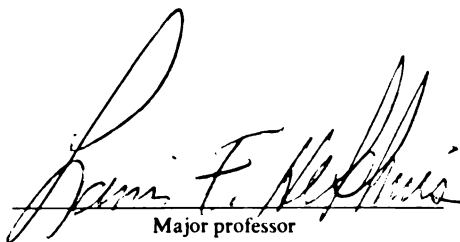This is to certify that the

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A STUDY OF PERCEPTUAL CHANGES ON THE PART OF STUDENTS WITH RESPECT TO THEIR DECISIONS TO PURSUE GRADUATE STUDIES

presented by

Mary Lee Vance

has been accepted towards fulfillment
of the requirements for

___Ph.D.___ degree in _Educational_ Administration

Major professor

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A STUDY OF PERCEPTUAL CHANGES ON THE PART OF STUDENTS

WITH RESPECT TO THEIR DECISIONS TO

PURSUE GRADUATE STUDIES

By

Mary Lee Vance

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Educational Administration

1993

ABSTRACT

A STUDY OF PERCEPTUAL CHANGES ON THE PART OF STUDENTS
WITH RESPECT TO THEIR DECISIONS TO
PURSUE GRADUATE STUDIES

By

Mary Lee Vance

Two undergraduate research programs were studied: the Summer Research Opportunity Program (SROP) initiated in 1986 by the Committee on Institutional Cooperation (CIC) and the Ronald E. McNair Post-Baccalaureate Achievement Program, a federal TRIO program first funded by the U.S. Department of Education in 1989. Both targeted students to pursue research/ faculty careers.

The researcher sought to determine what, if any, perceptual changes took place on the part of students who participated in SROP and McNair with respect to their decisions on whether to pursue graduate studies. Three research hypotheses were formulated, two of which showed significant differences between groups in terms of interest in graduate schools and confidence in participants' abilities to succeed in graduate or professional schools.

The following student groups--(a) those achieving grade point averages of 2.5 and above, (b) black males, and (c) students engaged in second or third year participation--demonstrated the most positive growth in self-confidence.

Mary Lee Vance

Women, irrespective of race, showed little change. The most negatively affected group was the nonblack males. The study provided evidence that some perceptual changes did occur, especially in the case of black males. Demographics and the research results indicate that more attention may need to be provided to women and nonblack minorities if they are to experience similar perceptual changes in self-confidence development with respect to pursuing graduate studies.

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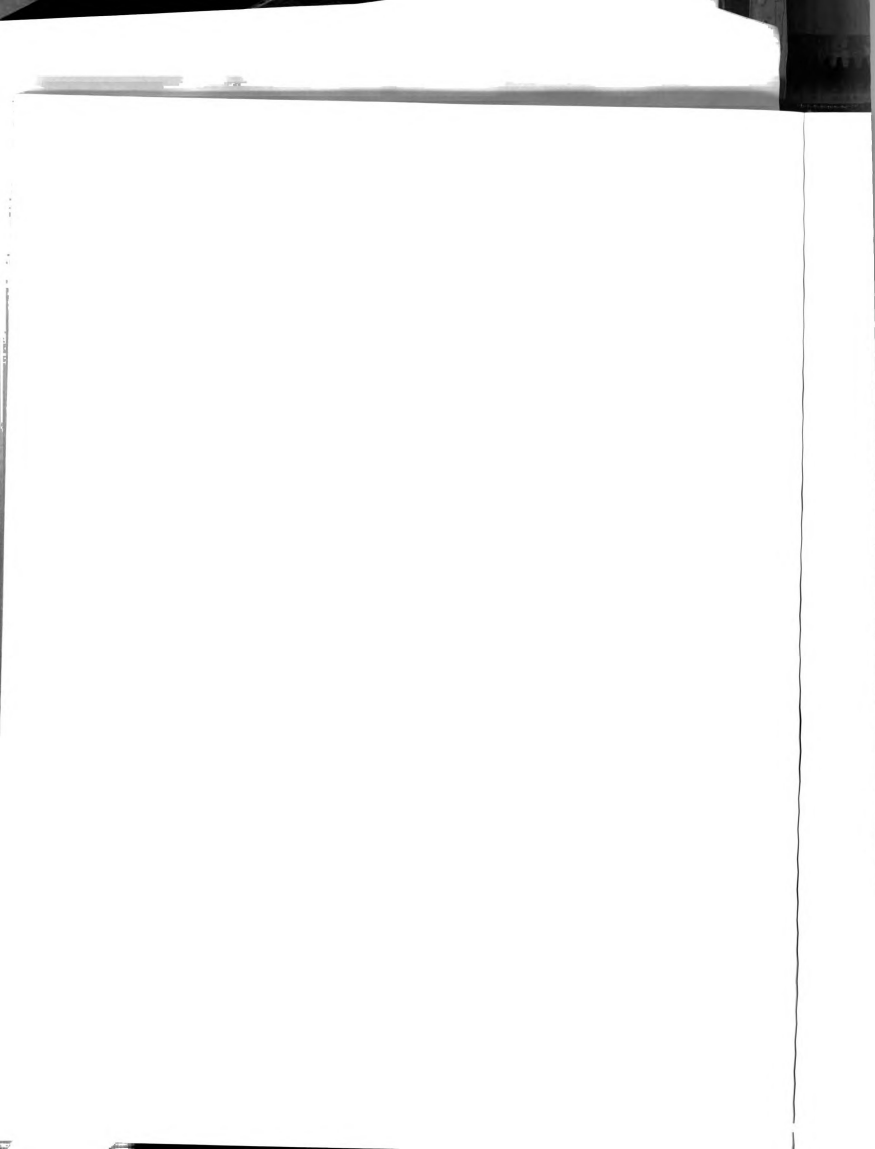
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IN MEMORY

During 1992-1993, two significant people died. One was my paternal grandmother, Rosalie Hoeft, a Swiss immigrant who never went to college herself but raised children and grandchildren who did. The other person was an MSU environmental engineer alumnus, Mark Ramon, a 1991-1992 McNair participant and PAL. This research is dedicated to their memories and their educational dreams.
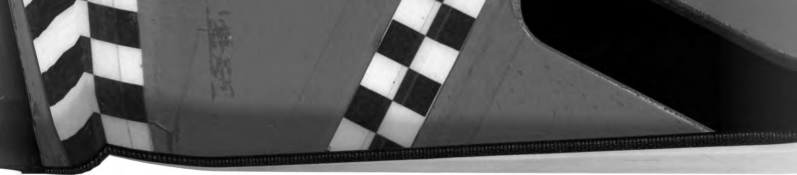
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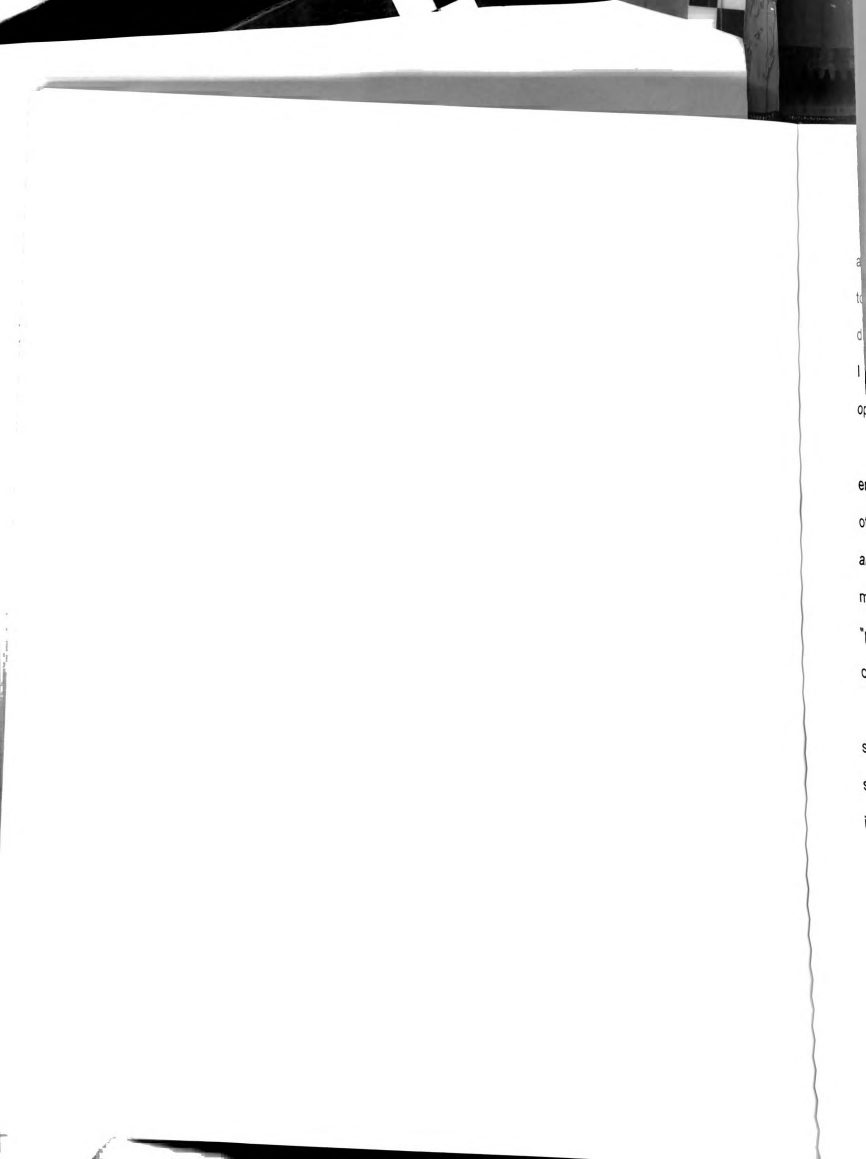
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ACKNOWLEDGMENTS

Special recognition and acknowledgment go to Shawn Whitcomb, my assistant coordinator for the last four years. Without his conscientious attention to the SROP and McNair programs, this study would have been made far more difficult. More than anything, I have treasured his friendship, loyalty, and support. I wish him the very best and hope that someday he and I might have the opportunity to work together again.

Other supporters include Dr. Elaine Cherney, who provided me encouragement and guidance during the numerous "Is there no light at the end of the tunnel?" periods. Thanks to Cheryl O'Brien, a former McNair participant and friend, who patiently took me to "work-out" sessions at the IM in order to give me breaks from my work. Last but not least, I would like to thank my e-mail "psychiatrist," Dr. Maureen Lienau. To all, I am highly appreciative of their concern for my personal and mental well-being during this critical period.

Most important of all, I would like to thank the student participants in this study. It is my hope and wish that they will have the opportunity to achieve the same type of satisfaction I now have, completion of a doctorate degree. It is an incredible feeling!

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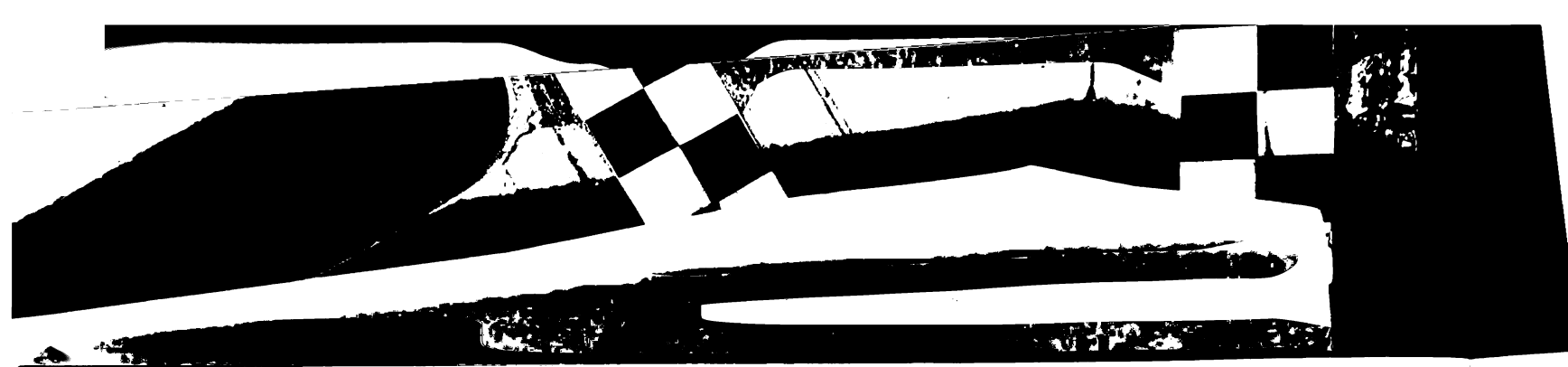
CHAPTER I

INTRODUCTION

Statement of the Problem

Since the inception of both the Ronald E. McNair Post-Baccalaureate Achievement Program in 1989 and the Summer Research Opportunity Program (SROP) in 1986, no published record has been made of the history, much less the track record, of the Michigan State University (MSU) undergraduate multidisciplinary research program's successes or failures.

National demographics and the institution's own commitment to diversity and minority opportunities helped create the MSU IDEA (Institutional Diversity: Excellence in Action) (Office of the Provost, 1989) report, a document that reinforced what the composition of the future workforce is predicted to be. The document addressed critical issues related to diversity, stating:

> Between now and the year 2000, minorities and women will make up 85% of the new people entering the nation's workforce, and the number of handicappers in the workplace will increase. By the year 2000 one out of every three people will be non-white and one-third of all school children will be minorities. (Office of the Provost, 1989, p. 1)

Among the 50 ideas listed in the MSU IDEA II (Office of the Provost, 1992) were suggestions for implementing and strengthening undergraduate research opportunities. With the support of the institution, federal grants, and private resources, research opportunities were made more accessible to minority

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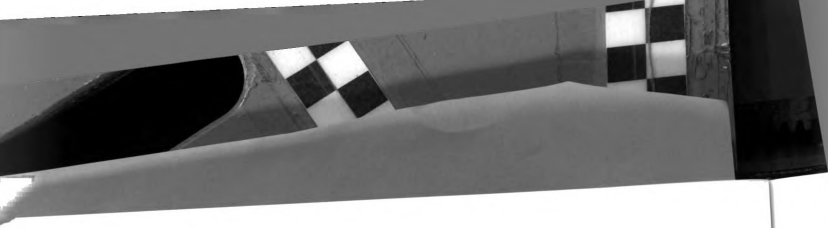
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students, as well as to other students who were considered underrepresented in doctoral programs. As a leading research institution, Michigan State University had historically supported research opportunities for faculty and graduate students. In 1986, the CIC Summer Research Opportunity Program (SROP) for Minority Students was first initiated at MSU and selected member institutions. It was the first multidisciplinary undergraduate research program to be offered on the MSU campus.

Since then, two similar programs have been developed. The Ronald E. McNair Post-Baccalaureate Achievement Program was first funded in 1988, and the Developing Research Expertise at Michigan State (DREAMS) program (formerly known as the Research Initiation Program--RIP) was begun in 1990. For the purposes of this study, because comprehensive data are available on only two of the programs, only the SROP and McNair programs are reviewed.

The CIC Summer Research Opportunity Program (SROP)

The Committee on Institutional Cooperation (CIC) was founded in 1958 and is composed of a consortium of 12 major research institutions: The University of Chicago, the University of Illinois, Indiana University, the University of Iowa, the University of Michigan, Michigan State University, the University of Minnesota, Northwestern University, The Ohio State University, Pennsylvania State University, Purdue University, and the University of Wisconsin-Madison. The primary focus of the CIC is to establish joint academic projects and

programs that promote more effective communications among the faculties and staffs of the member institutions.

The Summer Research Opportunity Program (SROP), which was initiated by the CIC graduate deans in 1986, is administered by the CIC and relies on member institutions to coordinate the campus-based programs. Student participants come from within the Big Ten, historically black colleges and universities, Hispanic-serving institutions, and selected Ivy League and West Coast institutions.

