematics.

Staffing

Instructors who expressed the most desire to work with high-risk students were assigned to the remedial curriculum by the appropriate division or department chairs at the four institutions. Generally, these instructors were among the most willing to accept students at varying points along the developmental continuum and help maximize their opportunities for cognitive growth.

At each of the chosen colleges, practitioners with special interest and training were attached to the remedial program. Brentwood Community College, for example, employed a counselor with specific knowledge of learning disabilities and with sensitivity toward high-risk students. Bayberry Community College hired specialists to teach in certain areas of the curriculum, such as reading and English. Selected program staff at Greentree State University were suitably prepared for their assignments, having undergraduate degrees in specific content areas and advanced degrees in counseling and counseling psychology.

Certified developmental educators were included among the staff at Oak Valley College.

Creative staffing at Brentwood Community College and Greentree State University ensured that counseling services were attached to the remedial programs offered therein. On the other hand, the counseling function was devalued at Bayberry Community College, while high-risk students at Oak Valley College had access only to regular institutional counselors.

Moderate attempts have been made by the colleges under scrutiny to provide remedial program personnel with professional development activities. Generally, these included the purchase of print resources and travel allowances for specialty workshops and conferences. The leaders of some participant colleges have attempted to remain responsive to the challenges presented by high-risk students in assorted other ways. For example, at Brentwood Community College, research and development grants were offered to faculty who were concerned with the improvement of institutional services to underprepared students. At Bayberry Community College, campus-wide assessment workshops were staged with attention centered on high-risk students. Financial support for the training of staff as

developmental educators through the Kellogg Institute was provided at Oak Valley College.

Evaluation

Rigorous attempts at remedial program evaluation were missing at the colleges participating in this investigation. Of the evaluative efforts made at each of the institutions, many were based on measures internal to the program, such as the proportion of program completers and grade point averages in remedial coursework. The staff at Greentree State University was inclined to look at "gain" scores on selected assessment instruments.

The institutional research function at Brentwood Community College has not occupied a prominent place in the internal affairs of that institution in recent years. Remedial practitioners occasionally have assessed the progress of students within the program and of those making short-range incursions into the mainstream curriculum. Typically, measures like persistence and GPA were used. At Bayberry Community College, a computer data base was established, permitting staff to more readily track the progress of students through the remedial program and into mainstream coursework.

Data related to the persistence of high-risk students at the pair of four-year colleges sometimes were compiled

at the request of external state agencies. Rather than use such measures in a design to assess program effect, the staff at Greentree State University more often preferred to compare the data with that of students exempted from remediation. The staff at Oak Valley College was inclined to focus on students' progress in the remedial program.

At each of the four colleges, students were given an opportunity to evaluate the remedial program only indirectly. To wit, they frequently were asked to assess the effectiveness of their instructors and, where utilized, other program personnel such as tutors and instructional assistants.

Summary

While the descriptive categories of remedial practices generally suggested a similar perspective of institutional leaders toward addressing the needs of high-risk students, there were differences worth noting.

Few differences were seen in the size and geographical identity of participant institutions. The relative impact of such variables on the delivery of services to high-risk students was apparently much the same across the pairs of two- and four-year institutions. A more outstanding difference related to the context in which the programmatic responses of participating colleges should be viewed was

the tendency of a larger proportion of students at Greentree State University to enroll as full-time residents.

The endorsement of a meritocratic philosophy of higher education by a larger proportion of educators at the pair of four-year institutions was illustrative of the time-honored differences in perceived mission by many in higher education's two- and four-year sectors. However, the remedial program staffs at the study's two- and four-year colleges were consistent in their belief that high-risk students should not be deprived of the opportunities available to those who have experienced past educational success.

No surprises were revealed with respect to what the institutional responses to the problems of high-risk students were designed to accomplish. Without exception, the provision of special services and coursework across the four colleges was intended to strengthen basic academic skills leading to a successful mainstream curricular experience. Noteworthy similarities also existed among the participating institutions relative to the identification and course placement of students at academic risk. Such shared beliefs were evidenced by a reliance on diagnostic battery testing underscored by the use of similar

instruments with the exclusion of mathematics. Moreover, reasonably similar criterion scores existed within a system of four colleges favoring mandatory placement in remedial coursework.

Fundamental differences existed, however, between the staffs of Greentree State University and the remaining three colleges regarding the educational model most likely to contribute to the progress and ultimate goal attainment of high-risk students. The prevailing view among the leaders at Greentree State University seemed to be that high-risk students were immediately capable of succeeding in the mainstream curriculum, providing appropriate support services were in place. That is to say, students at academic risk were not denied entry to regular college coursework, for they were considered able to meet such challenges with the help of resources that included tutoring and adjunct laboratories. Skeptical of the foregoing view, leaders at Brentwood Community College, Bayberry Community College, and Oak Valley College chose to shield high-risk students from much of the mainstream curriculum until they were "healthy" enough to successfully endure its rigors. Until that time, students were exposed to a program of comprehensive remedial services.

While moderate differences existed in the organizational structure of remedial education at the four institutions, the colleges were more clearly at variance with respect to their provisions for support services. Of the participant institutions, Brentwood Community College appeared to present high-risk students with the fewest options in support of the remedial curriculum.

Across the pairs of two- and four-year colleges, the remedial curriculum included coursework in English, reading, and mathematics. However, differences abounded in the levels of remedial instruction provided within each discipline. The most comprehensive programming was discovered at Brentwood Community College. The instructional programs at all four institutions were marked by diverse pedagogical methods. While flexible time frames for course completion were more likely in the two-year colleges, institutional leaders at Oak Valley College were more willing to grant degree credit for successful completion of remedial coursework.

There were many similarities in the way instructors were chosen to teach in the participant colleges' remedial programs and in the inclination to hire practitioners with special interest and skills. Unfortunately, rigorous evaluation methods were not employed within the selected

two- and four-year sectors of higher education to assess the effect of remedial practices on the progress of high-risk students. Rarely were control groups used, and existent designs often were flawed.

Chapter 5

Summary, Conclusions, and Recommendations

America has been placed on alert throughout the 1980s by several national commissions expressing concern for the educational attainments of the nation's citizenry. Unwilling to deprive high-risk students of the potential benefits derived from college, many two- and four-year institutions have responded by designing remedial programs to bring equal opportunity closer to those who have experienced little academic success.

In at least some states, lawmakers have tended to remove the remedial function from four-year institutions and place it directly at the doors of the community colleges. Yet, such decisions often have been made for reasons other than the proven ability of two- versus four-year colleges to contribute to the progress of students at academic risk. The assumptions regarding the efficacy of community college responses to the problems of high-risk students frequently are based on the age-old proclamation that teaching has always been the raison d'être of the two-year institution. As a result of this definition of mission, the two-year professoriate has

boasted of being better suited to assist high-risk students in the attainment of their goals.

This investigation provided an empirical grounding for the tendency of state lawmakers to make community colleges the primary custodians of higher education's remedial function. To that end, it was the purpose of this study to assess how comparable two- and four-year sectors of higher education are contributing to the progress of high-risk students. The likely effect of remedial programs and other institutional variables on the progress of two-year nonresident, four-year nonresident, and four-year resident students was determined. The impact of residence status on the progress of high-risk students was considered in light of a theoretical framework suggesting that the decision to live on campus or commute could have a differential effect on one's educational progress. Further, this study was designed to assess the apparent effect of the remedial approaches at separate two- and four-year institutions on the progress of high-risk students and to describe the remedial programs that exist therein.

The theory and previous research germane to the issues investigated in this study were discussed in a comprehensive review of related literature. Many past evaluative studies of the effects of remedial programs used

the same postprogram measures of student progress--GPA, college credits, and persistence--employed in this investigation. While the quality of attempts to evaluate the effects of remedial programs has improved in recent years, efforts to compare the effectiveness of programs at separate institutions have been sparse. Fewer studies have attempted to compare, through the use of strict research methods, how selected two- and four-year sectors of higher education are contributing to the progress of high-risk students. In part, this probably is true because of the difficulty in establishing initial comparability of populations. At the heart of the decision to complete this study was the belief that remedial programs having similar populations, objectives, content, and placement procedures could be found across selected pairs of two- and four-year colleges.

A research design that included a variety of data and methods was used to address the problem under investigation. As a preliminary, the comparability of the students forming the study's population and sample was established through a careful examination of variables that included age, scholastic aptitude, race, and gender. The total sample of 622 students was divided equally between remedial and nonremedial students. In order to produce

more meaningful research, the major questions of this study were addressed through a combination of quantitative and qualitative methods.

An ex post facto research method was used to investigate the likely effect of remedial programs on the progress of high-risk students across two- and four-year collegiate sectors. The quantitative data that served as postprogram measures of student progress over four semesters included GPA, college credits earned, and persistence. Such data were gathered through an examination of student files.

A remediated-exempted comparison was made of the data wherein the performance of students exempted from remediation was used as the standard for assessing the progress of remediated counterparts having two-year nonresident, four-year nonresident, and four-year resident affiliations. Moreover, the quantitative data gathered from the high-risk students meeting the study criteria were subjected to a cross-program comparison. That is to say, remedial program assessment was performed by using as a standard of effectiveness the progress of comparable remedial groups that differed with respect to affiliation (i.e., nonresidents at two-year colleges, nonresidents at four-year colleges, and residents at four-year colleges).

Further, cross-program comparisons were effected using the progress of comparable remedial populations at separate two- and four-year colleges as a criterion of success. An assortment of inferential statistical procedures was used to analyze the quantitative data gathered in this study.