Primary student participants considered particularly underrepresented by the CIC are from the African American, Chicano/Hispanic, and Native American groups. Primary sponsors of the CIC SROP have been the Andrew W. Mellon Foundation, the Lilly Endowment, Inc., the W. K. Kellogg Foundation, and Sloan. In its renewal proposal, the CIC (1991a) explained that it

> is unique among academic consortia in the size and strength of its member institutions, all of which are counted among the leading research institutions in the nation. Collectively, these twelve institutions engage in nearly $2 billion worth of externally funded research annually, employ over 33,000 full-time faculty members, and enroll nearly one-half million undergraduate, graduate and professional students on their principal campuses. CIC institutions confer nearly 10% of all Ph.D. degrees awarded annually in the United States. (p. 1)

Since the inception of SROP in 1986, more than 1,952 SROP students have been supported, of whom 303 were repeat participants. Records show that 799 students from Big Ten institutions are known to have graduated. More than 300 participants, of whom several were reapplicants, have been involved in the MSU program since its inception. The CIC (1991c) claimed:
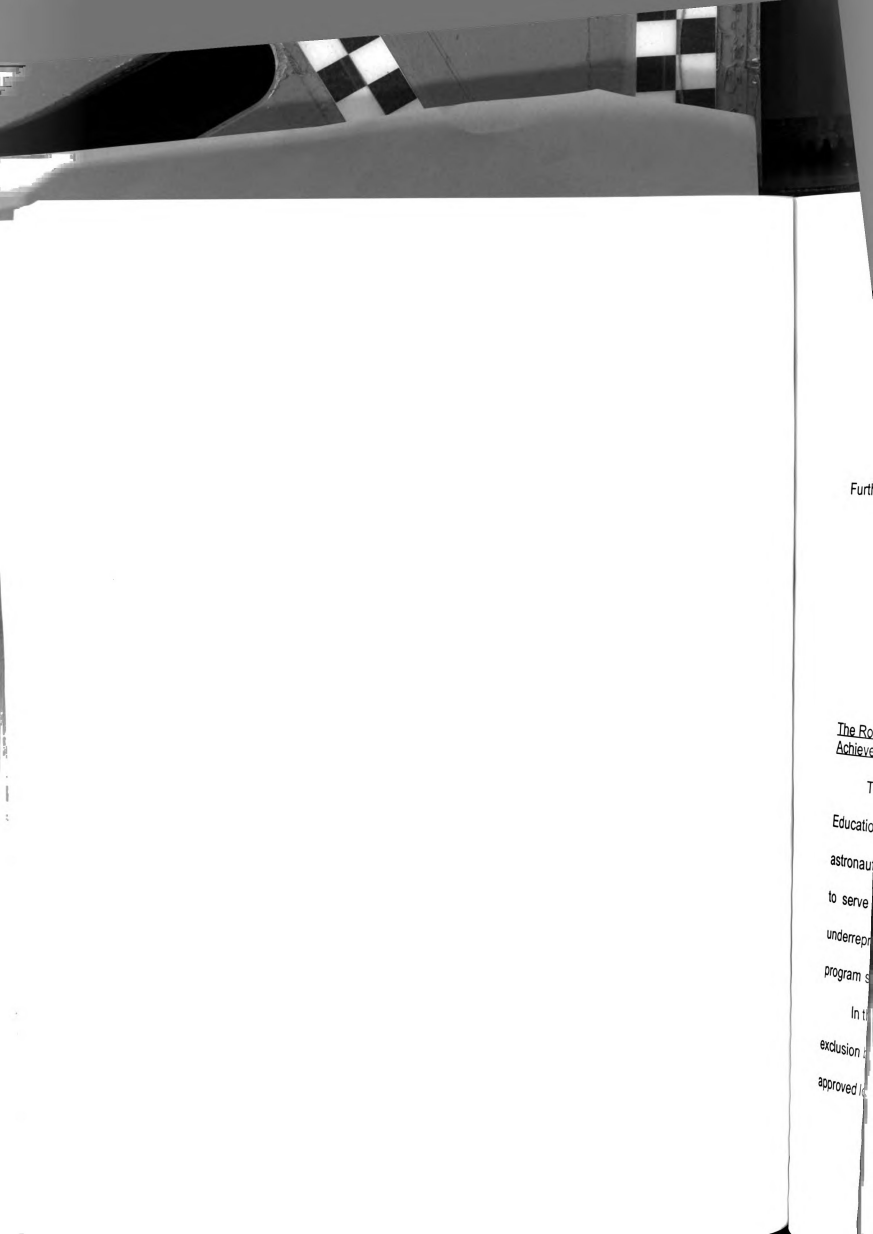
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Of the students for whom we have information, 46% are enrolled in graduate schools, 12% in medical schools, and 12.6% in other professional schools or post-baccalaureate programs. 29.3% of the graduates are employed. Many of those who are working full-time indicate that they either are enrolled part-time or are thinking about enrolling in graduate school. We are still in the process of gathering information concerning students for whom we have no information. Five former SROP students have already earned doctorates from CIC institutions. (p. 5)

Furthermore, the CIC claimed:

1. retention and progress to degree (98% of the 1,952 SROP participants are still enrolled or have received their undergraduate degrees);

2. admission to post-baccalaureate programs (71% of SROP participants who have graduated have entered graduate or professional programs, three times the national average for all baccalaureates, with over half of the SROP students enrolled in programs already planning academic careers).

The Ronald E. McNair Post-Baccalaureate Achievement Program

The McNair program was first funded by the U.S. Department of Education in late 1988. The program, named in honor of the African American astronaut killed in the 1986 USS Challenger Space Shuttle disaster, is intended to serve low-income and first-generation students and students who are underrepresented in doctoral programs. As with the CIC SROP, the McNair program seeks to reverse the current educational pipeline trend.

In the McNair program, unlike the CIC SROP, federal guidelines prohibit exclusion based on race, especially if the McNair applicants meet the federally approved low-income and first-generation criteria. The intention and focus of the

MSU McNair program is to target members of groups that are underrepresented in doctoral programs.

In 1988, 14 McNair programs across the United States were awarded federal grants. MSU's program was one of the first to be awarded a three-year grant. In 1989, 14 additional programs across the nation were funded for a two-year period, and in 1990, 14 more programs were funded for one year. A new call for proposals was made late in 1992, requiring currently existing programs to compete for a new three-year grant.

Michigan State University was, and still is, unique in many ways, one of which is that it is the only institution in the nation that has both a McNair program and a SROP program coordinated by the same department and personnel. Within the CIC, there are only a few other institutions having both a McNair and a SROP on the same campus.

Indicative of MSU's commitment to undergraduate research opportunities is the fact that institutional support for the McNair participants has been generous since its first grant year. Federal guidelines provide a maximum amount of $2,400 per student participant, to be used as stipends during each annual research period. Because SROP students have been provided $3,000 stipends since 1986, MSU agreed to provide an additional $600 per McNair student, so that both programs would provide equal stipends. In addition to the extra stipend support, MSU has purchased participant T-shirts and has assisted with conferences and various other expenses.

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At the time of this study, no data existed on the success rate of McNair participants across the nation. Because of the unusual relationship between the MSU SROP and McNair programs, the MSU McNair data are included with the SROP information. Through an agreement with the CIC, all MSU McNair participants have been included in the CIC SROP program and are eligible to participate in the annual Big Ten CIC SROP Conference. They have been included in the CIC SROP follow-up reports and are considered SROP participants, for all intents and purposes, by the CIC.

Purpose of the Study

The purpose of this study was to determine what, if any, perceptual changes took place on the part of students who participated in the Michigan State University SROP and McNair programs with respect to their decisions regarding whether to pursue graduate studies. The available literature has chronicled the efforts that MSU and other institutions have made to increase minority graduate enrollment, with the ultimate intention to increase the supply of minority faculty. This researcher sought to focus on the perceptual outcomes of the McNair and SROP undergraduate preparation programs at MSU during the last year.

The researcher anticipated that, by examining the past record of the combined two MSU programs, SROP and McNair, a linkage between the undergraduate research programs at MSU and an increase in minority graduate program admits could be made. An attempt was made to examine minority

undergraduate students' perceptions with regard to graduate program admissions and other issues relevant to the postbaccalaureate process, thereby possibly increasing the minority graduate pool into faculty/research careers.

A primary objective of the undergraduate opportunity program is having the undergraduate work closely with a faculty mentor. Faculty play a major role in whether or not a student will decide, not only to complete an undergraduate degree but also to pursue an advanced degree. Mentors are viewed as being extremely important in contributing to students' perceptions of being ready for graduate school. The mentor and student relationship has always been, and probably will remain, a key element in the undergraduate research experience. As in the beginning, the faculty remain key players in their discipline-specific research.

Sands, Parson, and Duane (1991) stated that the term "mentor" has its origins in Greek mythology. The Greek gods or goddesses assuming the role of Mentors provided advice to, protected, and otherwise cared for their charges. In the same manner, faculty mentors of today guide, educate, support, and interact with their student researchers. Sedlacek (1983) noted:

> Students who find something or someone to identify with at a school are more likely to stay. Interviews with graduating seniors at the University of Maryland, College Park, showed that the single most important thing that students felt that they had gotten out of college was not something they had learned in a course or their preparation for employment but the relationship that they had formed with a faculty member. (p. 39)
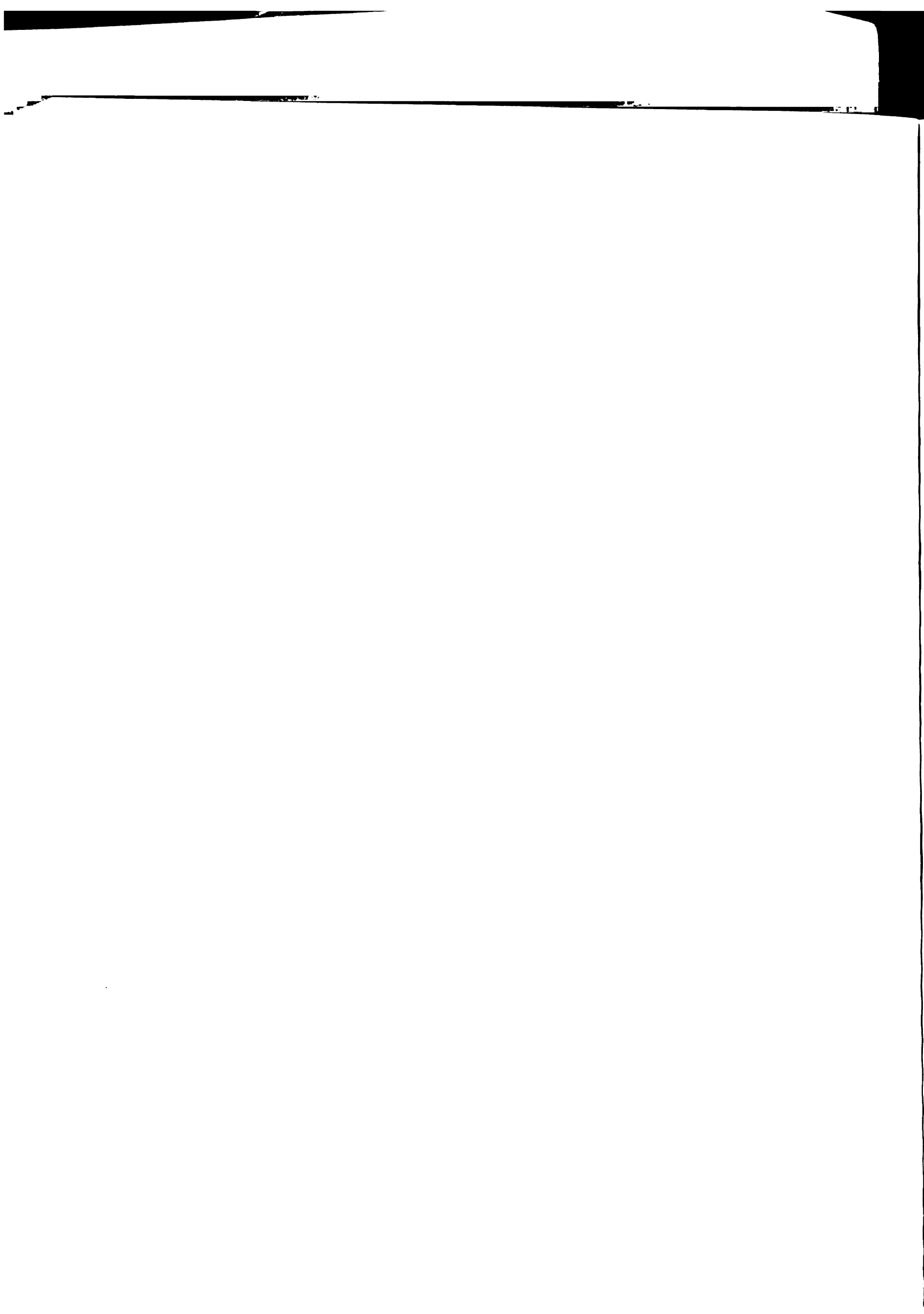
Background

Research opportunities targeting historically underrepresented undergraduate racial minorities and students from low-income and first-generation backgrounds have become more evident. As the nation gears up for the year 2000 and beyond, it has become increasingly evident to social researchers that there is a growing need to include these populations in the higher-income-earning brackets. In 1988, more than 100 deans, representing graduate schools across the nation, met to exchange ideas and strategies for addressing concerns related to the predicted faculty shortage:

> They discussed how they could further enhance the presence of minority graduate students and faculty in the nation's college and university campuses. Armed with the examples of their own institutions, these deans took a frank look at action that they could initiate and outcomes that they could expect as the subject was discussed. There was unanimous agreement that more needed to be done, that the entire campus community had to be involved in whatever plan was developed, and that the full and continuing participation of the faculty was critical to the success of any venture that was undertaken. (Council of Graduate Schools, 1988, p. 4)

Opportunities targeted toward students who were underrepresented in doctoral programs, specifically racial minorities, were created in an attempt to diversify the future racial composition of higher education faculty/administrative ranks. Graduate deans across the nation seemed to realize that more active recruitment efforts needed to be focused on undergraduate students. Deans found themselves looking critically not only at the current graduate population but also at the admission and retention issues of the undergraduates.

In a descriptive study done by the Graduate School at Oklahoma State University, the Director of the Student Academic Services warned: "Graduate deans and related personnel must support activities aimed at increasing the *undergraduate* student body if they are to increase the minority graduate student body" (Olson, 1988, p. 41).

Since 1986, MSU has actively supported undergraduate research programs targeted at recruiting minorities to pursue graduate studies. In 1989, the MSU Supportive Services Advisory Committee (SSAC) recommended to the Provost that:

> institutional grant aid be used to award more non-need-based scholarships to academically outstanding underrepresented minority students. Further, SSAC recommends that the practice of reducing MSU grant aid for students when they receive external scholarship aid be stopped. Such reduction penalizes outstanding financially needy students generally, and the outstanding financially needy minority student, in particular, and the elimination of this practice could aid recruitment efforts for both groups of students. (p. 2)

The SSAC further recommended:

> that MSU financial support of the Summer Research Opportunity Program be expanded to include funding for up to 60 students with a focus upon underrepresented groups such as Blacks, Chicanos, and Native Americans. This would place MSU levels of support for minority student research participation at a level equivalent to that of peer institutions and would make a great contribution to increasing the pool of underrepresented minority students aware of and prepared to consider enrollment in graduate degree programs. (p. 2)

The 1992 edition of the MSU IDEA II (Office of the Provost, 1992) report stressed commitment to the recruitment of minority and female faculty. In the Overview, the report acknowledged MSU's concern over the low numbers of women and minorities on the faculty tenure track:

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Michigan State has shown slow but steady improvement in recruitment rates for minority and women faculty within the tenure system over the last decade, with the percentage of tenure-system protected class employment rising from 20.4 in 1980 to 29.3 in 1991; however, the University has been less successful in retaining minority and women faculty during that same time period. Minorities and women are underrepresented among the tenure-stream faculty relative to availability in a number of disciplines, and the progress of minorities and women into senior faculty ranks and into administrative leadership positions is slow. (p. 11)

Initiative 24 in the MSU IDEA II addresses the long-term planning required to develop a wider pool of female and minority faculty. The initiative noted:

The Graduate School, in concert with the Office of the Provost, will coordinate, monitor, and support undergraduate (and high school) programs such as the Summer Research Opportunity Program and the Research Internship Program, designed to increase the pool of potential minority graduate students. (p. 61)

In addition to MSU, two other sponsors of the MSU multidisciplinary undergraduate opportunity outreach programs, SROP and McNair, are the Committee on Institutional Cooperation (CIC) and the U.S. Department of Education. As a result of having three major funding sources, the combined programs have grown steadily through the years, serving about 80 students annually.

Through the years, the SROP and McNair programs have endeavored to develop more "rounded" faculty members, ones who are accomplished at both research and teaching. Baldwin (1990) explored the issue of faculty vitality in the arenas of teaching, research, and public service. All of these areas are encouraged and needed. However, faculty often are forced to choose research over developing teaching techniques and/or public service involvement. Baldwin wrote:

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The researchers learned that "highly active ideal type" research university faculty allocated a smaller percentage of their time to teaching and had a stronger research orientation than did a "representative" sample of their colleagues. Likewise, Clark and Corcoran found that more highly active than representative faculty viewed department and institutional activities as significant drains on their research time.

The SROP program, the oldest and most uniform of the two programs examined in this study, strives to provide students with three primary forms of exposure:

1. Campus-based activities, including weekly seminar meetings, inservices, research oversight, and campus-specific requirements for holistic development.

2. Research with the faculty—a critical portion of the program, in which the student learns, from a faculty member, the processes and procedures for professional research.

3. The annual CIC/SROP Big Ten Conference, a time when all student researchers, from all disciplines, have the opportunity to mix and mingle socially.

The above-mentioned threefold focus model is used with the MSU-based McNair program, as well.

Among the numerous MSU campus-based activities and requirements that the student participants complete are the following: the development and submission of research abstracts and research papers; videotaped oral defenses conducted before fellow research and faculty mentors; creation and presentation of visual display capsulizing the research experience; participation in

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conferences, thereby practicing and refining social networking skills; and participation in weekly educational seminars conducted by prestigious faculty members.

Returning students serve as peer administrative leaders (PALs), taking responsibility for introducing guest speakers, peer advising new participants, and assisting with the weekly seminar schedule. All activities and required events are designed to increase and enhance the student participants' opportunities to become competitive graduate school candidates and ultimately to be better prepared to deal with the realities of pursuing a career in research and teaching.

In The Craft of Teaching, Eble (1976) listed numerous myths regarding the teaching profession, among which were the following:

* That teachers are born and not made.
* That research is complementary to teaching.
* That teaching a subject matter requires only that one knows it.
* That college teaching is not a profession. (p. 10)

Traditionally, many graduate schools recruited other schools' "bright and talented" students, spending little energy with their home institutions. In essence, the myth that "teachers are born and not made" then ceased to be a myth and became accepted as the truth.

The National Picture

The statistics show an alarming trend: Fewer minorities are preparing to be teachers. According to the Commission on Minority Participation in Education and American Life (1988), few minority students are interested in the teaching profession. The Commission's report stated that the historically black colleges

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and universities, which have traditionally produced more than half of the black teachers, have seen a marked decrease in education majors. This loss not only affects minority students of the future, but it will influence majority students as well, who will be provided one less opportunity to be exposed to minorities over the course of their schooling.

Education, which is a right for students whose families are in the higher income brackets, is a privilege for those students on the lower economic rung. The future outlook for low-income minorities in terms of their education is not promising. The 1988 study by the Commission on Minority Participation in Education and American Life reported that "In the year 1000, almost 42% of all public school students will be minority or other children of poverty. In a few years they will be one-third of the nation's adults" (p. 3). The same report revealed:

> For example, although blacks made up 9% of all undergraduate students in 1984-85, they received 8% of the associates' degrees and 6% of the baccalaureate degrees conferred that year. Hispanics did better at the community college level, receiving 4.5% of the associate degrees. By contrast, 80% of the undergraduate students in 1984-85 were white, but they received 85% of the baccalaureate degrees. (p. 12)

Data regarding minorities earning Ph.D.'s indicate that there has been a decline, not an increase, over the last seven years:

> Ph.D.'s have declined over the last seven years from a total of 2,900 in 1979 to 2,769 in 1986, a 4.5% drop. Among Blacks, the drop was 14.5%, from 1,106 to 946 during the period. American Indian numbers fell from 162 to 99, which means that they received 39% fewer Ph.D.'s in 1986 than they did in 1979 (Summary Report: Doctorate Recipients from U.S. Universities. NRC). The professorate can ill afford to produce fewer of the very persons it requires most at the time when they will be in greatest demand to fill the vacancies occasioned by the retirements of an aging faculty. (Council of Graduate Schools, 1988, p. 11)

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Local Status

MSU, one of the original Morrill Land Grant schools and a leading research institution, has long been aware of the need for students to pursue advanced education. The university quickly became known internationally for its doctoral and professional programs, and, realizing that undergraduates required pregraduate research experiences, initiated its first multidisciplinary undergraduate research program in 1986. Before that time, many departments had offered research internships and other similar experiences to undergraduates within their majors. However, it was not until the CIC SROP was initiated that an administrative attempt was made to coordinate a multidisciplinary program. Since then, two more programs with similar objectives have been developed, and more may yet be planned.

Importance of the Study

In 1988, more than 100 graduate school deans across the nation met, under the coordination of the Council of Graduate Schools, to discuss a critical issue facing higher education—the decrease in the number of minority students pursuing careers in higher education. The series of meetings involved sharing sessions, in which deans discussed what currently was being done on their campuses to enhance the presence of minority graduate students and faculty members. Ideas, as well as problems, were exchanged. When discussing the problem of how to increase minority participation in graduate education, the

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deans acknowledged a major problem, the stigma that special outreach programs sometimes may create for potential participants:

> Especially disturbing is the stigma it places on persons who are regarded as having "benefitted" from them. This recognition has generated suggestions for a change in terminology, as thus far, no viable solution to the inherent problem of stigmatization has been found. (Council of Graduate Schools, 1988, p. 10)

As a result of the national concern about predicted faculty shortages, institutions of higher education have begun to step up efforts to address the potential dangers that an increasing number of low-income citizens, specifically women and minorities, will represent in the year 2000 and beyond. Underrepresented students in doctoral programs are encouraged to pursue graduate and doctoral studies, in an effort to combat the negative educational and financial statistics predicted for the future.

Early identification recruitment and retention programs for minority students and students from low-income and first-generation backgrounds have become commonplace at most large research institutions. The U.S. Department of Education funds Talent Search and Upward Bound, both pre-high school retention programs, and more than 1,700 other educational opportunity programs nationwide.

The Department of Education supported two programs aimed specifically at increasing minority and/or underrepresented students pursuing doctoral programs--first the Title IX, Part A, program, and later the Ronald E. McNair Post-Baccalaureate Achievement Program. Such efforts, although commendable, may be too little too late. A 1989 report by a Michigan consultant firm warned

educators about becoming too comfortable with the efforts being made to
increase minority enrollments:

> As we move toward the 21st century, it is particularly important that efforts
> to increase minority enrollment in Michigan colleges and universities be
> improved and expanded. Between 1985 and 2000, about 80 percent of
> new entrants into the U.S. workforce will be women, minorities, and
> immigrants, and the majority of jobs they will be asked to perform will
> require much higher levels of skill and education. Yet the training and
> educational opportunities of these groups have been severely limited in
> comparison with those afforded white males. Clearly, if Michigan hopes
> to compete successfully in a global economy, in which technology and the
> nature of work are changing at faster and faster rates, it must insure that
> women, minorities, and immigrants have equal access to higher educa-
> tion. (Headley, 1989, p. 1)

The report further cautioned educators to realize that access to higher
education is not, in itself, enough to solve the problems of women, minorities,
and immigrants. Too many minority and low-income students are dropping out
of college and not finishing. Where, the writer wondered, were the minorities if
they were not in higher education institutions finishing their undergraduate
degrees? This, the writer stated, was not an uncommon trend.

> Therefore, while the level of minority enrollment continues to warrant the
> serious attention of the education community, the issues of student tenure
> and degree completion also deserve careful consideration and prompt
> action. After all, the goal is to educate students, not merely get them
> through the door. (Headley, 1989, p. 1)

Until the present study, there has never been a "profile" or list of
"characteristics" of the student participants in MSU's McNair and SROP.
Graduation and placement data have been sent to the Committee on Institutional
Cooperation each year. These data have been merged with the same
information from the cooperating Big Ten institutions, and by examining the data,

it was possible to compare and contrast the MSU programs with those at the other Big Ten schools. Missing from the CIC report was how each school selected participants. Conversations with deans and other administrators revealed that, although some selection criteria were similar, there were unique considerations at each of the independent member institutions.

A simple example of different selection criteria is that at MSU, Asian Americans and Caucasians are not considered underrepresented, a premise shared by the majority of the other Big Ten administrators. The difference is that MSU does accept Asian Americans into its SROP, paying for their CIC SROP participation through institutional funds. Also, by federal law, MSU accepts low-income and first-generation Caucasians into the McNair program.

Another significant difference is that at MSU the programs are not administered by, or housed in, the Graduate School. Instead, they are coordinated by a staff member working under the auspices of the Graduate School, Assistant Provost for Undergraduate Education, and the Office of Supportive Services (OSS). SROP and McNair are housed in OSS, an MSU student support services unit that receives generous support from the United States Department of Education.

Both the OSS and McNair are TRIO programs. The word TRIO at one time referred to three Department of Education programs and literally meant "three." Now, more than three different programs exist, yet the word TRIO continues to be used to refer to any of the programs that receive Department of Education funds.
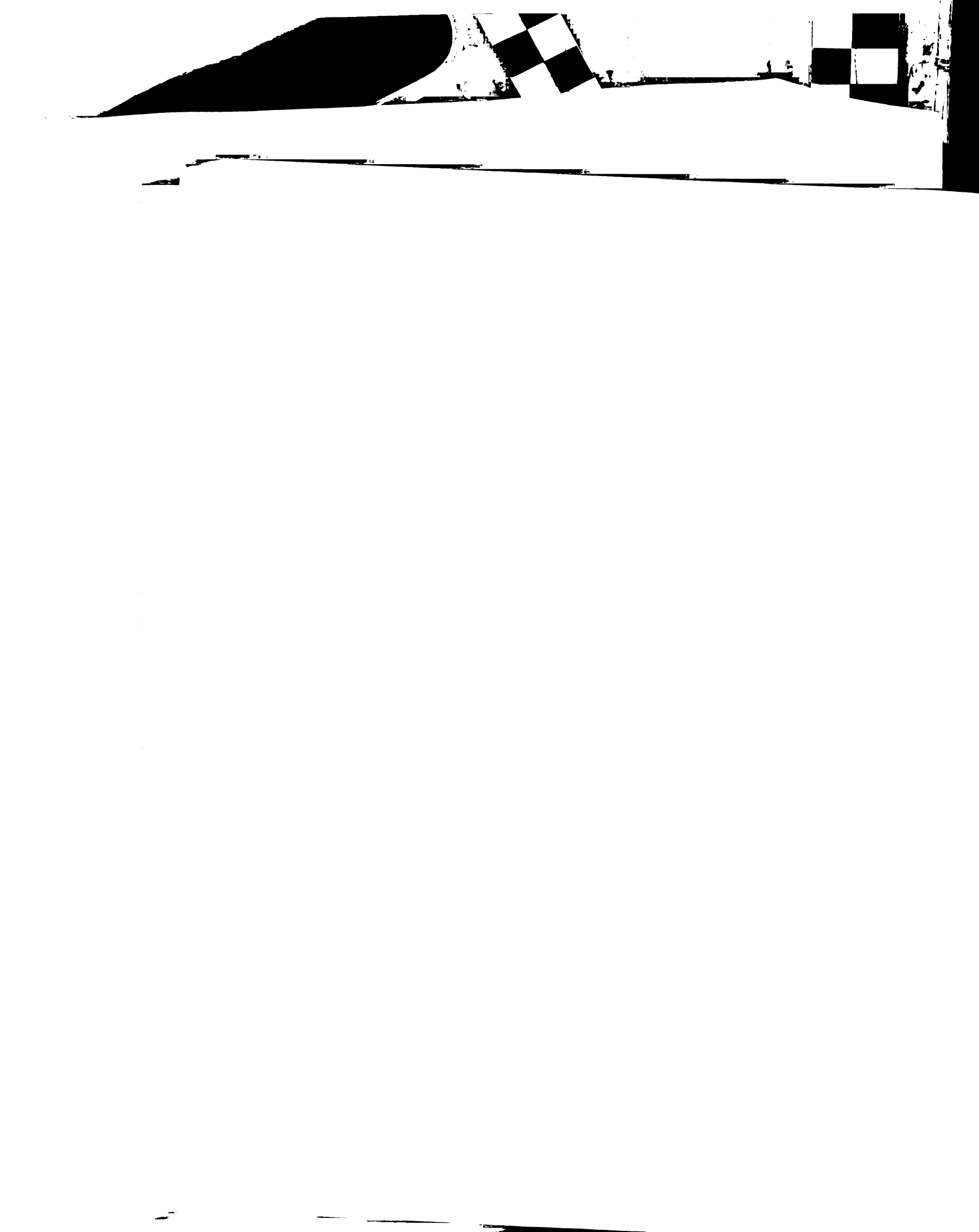
Care is taken not to commingle the finances of OSS and McNair, or of McNair with SROP, yet the commingling of resources and services has appeared extremely positive. McNair provides support for underrepresented low-income and first-generation students, and SROP provides McNair students the opportunity to be a part of the CIC SROP Conference. Both also share the distinctive fact that, even though at the time of this research there were three other Big Ten schools that had both McNair and SROP on their campuses, only MSU had the two so tightly coordinated.

Research Purpose

The primary purpose for this research project was to determine what, if any, perceptual changes took place on the part of students who participated in the Michigan State University SROP and McNair programs with respect to their decisions regarding whether to pursue graduate studies.

Research Question

For the purpose of this study, one main question was posed: Does participating in the SROP and McNair programs influence the perceptions of the participants? If so, in what way?

Research Hypotheses

The following hypotheses, stated in the null form, were formulated for this study:

> Ho 1: There are no differences between pre and post program surveys, with regard to participants' interest in graduate schools.
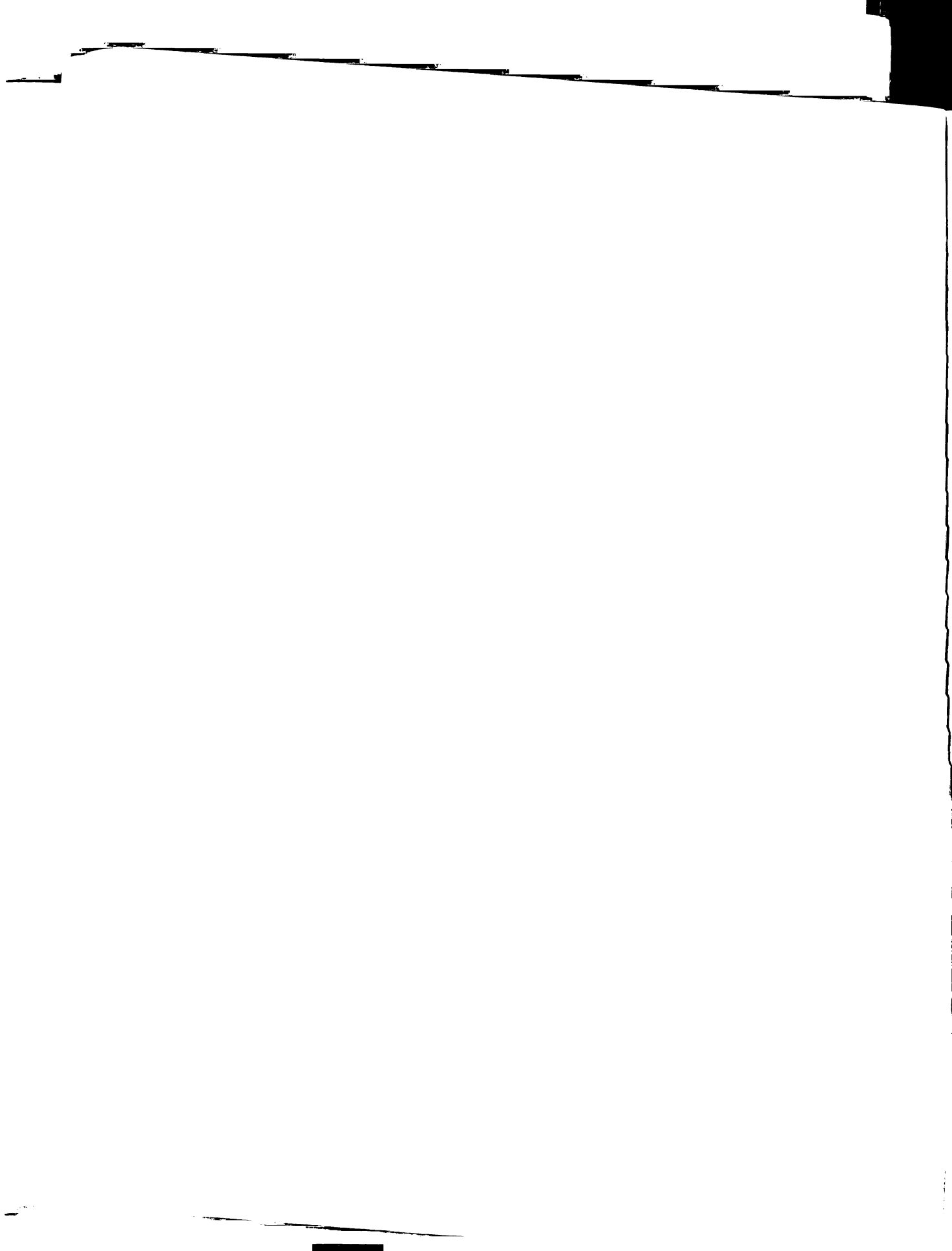
Ho 2: There are no differences between pre and post program surveys, with regard to participants' interest in pursuing careers as college or university professors.

Ho 3: There are no differences between pre and post program surveys, with regard to participants' confidence in their ability to be successes in graduate or professional schools.

Assumptions

For the purposes of this study, the following assumptions were made:

1.   The Michigan State University SROP and McNair programs have accurate data collection.

2.   Participants in the McNair and SROP were conscientious and honest in filling out both the pre and post surveys.

3.   Information from the interviews augmented information from the surveys in a meaningful way.

4.   Students' perceptions at the end of the program were related to their later behavior.

Limitations

Student participants were self-selected and had volunteered to apply to the McNair and SROP. It is possible that, due to the individual quality of the students, they may have continued on to a doctoral program without influence from the research opportunity. The following limitations also may have affected the accuracy of this study:

1.   Data collected on the SROP and McNair participants were for only one year, 1991-92.

2.   The Michigan State University SROP and McNair programs are not representative of how the other CIC SROP or national McNair programs are coordinated.

3.   No comparative sample pool was used.

Application Process

As noted, the fact that student applicants were, for the most part, invited to apply was a limitation to some extent. At the beginning of the academic year, a list of eligible minority students was obtained from either the Office of Planning and Budgets or the Registrar's Office. Students on the list had to (a) be a member of a recognized racial minority group, (b) be a United States citizen or permanent resident, (c) have a minimum cumulative grade point average of 2.5 or better on a 4.0 scale, and (d) have achieved at least sophomore standing (with the assumption that, with average progress, they would have earned enough credits to be a junior by the time of the research experience). Students were informed that they were to be currently enrolled at the time of the research and must not have graduated before the research experience ended.