Case study methods also were employed to collect qualitative data from high-risk students that would enhance the quantitative analysis. By allowing alternative explanations of how the two- and four-year sectors of higher education are contributing to the progress of students at academic risk, the presumption of the effect of remedial programs could be strengthened. Further, the preferred orientations of the leaders at participant two- and four-year institutions toward remedial education were described through the use of case study methods.

A small sample of high-risk students with geographic accessibility was interviewed at each college. The subjects at the pair of four-year institutions included an equal number of resident and nonresident students. The staff members included a well-informed few who were affiliated with the remedial programs at the study institutions. They were queried with respect to program operations. The interview instruments that were used to gather qualitative data were field tested at New River

Community College in southwestern Virginia and, as a consequence, were reshaped where appropriate to this investigation.

The qualitative data gathered in this study were examined by the process of analytic induction. Specifically, while searching for disconfirming evidence, the data were used to generate a number of supportable assertions relative to variables contributing to the progress of high-risk students and several declarations related to remedial program operations. Similar assertions were then grouped in accordance with the subject matter they represented and used to produce discussion.

Summary and Discussion of Findings

Question 1: What is the relationship between type of student (i.e., high-risk student in remedial program vs. regular student) and type of affiliation (i.e., nonresident at two-year college, nonresident at four-year college, and resident at four-year college) with respect to (a) academic achievement in mainstream college courses at the end of four semesters and (b) persistence, in terms of continued enrollment over four semesters?

Academic achievement. Differential effects of remediation were not discovered across selected two- and

four-year sectors of higher education when comparisons were made of the academic achievement of high-risk students relative to that of nonremedial or regular students. That is to say, with respect to college credits earned and GPA attained after four semesters, students exempted from remedial coursework outdistanced their remediated peers by the same measure across the three dimensions of student affiliation (i.e., nonresident at two-year college, nonresident at four-year college, and resident at four-year college).

Type of student was significantly related to different levels of academic achievement. Specifically, nonremedial or regular students accrued more college credits and achieved higher GPAs after four semesters than their remediated peers. Controlling for residence status, it appears that the redemptive efforts across selected two- and four-year collegiate sectors were not enough to compensate for the initial handicap of high-risk students when their academic achievement after four semesters of enrollment was compared with that of nonremedial peers. In a similar study, the New Jersey Basic Skills Council (1986) also determined that exempted students outperformed remediated students using the same measures of progress across the state's public two- and four-year colleges.

While it was not revealed if such differences were statistically significant, it appears likely that the redemptive strategies employed by the leaders of New Jersey's public two- and four-year colleges also were not able to fully compensate for the primary deficits of high-risk students relative to their nonremedial peers. Further, in a review of research on CUNY's remedial programs, Piesco (1978) rarely discovered that remediated students matched the performance of their exempted peers.

Type of affiliation also was related to different levels of academic achievement. When remedial and nonremedial students alike were considered, residents at four-year colleges earned significantly more college credits over four semesters than students who commuted to four-year colleges. Moreover, with GPA as the measure of educational progress, remedial and nonremedial students alike who commuted to community colleges earned significantly higher GPAs than residents and nonresidents of four-year colleges.

Persistence. A significant, albeit weak, relationship was discovered between persistence over four semesters and group membership for two-year nonresident students. A smaller proportion of remediated students who commuted to community colleges persisted over the criterion period than

the proportion of their nonremedial counterparts. In spite of the redemptive strategies designed by community college leaders for high-risk students, those at academic risk were less likely than nonremedial students to remain enrolled in college over four semesters. In the four-year collegiate sector, remediated students persisted at rates comparable to nonremedial students, controlling for residence status.

Notwithstanding the rather weak relationship discovered between persistence and group membership in the two-year collegiate sector, it appears that the impact of remedial programs in this study was more positively expressed through the measure of student persistence, as opposed to selected indicators of academic achievement, when the performance of nonremedial students was used as the standard for assessing the progress of high-risk students. This finding is consistent with that discovered by the New Jersey Basic Skills Council (1986) in a comprehensive study to assess the effects of remedial programs in the state's two- and four-year collegiate sectors. A meta-analysis of several studies by Boylan (1983) also confirmed this discovery. The presumed individual attention given to high-risk students by staff, peer tutors, and others may foster a sense of "community," leading to a greater desire to remain in school. Many

scholars have argued that increased student retention may result from greater personal contact with faculty (Astin, 1975, 1977; Roueche & Kirk, 1973; Tinto, 1975).

Question 2: Do high-risk students with distinct affiliations (i.e., nonresidents at two-year colleges, nonresidents at four-year colleges, and residents at four-year colleges) differ with respect to (a) academic achievement in mainstream college courses at the end of four semesters and (b) persistence, in terms of continued enrollment over four semesters?

Academic achievement. When the performance of comparable remedial groups with different student affiliations was used as a standard of educational progress, significant differences were not discovered in the college credits earned after four semesters. However, the comparison groups differed significantly with respect to the GPAs attained at the end of four semesters. High-risk students who commuted to community colleges had significantly higher GPAs after four semesters than either nonresident or resident peers at four-year colleges.

The remedial practices found within selected two- and four-year sectors of higher education seemed to have a differential effect on the GPAs of high-risk students. Apparently, the redemptive strategies applied in the

two-year collegiate sector were more effective at raising the grades of high-risk students than were the practices adopted in the four-year sector, controlling for residence status. Still, alternative explanations of this finding must be considered, lest a causal link be erroneously established between the foregoing variables.

One explanation may be that the significantly higher GPAs of high-risk students attending community colleges were largely a result of the differences in pedagogical practices found in the chosen two- and four-year institutions. This explanation implies that the phenomenon of "grade inflation" may be more perceptible in the study's community colleges than in selected four-year institutions. Yet, leaders of the pair of two-year colleges--Brentwood and Bayberry--declared that students who have transferred from their institutions to the four-year colleges included in this study remained quite competitive with respect to the GPA variable.

Another explanation suggests that additional institutional variables, working alone or in combination, may have contributed to the differences in the GPAs of high-risk students within higher education's two- and four-year sectors. Further, certain dispositional factors that remained uncontrolled also may have contributed to the

significant differences in this particular measure of academic achievement among students at academic risk. Included among these dispositional variables is the motivational level that underprepared students use to address their educational tasks.

While residence status was not a variable of interest, the study of New Jersey's two- and four-year institutions by the New Jersey Basic Skills Council (1986) revealed that after four semesters of enrollment, remediated students in the two-year sector maintained a mean GPA of 2.2; those attending four-year colleges earned an average GPA of 2.4. The statistical differences between the two studies relative to this outcome measure may be attributed to many factors. Among them is the use of separate criteria for identification and placement of high-risk students in remedial programs. Moreover, no attempt was made to control for initial differences between groups in the study of New Jersey colleges.

Persistence. When comparisons were made among comparable remedial groups, the persistence rate of high-risk students over four semesters was independent of affiliation (i.e., nonresidents at two-year colleges, nonresidents at four-year colleges, and residents at four-year colleges). However, these data showed an

apparent trend toward a more favorable persistence rate for residents at four-year colleges, 82 (64%) of whom persisted over the criterion period.

The foregoing tendency also is consistent with the theoretical framework provided by Tinto (1975), wherein greater persistence is presumed to result when students are woven into the academic and social fabric of the institution. Such opportunities normally are more abundant for resident than nonresident students. Other research has corroborated the importance of the residential experience to student persistence (Astin, 1975; Dougherty, 1987). Further, recent findings have suggested that plausible explanations of persistence behavior may depend on the precise definition given to college dropouts. Williamson and Creamer (1988) provided evidence that Tinto's reliance on the ability of social and academic integration to explain persistence may have more credence when applied to short-term persistence patterns at the institutional level. This was, of course, the definition given to the construct in the present study. However, Williamson and Creamer asserted that long-term persistence behavior of students in the system of higher education may be influenced more by students' background characteristics than by their social and academic integration.

Question 3: Does the remedial approach at any one institution appear to contribute unusually to student progress?

There was little evidence to indicate that the remedial approach employed by any one of the participating institutions contributed unusually to student progress.

Academic achievement. While the remediated students at the participant colleges did not differ significantly with respect to college credits earned after four semesters, high-risk students at each of the community colleges attained significantly higher GPAs than their underprepared counterparts attending the pair of four-year institutions. Apparently, the remedial programs at both community colleges were more effective at raising students' grades than were the strategies used at the pair of four-year institutions. Yet, when compared with each other, neither of the remedial approaches employed by the two-year colleges seemed to contribute differently to the postprogram measure of GPA in mainstream college courses.

Persistence. Evidence to support that one institution's remedial approach contributed uncommonly to the progress of high-risk students was not detected when persistence over four semesters was used as the postprogram measure. The persistence rate of high-risk students in

this study remained independent of the two- or four-year college attended.

Furthermore, the likely effect of the remedial approaches employed by the pair of four-year institutions--Greentree State University and Oak Valley College--was independent of residence status, using established measures of student progress.

Academic achievement. No significant differences were discovered in the college credits earned and the GPAs attained after four semesters by high-risk resident and nonresident students at Greentree State University and Oak Valley College. This finding appears to fly in the face of conventional thought, which suggests a marked impact of the residential experience on academic achievement. Riker (1981), for example, affirmed that the residential experience supports academic achievement by increasing students' preparedness for learning and effectiveness at learning.

What, then, may explain the fact that the observed differences between high-risk resident and nonresident students on the aforementioned outcome measures were not closer to reaching significance? For one thing, much of the research in this area included students who were exempted from remediation. Such was the case with the

study performed by Astin (1977), who also affirmed that it was principally the grade point averages of men that increased by living on campus. Further, the GPA variable in Astin's research was defined differently from that in the current investigation. Because these distinctions were not made in the present study, the results may be expected to differ.