Additional applications then were sent to deans, assistant deans, advisors, faculty mentors (past and present), and other persons/units concerned with increasing minority participation in graduate programs. Extra copies of the application sets were left with both the OSS and the Graduate School and were available to students who may have been overlooked or who needed extra work
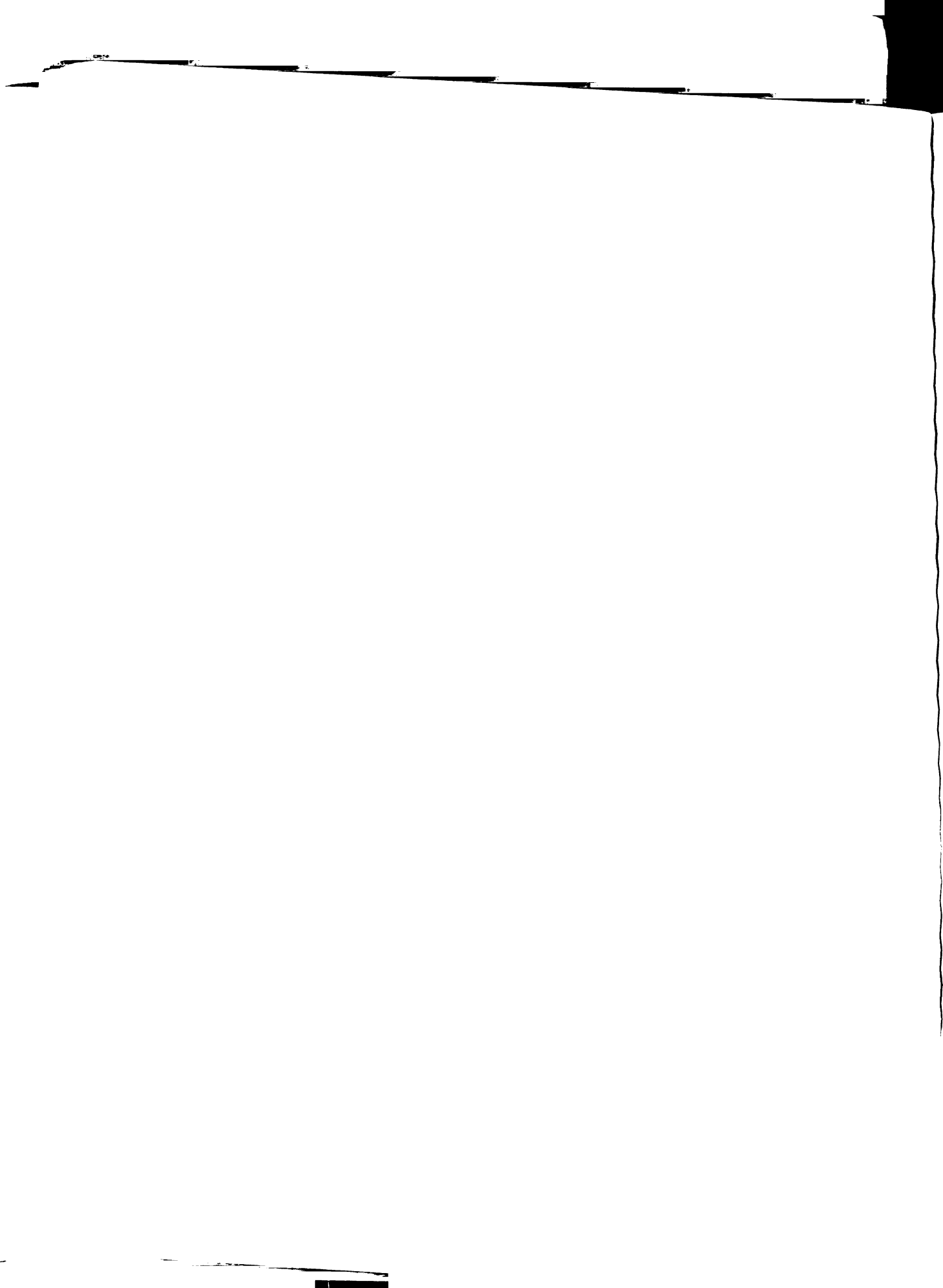
copies. Meanwhile, the coordinator served as a recruiter during that time, contacting individual students and groups.

Students participating in the application process were responsible for assembling a complete application pack. As the application was quite complex, similar to actual graduate school applications, in general only the serious candidates completed the process. Special information sessions before the application deadline helped the applicants understand how to fill out a competitive application (typed application, official transcript, three letters of recommendation, name of faculty mentor with viable research proposal, and financial aid documentation if claiming to be a low-income student). Attendance at these sessions has dramatically grown each successive year, and each year the applications have become far more competitive.

In the American Council on Education's 1991 Status Report on Minorities in Higher Education (Carter & Wilson, 1991), educators were warned that access to education is not enough. Many minorities never complete their education due to the revolving-door mentalities of administrators who are more interested in admitting than in graduating students:

> For minority students, the revolving door syndrome has become all too common in higher education. Even those who do complete college are taking longer to attain their degrees. Although much is known about what causes one student to drop out of college and another to persist, improving college graduation rates is not a simple matter. A multitude of factors influences college persistence, including college aspirations, socioeconomic status, academic preparedness, availability of financial support, parental education, the student's attitude and motivation toward college, institutional selectivity and environment, campus climate, faculty involvement with students, and academic and counseling support services. (Carter & Wilson, 1991, p. vi)

Both SROP and McNair strive to meet the objectives and goals of the funding sources--specifically, to increase the numbers of low-income and first-generation students and students underrepresented in doctoral studies who pursue faculty/research careers. Taking this charge literally, it may be assumed that "success" is achieved when students enroll in graduate programs leading to doctoral degrees and ultimately are appointed to a faculty/research-track position.

Therefore, it would seem that students who "stop out" to work or who enroll in professional programs after graduation are not meeting the goals of the program. Professional jobs may not immediately be viewed as doctoral track, yet they could eventually lead the individual to pursue a career in higher education research. A case in point would be Dr. John DiBiaggio, president of MSU from 1985 to 1992, who was a dentist before changing career tracks into higher education administration.

Students who are hired into high-paying, highly skilled positions have not achieved SROP/McNair "success," yet have they not benefited by the experience? Can one assume that the research experience led them into their current high-status job?

In essence, it may be necessary to reevaluate "success"; furthermore, it may be necessary to examine the quality of the programs over the number. Consequently, success may not be the absolute meeting of the program goals as they are interpreted now, but it may rather be a level of achievement based
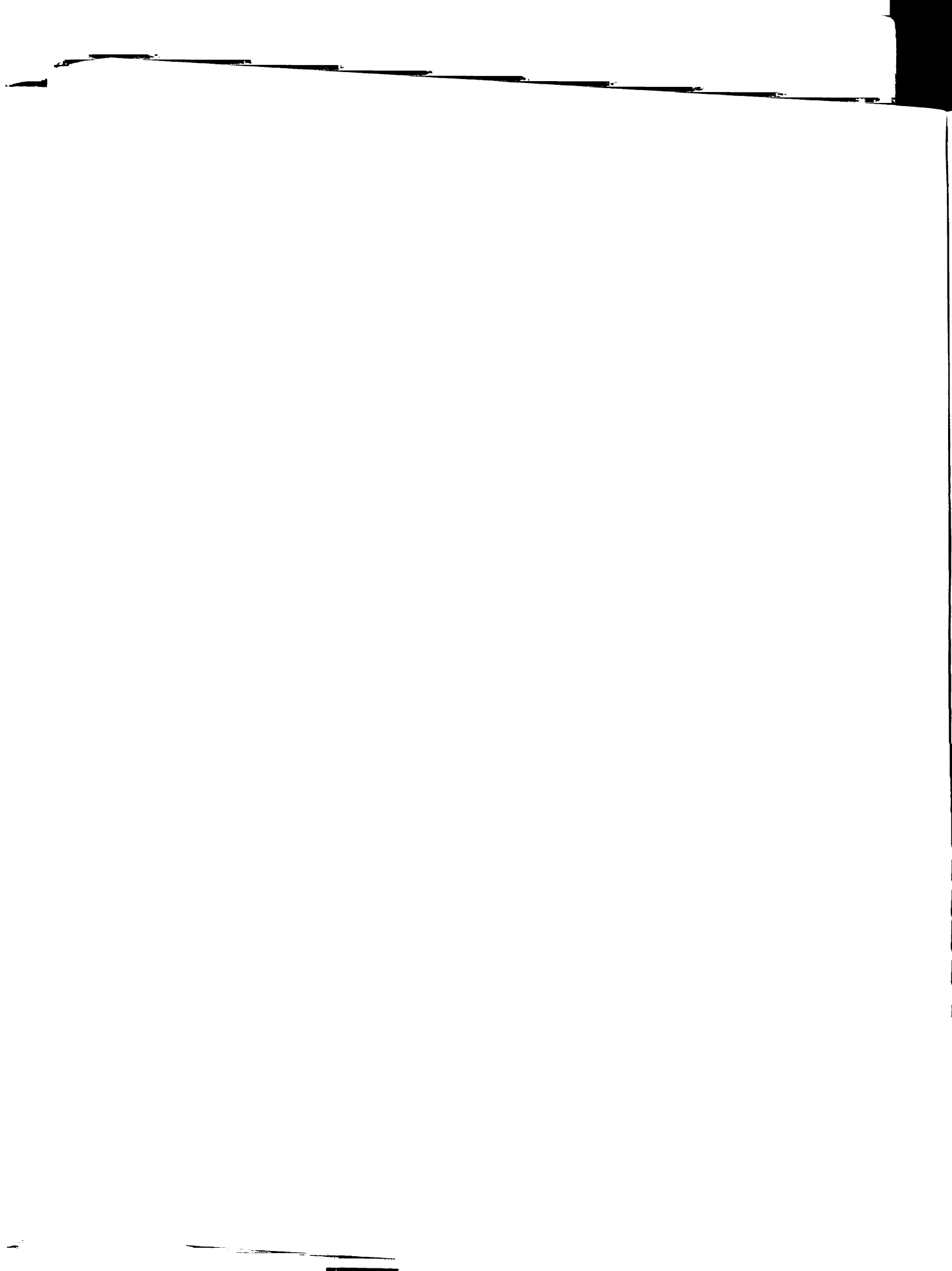
on other measurable criteria, which in the "real world" would be interpreted as success.

Definition of Terms

For the purpose of this research, the following terms are explained in the context of their use in this dissertation:

CIC is the acronym for the Committee on Institutional Cooperation.

Ethnic minorities refers to the five specific groups in this study: (a) African American, (b) Asian Pacific American, (c) Chicano/Hispanic American, (d) Native American, and (e) other (may include disabled students, Caucasians who are from low-income and first-generation backgrounds, or those who are considered underrepresented in doctoral programs).

First generation is a term used by the federal government to refer to students who have had neither parent, or the parent with whom they currently reside, complete a baccalaureate degree.

First year refers to SROP and McNair research participants who are in their first year of a paid MSU research experience.

Handicapper is a term used by the State of Michigan to refer to students who have identified themselves as having characteristics that may require specialized support.

Low income is a term used by the federal government to refer to students whose family income does not exceed 150% of the poverty level in the calendar
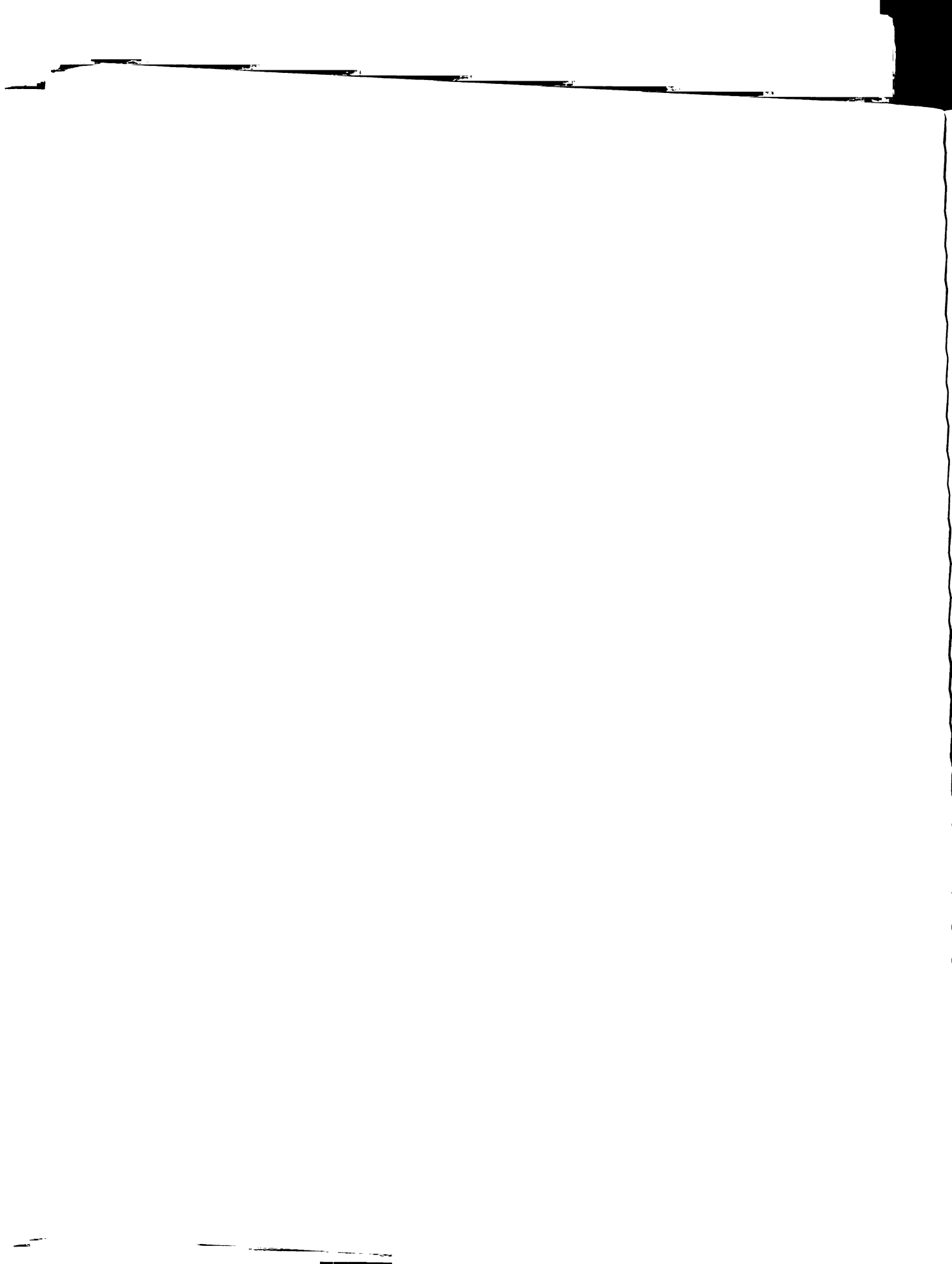
year preceding program participation. Eligible students generally receive full financial aid.

MSU IDEA II refers to a report published by Michigan State University; the full title of the report is Institutional Diversity: Excellence in Action--MSU IDEA II.

PALS refers to returning students who are peer administrative leaders for the MSU McNair/SROP programs.

Persistence is used to describe an undergraduate student's completion of a baccalaureate degree and subsequent admission to a graduate or professional program.

Returning refers to McNair/SROP participants who are continuing with their paid research.

Successful is used to define students who are still currently enrolled undergraduates or who have completed the undergraduate degree. Ideally, the term also implies that the students are bound for graduate school.

Underrepresented refers to students who are racial minorities or who are numerical minorities in doctoral programs.

Unsuccessful is used to define students who participated in the under-graduate research experience and either "stopped out" of school or finished a baccalaureate degree without intending to continue their education beyond that degree.

Research Design

Major variables for this profile were obtained from the McNair/SROP files located in the Office of Supportive Services. Most of the 1991-92 participants were included in this research. The same group of students was used for both the pre and post comparisons.

Four methods of statistical inquiry were used: (a) a difference method to compare pre and post responses, (b) a t-test to compare averages and means of the pre and post survey "pairs," (c) analysis of variance (ANOVA) to look at more than two groups of variables, and (d) qualitative induction to analyze the responses to the oral interviews. As a result of using these methods, the researcher anticipated learning when change occurred (if it did), how many people were affected, and in what ways the change affected the participants' perceptions.

Subjects

The primary subjects of the study were the student research participants themselves.

Data-Collection Instruments

The CIC annually requests participating Big Ten CIC SROP campus program coordinators to distribute and collect Pre-Surveys and End-of-Program Evaluations to the student participants. These two instruments provided the bulk of the data for this study. The two forms contain both Likert-type statements and
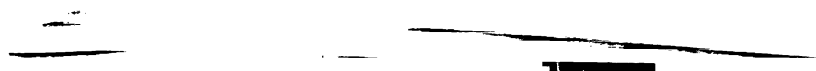
open-ended questions and have been used in both the MSU SROP and McNair programs for more than three years. Permission to use the CIC pre and post instruments for this study was granted by Jean Girves, assistant director of the CIC.

After the study was completed, oral interviews with open-ended questions were conducted with selected student participants. The questions were designed to elicit students' verbal reactions to program experiences. The interviews were concerned primarily with the relevance of the McNair and SROP programs to the students' current and future career plans. In the interviews, an attempt was made to elicit subjects' personal perspectives on how the research experience influenced their graduate school/career plans.

Overview

Chapter II contains a historical overview of minority and disadvantaged student opportunity programs at MSU and across the nation. Literature relevant to issues related to increasing minority and underrepresented students' pursuit of graduate/doctoral studies is reviewed. Six major topics that are considered are (a) racial diversity, (b) academic persistence, (c) college life, (d) minority representation/promotion in higher education, (e) preparation for graduate school, and (f) community and national demographics. Specific information related to how the study was carried out is reported in Chapter III. Results of the data analyses are reported in Chapter IV. Chapter V contains a summary of the

study, conclusions drawn from the research findings, recommendations for practice, and the researcher's reflections.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

In an attempt to provide historical as well as current information relevant to the students who were specifically targeted in the McNair and SROP programs, it was necessary to review a wide range of literature. The following resources represent the most relevant materials to be assembled at this time, and with the exception of materials used to describe historical situations, only the most current information was cited. In conducting the review of related literature for this study, six major categories of subjects became evident: (a) racial diversity, (b) academic persistence, (c) college life, (d) minority representation and promotion in higher education, (e) graduate school preparation, and (f) demographics. These areas have affected, still affect, and will continue to affect students' perceptions of whether to pursue graduate studies and ultimately faculty/research careers.

Numerous publications about faculty and/or student mentoring (Sands et al., 1991) exist, as do articles pertaining to research programs within specific departments and the need to develop minority recruitment and/or retention programs (Henry, 1990). Few, if any, sources exist that discuss the coordination of multidisciplinary programs, much less multi-funded programs. No writer, to

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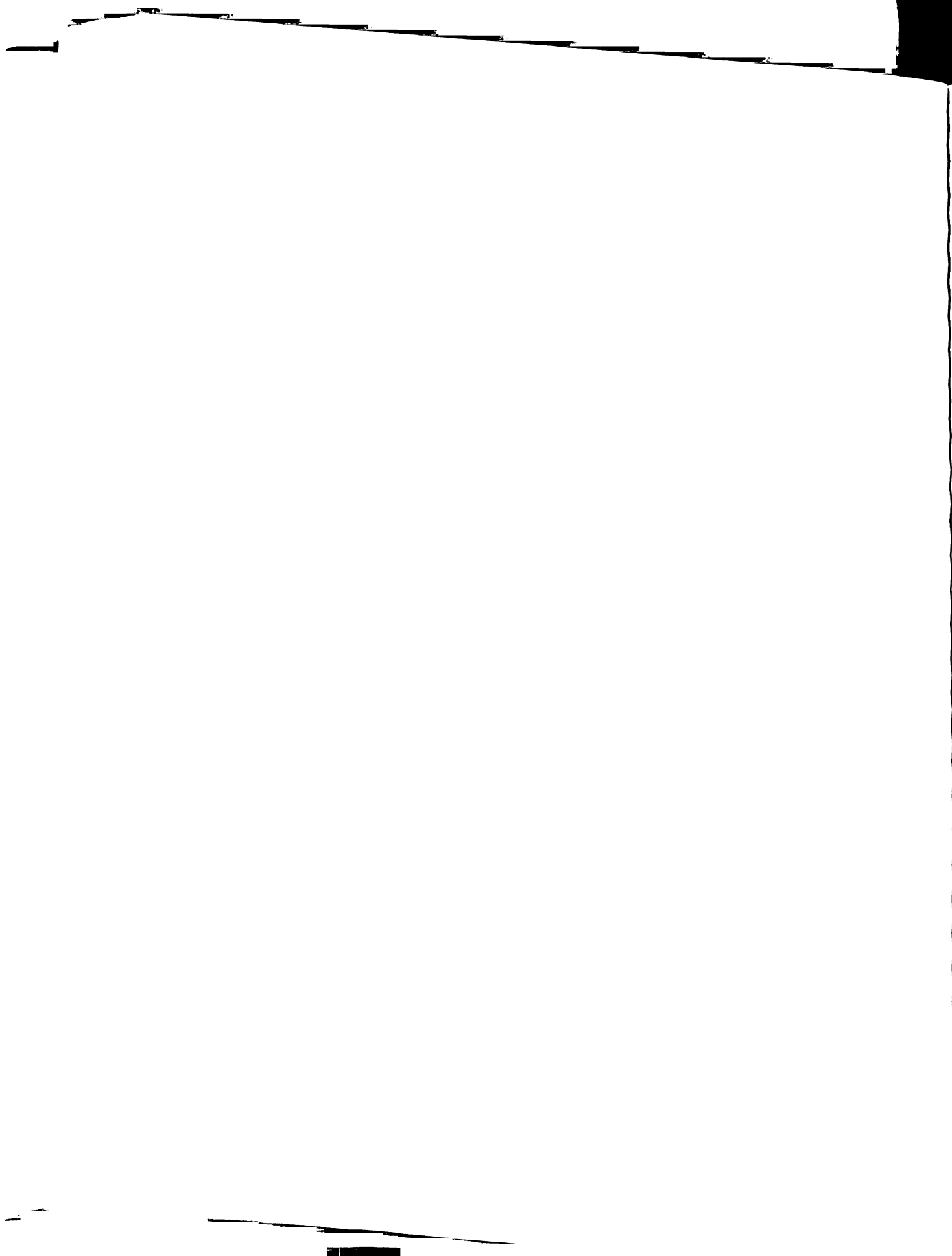
this researcher's knowledge, has attempted to profile a study of an undergradu-

ate research opportunity program similar to the SROP and McNair design at

Michigan State University.

In 1989, an evaluation of the ACE Fellows Program was conducted,

assessing the first 18 years of its history. The study drew from limited sources

of information and had several of the same limitations as does this study--in

particular, the self-selection process and self-reported data. The ACE study

identified issues that were similar in scope to those of this study:

> The basic difficulties are the self-selected nature of the Fellows group and
> the fact that no data were collected on a comparable non-Fellows group.
> Therefore, it is difficult to argue that the AFP experience *per se* produced
> either career advancement or effectiveness in subsequent administrative
> positions. Fellows might have attained these positions and enhanced
> their administrative skills without participating in the program. (Chibucos
> & Green, 1989, p. 22)

The authors further warned:

> A related issue involves the use of data from the self-reports of the
> individuals who are likely to be highly invested in the program and in their
> own participation in it. Clearly, this issue is not unique to this study; it is
> relevant to education evaluations in general. Nonetheless, the shortcom-
> ings of self-reported data should be kept in mind. (p. 22)

Nationwide, as of early fall 1992, the 42 currently existing McNair

programs had little to report. Fourteen programs, of which MSU is one, have just

completed their third year. Fourteen more programs were funded for one year.

During the late 1992 fall semester, it was predicted that 27 more McNair

programs would be funded.

It may be another 10 years before any substantial data exist to prove the

overall effectiveness of increasing the number of low-income and first-generation

students and students who are underrepresented in doctoral programs who complete doctoral degrees. Many students are still currently enrolled, and others, due to financial, personal, or academic reasons, have had to take a temporary leave from their educational pursuits. The time is particularly short when one takes into account that the students served are, for the most part, low-income and/or first-generation students or ethnic minorities.

A growing number of people, inside and outside higher education, have been voicing their opposition to opportunity programs targeting selected populations. One such individual, Dinesh D'Souza, author of Illiberal Education: The Politics of Race and Sex on Campus (1991), argued against programs that, in his opinion, do more harm than good. In particular, he blamed:

> student activists who charge that universities are "structurally" racist, sexist, homophobic, and class biased. These activists march under the banners of pluralism and diversity. They have demanded an admissions policy based not on academic merit but on ethnic representation; a curriculum and faculty assembled not by intellectual standards but by race and gender categories. (cover insert)

D'Souza further argued that such activism has created:

> sensitivity training which borders on the totalitarian in its invasive insistence on a new social and political orthodoxy. Abetted and inspired by junior faculty, who press their own ambitions in a common cause; largely unopposed by senior faculty afraid to disagree with new orthodoxy; and unrestrained by university administrators who rarely resist and frequently encourage the activists, this revolutionary movement has already widely imposed its program on every facet of university life. (cover insert)

Concern about funding and otherwise supporting programs that are perceived to be "discriminating" is growing. The January 25, 1991, meeting of the CIC Panel on Increased Access of Minorities to Graduate Study discussed,
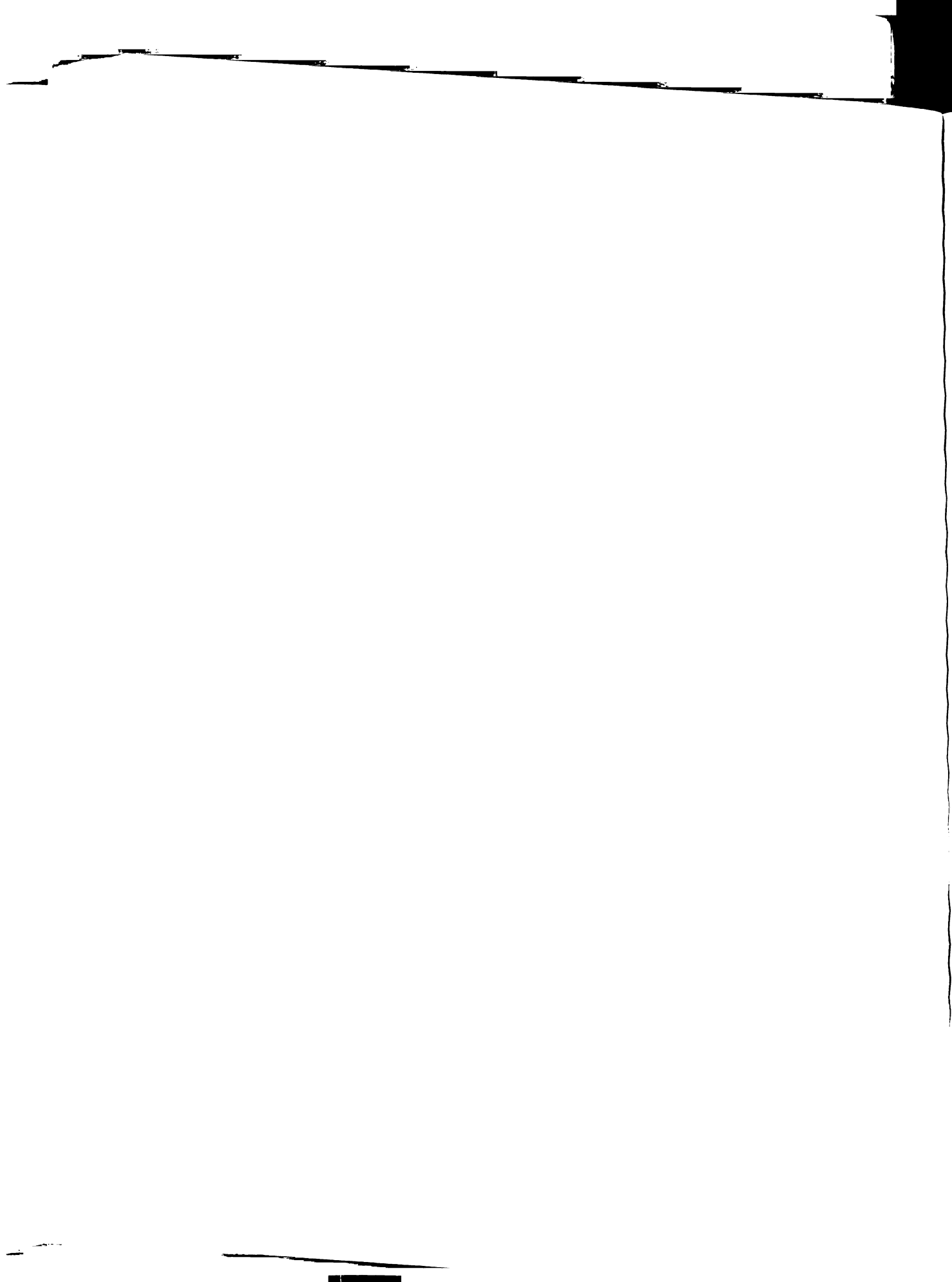
among other items, the U.S. Department of Education's regulations regarding

nondiscrimination (Federal Register, December 10, 1991, Vol. 56).

Such beliefs and sentiments not only affect the educational access of

minorities and low-income individuals, but also have long-range effects in the

workforce. Pruitt and Isaac (1985) commented:

> We have been struck by the similarities between the labor market and the student market. Thus, we have explored the applicability of some of the concepts set forth by Doeringer and Piore regarding discrimination in internal labor markets to the traditionally white university and the graduate school.
>
> According to Doeringer and Piore, the internal labor market is an "administrative unit, such as a manufacturing plant, within which pricing and allocation of labor is governed by a set of administrative rules and procedures." Internal labor markets choose workers at the points of entry, and they accord privileges that are not available to workers in the external labor market. Job security and opportunities for advancement that characterize this work force, and not race *per se*, generate discriminatory practices. Yet, discrimination occurs as a by-product of centuries-old practices. (p. 528)

Columnist Norman Lockman (1991) wrote about the workforce picture.

While not specifically connected to the minority opportunity program issues in

higher education, his view reflects the sentiment of educators seeking to clarify

why such programs continue to be needed:

> Throughout the arguments against "quotas" or affirmative action programs in the work place runs an assumption, based on bad examples, that they mostly have to do with opening doors to people with lower than normally acceptable qualifications.
>
> Affirmative action was not intended to be a system that gave preference to the unqualified minority candidates over better qualified white ones. In theory, affirmative action programs were to draw candidates from pools of candidates as well or better qualified than their competitors. It was to prevent discrimination against qualified candidates. (p. 4)
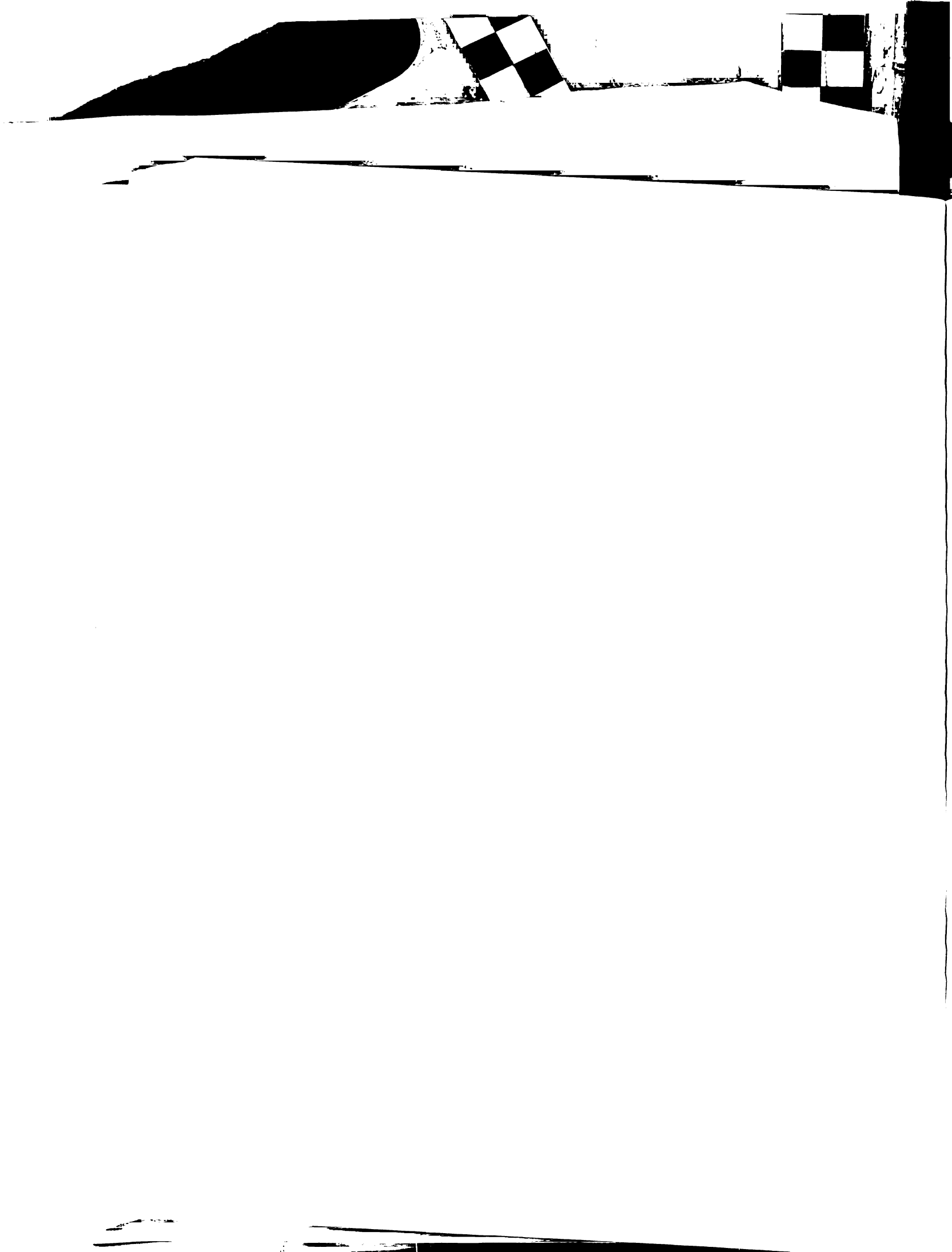
Arguments, both pro and con, regarding opportunity and affirmative action programs still remain a major issue in higher education. Yet, little is known about their results. Regardless of the conflicts, the fact remains that opportunity programs do exist. This writer sought to explore students' perceptions of the MSU opportunity programs, SROP and McNair.

Michigan State University

Michigan State University, a land grant institution, has achieved much during the last several years. Moore (1990) and Hamilton (1990, 1991) are just two of the more recent MSU researchers who have written about the history of the MSU campus.