As demonstrated by the research of Kulik et al. (1983), the factors that affect the success of special programs for high-risk students are manifold. The differences in the obtained results between this and other studies relative to the effects of residence status on students' progress may partially be explained by the chosen research design. That is, it may be that the method used to assess academic achievement in this study was inadequate for capturing the effects of residence status on the construct. More nonresident than resident students failed to persist over the criterion period. Presumably, these students were among the most academically deficient. Thus, compared to their resident peers, a larger proportion of the strongest and most highly motivated nonresident students could have remained at their colleges. Consequently, the drop-out bias may have operated differentially to deflate the measures of academic

achievement for resident students. Yet, the fact that high-risk students within the two-year sector had significantly higher GPAs than four-year nonresident and resident students suggests that factors independent of residence status may have affected grade performance.

Persistence. It appears that the remedial approaches at the pair of four-year colleges did not have a differential effect on the persistence of high-risk resident and nonresident students, as no statistically significant relationships were evident. Yet, a bias favoring on-campus students emerged within each four-year institution when persistence was used as the postprogram measure of progress. At Greentree State University, 49 (61%) of the remediated resident students were still enrolled after four semesters, while 33 (69%) of their counterparts at Oak Valley College remained that long.

Question 4: What are the institutional contributors to educational progress as identified by high-risk students within the two- and four-year sectors of higher education?

In this study, several institutional variables were important contributors to the educational progress of high-risk students within two- and four-year collegiate sectors. Across selected four-year colleges, the perceptual patterns were generally consistent for all

informants, residence status notwithstanding. Moreover, the ordering of the factors in accordance with the volume of confirming evidence that was evoked from the data was quite similar across the two collegiate sectors. However, the pattern of persuasive evidence used to affirm the institutional variables as most meaningful to students' progress within higher education's two- and four-year sectors was striking for its differences. That is to say, without exception, a greater amount of evidence was extracted from the data to confirm the impact of every factor on the progress of students attending two-year colleges.

It appears that, while the same forces within two- and four-year colleges were important determinants of educational progress, their impact on high-risk students was more marked in the two-year collegiate sector. This is consistent with the speculations of Mink (1977), who suggested that the ability to respond with flexibility to an assortment of student needs was more possible in an open environment. He hinted that two-year colleges, with less fixed elements than four-year institutions, may provide the most appropriate climate to facilitate students' learning and success.

The greatest range of evidence existed to confirm the following situational variables as those having a notable effect on the progress of underprepared students attending selected pairs of two- and four-year colleges: (a) attention from instructors, (b) attitudes of instructors and staff, and (c) remedial education program. Although the confirming evidence to warrant their place among the factors contributing substantially to the progress of high-risk students was not as compelling as the aforementioned testimony, the variables that follow were judged to have had considerable impact: (a) college environment, (b) class size, (c) peer relationships, and (d) college curriculum.

Attention from instructors. For the high-risk students attending participant two- and four-year institutions, the considerable attention received from instructors appeared to be prominent among the institutional factors contributing to their educational progress. While all students are likely to benefit from increased personal attention, this factor seemed particularly important to the high-risk students in this study who were encumbered at college entry by assorted academic deficiencies and attitudes and emotions that were likely unfavorable to educational attainment. Astin (1977)

found that student-faculty interaction has a stronger relationship to students' satisfaction with college than any other student or institutional characteristic. It seems reasonable that students will attain greater progress if they express satisfaction with their college environment. Astin also reported that students in small colleges are much more likely to interact with faculty than are peers attending large institutions.

Attitudes of instructors and staff. The quality of the interaction between underprepared students and staff was a very meaningful contributor to students' progress within both sectors of higher education. The honest and respectful interactions between high-risk students and staff appeared to challenge and support students, resulting in increased learning. The importance of student-faculty relations to students' satisfaction with their college environment was confirmed by Astin (1977). He affirmed that students who interact most frequently with faculty are much more likely to be satisfied with their relationships. His research suggests that students in small colleges are considered more likely to be satisfied with their faculty relationships than are peers attending large institutions. Moreover, based on a comprehensive survey of two- and four-year institutions, Noel, Levitz, and Kaufman (1982)

reported that the personal characteristics and attitudes of college staff were even more important to the success of high-risk students than was the design of learning assistance programs.

Remedial education program. The remedial education programs constructed in the study's two- and four-year colleges were among the prominent factors that helped students break a cycle of academic failings by strengthening the requisite skills and, in some cases, the spirit, that lead to educational attainment. The redemptive strategies applied in both collegiate sectors were valued chiefly for their ability to correct specific academic deficiencies and prepare students to compete in the mainstream curriculum. This is in keeping with the primary objectives of the remedial programs, as defined by the leaders of chosen two- and four-year colleges.

Based on their meta-analysis of the findings from several evaluative studies, Kulik et al. (1983) concluded that certain factors within programs and studies helped determine study outcomes. For example, intervention strategies that included guidance sessions and comprehensive support services had a more positive effect on students' GPAs and persistence than did the remedial programs that often are associated with community colleges.

The authors speculated that GPAs and persistence rates may not have been appropriate indices of remedial program effects at community colleges. However, a plausible explanation for the obtained differences between this study and that of Kulik et al. is related to the manner in which remedial programs were conceptually and operationally defined. In this study, reading and study skills courses, counseling services, and sundry support systems helped form the remedial program structures. Kulik et al. considered each to be a separate programmatic response.

While the redemptive measures taken by two-year colleges appeared to build enthusiasm and confidence among students, program participation failed to yield such desirable benefits for those attending four-year institutions. The factors that account for such differences across the two collegiate sectors are unclear in the absence of further study. However, it may be that program personnel in selected community colleges chose to focus more on the affective and socialization needs of underprepared students than did their counterparts in the study's four-year institutions.

At participating two- and four-year colleges, a similar pattern of resource utilization existed among high-risk students. The pattern of completing remedial

coursework at assigned hours during the day was apparently a function of the full-time enrollment status of student informants. Further, the failure to maximize the use of adjunct services in support of the remedial curriculum was a tendency of underprepared students across the two- and four-year collegiate sectors. This finding is in accord with the work of Friedlander (1981), who determined that the unwillingness of high-risk students to make greater use of support services often was a corollary to (a) the feeling that they did not need the service, (b) the perception that they had no time, and (c) the impression that services were offered at inconvenient times.

Tutorial instruction was the most frequently employed ancillary service of underprepared students across two- and four-year institutions. The inclination of high-risk students to seek additional assistance in tutorial form probably reinforces the importance that practitioners place on diverting personal attention to the specific problems presented by this group of learners. In this way, the students' learning strengths can be maximized, while learning weaknesses are minimized.

College environment. The small college environment that typified Brentwood Community College, Bayberry Community College, Greentree State University, and Oak

Valley College was an important situational variable that helped high-risk students advance toward their chosen goals. It appears that the developmental needs of high-risk students may be addressed more suitably in a small college environment. This is understandable in light of the many adjustments required of such students, many of whom may have thought of college as only a remote possibility. The importance of this factor relative to students' educational progress is supported by the research of Astin (1977), who declared that small colleges foster greater student achievement and involvement than large institutions. He stated that students are much more satisfied with their faculty relationships and classroom instruction at small institutions. Such factors were considered by the high-risk informants in this study to have made important contributions to their educational progress.

Class size. Small class size was an important determinant of the educational progress of high-risk students at this study's two- and four-year institutions. The small classes are apparently included among the benefits uniquely associated with attendance at a small institution. Burgeoning enrollments often characterize the coursework in general education that is completed during

the first few years at large institutions. It is at this time that a more intimate class environment may be especially beneficial to underprepared students, as personal adjustments often are most difficult. Moreover, small classes probably create more opportunities for the quality interactions between students and instructors that Astin (1977) declared as so important to students' satisfaction with their college experience.

Peer relationships. The environments of participant two- and four-year institutions fostered peer relationships that were among the meaningful contributors to the academic progress of high-risk students. The attendance of friends at the two-year colleges seemed to prevent feelings of immediate alienation with the students' new surroundings. The fact that community college students are reasonably satisfied with the social life at their institutions may be explained by their already knowing many peers when they enter college, having attended the same high schools (Astin, 1977). A relaxed atmosphere apparently results, enabling students to direct their energies to the academic tasks at hand.

Student informants in the selected four-year collegiate sector credited their small college environments with being conducive to the development of peer

relationships that facilitated educational progress. Being in the company of friends who are engaged in the same scholastic struggles has an apparent motivating influence on high-risk students. However, the effect of this variable on the progress of underprepared students seemed stronger among resident than nonresident students. This finding conforms to the work of Astin (1977), who stated that "going away from home and living on campus provides students with more opportunities to interact and to develop friendships" (p. 173).

College curriculum. The curricular structures within this study's two- and four-year institutions aided the advancement of high-risk students in their search for a college degree. Attempts by the leaders of participating two-year colleges to orient their curricula toward the consumer by offering many choices were recognized by high-risk informants as meaningful to their academic progress. The notion that flexible curricula are important if the needs of such a diverse group are to be addressed seemed to be endorsed by underprepared students. It has been observed that students at two-year colleges are more satisfied than average with the curriculum, largely because of its diverse offerings (Astin, 1977).

Among students in the four-year collegiate sector, the emergent pattern seemed to suggest that curricular quality was an important institutional factor that enhanced educational progress. This appeared to be particularly true with coursework completed in the "major" or specialty area, curricular elements that many students in four-year colleges may experience sooner than their community college counterparts.