In a 1991 report, Hamilton presented a historical summary of MSU's undergraduate racial/ethnic diversity experience for the Dean's Counsel Mini-Retreat. In it, he stated that the first MSU black graduate was a female who graduated in the early 1900s. In 1963, a concerted effort was made to recruit black and white disadvantaged students from the Greater Lansing area. Project ETHYL, funded by the Hinman Foundation in 1963, was followed by the Detroit Project in 1967. Eventually, this last program became known as the College Achievement Admissions Program (CAAP), located in the Office of Supportive Services. Later, through the acquisition of major federal funds (Student Support Services and McNair from the Department of Education), services to more than 1,200 MSU students were provided annually to more than 50% of the admitted black population and other underrepresented groups.

During the late 1960s through the 1980s, the Center for Urban Affairs and the Equal Opportunity Program (later called the Department of Human Relations) were created. A minority tutorial program (predecessor of the Office of Supportive Services) and the Office of Programs for Handicapper Students were created at about the same time the Assistant Provost for Special Programs was established.

Through the auspices of the EOP and the Center for Urban Affairs, numerous support positions were created for persons of color in the Counseling Center, the Office of Financial Aid, and the Minority Aide Program. Special transportation for handicapper students helped students to classes, and accessibility became more evident on the campus.

In conclusion, Hamilton (1991) reported:

> The final point that should be noted is that while the University was doing many things centrally, there were parallel developments occurring in the colleges. A tutorial assistance program in chemistry was created with funding from the Center for Urban Affairs in 1969. Additionally, the College of Engineering had created an engineering support program for minority students as early as 1968. Thus, college-based and departmentally based support programs were rooted in the history of the University's efforts to serve a more diverse clientele. (p. 4)

In the second section of the summary prepared for the Dean's Retreat, Hamilton focused on issues that he believed affected the ability to increase the numbers and quality of minority students. One of the key issues was whether more resources should be placed at the college level for academic support services for minority students, including:

> the CIC/MSU Summer Research Opportunity Programs and the U.S. Department of Education/MSU Ronald E. McNair Post-Baccalaureate Achievement Program, which have as their goal encouraging minorities

who have the background to undertake summer research experiences with a MSU faculty member, and ultimately to pursue graduate study leading to the Ph.D. degree. There is evidence that more resources expended in the latter category could be most useful in contributing to the pool of future graduate students of racial/ethnic minority groups from institutions such as our own. (p. 3)

This report, completed in 1991, was different from the 1979 Report to the Provost of Michigan State University from the Committee on Supportive Services for Minority Students and Students from Disadvantaged Backgrounds because it acknowledged the importance of paid undergraduate research opportunities for minorities. The 1979 Report did not address the issue of postbaccalaureate training as having an effect on undergraduate retention.

Racial Diversity

As discussed in Chapter I, the national picture in the near future will be composed of more and more nonwhite citizens. In preparing for this transition, educational administrators need to be prepared to address the issues of diversity in their schools. Being sensitive to issues related to diversity does not mean that nonwhites lose their significance, but instead it refers to the concept that all cultural groups should be treated with equal dignity and respect. King (1991) explained:

> The new watchwords in education, "celebrating diversity," imply the democratic ethic that all students, regardless of their sociocultural backgrounds, should be educated equitably. What this means in practice, particularly for teachers with little personal experience of diversity and limited understanding of inequity, is problematic. (p. 133)

Such concern is based on "dysconscious racism," a term coined by King (1991) denoting limited and distorted understandings about inequity and cultural

diversity—understandings that make it difficult for them to act in favor of a truly equitable education. Mutter (1992) explored Tinto's theory regarding community college students' persistence. In her study, she looked at race and gender and noted how they affected retention. Richardson and Skinner conducted a three-year study of 10 predominantly white institutions that had experienced above-average graduation success rates for African Americans, Hispanics, and Native Americans. In 1990, they worked together on another study in which they proposed "a grounded model describing the forces that alter organizational culture so that diversity is no longer perceived as a threat to culture" (p. 486).

In a presentation to the MSU All University Excellence in Diversity Conference, Curry (1991) distributed a packet outlining diversity issues related to evaluation and promotion. In 1989, MSU President John DiBiaggio distributed copies of his comments made to the March 7 Academic Council meeting regarding discrimination and racism, stressing that "any expression of racial intolerance is always 100% wrong." Sudarkasa (1986), Carter and Wilson (1991), Hariman (1991), and Ahlquist (1991) are just a few researchers who have written about pluralism and multicultural sensitivity issues related to higher education.

In 1968, the national minority student enrollment was unprecedented in the history of higher education. The excitement generated across the nation over the all-time record-high minority enrollment began to fade as the realization hit that many of the promising enrollees were not matriculating at the same level as they were being admitted. This concern became quite significant through the

years as minority enrollments began dropping quickly. Post and Woessner (1987), Wunders (1988), Backover (1992), and Coughlin (1989) wrote reports concerned with minority retention.

In Teaching Minority Students, Sedlacek (1983) referred to the issue of recruitment and retention:

> The literature seems to emphasize admissions procedures as a way of increasing minority student retention. In contrast, ways in which minority students might be helped to remain in school once they have started have received little attention. Also, the literature tends to focus on student services, such as counseling or minority affairs programs, not on the role of academic faculty in minority student retention. (p. 39)

In subsequent years, the role of the academic faculty became more and more significant to student support programs and retention. Faculty were found to be quite important to increasing undergraduate retention and began getting more involved with transitional support programs that helped undergraduate students enter graduate-level programs.

Levin and Levin (1991) examined academic programs for at-risk minority college students. They defined faculty involvement as being not merely a classroom experience, but as being active in academic retention programs from design to implementation. In discussing faculty roles, they noted that nonacademic staff members did not have the ability to achieve the same level of retention and attainment; they noted:

> Student characteristics and family characteristics complete the constellation of factors that predict persistence among at-risk minority students. Clearly, initiatives that place sole blame on the victim (the student) and that fail to recognize the strategic role played by the faculty are incomplete responses to the minority student attrition problem. (p. 325)

Others who have written position/statistical papers concerned about disadvantaged students include Capper (1990), Hargis (1990), Thurgood and Weinman (1991), York-Anderson and Bowman (1991), Eiland, Turner, and Rosenthall (1988), Hamilton (1990, 1991), Larose and Roy (1991), Lockhart (1992), and House (1991). In addition, MSU annually reports on the university's retention record to the Board of Trustees (Scott, 1991), as do the CIC (1991) and the ACE (Chibucos & Green, 1989). All of the above-mentioned sources have shared the same concern and desire to change the current trend of low minority matriculation.

Representation

High-risk students generally are perceived to be African American (based on the bulk of the literature available). However, the category includes other racial groups and definitely is influenced by low income levels (Murphy, 1986). Washington (1988), Branson (1988), Asante (1991), Thomas (1985), Conciatore (1990), Robinson (1990), Skinner and Richardson (1988), Smith (1988), and Thompson and Fretz (1991) are just a few of the other researchers who have focused on minority or at-risk issues that specifically targeted African Americans.

Less documented are the experiences of African American females, and even less noticed are specifics related to Hispanic, Native American, and Asian American students. Lin, LaCounte, and Eder (1988), Tachibana (1990), Fields (1988), and Minority Presence (1985), along with the Ford and Mellon Foundations, have tried to address the needs of non-African American minorities. In

1984, the Ford Foundation concluded in their position paper that, in their opinion, the Hispanics were in desperate straits:

> What Hispanics have need of today is what blacks needed twenty-five years ago: greater knowledge and understanding of their economic, social, and political situation and of the roots of their disadvantage, and the development of an infrastructure that will increase their participation in the mainstream of society. (p. 63)

In studying the attrition rate of Hispanics, specifically Mexican Americans, Attinasi (1989) argued that it was the Mexican Americans who were particularly underserved in American higher education. Administrators from Texas, New Mexico, Colorado, Arizona, and California live in states with the highest percentages of Hispanics in the nation (U.S. Census Bureau, 1991). Statistics and placements for Hispanic males in higher education are quite low, but even lower are those for Hispanic women. Nieves-Squires (1991) pointed out that:

> The gap between Hispanic women and men is similarly wide at the administrative level; women hold 0.7 percent of administrative positions; men hold 1.3 percent. . . . For many Hispanic women, the major cause of stress is cultural conflict. In addition to facing difficulties that women or any other minority member might experience, they must also deal with different cultural expectations. Melendez and Petrovich point out that "many attitudes and values of the university culture are at odds with the character of Hispanic interpersonal relationships, forms of communication, and sex-role expectations." (p. 2)

Another population that is growing rapidly is Asian Pacific Americans (APAs). According to the Population Reference Bureau (Minority Presence, 1985), it has been predicted that the population of APAs could exceed 10 million by the year 2000. Despite the fact that APAs and other minority populations are increasing, the enrollment of minority students in colleges is decreasing. African Americans in Michigan institutions of higher education equal 9.23% of the total

enrollment, which is low in relationship to their percentage of the population. Native Americans had .58% and Asian Americans had 1.67% of the enrollment in higher education, both of which represented larger percentages than their representation in the population (Public Sector Consultants, 1989).

Academic Persistence

The August 2, 1989, issue of the Chronicle of Higher Education featured on its cover an article concerned with the difficulties involved in hiring minority faculty across the nation. The article noted that many sources believed that the end of the educational pipeline had been reached and that the minority recruitment sources were "drying up."

Smith (1988), Robinson (1990), and Penn and Panos (1988) wrote about African Americans and their level of persistence in the university environment. These authors offered recommendations for reversing the African American educational pipeline trend. In exploring why students do not do well academically, some thought and effort must be expended in the area of the other students who are at risk academically, as well as socially (Jones & Watson, 1990).

Researchers have examined how the pipeline trend affects students, the university, and the nation. Another population, possibly intertwined with the others who are at risk, is those who are first-generation college students (neither parent has ever achieved a baccalaureate degree). York-Anderson and Bowman (1991) assessed the knowledge of first-generation and second-generation college students. In their study, they also introduced another type of high-risk student, nontraditional older students, who may have spouses, families, jobs, and

other factors complicating their academic pursuits. In researching first-generation students, York-Anderson and Bowman concluded:

> College attrition may be the result of, in part, a lack of basic information about college for first-generation college students. Also, students who perceive less support from their families may be more likely to experience academic failure and either drop out or fail out of college. (p. 121)

Based on their findings, York-Anderson and Bowman provided some suggestions that could help provide greater academic support for first-generation college students. They wrote:

> As a preventative measure, college and university professionals could implement orientation programs aimed directly at the parents of incoming first-generation college students to aid them in understanding the new environment. Such programs could educate the parents on the importance of their active involvement in their children's continued education. (p. 121)

Recommendations for increasing retention of Hispanic students (Fields, 1988) and for reversing the pipeline for minorities were made in the Presidents Council Report to the House Appropriations Committee in 1985. Studies examining nonacademic factors related to retention have provided an interesting perspective regarding students' intellectual development. LaRose and Roy (1991) pointed out that an important consideration that must be understood is that students need to be at college out of choice, not because of domestic or social pressure:

> A student's willingness to give priority to studies is crucial for activating his or her whole range of abilities. It is also vital to insure that these students adopt appropriate study behaviors, that they have realistic beliefs as to how success is achieved, that they interact effectively with their peers and teachers, and that they are able to control feelings of anxiety. Integration or transition programs aimed at high-risk students should focus on developing these essential skills. It is important to acknowledge that

nonacademic attributes play a significant role in the success of high-risk students at the college level. (p. 176)

The CIC

The Committee on Institutional Cooperation (CIC) sponsors more than 20 programs or projects, representing a wide range of opportunities for its participants, and manages a $2,536,258 budget (CIC, 1991b). The CIC is one of numerous regional and nationwide data-generating sources interested in tracking minority persistence. These reports are sent out to the cooperative Big Ten SROP programs and are used to provide general information to all participants. The reports have provided a service to the host institutions as the data are broken apart by school (CIC, 1991b).

The CIC reports also are submitted to the private corporations that provide funding to support minority students who are engaged in undergraduate research (CIC, 1991c). In addition, the reports are used to pursue other grant/funding sources, such as the U.S. Department of Education (CIC, 1988) and the Lilly Endowment, Inc. (CIC, 1989).

One of the many other programs they sponsor is the Alliance for Success, a coalition of 20 institutions, including the host CIC institutions and six historically black colleges and universities (HBCUs). Each year, the CIC must submit a renewal proposal to Lilly, the NSF, and other sponsors (CIC, 1991a). When appropriations are made, the events become newsworthy (Ford Foundation, 1989; McMillen, 1991).

All of the above-mentioned funding sources share one major concern: minority retention. The results of these and other studies (Henry, 1989) have revealed that more needs to be done if the educational pipeline trend is to be reversed. Special reports concerned with minorities in the sciences have expressed particular concern about the low numbers of minorities pursuing and completing degrees in the sciences (Cordes, 1988; Hilton & Lee, 1988; Rawls, 1991).

Reports such as the MSU minority recruitment and retention trends are generated and made public by the Office of Planning and Budgets (OPB). Persistence rates for domestic undergraduates, organized by ethnicity, gender, and college since 1973 (Lockhart, 1992), are organized into appropriate charts. In addition to the OPB reports, the Assistant Provost for Undergraduate Education (as of 1991, the consultant to the Provost) submitted memoranda to the Supportive Services Advisory Committee (Hamilton, 1991), undergraduate Assistant Deans (Hamilton, 1990), and appropriate others.

Ogbu (1990) tried to put the issue of minority education into a "comparative perspective." In his article, he divided the minorities into three groups: autonomous, immigrant, and involuntary or castelike. He concluded his study by stating:

> Immigrant minorities are relatively more successful in school than involuntary minorities because the status of the former as voluntary minorities generates for them certain community features that enhance the attitudes and behaviors conducive to school success. This does not mean that all immigrant minority students fail, nor does it mean that involuntary minority children have no obligation to understand and relate to the culture and language of schools--education will always be a two-way street. (p. 55)

Ogbu further suggested what would be necessary in order to promote greater success of minorities in school:

> To promote a greater degree of school success and better social adjustment among involuntary minorities, it is necessary to recognize and remove obstacles from society and within the schools. It is equally necessary to understand and attend to the nature of the obstacles that arise from the minorities' own communities as well as the strategies that promote or can promote school success in their circumstances. (p. 55)

Women

Little has been written about the low numbers of women in the sciences and graduate programs. The low representation of women in the sciences recently has resulted in the development of programs targeting both women and minorities. It has become more common to see studies discussing the low representation of both women and minorities in the sciences.

Bar-Haim and Wilkes (1989) and Frost (1991) explored the critical-thinking process of women in colleges and examined the ideal academic-advising relationship. Other researchers concerned with female representation, recruitment, and/or retention included Cordes (1988), Faragher and Howe (1988), Nieves-Squires (1992), and Frost (1991). Schneider (1987) shared an observation by Crookston that may be indicative of why women might not pursue options requiring more initiative:

> Crookston considered advising as a form of teaching that is based on a negotiated agreement between the student and the teacher. The developmental advisor focuses on the students' potential to become self-directed. In contrast, Crookston described traditional, or prescriptive, advising as a limiting, supervisory relationship in which the advisor takes initiative to fulfill requirements. (p. 360)

In the article "Graduate Women, Sexual Harassment, and University Policy," Schneider (1987) discussed a problem unique to female students. She noted that the existence of harassment constituted obstacles and limitations. In a statement that could also apply to racial harassment, she concluded:

> Only when there are clear and effective means available to prevent or, if necessary, fight such behaviors will graduate women have the respect and encouragement necessary to demonstrate their full intelligence and commitment to professional goals and careers. (p. 63)

Transition

Possibly the most difficult part of any study or long-term program is tracking the transition of past participants. Studies by Chibucos and Green (1989) and Simpson (1987) provided models for comparison with this study. Headley (1989), Hilton and Lee (1988), and McMillan (1991) also researched issues related to the transition process. However, to this researcher's knowledge, no published model for tracking undergraduate students' progress through graduate studies exists. Neither, for that matter, is there much information related to students' perceptions regarding their decisions to pursue graduate education.

Nettles (1990) confirmed that little information existed regarding students' "background characteristics and undergraduate educational preparation" and their "transition from undergraduate to graduate school, their graduate school experiences, and their grades and satisfaction while enrolled in doctoral programs" (p. 1). Among other things, Nettles discovered the following in his study of black, Hispanic, and white doctoral students:

Neither race nor SES [socioeconomic status] was found to have much bearing on the amount of money students borrowed to complete their undergraduate work. Male students, however, were more in debt than female students were when they finished their undergraduate work.

Hispanic students took less time off than Black and White students before beginning work on their doctoral degrees. Students who took the greatest amount of time off were likely to have relatively low undergraduate grade-point averages, were more likely to be women than men, had lower amounts of undergraduate indebtedness, and had low SES backgrounds.

There was no significant relationship between race and a student's decision to begin doctoral work in a field that differed from the student's undergraduate major.

Hispanic students were more likely than Black and White students to receive fellowships or assistantships. After background and undergraduate education were considered, the Black and White students received about the same number of graduate fellowships and assistantships.

Hispanic students were more likely than Black or White counterparts to attend graduate school full-time. Of the three groups, Black students expressed the strongest feelings that their universities were discriminatory, and Hispanic students expressed stronger feelings of discrimination than White students did. Students who felt most strongly that their universities were discriminatory were most likely to be women and those who took relatively little time off between undergraduate and graduate school. These students also were less likely to have fellowships or assistantships. (p. 2)

Students who do not complete their undergraduate education or immediately pursue graduate studies might not really be dropouts; they might actually be stop-outs. Hodgkinson (1985) explained:

It would appear that many, if not most, drop-outs are in reality STOP-outs who simply have to do something else before resuming their studies. Yet they are often treated by the college or university as persons who have left higher education forever. At the moment, we have no effective and economical system to routinely track students who move from one campus to another, making the effectiveness of "retention" efforts difficult to assess if retention is taken to mean graduation from another institution than that in which the student originally enrolled. (p. 17)

College Life

In <u>When Dreams and Heroes Die</u>, Levine (1980) examined college students' values. Moffatt (1991) studied the "culture" of undergraduate students in higher education and compared the youth culture during the 1980s to that of earlier periods. Cole (1987) investigated the values of nontraditional students, defining the "others" as ones who differed from themselves. To teach others about one's self or to learn about others, it becomes critical that professionals trained in multicultural affairs take a firmer lead in the cross-education process (Manning & Boatwright, 1991).

McIntosh (1989), Associate Director of Wellesley College for Research on Women, wrote about her "white privilege." In her article, she addressed the "white male privilege." After addressing various parallels and differences regarding racism, sexism, and heterosexism, she concluded:

> What will we do with such knowledge? As we know from watching men, it is an open question whether we will choose to use unearned advantage to weaken hidden systems of advantage, and whether we will use any of our arbitrarily-awarded power to try to reconstruct power systems on a broader base. (p. 12)

DeSousa and King (1992) explored who was more involved in collegiate experiences, African Americans or Caucasians. The findings showed that African Americans had lower levels of involvement at predominantly white institutions than did their Caucasian counterparts. However, the authors acknowledged that, due to highly visible, centralized offices for multicultural affairs, in reality black students may have had significantly more involved

experiences on campuses than indicated by the literature. DeSousa and King

noted that, to understand the involvement of black students:

> An important next step in understanding the involvement of Black students at predominantly White institutions is to identify the specific factors that affect the *quality* as well as the *frequency* of student involvement in campus-related activities, whether these factors differentially affect Black and White students, and how various types of involvement affect their adjustment, satisfaction, and retention. (p. 368)

Marvin (1989) conducted a survey of entering MSU students to assess the

goals that were important to them. Not surprisingly, students from different racial

groups ranked the goals differently. Gallagher, Golin, and Kelleher (1992),

Steltenpohl and Shipton (1986), Ladson-Billings (1991), and Stern and Nakata

(1991) wrote about their interpretations of college students' needs. They all

referred to the need for more diverse student services.

Minority Representation/Promotion in Higher Education

Mooney (1989) was concerned with the pending shortage of faculty, much

less minority faculty. In researching the concerns, from the administrative and

national perspective, it became necessary to understand the perceptions of the

population itself. Sagaria wrote in 1988 about higher education mobility and

gender. She explored the patterns and processes involved with position

changes. In her study, race was not even an issue, as 92.4% of her educational

administrator respondents were Caucasian.

Williams (1986) conducted a study of chief academic officers at black

colleges and universities and also compared mobility by gender. Williams

concluded her study by reflecting the thoughts of another writer, Fulton, who

defined two specific obstacles faced by advancing women and minorities:

> the small size of their representation in the typical candidate pool and the subsequent failure of administrators to follow through and appoint such candidates. There are remedies to this situation. When college officials seek to fill top managerial pools, they should cast a broad affirmative net that ensures there will be a representative number of women among the final candidates considered. Through conscious decisions that identify, encourage, and promote women aspiring to administrative positions, colleges can begin to redress the sexual imbalances that exist at the upper echelons. (p. 452)

> Mabry (1990) and Foster (1987) echoed similar sentiments—that minorities

are not highly represented in administration. Some corporations, such as Phillip

Morris (Marriot, 1992), are beginning to offer opportunities to be recruited and

funded, in order to increase the numbers of students entering the teaching/faculty

ranks.

Reginald Wilson, Director of the Office of Minority Concerns, American

Council on Education, pointed out in a 1988 article that there was a "serious

dysfunction between the national educational reform movement and the

objectives of the Holmes Group" (p. 195). He stressed that true educational

reform would not occur until people's self-interests prompt them and that:

> reform cannot be characterized as serious until it includes raising the achievement of all students, irrespective of race or class, to excellent levels of competence. By the year 2000, one-third of the American population will be composed of minorities, as will be 50 percent of the public school student population. Our viability as a nation hinges on these students' being educated, productive citizens. Currently that is not a high priority for the nation or for educators. Nevertheless, our international competitiveness and our national productivity will continue to decline without the full participation of all our citizens in education and in the work force. (p. 198)

Moore (1989) attacked the issue head-on. While concerned primarily with the actual duties of managing time and responsibilities, he made a comment that could be transferred to administrators concerned about minority and female advancement:

> You've got to *make*, not find, time to think "about the forces that will affect the destiny of [your school]." You've got to create measurable goals based upon diverse advice from your variegated community. And if you are like many other practitioner administrators in all walks of life, you've discovered that "most of the academic theory on leadership [is] useless." (p. 60)

In 1969, Moore expressed concern about the "leader drain" in higher education. Moore and Mizuba (1969) quoted Kvaraceus's thoughts regarding the need for more "uninhibited teachers":

> We need to stimulate students by purging the familiar and the jejune materials and methods which bore the young into a stupor or drive them to drop out of school. We must encourage teachers as well as pupils to radical behavior. One cannot be radical without becoming active. If there are no new worlds to conquer and if there is nothing left to be radical about, then we will be forced to face some unhealthy alternatives: passivity, apathy, and alienation. (p. 185)

The 1990 handout by the Office of Minority Equity, America's Diversity Is Its Strength, listed 45 suggestions that college faculty could use to promote the academic success of ALL students. Vasquez and Wainstein (1990) asserted that faculty must take more responsibility for minority students' failures and successes. They claimed that "minority students 'fail in school' not because they are culturally different but because faculty members are unprepared to recognize their cultural distinctiveness as strengths" (p. 608).

Haring-Hidore (1987) studied how mentoring enhanced careers for women. She explored the pros and cons of the "grooming-mentoring"

relationship, as defined by Levinson, versus the "networking-mentoring" relationship, as suggested by Swoboda and Miller. She suggested that, because of the inability to set up compatible "homogeneous" relationships between younger women/minorities and older professionals, the networking-mentoring strategy was the most useful model for women.

Without faculty direction and support, many students find themselves losing ground academically. Minority students, in particular, are in need of mentoring, encouragement, and resource assistance. As a result, the University of New York developed Project MAGNET (Minority Access/Graduating Network) to provide scholarships and mentoring to doctoral students (Lyons, 1990). Their next goal is to pursue a postdoctorate program to encourage social responsibility.

Programs like Michigan Minority Equity, MAGNET, and others will eventually increase opportunities for women and minorities to complete doctorates. The 1990 Supreme Court tenure ruling will affect how future tenure decisions will be made. It is anticipated that this ruling could have a positive long-term effect in increasing the numbers of tenured women and minority faculty members (Lyons, 1990). Demographers seem to agree that minorities and women are underrepresented in faculty and administrative roles. The literature review established the fact that few role models or mentoring processes have been made accessible to minority youths.

The "new guard" faculty and administrators may bring in different values. Baldwin (1990) researched the concept of faculty "vitality" and how it affects the research university. He noted that there was growing concern about the current

faculty/administration: "Worry is widespread that an aging, immobile, discipline-bound professorate will not be able to provide state-of-the-art teaching and research necessary for the United States to remain 'competitive'" (p. 160). Baldwin explored whether the faculty-vitality factor discriminated among professors in "meaningful ways regarding their professional attitudes, practices, and achievements." He realized that faculty prosper in different environments, thus legitimizing the need to target efforts fostering vitality in different categories. In conclusion, he noted:

> Many paths appear to lead to faculty vitality and many factors may inhibit it. Even though numerous key variables appear to distinguish vital from representative professors, institutions must be willing to work with faculty on a case-by-case basis. Academic life is too specialized and too fragile to compose a simple formula that will guarantee dynamic careers for professors in general. (p. 178)

This complexity reflected what Sands et al. (1991) discovered in their study of faculty mentoring other faculty. They, too, realized that mentorship is a complex, multidimensional activity. In identifying the ideal mentor, Sands et al. arrived at four specific kinds:

> The *Friend* interacts with the mentee socially, providing advice about people and helping with personal problems. The second type, *Career Guide*, promotes the development of the mentee's research, inclusion in a network of colleagues, and his/her professional visibility. The *Information Source* provides information about formal and informal expectations for promotion and tenure, publication outlets, and committee work. The *Intellectual Guide* promotes an equal relationship, collaborates with the mentee on research or publications, and provides constructive criticism and feedback. These categories also emerged in the qualitative analysis of respondents' own definitions of a mentor. (p. 189)

In looking at graduate students who, with appropriate support, could become new faculty and administrators, Gonzalez (1987) noted:

The presence of graduate students in the universities who learn by doing and later become available for consultation or employment themselves should be seen as another plus, for their presence ensures that the nation's research effort will have continuity over time--with less brilliant results if all research were conducted outside the academy. (p. 8)

Boice (1991) explored how new teachers perform, once they are established in a faculty position. A common concern regarding which takes precedence, research or teaching, was also addressed. For many new faculty, this balance was and still is one that is difficult to achieve.

In researching minority representation in academe, Brown (1988) noted in her comparison of black, Hispanic, and Asian American groups that:

> Teaching was the primary activity of Black and Hispanic faculty; they also more frequently reported being involved in administration. Compared to Asian Americans and Hispanics, few Black faculty were engaged in research. Asian Americans were most likely to report research as a primary activity and least likely to be in administration. (p. vi)

Brown recommended several policy directions to increase minority participation in faculty positions. Among these directions, she recommended that "national foundations and organizations should increase and adequately fund fellowships and traineeships to support underrepresented minorities who plan careers in academe" (p. vii).

Preparation for Graduate School

Specific resources targeted for minority students to increase persistence include Graduate School and You (Council of Graduate Schools, 1989) and Generic Guide and Checklist (Vance & Potter, 1988), which were designed to be read by the students themselves. Other research concerned with persistence

has been conducted by O'Brien (1990), Ogbu (1990), and Penn and Panos (1988).

The Council of Graduate Schools (CGS) circulated the results of their 1988 Spring Meeting, which focused on enhancing the presence of minorities in graduate education. This document was designed for assistant deans and other higher education administrators. Additional materials developed for administrators include joint publications from the Minority Graduate Education (MGE) Project, the Graduate Record Examination (1990), and the Educational Testing Service (Wah & Robinson, 1990).

Demographer Harold Hodgkinson (1985), in reporting on the status of minorities in higher education, warned educators to heed the trends and national demographics regarding the nation's youth. He claimed that the "bottom line" regarding the rapid increase of minority youths is here to stay, and he advised:

> We need to make a major commitment, as educators, to see that all our students in higher education have the opportunity to perform academically at a high level. There will be barriers of color, language, culture, attitude that will be greater than any we have faced before, as Spanish-speaking students are joined by those from Thailand and Vietnam. The task will be not to lower the standards but to increase the effort. To do so will be to the direct benefit of all Americans, as a new generation of people become a part of our fabric, adding the high level of energy and creativity that has always been characteristic of groups who are making their way in America. Their numbers are now so large that if they do not succeed, all of us will have diminished futures. That is the new reality. (p. 18)

The 1984 Governor's Commission on the Future of Higher Education in Michigan suggested that "minority, female and handicapper faculty should be given special consideration" in the selection process. The Commission further specified that "the State assist colleges and universities in recruiting and

retaining faculty; in offering career or early retirement options to faculty; and that the State continue its commitment to stable funding to assure research and academic excellence" (p. 16).

This suggestion, along with the other recommendations in this study, seems to agree that more must be done to increase the participation of minorities in higher education. Although the science and engineering areas remain critical, the literature indicates that minority education, regardless of the discipline, is highly regarded.

Community and National Demographics

Hodgkinson and other demographers repeatedly have pointed out that the national racial/economic picture is rapidly changing. In her article on minorities in science, Rawls (1991) noted that, in 1988, there were 54 million blacks, Hispanics, American Indians, and Alaskan Indians living in the United States, 22% of the total population. However, only 4.4% of the 4.5 million people employed in the United States as scientists or engineers were members of minority groups. Rawls quoted Erich Bloch, Director of the National Science Foundation (NSF) as saying:

> Our world is increasingly competitive, and our economy increasingly depends on scientific and technological excellence. That excellence, in turn, depends on people--people with education and skills in every area of science and technology. (p. 20)

Racial diversity has been increasing rapidly each year. Latinos and Asian Americans represent two groups that have, and will continue, to experience the largest growth. Nationally, the racial demographics included the following racial
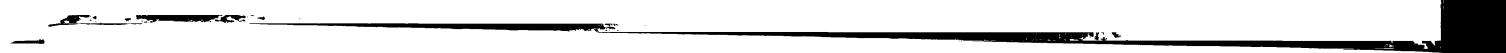
distribution of the 248,709,873 U.S. Citizens or U.S. Permanent Residents: Caucasians, 155,686,070; Blacks, 29,986,060; Asian and Pacific Islanders, 7,273,662; American Indians, 1,878,285; Eskimo, 57,152; and Aleut, 23,797 (1990 U.S. Census).

The March 3, 1993, Chronicle of Higher Education had a table of 1991 enrollments, by race, at 3,100 institutions of higher education. In total, 14,359,000 undergraduate through doctoral students were enrolled. The racial distribution was as follows: 114,000 American Indians (0.8%), 637,000 Asians (4.4%); 1,335,000 African Americans (9.3%), 867,000 Hispanics (6.0%); 10,990,000 Caucasians (76.5%), and 416,000 foreign students of all races (2.9%) (pp. A31-A39). Each category had increased from the previous year. The increases for the various groups were: American Indians, 10.7%; Asians, 12.2%; African Americans, 7.1%; Hispanics, 10.7%; Caucasians, 2.4%; and foreign students, 6.4% (p. A31). It is interesting that Caucasians had the smallest increase (Fact File, 1993).

The 1991 Summary Report by the Office of Scientific and Engineering Personnel National Research Council stated that, in 1990, a total of 36,027 doctorates were awarded by American universities, the largest number ever awarded in any year. Of these awards, United States minorities earned 2,236 of the doctorates, an increase of 37.7% from 1975 (p. 27). The distribution of the 36,027 doctorates, by race, was as follows: Caucasians, 21,650; African Americans, 828; Hispanics, 698; Asian Americans, 617; Native Americans, 93; and non-U.S. citizens, 9,398. Academe continues to be the principal employer

of new Ph.D.'s in the American labor force--for more than 50% of each minority group except Asian Americans.

The report further noted:

More and more, a focus on people means a focus on minorities, because minorities are a resource we have not fully used. Minorities have not been drawn to science and engineering in sufficient numbers, and earn far fewer advanced degrees in science and engineering than their relative numbers in the population would indicate. (p. 20)

In his discussion of the educational system in Michigan, Hodgkinson (1989) pointed out that it costs seven times more to keep a prisoner in jail than it takes to support a youngster in Head Start or to pay a college student's expenses for a year. Whereas prisons continue to be built, despite the costs, attempts are being made by the Department of Education, the NSF, the CIC Alliance, and other sources both public and private to increase the "window of opportunity" for minorities.

In recognition of the changing demographics and the national need for more minority representation in graduate schools, the Council of Graduate Schools in Washington, D.C., developed a series of booklets, including Enhancing the Minority Presence in Graduate Education (1988); Enhancing the Minority Presence in Graduate Education II: Assessing the Progress (1992a); Enhancing the Minority Presence in Graduate Education III: Institutional Partnership Programs (1992b); and Enhancing the Minority Presence in Graduate Education IV: Models and Resources for Minority Student Recruitment and Retention (1992c).

A population that often has been overlooked in the literature, but one that includes women and minorities, who are also pursuing advanced opportunities, is disabled individuals. In 1988, the NSF reported that 2% of the 94,200 scientists and engineers in the United States in 1986 reported having a physical disability (p. 27).

In 1985, the Presidents Council of State Colleges and Universities commented on the state of minority education:

> During the past decade, minority segments of our population have increased at a significant rate, with Blacks and Hispanics showing the largest overall increases. This development has already had a significant impact on the public schools, as witnessed by the fact that in several states (for example, California, Florida and Texas), minorities now comprise over one-half of the enrollment in primary grades. Although somewhat less dramatic, similar patterns are also clearly evident in other areas of the country. Paradoxically, during this same period there has been a significant decline in minority enrollment in the nation's colleges and universities. As a consequence, at both the state and national level, efforts have been initiated to examine the reasons for this alarming trend. (p. 1)

Summary

Jones and Watson (1990), Jacobson (1986), and others have written about what the future holds, what the trends are, and what must be done to meet the future effectively. After reviewing the literature, the researcher concluded that little information exists regarding students' perceptions with respect to their decisions to pursue graduate education. It became necessary to examine literature that was as closely related as possible to the topics of interest in this research.

Demographics pertaining to Latinos and Asians indicate that they are the fastest growing racial minority groups in the nation. Enrollments of Caucasians in higher education have decreased, while those of other racial groups have increased. These facts may influence how services to minorities or other underrepresented groups will be viewed in the near future.