Confirming evidence also was extracted from the data used to address question 4 that illuminated the effect of discrete situational variables on two specific measures of student progress--GPA and persistence. A different form of information was used earlier in this study to affirm that high-risk students who commuted to two-year colleges had significantly higher GPAs after four semesters than nonresident and resident peers at four-year institutions. Moreover, although statistical significance was not discovered, the quantitative data revealed meaningful differences in persistence favoring residents at four-year colleges compared with students who commuted to two- and four-year institutions. The sections that follow were designed to enhance such findings.

Factors affecting students' GPAs. The institutional factors declared to have had a marked effect on the GPAs of

high-risk students within selected two- and four-year collegiate sectors included (a) attention from instructors, (b) attitudes of instructors and staff, and (c) remedial education program. Such variables were supported by the greatest volume of confirming evidence from student interviews. The fact that student informants identified the same institutional factors as primary in importance to their GPAs and to the construct of educational progress, as operationally defined, seems to indicate that, conceptually, they were inclined to think of progress largely in terms of their grades. Certainly, students' GPAs lie at the heart of the remaining measures of educational progress employed in this study--college credits earned and persistence. It has been reported, for example, that undergraduate grade point average is the single variable most strongly associated with college persistence (Astin, 1977).

In any case, it appears that the quality interactions between students and staff in this study had a positive effect on the GPAs of underprepared learners. The attention given to specific problem areas and the encouragement offered by instructors seemed to boost students' grades. Of course, such likely determinants of students' GPAs formed the underpinnings of another

prominent factor affecting students' grades--the remedial education program.

As was the case when the broader construct of educational progress was considered, the impact of the factors jointly perceived to have had the greatest effect on students' GPAs across selected two- and four-year colleges was apparently greater within the community colleges. This is to say, a greater amount of evidence was evoked from the data to confirm the effect of each factor on the GPAs of high-risk students attending community colleges. Mink (1977) confirmed that the most responsive environments also are the most growth producing.

Effect of residence status on persistence behavior. Apparently, the judicious use of support and criticism by parents were important factors that helped prolong the continued enrollment in school of high-risk students who commuted to two- and four-year institutions. It may be that the discipline requisite to success in college was encouraged by the parents of a rather youthful student cohort living at home.

The act of commuting to college had variable effects on the efforts of underprepared students to persist across selected two- and four-year collegiate sectors. A consistent pattern in the data suggested that, while

commuting to campus had no effect on the persistence behavior of community college students, such travel militated against the desire to remain in school of high-risk peers attending four-year institutions. A possible explanation of this relationship is that students who commuted to four-year colleges traveled a greater distance than their underprepared counterparts who attended neighboring community colleges.

The evidence to confirm the importance of academic and social integration to persistence in college, at least at the institutional level, was quite convincing in this study. Resident students at four-year institutions extolled their decisions to live on campus because of the academic and social advantages uniquely available to on-campus students. The increased opportunity for meaningful interactions with peers provided by on-campus residence was a particularly important factor that heightened students' desires to remain in school. Clearly, resident students felt that on-campus living contributed to their ability to achieve social success and adjust well academically. In turn, they were able to persist longer in college. Tinto (1975) suggested that both academic and social behaviors affect persistence. He also stated that students may be able to integrate themselves into the

fabric of one domain but not the other. Most dropouts are presumed to have failed in at least one area.

Further, a rather consistent pattern emerged from the data to suggest that the efforts of commuting students to persist in two- and four-year institutions were imperiled by their nonresident status because they were unable to develop the same academic and social identification with college as their resident peers. It appears that social and intellectual contact beyond the classroom is as important to the persistence behavior of nonresident students as it is to on-campus residents (Pascarella, Smart, & Ethington, 1985). Because of the strong presence of resident students on campus, nonresidents at four-year colleges appeared to develop a stronger sense of anomie than commuters to community colleges. Based on the volume of confirming evidence extracted in this study, it seems that the pattern of increased persistence for resident students at selected four-year colleges is prominently related to their ability to achieve satisfactory academic and social integration with their institutions. The positive effects on persistence derived by living in a dormitory are confirmed by other research findings (Astin, 1975, 1977; Dougherty, 1987).

Remedial Program Descriptions

The remedial programs preferred by chosen two- and four-year institutions shared many similarities, although basic differences were observed. For example, while the program staffs at each of the participating colleges were strongly committed to offering high-risk students a second chance at academic success, a larger proportion of remaining colleagues in the four-year collegiate sector questioned the admission of such students to an institution of higher learning.

The leaders of all four study institutions believed that their redemptive efforts should be judged primarily by the extent to which they helped strengthen the basic educational skills of those at academic risk, resulting in a successful mainstream curricular experience. Further, the programs discovered at participant institutions had somewhat comparable placement procedures that were underscored by the use of like diagnostic tests and reasonably similar criterion scores in a system of compulsory basic skills remediation.

Without exception, the organizational structure of remedial practices favored at the pairs of two- and four-year colleges was marked by the addition of special courses to existing discipline curricula. The remedial

courses resided within appropriate divisions or departments of the participant institutions. However, the four-year institutions--Greentree State University and Oak Valley College--made a stronger effort to centralize the remedial function by establishing offices of support and coordination. The leanest menu of services in support of the instructional program was discovered at Brentwood Community College. The range of available learning supports varied at the remaining colleges, although comprehensive peer-tutoring programs helped form the underpinnings of their auxiliary services.

Across the selected colleges, the remedial programs were undergirded by comparable curricula that included coursework in English, reading, and mathematics. The most comprehensive instructional programs were discovered at Brentwood Community College and Oak Valley College, respectively. Staffing patterns within the remedial programs at the pairs of two- and four-year institutions were distinguished by the following constant: Instructional and support personnel with special interest and skills were chosen to address the multidimensional needs of high-risk students. Past attempts to evaluate the remedial practices at the chosen colleges have been sporadic, unrefined, and sometimes flawed.

Among the most striking differences distinguishing the remedial orientations of the institutions included in this study was the perspective relative to the model that most likely would lead to the goal attainment of students at academic risk. The educational leadership at Brentwood Community College, Bayberry Community College, and Oak Valley College apparently felt that high-risk students could best be served by shielding them from the mainstream curriculum until their basic skills were sufficiently strong to permit reasonable chances of success in regular coursework. It is evident that the theoretical model used to fashion this program design is Roueche's (1978). The Roueche model rests on rigorous assessment of basic skills and provisions for "intensive-care treatment" (p. 29) until students have the prerequisites to progress in the regular college program.

Cohen's (1979) model provided the theoretical framework for the program design chosen by the leaders at Greentree State University to address the problems of high-risk students. Cohen advocated the immediate integration of underprepared students into regular programs. Success was thought to be attainable if such students were provided with comprehensive support services that included tutorial assistance, learning laboratories,

peer counseling, and other aids. At Greentree State University, high-risk students entered special sections of regular college coursework that were buttressed by required participation in adjunct laboratories and the availability of tutorial assistance.

Conclusions

Recently, Cohen (1987) declared that debates among academicians concerning the rightful place of remedial education were for naught because, like it or not, community colleges are "stuck with the job" (p. 4). Within several states, that notion has been affirmed by legislative fiat. The findings of this study suggest that serendipity may have underscored the decisions of state policymakers to concentrate the remedial function in two-year colleges, while decreasing its emphasis in four-year institutions.

The redemptive efforts of selected two-year colleges were generally more effective than the remedial strategies employed by participant four-year institutions, based on multiple measures of student progress. These outcome indicators included GPA, a measure on which remediated students in the two-year sector outperformed their four-year counterparts by a significant margin. Support

for the greater impact of remedial programming in the two-year sector also was found in the qualitative data gathered in this study.

Boylan's (1983) meta-analysis of recent research on the effectiveness of developmental education led to the conclusion that the redemptive programs at selected two- and four-year colleges produced the same range of results when progress indicators such as GPA were employed. The observed differences between this study and Boylan's may best be explained by the research methods used. While the initial comparability of populations was ensured in the present study through confirmation of similar demographic characteristics, Boylan's conclusions relative to two- and four-year colleges were reached in the absence of such controls. Moreover, much variation existed in the way developmental programs were operationally defined in the studies he chose to analyze, and the research methods undergirding such studies were open to questioning.

While the cross-program comparisons in this study affirmed the increased effectiveness with which two-year colleges are addressing the problems of high-risk students, no advantage was ascribed to either the two- or four-year sector when the academic achievement of students exempted from remediation was used as the standard for assessing

remedial program effectiveness. Across both collegiate sectors, exempted students had significantly higher grades and completed significantly more college credits than remediated students. Perhaps the practical reality is that even the most fundamentally sound remedial practices should not be expected to transform low-achieving students into the more efficient learning machines with whom the institution is shared. In the last analysis, it may be more important to consider whether high-risk students are succeeding than to ponder how well they are succeeding. Remedial program effects were more positively expressed through the measure of persistence when remediated-exempted comparisons were made. The special attention offered students at academic risk in this study was apparently an important determinant of their commitment to remain in school.

The use of multiple methods in this research allowed a more convincing explanation to emerge of why the redemptive practices in two-year colleges were more efficacious than those in the four-year sector. The advantage accorded high-risk students in community colleges was not primarily a result of the differences in the remedial approaches used across the two- and four-year collegiate sectors. Any inferences of the kind would fly in the face of the

evidence gathered in this study. That is to say, remedial programs don't exist in a vacuum. Rather, they are a part of a larger system of institutional variables that influence students' educational progress. Derived from the qualitative and quantitative analyses in this study was the resolution that the relative eminence of the remedial practices in community colleges is largely a result of their synergistic relationship with other institutional variables. This notion conforms to the systems model of organization which suggests that, in an open system, the parts of the organization affect their environment and are affected by it. This study disclosed that the efficacy of remedial programs must be judged with an eye on the institutional environment of which they are a part. To speak of program effect also is to speak of the context in which the remedial function exists.

The most effective remedial programs are commonly thought to be built around factors that were identified in this research as important contributors to the progress of high-risk students. These institutional variables include (a) attention from instructors, (b) attitudes of instructors and staff, (c) college environment, (d) class size, (e) peer relationships, and (f) college curriculum. Inherent in the notion of environmental press is the

attempt to use student-centered and goal-oriented services to influence student behavior. Remedial programs and the other learning environment variables identified above lie at the heart of the environmental factors most likely to affect the learning patterns of high-risk students. The press of the two-year college environment in this study had a more positive impact on the learning behaviors of underprepared students than did the climate within the four-year sector.

The two-year college environment in this investigation more accurately represented the high-quality learning climate that Mink (1977) felt would offer high-risk students a better chance at success. He stated that such growth-producing environments are responsive, for they are established to enhance the existence of all students, including those at academic risk. It appears that the remedial programs within selected community colleges were strengthened by the total college environment that high-risk students gambled on. Remedial programming in the four-year sector, on the other hand, was accomplished against a backdrop of many staff questioning the right of poorly prepared students to coexist with their more able peers. Successful remedial education programs are more likely to occur in learning environments where instructors

and staff are attempting to help all students grow (Roueche, 1977).

Roueche and Snow (1977) declared that students' abilities likely are not the only features of risk. They suggested that, perhaps, institutions themselves should be described as high- or low-risk environments. The findings of this study indicate that, in terms of opportunities for progress, there is less risk in the two-year collegiate sector for underprepared students. Remedial education programs are an important part of today's collegiate environment. However, their relative effectiveness will be determined, in large measure, according to how they are influenced by other factors within the total institutional environment.

This study also demonstrated that residence status had little effect on educational progress when high-risk students across selected two- and four-year collegiate sectors were the population of interest. On-campus living was, however, more positively related to the continued enrollment of high-risk students than to their academic achievement. Although a statistically significant relationship was not discovered, a pattern of greater persistence for resident students was established. Still, on-campus residence was not related to greater academic

achievement when college credits and GPA were the chosen progress measures.

The use of academic and social integration, as conceived by Tinto (1975), to explain the importance of on-campus residence relative to persistence found support in this study. The evidence indicates that the significant peer contact derived by resident students was particularly meaningful, for it created a sense of community membership that favorably affected their persistence in college. Such congruence among students appears to be especially important to young adults, such as the subjects selected for this study. The greater the contact among peers, the more likely students are to establish social and intellectual membership in their college, resulting in greater persistence (Tinto, 1987). On the other hand, the continued participation in the college community of students living at home was strongly promoted by their families. It seems that this countervailing force may partially explain why differences in the persistence behavior of students in this investigation were not more strongly in favor of on-campus students. Forces external to the college may serve to support or oppose participation in college life (Tinto, 1987).

Moreover, certain dimensions of the social and intellectual character of collegiate life that were important determinants of the GPAs of high-risk students appeared to operate independently of residence status. That is, on-campus residents derived no advantage with respect to the number and quality of interactions with faculty and staff. This suggests that the additional opportunities to interact with staff that resident students are commonly thought to have (Astin, 1975; Chickering, 1974; Dougherty, 1987) are illusory or, if they exist, are not used to the fullest advantage.

While, admittedly, the sample used in this part of the study was small (n = 16), the findings were clear. The effect of personal attention from instructors and of the quality of such interactions on GPAs was no greater for underprepared resident than nonresident students in the four-year sector. These institutional factors are embodied in Tinto's (1987) concepts of isolation and incongruence, as they apply to student departure. They are used in that context to describe the lack of interaction and the outcome of the quality of interaction between students and other members of the institution. The influence of the above institutional factors on the grade performance of high-risk students was most positively felt by commuters to community

colleges. Tinto confirmed that faculty behavior within the classroom influences academic performance and is a precursor to the likelihood of further interactions outside of class.

Remedial education programs were another important factor that affected the GPAs of high-risk students. Still, the evidence provided by this study confirmed that resident students use such programs in similar fashion as nonresident students. This indicates that, while on-campus residents may be more aware of related support services and have more convenient opportunities to use them apart from class, they are not making the most of their favorable circumstances. The effect of remedial programs on students' grades was greatest among nonresidents at two-year colleges.

The design of remedial education programs in selected two- and four-year collegiate sectors marks a shift away from the merger that occurred during the 1970s and 1980s between programs that stressed the affective dimensions of student development and earlier conceptions of remediation. Current attempts to address the needs of high-risk students have been grounded in concerns for skill building to cure academic deficiencies. Although the leaders of chosen two- and four-year colleges have given cursory attention to the

importance of encouraging the emotional growth of students, their programmatic responses clearly signal a return to more traditional attempts at remediation. While the instructional programs at participant institutions are bolstered by more comprehensive support services that have become the trademark of contemporary programs, the kernel of the remedial curricula--special courses in English, reading, and mathematics--represents the vision of an earlier time.

The strong emphasis on basic skills remediation and the coincident devaluation of the mission aimed at students' affective development are responses to certain extramural forces impinging upon participant colleges. The existent remedial program objectives reflect the more urgent demand by current students for skills that will prepare them for new educational technologies. The change in program emphasis was made easier by the abatement of the humanistic reaction to earlier mechanical approaches to remediation that helped usher in the developmental programs of the 1970s.

Implications for Educational Practice and Policy

At the conceptual core of this study was the desire to lend focus to current trends among state policymakers who

have removed the remedial function from the four-year university, while increasing its visibility in local community colleges. The findings should be instructive for state governments, generally, and for those legislators who represent the targeted region of the study, specifically. The increased effectiveness with which the selected two-year sector is addressing the needs of high-risk students, compared with the efforts of comparable four-year institutions, offers belated hope to the aforementioned state governments that decisions to consign the responsibility for remedial education to community colleges may be justified on the basis of the effective delivery of services. However, the defense of such declarations rests with comparative research studies that are yet to be performed. Still, there is reason to believe that the differences favoring the two-year sector in this study may have been even more pronounced if the comparisons had been made with larger four-year institutions.

State legislators who serve the region encompassing this study should consider the advantages of similarly assigning custody of the remedial function to the two-year collegiate sector. The climate for effecting the necessary legislation exists, for the public is demanding increased quality, accountability, and efficiency in higher

education. Moreover, external influences on the community college curriculum appear to be escalating, as state legislators, in particular, have responded to their fiscal responsibility by becoming more involved in the affairs of education.

However, pointing to lower per-student costs as the primary means to justify the place of remedial education in community colleges will not win favor with constituents, who are clamoring for more efficient use of their tax dollars. Rather, remedial education in the two-year sector must remain part of the state funding base because of the ability of community colleges to demonstrate that they are more capable than four-year institutions of delivering what is promised. That is the only acceptable answer to all who continue to wonder how many times basic skills education must be taught. In answering the foregoing charge, this research has demonstrated that participating community colleges--Brentwood and Bayberry--should adopt more responsibility for remedial education from the four-year institutions in their region. While contemplating the increased role for remedial education in the selected two-year sector, state policymakers should weigh the likely gains to be derived by underprepared students and

the broader community from introducing the required initiative.

The results of this study have immediate relevance for the students who are entering selected two- and four-year collegiate sectors without the requisite skills for academic success. The decision to enter one of the regional community colleges or four-year institutions is likely to have substantial impact on the progress of many low-achieving students. These prospective students, whose basic literacy skills are found wanting, should be urged by the staffs at participant community colleges and their secondary feeder schools to consider how the interplay of learning environment variables within chosen two- and four-year sectors may promote their educational progress. The sharing of this research with interested parties can help provide the necessary frame of reference. Directing underprepared students to neighboring community colleges rather than to larger four-year institutions should result in a smoother adjustment to the institution and a more desirable interface of remedial programs and academic skills deficiencies. In short, more meaningful opportunities for educational progress await such students within the selected two-year collegiate sector.

The revelations of this research concerning the impact of certain environmental influences on the progress of high-risk students suggest that the two- and four-year collegiate sectors may be able to increase the effectiveness with which they are addressing such students' needs by redesigning the learning environment. As confirmed by this study, an institution's remedial efforts are likely to be more effective if they are offered in an environment that maximizes the press of the following factors on its students: (a) attention from instructors, (b) quality interactions with instructors and staff, (c) small surroundings, including class size, (d) cohesive peer environment, and (e) responsive curriculum. While a natural advantage is granted most two-year colleges because of their reduced size, efforts can undoubtedly be made by all institutions to increase these desirable environmental forces that contribute to the progress of high-risk students.

The present findings have profound implications for all who work at the two- and four-year colleges in this study, should these institutions decide to accept more responsibility for the progress of high-risk students by systematically designing a more growth-oriented climate. Institutional leaders, of course, must initially consider

whether the necessary resources are available for the planning and implementation of such changes. Furthermore, support from the total staff should be secured, for the sort of positive alteration of the environment now contemplated would most likely require an unflinching commitment from everyone.

This study revealed that the ability to create a more favorable institutional climate for the progress of underprepared students may depend largely on the faculty. It appears that the one-to-one encounters with instructors and the positive evaluation of those exchanges by students are among the most important environmental influences on students' success. However, a larger proportion of faculty at participant four-year institutions questioned the propriety of offering students of such low caliber admission to "higher" education. Convincing this professoriate of the necessity to improve the number and quality of their personal contacts with such students, in and outside the classroom, could prove to be a rather formidable undertaking.

The development of more resolute policies and practices to enhance underprepared students' social and academic membership in their college should have a positive effect on persistence behavior. The findings of this study

suggest that the greatest rewards might be returned by aiming such efforts at the young adults who commute within selected two- and four-year collegiate sectors. Whether to attempt to periodically bring these students back to campus or to strengthen the college connection by reaching out to them in other ways will necessarily depend on the needs of individual institutions. While program development might be the chosen means of some institutions to heighten the effect of environmental variables like peer cohesion, other desirable influences affecting the progress of high-risk students probably can be aggrandized with little more than a stronger effort from existent personnel.

The opportunity for an institution to strengthen its redemptive practices by maximizing the press of certain environmental variables on students exists within both sectors of higher education. Yet, the struggle to produce a more growth-oriented environment for underprepared students should prove more difficult for four-year institutions, since their members are likely to be more resistant to the necessary organizational changes. In the end, each institution must determine the degree of satisfaction with how its remedial practices and attendant environmental influences are affecting students' progress. The results of this research hopefully will prove useful to

program evaluators and concerned others within the two- and four-year collegiate sectors as they ponder such questions.

An important issue exposed in this research relates to how the outcomes of studies of this kind are apparently influenced greatly by the precise definition given to remedial education. There is some evidence, for example, to suggest that remedial programs in community colleges that are defined as a basic skills curriculum and concomitant support services produce more favorable results than those defined in less sweeping terms. The problems that arise when comparing the results of research in this area are further exacerbated by the muddled connotations of developmental education. It may be that research practitioners should consider standardizing the definition of remedial education to permit cleaner evaluation, including more meaningful comparative analyses of studies.

Recommendations for Further Research

The contributions of this study can be extended by accepting the challenge inherent in the following recommendations for further research:

1. Of immediate importance to the body of research to which the present study contributes is an investigation of the possible effects of the phenomenon of "grade inflation"

on the GPAs of high-risk students in the selected two-year collegiate sector. The results of this study indicated that, despite lower ACT scores, the GPAs of the high-risk students in the chosen two-year sector were significantly higher than those of their counterparts in the selected four-year sector at the end of the criterion period. However, an inability to control certain potentially confounding variables was a function of the favored ex post facto research design. Prominent among such factors were the grading practices employed by instructors across the study's two- and four-year institutions.

Increasingly, academicians have been firing salvos at community colleges for their attempts to "level down" instruction as an answer for the preponderance of students who are unprepared for the rigors of college-level studies. An investigation of whether this study's two-year colleges are awarding higher grades than its four-year institutions for an equal or lesser amount of work is needed to sanction the conclusions drawn from the present findings. Ongoing comparisons between the GPAs of high-risk students who started in the chosen four-year sector and those who transferred from participant two- to four-year institutions could produce useful data for remedial program evaluators and state policymakers.

2. Further confirmation of the present findings is suggested through a replication of the study in the same or a similar setting, using a different sample of comparable two- and four-year institutions. Moreover, to increase the generalizability of the results of this study over a broader area, the research needs to be duplicated in many different regions of the country, including the urban as well as the rural settings in which comparable two- and four-year colleges can be found. The trend toward standardized assessment and placement procedures within entire college systems such as CUNY and the public institutions of New Jersey and Georgia should make it easier to find similar remedial programs and help ensure the initial comparability of student populations. Where feasible, the number of student informants used in the qualitative portion of the study should be increased to further validate the research findings.

3. A more complete understanding of how institutional size affects the progress of high-risk students across two- and four-year collegiate sectors is an important extension to the findings of this study. The results of this research were produced by using two- and four-year institutions that differed little with respect to size. Yet, it seems plausible that the impact of the remedial

programs and most other learning environment variables identified in this study as paramount to the progress of high-risk students is likely to be more pronounced in small institutions. Therefore, as increasing divergence in institutional size marks the comparisons between selected two- and four-year collegiate sectors, the advantages conceded students in the normally smaller two-year sector may become even more obvious. Such research could provide valuable insights for prospective students and state lawmakers. Further, information of this sort should be of special interest to collegiate leaders who face the task of redesigning the institutional environment to more effectively serve those at academic risk.

4. The criteria established for students' participation in the present study, including full-time enrollment status and degree aspiration, necessarily made recent high-school graduates the focus of attention. This is problematic only in the sense that older part-time students, many of whom require remediation, predominate on many of today's two-year college campuses. However, this example does point out the need to contextualize the effects of remedial programs and other institutional variables on students' progress by studying how they interact with different student characteristics across the

two- and four-year collegiate sectors. That is, a better understanding is required of how the effects of the primary institutional contributors to students' progress, as reported in this study, are altered with variations in students' age, race, sex, enrollment status, and program of study. Such knowledge could result in fresh approaches to the design of remedial programs and the broader institutional environment.

5. This research has confirmed the importance of successful integration into the academic and social systems of the college to student persistence. In light of these findings, a study seems warranted to investigate whether the persistence behavior of high-risk students who commute to two- and four-year institutions can be enhanced by the design of programs that attempt to strengthen the social and intellectual identification that such students have with their college. Further research is recommended to determine how the shape of effective programs varies with different categories of students. That is to say, it is unlikely that the same degree of institutional involvement will be required by all students. Therefore, the approach that promotes intellectual and social gains among part-time adults within two- and four-year collegiate sectors may be decidedly different from the successful strategies employed

with recent high-school graduates. These data would be of great interest to the leaders of all institutions who seek to strengthen their student retention policies.

6. The research design used in the present study obscured the effectiveness of remedial programs in separate skills areas. The efficacy of the redemptive efforts within selected two- and four-year sectors was assessed by considering the aggregate program effects on students' progress. A valuable extension to this research would be a similar study to assess the effects of remediation within the separate skills areas of English, reading, and mathematics. The multiple measures of student progress might be determined in accordance with the specific skill remediated. Moreover, an examination of the passing rates in subsequent mainstream courses that are dependent upon the remediated skill would add much to the evaluative effort. The relevant comparisons of the strength of the respective program components could then be made across the selected two- and four-year collegiate sectors.

7. The design of this study was necessarily constrained by the policy of required placement in remedial courses for low-achieving students at the participant two- and four-year institutions. Further research unbound by that constraint could add appreciably to the present

findings by incorporating into the research design a comparison between remediated students and those who needed, but did not complete, remediation. The addition of this feature to the remediated-exempted and cross-program comparisons inherent in the design would offer new insights relative to the effectiveness of remedial programs across selected two- and four-year collegiate sectors. The added comparison would allow the effectiveness of the redemptive strategies of two- and four-year institutions to be judged by assessing the extent to which students who complete remediation perform better in the mainstream program than those who forgo the recommended remedial coursework. The problem lies with locating comparable institutions where remedial placement is voluntary or where a sufficient number of students who avoid the remedial program can otherwise be found. However, the important dimension that this feature would add to the present evaluative study justifies making the effort.

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Appendices

Office of Student Services

Hagerstown Junior College

751 Robinwood Drive ■ Hagerstown, Maryland 21740-6590 ■ 301-790-2800 ■ Voice - TDD

Appendix A

Letter Soliciting Study Participation of
Four Rural Appalachian Colleges

September 16, 1987

Dear :

As the basis for my doctoral dissertation at Virginia Polytechnic Institute and State University, I will be assessing how comparable two- and four-year colleges are contributing to the academic progress of high-risk students. My research is designed to provide an empirical grounding for recent state policy resolutions that place remedial education strictly at the doorstep of community colleges while de-emphasizing its role within four-year institutions. My advisor, Dr. Darrel A. Clowes, is directing my study.

I would like to include your institution among the four regional Appalachian colleges from which my sample will be drawn. Your institution's participation would permit me to conduct student transcript analyses as well as interviews with both students and staff. The staff interviews should include those who are directly involved with the college program designed to address the educational needs of high-risk students.

As part of my research, I would like to interview the administrator most closely identified with the college's remedial program and an English instructor attached therein. Additional interviews may be desirable with a counselor, a mathematics instructor, or a reading instructor. The student interviews will be with a sample of high-risk students who matriculated at the college. Each interview would be conducted on your campus at the convenience of students and staff. As I am interested in aggregate data, personal identities will be protected.

I will be using interview instruments to facilitate the collection of data. Once final approval has been given for the use of these instruments, I will visit you and your

staff for the purpose of scheduling interviews. At this time, I will distribute a copy of the interview guide to the staff members who consent to be questioned. The students to be interviewed will be sampled in a stratified and selective way. The informed consent of all participants in the investigation will be solicited. I hope to initiate the data collection phase of the study in the winter or early spring of the current academic year.

I believe my research strikes at the heart of one of higher education's most perplexing issues: providing for today's underprepared students. Since we are concerned with offering this cohort real opportunities for progress, I perceive my work as having relevance for all who serve high-risk students. In return for your cooperation with my research, I will make available a summary of its results. Hopefully, we will share the advantages of the labor that awaits. Please inform me at your earliest convenience of your willingness to assist with my research efforts.

Sincerely,

Daniel E. Bock
Counselor/Professor

DEB:db

Appendix B

Data Recording Form

ID. No. ☐☐☐☐ NAME ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
LAST FIRST MI

☐☐☐☐☐☐☐☐☐ Social Security No.
☐☐ Age at College Entry
☐ Race W/N

☐ Sex M/F
☐☐☐ Name of College BBC/CCB/GSU/OVC

DATE OF INITIAL COLLEGE ENTRY ☐☐☐☐☐☐☐☐☐☐ Semester Year
☐ FULL-TIME Y/N

☐ Degree Pursuer Y/N
☐ High-Risk Student Y/N

☐☐ Rem. Credits Earned Fall '85
☐☐ ACT Comp. Score or Equivalent of SAT Total Score
☐☐☐☐ SAT Total

☐ Residence Status R/N/O
☐ Eligible Subject Y/N
☐ Group R/N

☐☐☐ Case No. of Chosen Subject
☐ Four-Semester Persistence Rate Y/N

THE FOLLOWING DATA ARE REGISTERED ONLY FOR SUBJECTS WHO PERSISTED THROUGH FOUR SEMESTERS:

☐☐ College Cr. Earned
☐☐ College Cr. Attempted

☐☐☐ Quality Pts. in College-Level Courses
☐☐ Rem. Credits Earned

Appendix C

Standardized Open-Ended Interview Used to Illuminate Contributors to the Scholastic Progress of High-Risk Students

The following definition of progress will be used in connection with this interview: Progress refers to the advancement toward your goal of a college degree. It is more specifically defined as the total college credits and grade point average earned after your first four semesters in school. Progress also is represented by your continuous enrollment over those four semesters.

1. Please state your name.
   a. What college did you enter in the fall of 1985?
   b. Did you live on or off campus throughout your freshman year?

2. As you think about the experience of being a student at (name of college), what were the most important factors at the college that contributed to your academic progress?

3. What specific factors at your college had the greatest effect on your grades?

4. What effect did living on/off campus have on your effort to stay in college?

5. How would you rate the remedial education program at (name of college) among the contributors to your academic progress?

6. What specific examples can you give of how the remedial program contributed to your academic progress?
   a. If the remedial program hindered your progress in any way, please describe how.

7. Briefly describe how you used the remedial program and related services.

Appendix D

Staff Interview Guide Used to Elicit Remedial Program Descriptions

I. Context
   a. name of college/its size and geographical identity?
   b. informant's name/position at the college?
   c. informant's length of employment at the college?
   d. informant's responsibilities relative to remedial program?

II. Philosophy
   a. college's philosophy with respect to high-risk students?
   b. attempts by college to articulate philosophy to students?

III. Rationale
   a. what are goals and objectives of remedial program?
   b. what are remedial program's origins?

IV. Placement of Students
   a. how are high-risk students identified--special recruitment strategies?
   b. what assessment measures are utilized?
   c. how is placement effected in remedial coursework--required vs. voluntary participation?
   d. nature of advisement process with high-risk students?
   e. what are entry/exit criteria for remedial courses?
   f. when are high-risk students permitted to enter mainstream curriculum?

V. Organizational Structure
   a. organizational form of this college's remedial effort--priority assigned by president?

VI. Support Services
   a. types of support services utilized within college's remedial program--extent of use?

VII. Curriculum
- a. courses included in remedial curriculum?
- b. instructional methods employed?
- c. grading practices and policies subscribed to?
- d. efforts to address the affective dimension of development within remedial program?
- e. resolution of credit/noncredit issue relative to remedial coursework?

VIII. Staffing
- a. how are instructors selected for remedial program--special skills sought?
- b. assignment of counselors to remedial program?
- c. professional development activities for remedial program personnel?

IX. Evaluation
- a. evaluative methods employed in relation to remedial program--role played by high-risk students?

Appendix E

Informed Consent Document

The dissertation research to be performed by Daniel E. Bock, a doctoral candidate in the College of Education at Virginia Polytechnic Institute and State University, has satisfactorily been explained to me. My participation in the investigation will require me to answer questions relative to my institution's remedial education program and/or other perceived contributors to the progress of high-risk students. The personal interview with Mr. Bock will be tape recorded and conducted at the college wherein I function primarily as an employee or in which place I entered as a freshman.

I understand that I am not obligated to participate in the study, the following terms of the inquiry, notwithstanding:

1. My identity will be protected, as all information is confidential.

2. All questions related to the investigation will be answered.

3. I am able to withdraw from participation in the study at any time.

Questions regarding this research also may be directed to Dr. Darrel Clowes (703 961-5558) or Dr. Thomas Sherman (703 961-5121), VPI & State University. With a complete understanding of the above terms that govern my involvement in this study, I agree to become a research subject.

_____	_____
Participant's Signature	Researcher's Signature
_____	Daniel E. Bock
Name	Name
_____	Counselor/Professor
Position	Position
_____	Hagerstown Junior College
College	College
_____	(301) 790-2800, Ext. 303
Date	Telephone No.

Office of Student Services
Hagerstown Junior College
751 Robinwood Drive ■ Hagerstown, Maryland 21740-6590 ■ 301-790-2800 ■ Voice - TDD

Appendix F

Letter to Prospective Student Informants
at Participant Colleges

November 20, 1988

Dear :

As you have learned from (name of administrator closely aligned with college's remedial program), I am seeking your help with the research that I am conducting while a student at VPI and State University. Briefly, I am attempting to determine how selected two- and four-year colleges are contributing to the progress of students who were underprepared for college-level work when initially admitted to school. Therefore, I wish to know what such students view as important contributors to their academic progress.

Your participation in the study would require you to answer a series of questions regarding the contributors to your progress while a student at (name of college). Since you live at or near the college, the interview will be conducted on campus, at your convenience. Approximately 30 minutes will be required to complete the interview. Your identity will not be revealed, as the information gathered will be treated in a responsible way.

I have enclosed a copy of the Informed Consent Document that describes the terms of which you agree to be interviewed. I hope that you can participate in what I think is a valuable research project. Please indicate your willingness to cooperate by completing the Informed Consent Document and mail it to me in the self-addressed stamped envelope that I have provided. I will then telephone you to schedule the interview. If you decide not to participate in the study, please forward the unsigned Informed Consent Document to me as soon as possible. In the meantime, thank you for your attention to this important matter.

Best wishes,

Daniel E. Bock
Counselor/Professor

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Appendix G

Sample Analysis of Interviews with High-Risk Students in the Two-Year Collegiate Sector

Theme: The role of remedial education as a contributor to students' progress.

Question: How would you rate the remedial education program at (name of college) among the contributors to your academic progress?

Very good. I highly recommend it [remedial program] to one who fell behind in high school as badly as I did. Yes, one of the primary factors at the college that helped me progress. (JB--CCB)

I think the remedial education program is very helpful because, obviously, I lacked them in high school and they noticed that right away. I actually did better when I went to college than when I went to high school and I think the below entry-level classes had a lot to do with it. (DA--BCC)

You're thankful that you had the remedial program when you go to other classes. The remedial courses helped with things that were not learned in high school. I don't feel I would have done as well without these classes. (WR--CCB)

If I hadn't taken the basic classes and went right into regular classes, I might not have done as good. It

helps instead of going into a class where you don't know what's going on. I don't think they should change anything. I'd rate the program highly. (TG--CCB)

I didn't do well in high school so I took developmental classes. That really helped me. When you're in high school, you don't pay attention. Now, I've got to sit down and study and the remedial education program made it a lot easier. My grades are high. (CW--CCB)

I had remedial courses and they really helped because they help you get on track on a college subject. The brushing up that you didn't have in high school--I think it was really good. It definitely helps in the little things that you do every day. (PB--BCC)

Assertion: The remedial education program is an important contributor to students' progress.

Question: What specific factors at your college had the greatest effect on your grades?

The remedial program was a review, a refresher. It also had a positive effect on my grades. (JB--CCB)

Remedial coursework helped with my grades in regular courses. (WR--CCB)

I wouldn't have made the grades I did without the remedial courses. (TG--CCB)

The remedial education program made it a lot easier--my grades were high. (CW--CCB)

The remedial program [had a great effect on my grades]. (PB--BCC)

Assertion: The remedial education program has a positive effect on students' grades.

Question: What specific examples can you give of how the remedial program contributed to your academic progress?

I took a lot of remedial courses like reading, math, and English. They were all needed because I was really behind. I really needed to brush up on my skills and the program helped me do that. The study skills course helped me a lot--how to read a chapter in a book. (JB--CCB)

I took reading and study skills and that taught you how to study a little bit better. You learn to read and read closely. That goes along with study skills. You pay more attention--you're just not reading and forgetting when you get done. You seem to take in everything as you're reading. I improved my math. (DA--BCC)

The remedial classes helped with my English weaknesses. It helped with my basic skills. Reading and English helped my skills. (WR--CCB)

It [remedial program] gave me a lot of review so the next semester I remembered more from it--what I didn't

learn in high school. The program helped with the basics. (GG--BCC)

I had basic math and English. It helped get more familiar with everything instead of going into higher classes. (TG--CCB)

I think they [remedial courses] were definitely a help as to trying to help me out where my weaknesses were. It [remedial program] rehashed things I had learned before and made me aware of things I knew and had forgotten and was able to relearn those. Being able to take the remedial math class, I was able to go over what I learned in high school that I wasn't so strong on. (MK--BCC)

I had an awful time with fractions and they [remedial courses] helped me with my math. They also helped me read and study better. The courses gave me the basics. (CW--CCB)

The English and reading and study skills, they helped me study and helped understand more--important things that I could pick out. It [remedial program] helps you to understand better what you're reading--little things that you don't really think about. (PB--BCC)

Assertion: The remedial education program strengthens students' basic skills.

The basic skills improvement showed up in later classes. (JB--CCB)

The [remedial] math didn't help as much later on because I stopped taking math but with reading and study skills--that carries throughout your whole college career. (DA--BCC)

Reading and basic English helped strengthen skills that helped with other coursework. I saw a big difference in my work after the 099 coursework. You're thankful that you had the remedial program when you go to other classes. (WR--CCB)

What I learned in [remedial] English helped in other courses. (GG--BCC)

I was more familiar with the stuff that they taught in the higher classes and that helped because, first year of college, I wasn't really prepared for it. That helped me prepare a little better. Remedial classes help you prepare for other classes. When you go in, you already know this and that. (TG--CCB)

The remedial courses gave me the basics which definitely helped me in my later classes. (CW--CCB)

Assertion: The remedial education program prepares students for the mainstream curriculum.

The [remedial] courses helped my confidence. The reason why you're in there is because you were never really able to do it and once you know you can do it, then you feel like going right on and doing the rest. (DA--BCC)

The remedial coursework helps you to go on in college. I felt more sure of what I was doing. (WR--CCB)

It [remedial program] helped my confidence a little bit. When you go to college for the first year, it's kind of hard to get used to a lot of things. It helps a lot. (TG--CCB)

Remedial classes gave you one on one attention with the instructor. It helped also with my confidence level. The instructors never shot me down if I didn't know something. (MK--BCC)

It [remedial program] helped me prove to myself that I could do it. I aced the first math test and knew that I could do it. (CW--CCB)

It seemed like it [remedial program] doesn't make you afraid to do other things. (PB--BCC)

Assertion: The remedial education program raises students' confidence.

I became close with other students that I had remedial courses with. It's a lot easier when you have someone there you know--it helps a lot. (DA--BCC)

A bond was created with other students. (PB--BCC)

Assertion: The remedial education program fosters a sense of "community" among students.

Appendix H

Summary Analyses of Statistical Procedures Used to Establish the Comparability of Student Populations

As noted in chapter 4--Findings--a multi-dimensional profile of the population and sample relative to this investigation was sketched in the hope that an argument for the comparability of separate student populations could be made. It was anticipated that selected control variables (i.e., age, aptitude, race, and gender) would remain constant so that their effects could be nullified.

Summaries of the one-way ANOVAs and chi-square tests that were applied in association with the foregoing variables across the four colleges' remedial and nonremedial groups, as well as over the total sample, are included in Tables H-1 and H-2.

Moreover, summary results are presented of several statistical procedures used to determine whether subjects who formed the study's primary comparison groups differed significantly on the chosen control variables. One-way ANOVAs and chi-square analyses were used on the relevant comparisons for remedial group members across the three dimensions of student affiliation (see Tables H-3 and H-4). Comparisons also were made between the remedial and nonremedial groups on the selected variables, incorporating all levels of student affiliation. Tables H-5 and H-6 report the results of such comparisons, derived through the use of t tests and chi-square analyses.

Table H-1

Summary of Analyses of Variance of Age and ACT Scores for Groups Composing Total Sample at Selected Two- and Four-Year Colleges (N = 622)

Variable	df	SS	MS	F	p-value
		Remedial group			
Age					
College	3	12.22	4.07	2.64	.049
Within-groups	307	474.20	1.54	--	--
Total	310	486.42	--	--	--
ACT					
College	3	149.91	49.97	8.20**	.000
Within-groups	307	1,870.07	6.09	--	--
Total	310	2,019.98	--	--	--
		Nonremedial group			
Age					
College	3	17.33	5.78	2.41	.066
Within-groups	307	734.03	2.39	--	--
Total	310	751.36	--	--	--
ACT					
College	3	764.24	254.74	15.02**	.000
Within-groups	307	5,204.94	16.95	--	--
Total	310	5,969.18	--	--	--
		Total			
Age					
College	3	27.60	9.20	4.69*	.003
Within-groups	618	1,213.58	1.96	--	--
Total	621	1,241.18	--	--	--
ACT					
College	3	700.74	233.58	8.75**	.000
Within-groups	618	16,494.94	26.69	--	--
Total	621	17,195.68	--	--	--

Note. ACT = American College Test. (Data were based on composite scores.)

*$p < .005$. **$p < .001$.

Table H-2

Chi-Square Analyses of College by Race and by Gender for Groups Composing Total Sample (N = 622)

Variables	df	X^2	p-value	ϕ'
		Remedial group		
College/race	3	40.58**	.000	.36
College/gender	3	12.31*	.006	.20
		Nonremedial group		
College/race	3	7.55	.056	.16
College/gender	3	8.38	.039	.16
		Total		
College/race	3	44.60**	.000	.27
College/gender	3	10.79	.013	.13

*$p < .01$. **$p < .001$.

Table H-3

Summary of Analyses of Variance of Age and ACT Scores for Remedial Groups With Different Student Affiliations (N = 311)

Variable	df	SS	MS	F	p-value
Age					
Affiliation	2	9.74	4.87	3.14	.044
Within-groups	308	476.68	1.55	--	--
Total	310	486.42	--	--	--
ACT					
Affiliation	2	149.86	74.93	12.34*	.000
Within-groups	308	1,870.11	6.07	--	--
Total	310	2,019.97	--	--	--

Note. ACT = American College Test. (Data were based on composite scores.)

*$p < .001$.

Table H-4

Chi-Square Analyses of Student Affiliation by Race and by Gender for Remedial Groups (N = 311)

Variables	df	X^2	p-value	ϕ'
Affiliation/race	2	31.59**	.000	.32
Affiliation/gender	2	11.30*	.003	.19

*$p < .005$. **$p < .001$.

Table H-5

Comparison of Age and ACT Scores for Remedial and Nonremedial Groups Incorporating All Dimensions of Student Affiliation (N = 622)

	Remedial group (n = 311)		Nonremedial group (n = 311)		
Variable	M	SD	M	SD	t
Age	18.19	1.25	18.05	1.56	1.31
ACT	13.01	2.55	20.70	4.39	-26.73*

Note. ACT = American College Test. (Data were based on composite scores.)

*p < .001.

Table H-6

Chi-Square Analyses of Group by Race and by Gender Incorporating All Dimensions of Student Affiliation (N = 622)

Variables	df	x^2	p-value	ϕ
Group/race	1	43.59*	.000	.26
Group/gender	1	2.34	.126	.06

*$p < .001$.

Appendix I

Summary Analyses of Statistical Procedures Used to Address Research Questions

It was observed in chapter 4--Findings--that quantitative data were gathered to address the first three research questions of this study. The summary tables of several inferential statistical procedures to which such data were subjected are displayed in subsequent tables.

Tables I-1 through I-3 present the results of two-way ANOVAs and chi-square procedures used to address question 1. Summaries of the one-way ANCOVA, one-way ANOVA, and chi-square test that were employed to answer question 2 are presented in Tables I-4 through I-6. The data used to address question 3 were subjected to a one-way ANCOVA, a one-way ANOVA, and multiple chi-square tests. The results of these statistical analyses are included in Tables I-7 through I-10.

Table I-1

Analysis of Variance of College Credits Earned by Groups With Different Student Affiliations (N = 394)

Source of variation	df	SS	MS	F	p-value
Group (A)	1	13,632.74	13,632.74	122.89**	.000
Affiliation (B)	2	751.43	375.72	3.39*	.035
A x B	2	35.56	17.78	0.16	.852
Within groups	388	43,042.05	110.93	--	--
Total	393	57,277.48	--	--	--

*$p < .05$. **$p < .001$.

Table I-2

Analysis of Variance of GPAs Earned by Groups With Different Student Affiliations (N = 394)

Source of variation	df	SS	MS	F	p-value
Group (A)	1	23.48	23.48	85.63*	.000
Affiliation (B)	2	7.33	3.67	13.38*	.000
A x B	2	0.18	0.09	0.33	.720
Within groups	388	106.37	0.27	--	--
Total	393	138.54	--	--	--

Note. GPA = Cumulative Grade Point Average.

*$p < .001$.

Table I-3

Chi-Square Analyses of Group by Persistence for Two-Year Nonresident, Four-Year Nonresident, and Four-Year Resident Students (N = 622)

Variables	df	X^2	p-value	ϕ
Two-year nonresident students (n = 236)				
Group/persistence	1	7.32*	.007	.18
Four-year nonresident students (n = 130)				
Group/persistence	1	3.17	.075	.16
Four-year resident students (n = 256)				
Group/persistence	1	0.28	.599	.03

*$p < .01$.

Table I-4

Analysis of Covariance of College Credits Earned by High-Risk Students With Different Student Affiliations (N = 180)

Source of variation	df	SS	MS	F	p-value
Affiliation	2	451.96	225.98	1.91	.151
Within groups	176	20,814.97	118.27	--	--
Total	178	23,694.44	--	--	--

Table I-5

Analysis of Variance of GPAs Earned by High-Risk Students With Different Student Affiliations (N = 180)

Source of variation	df	SS	MS	F	p-value
Affiliation	2	3.61	1.81	7.69*	.000
Within groups	177	41.56	0.23	--	--
Total	179	45.18	--	--	--

Note. GPA = Cumulative Grade Point Average.

*$p < .001$.

Table I-6

Chi-Square Analysis of Student Affiliation by Persistence for High-Risk Students (N = 311)

Variables	df	X^2	p-value	ϕ'
Affiliation/persistence	2	3.73	.155	.11

Table I-7

Analysis of Covariance of College Credits Earned by High-Risk Students Attending Separate Colleges (N = 180)

Source of variation	df	SS	MS	F	p-value
College	3	692.76	230.92	1.96	.121
Within groups	175	20,574.17	117.57	--	--
Total	178	23,694.44	--	--	--

Table I-8

Analysis of Variance of GPAs Earned by High-Risk Students Attending Separate Colleges (N = 180)

Source of variation	df	SS	MS	F	p-value
College	3	3.84	1.28	5.46*	.001
Within groups	176	41.33	0.23	--	--
Total	179	45.18	--	--	--

Note. GPA = Cumulative Grade Point Average.

*$p < .005$.

Table I-9

Chi-Square Analysis of College by Persistence for High-Risk Students (N = 311)

Variables	df	X^2	p-value	ø'
College/persistence	3	1.03	.794	.06

Table I-10

Chi-Square Analyses of Residence Status by Persistence for High-Risk Students at Four-Year Colleges (N = 193)

Variables	df	X^2	p-value	ϕ
Greentree State University (n = 101)				
Residence status/ persistence	1	2.30	.129	.15
Oak Valley College (n = 92)				
Residence status/ persistence	1	1.97	.161	.15

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