From the literature review, it became evident that academic persistence, and representation, in higher education are of great concern to administrators. These concerns also are shared by members of the various racial and ethnic minority groups, females, and demographers concerned about the future of the nation.
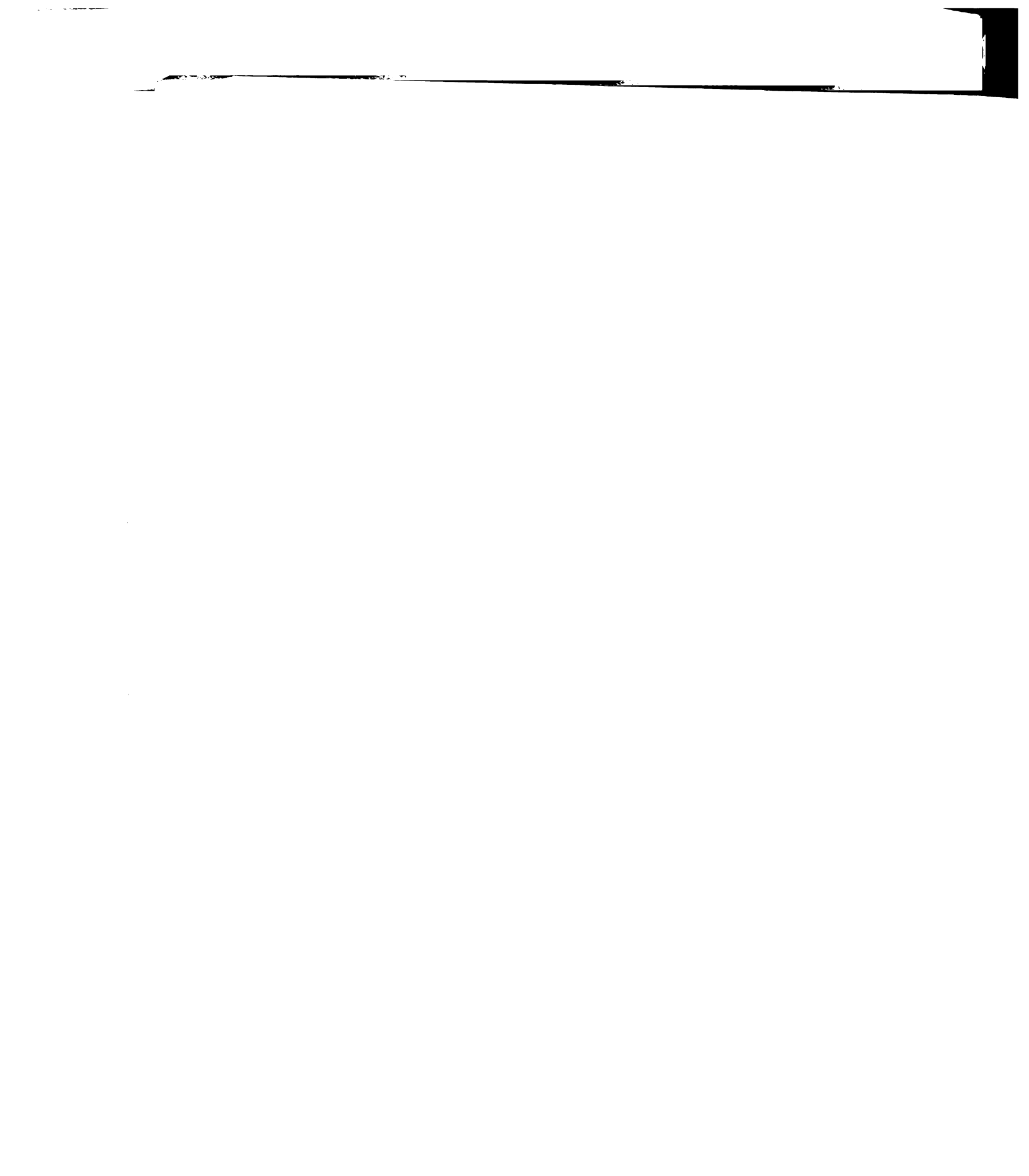
CHAPTER III

METHODS AND PROCEDURES

Introduction

For several years, the MSU SROP and McNair participants have filled out annual CIC pre and post evaluations of their research experiences. However, until now, no attempt has been made to analyze and compare MSU students' responses to the questions. It would be useful to obtain such information before the commencement of another SROP/McNair undergraduate research period because such information could provide an enhanced sense of how the participants' perceptions have affected future decisions to pursue faculty/ research careers. The data from the past research period should be relevant in evaluating students' perceptions.

Research Purpose

The primary purpose for this research project was to determine what, if any, perceptual changes took place on the part of students who participated in the Michigan State University SROP and McNair programs with respect to their decisions regarding whether to pursue graduate studies.

Research Question

For the purpose of this study, the following research question was posed: Does participating in the SROP and McNair programs influence the perceptions of the participants? If so, in what way?

Research Hypotheses

The following hypotheses, stated in the null form, were formulated for this study:

Ho 1: There are no differences between pre and post program surveys, with regard to participants' interest in graduate schools.

Ho 2: There are no differences between pre and post program surveys, with regard to participants' interest in pursuing careers as college or university professors.

Ho 3: There are no differences between pre and post program surveys, with regard to participants' confidence in their ability to be successes in graduate or professional schools.

Procedures used to investigate these research hypotheses included (a) formulating the research hypotheses, (b) identifying the sample population and the period being investigated, (c) identifying the instruments to be analyzed, (d) collecting the written and oral data, and (e) analyzing the collected data.

Limitations to this study included the following:

1. Only one year was evaluated.

2. Student participants were self-selected and may already have been bound for graduate school.

3. The MSU McNair and SROP programs were not representative of how other CIC SROP or national McNair programs are coordinated.

4.   No comparative sample pool was used.

A review of the existing literature confirmed that no study similar in nature to this has ever been conducted. This seems curious, considering that higher education institutions across the nation have programs similar to the MSU McNair and/or SROP. However, like MSU, they may be feeling limited by the lack of data that are available on undergraduate researchers' perceptions and progress.

At the time this research was being conducted at MSU, the CIC was undertaking its first study of the Big Ten SROPs. Until 1992, CIC reports and proposals focused predominantly on raw numbers of students matriculating and pursuing the levels required for doctoral completion. The results of their extended study will be very much anticipated by those who either currently run similar programs or who are interested in investing resources in such a project. Target populations intended to read the study will be the current and/or potential sponsors interested in supporting undergraduate students who pursue research opportunities.

The Study Population

For the purpose of this study, the 1991-92 SROP and McNair participants' pre and post evaluation responses were used. Twenty-four students were co-sponsored by McNair and MSU, and 56 students were sponsored by either the CIC or the MSU SROP budget, totaling 80 participants.

In the 1991-92 research period, the participants included 19 African American females, 16 African American males, 12 Hispanic females, 7 Hispanic
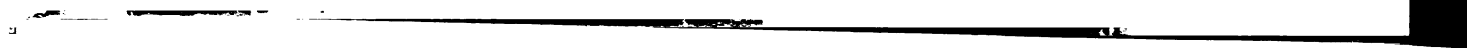
males, 6 Asian American females, 11 Asian American males, 4 Native American
females, 4 Caucasian females, and 1 Caucasian male.

Research Design

Major variables for this profile were obtained from the McNair/SROP files,
stored in locked cabinets, in the Office of Supportive Services. For the purpose
of this study, most 1991-92 participants were included in this research. This
same group was used for both the pre and post comparisons.

Four methods of statistical inquiry were used: (a) a difference method to
compare pre and post responses, (b) a t-test to compare averages and means
of the pre and post survey "pairs," (c) ANOVA to look at more than two groups
of variables, and (d) qualitative induction to analyze the responses from the oral
interviews. As a result of using these methods, the researcher anticipated
learning when change occurred (if it did), how many people were affected, and
in what ways the change affected the participants' perceptions.

After the statistical analysis was completed, oral interviews were
conducted with the student participants to increase the researcher's under-
standing of the participants' perceptions. These methods are commonly used
in analyzing survey research in the MSU Institute for Public Policy and Social
Research, according to Larry Hembroff, Survey Director. Alice Kalush, Systems
Analyst in the Computer Laboratory, and Irvin Lehmann from the Department of
Counseling, Educational Psychology, and Special Education in the College of
Education also recommended the methods listed above as being appropriate for
this particular research.

Difference

The difference method was used to compare pre and post survey changes for likelihood Questions 1 and 2. Questions with Likert-scale responses were assigned quantity strength codes from 4 to 1, with 4 representing most strongly, 3 representing probably, 2 representing possibly, and 1 representing none. Either averages or percentages may be used to illustrate change.

Agree/disagree statements 3 to 8 also used the difference method. The strength codes ranged from 4 to 1, with 1 representing strongly agree and 4 representing strongly disagree. Note that Questions 1 to 8 represented biases and could affect the outcome of the comparison as scores on the post test should reflect higher values than those on the pre test.

T-Test

The t-test was used for the pre and post survey comparisons (Rowntree, 1981, p. 168). Both the pre and post surveys were "paired" to compare the responses of the same respondents.

ANOVA

ANOVA was used to evaluate the effectiveness of an intervention or a difference between groups (Rudestam & Newton, 1992). This method was useful for comparing change in one group with another—for example, determining whether African American females responded differently from African American males. The three types of outcome responses for this method were (a) positive, (b) negative, and (c) no response.

Additional questions possibly to be considered for ANOVA included perceptual differences among or between (a) sophomores, juniors, and seniors; (b) the various racial groups; (c) first-, second-, and third-year participants; and (d) males and females.

Qualitative Induction

Oral interviews were used to provide qualitative information. Participants were encouraged to reflect on their past experience with the SROP/McNair and to recall their perceptions of the intention of the program(s), their decisions to pursue graduate studies, and their perceptions regarding the treatments provided during the research period.

The CIC SROP Participant Information Survey

The instrument had three primary sections. Part One included demographic questions about the participants and sought background information on their research and their mentors.

Part Two consisted of two questions that respondents answered using a four-part Likert-type scale (most definitely, probably, possibly, or none). The questions were:

1.   What is the likelihood that you will enroll in graduate school (masters or Ph.D.) upon completion of your undergraduate degree?

2.   What is the likelihood that you will enroll in professional school (e.g., law, medicine, or dentistry) upon completion of your undergraduate degree?

In Part Three of the instrument, a four-part Likert-type scale again was used to measure the strength of the responses. Response options were as follows: 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree. The six questions in this section were:

3.   I plan to get a full-time, regular job immediately after I earn my bachelor's degree.

4.   I hope to become a professor at a college or university some day.

5.   My career plans are unclear at this time.

6.   By the time I earn my bachelor's degree, I will owe over $5,000 for student loans.

7.   I don't think that I will be able to afford to go to graduate or professional school.

8.   I am confident that I would be successful if I went to graduate or professional school.

The ninth question was open ended, requesting information on what or who motivated the respondent to participate in this program.

The CIC End-of-Program Evaluation

The Participant Information Survey and the End-of-Program Evaluation basically asked many of the same questions (see Appendix for copies of these survey forms). Differences between the Participant Survey and the End-of-Program Evaluation included the fact that the latter asked four different questions in Section Two and two more questions in the last section.

Section Two was designed to obtain responses to the following questions, which had not previously been asked:

* Project title

* Do you plan to continue working on your project with your mentor during the academic year?

* Do you have any plans to present the results of your research at a professional meeting?

* Do you expect to be listed as an author on an article or book chapter as a result of your research work this summer?

The ninth question differed from the Participant Information Survey in that it used a four-part Likert scale to rate the strength of the response. Response choices were as follows: excellent = 1, good = 2, satisfactory = 3, and unsatisfactory = 4. The questions sought participants' evaluations of the overall SROP experience in the following five major categories:

* The weekly campus activities

* The SROP Conference in Iowa

* Your research experience

* Your faculty mentor

* The entire program

Question 10 was designed to elicit a yes or no response to the question: Would you recommend the SROP program to your friends? Question 11 was open ended and sought students' comments about the program, its components, or suggestions for improving the program.

The Oral Interviews

In addition to the responses provided in the CIC pre and post evaluations, the researcher conducted personal interviews with a random sample of participants who completed the surveys. The purpose of conducting the interviews was to gain additional insights into the perceptual changes that had taken place through the years.

Specifically, the interviews were intended to obtain additional information that could influence future programming of the SROP and McNair programs. Attinasi (1989) conducted similar oral interviews to learn more about Mexican Americans' perceptions of the university and of freshman persistence. In that study, Attinasi used open-ended interviews—that is, conducting interviews without an interview schedule. This method was intended to give him more freedom to pursue any question he chose, based on the interviewees' responses to previous questions. He tried to make the respondents draw from their personal experiences. Attinasi explained:

> The interviews were in-depth modified "life history" interviews; the informants were encouraged to think back over their lives and recount experiences related to their own and others' college-going behavior. For each experience, informants were asked to describe the ways in which other persons were involved in the experience and to recall their own perceptions of it. (p. 253)

Responses to the oral interviews were analyzed using qualitative induction. "To initiate the analysis, the interviews were open-coded, that is, the contents were coded in as many different ways as possible" (Attinasi, 1989, p. 254).

The SROP/McNair students were not expected to give "life histories," but instead were questioned about their perspectives while having been in the undergraduate research program. In essence, their perceptions were probed to provide additional information about and insight into their experiences.

Confidentiality

Every precaution was taken to ensure the confidentiality and protection of all of the participants. The guidelines established by the University Committee on Research Involving Human Subjects (UCRIHS) regarding confidentiality and participants' rights were followed closely.

CHAPTER IV

ANALYSIS OF THE RESULTS

Introduction

Eighty students participated in the 1992 MSU SROP/McNair summer undergraduate research opportunity program. Of these students, 71 filled out both the pre and post CIC evaluation instruments. The pre and post evaluations were part of the summer program requirements and were to have been completed before the fall semester began. Despite double-checking and monitoring, not all participants filled out both of the evaluations in time for the present study. As noted earlier, 71 of the 80 participants qualified for the "paired" comparison; thus, responses from 88.75% of the total participant population were recorded for this study.

Procedures used to investigate the research hypotheses included (a) formulating the research hypotheses, (b) identifying the sample population and the period being investigated, (c) identifying the instruments to be analyzed, (d) collecting both written and oral data, and (e) analyzing the collected data. Four methods of statistical inquiry were used: (a) a difference method to compare pre and post responses, (b) a t-test to compare averages and means of the pre and post survey "pairs," (c) ANOVA to look at more than two pairs of variables, and

(d) qualitative induction to analyze responses to the oral interviews that were conducted after analyzing the CIC pre and post results.

Demographic Information on the Participants

Thirty-seven females and 34 males responded to both the CIC pre and post evaluations. Twenty-nine of the respondents were African Americans, 8 were Chicanos, 2 were Puerto Ricans, 16 were Asian Americans, 4 were Native Americans, 6 were Hispanics, and 2 were others (most likely Caucasians). Fifty-three of the participants were in their first year of research experience, whereas the remaining 18 were second- or third-year participants. The median grade point average for the entire population was 3.0 on a 4.0 scale. Seventeen of the respondents were juniors, and the remaining 54 were seniors.

Pre and Post Difference Comparison

Responses were recorded according to response percentages. In the tables that follow, **Pre** refers to the evaluation completed before the 10-week summer research experience commenced. **Post** refers to the evaluation completed at the close of the summer experience. The **Missing** column refers to the number of cases that did not respond to the particular question. The **% Change** records the levels of differences between the pre and post percentage responses. The pre score was subtracted from the post score to arrive at the % Change.

With regard to the likelihood of respondents enrolling in graduate school, increases were observed in the Definite and Possibly categories (see Table 1).

Students in the Probably category shifted the most by the end of the summer. Some of these students became more Definite about their decisions, whereas others became more cautious about the likelihood of their enrollment in graduate school.

Table 1.--Likelihood of enrolling in graduate school (in %).

Evaluation	Definitely	Probably	Possibly	Missing	Total
Pre	46.5	33.8	14.1	5.6	100
Post	56.3	18.3	21.1	4.2	100
% change	+9.8	-15.5	+7.0	-1.4	

Shifts in cases were observed in both Tables 1 and 2. Slight changes occurred between the pre and post evaluations in all the areas of Table 2. However, neither Table 1 nor Table 2 evidenced any significant pre and post differences.

Table 2.--Likelihood of enrolling in professional school (in %).

Evaluation	Defin.	Prob.	Poss.	None	Missing	Total
Pre	16.9	9.9	38.0	29.6	5.6	100
Post	21.1	12.7	25.4	39.4	1.4	100
% change	+4.2	+2.8	-12.6	+9.8	-4.2	

Shifts occurred in all of the categories shown in Tables 3 through 8. Again, none of the shifts resulted in any significant differences between the pre and post evaluations. The shifts between the pre and post evaluations, although not significant, did show a slight decrease of interest in planning to gain full-time work upon graduation (Table 3).

Table 3.--Planning to get full-time work after earning bachelor's degree (in %).

Evaluation	Strongly Disagree	Dis-agree	Agree	Str. Agree	Missing	Total
Pre	35.2	47.9	11.3	4.2	1.4	100
Post	56.3	16.9	14.1	9.9	2.8	100
% change	+21.1	-31.0	+2.8	+5.7	+1.4	

As shown in Table 4, in the post evaluation, a slight increase was observed with regard to interest in pursuing a professor position. However, the shifts did not produce any significant differences.

Table 4.--Hoping to become a professor (in %).

Evaluation	Strongly Disagree	Dis-agree	Agree	Str. Agree	Missing	Total
Pre	11.3	25.4	38.0	23.9	1.4	100
Post	4.2	32.4	40.8	22.5	0.0	100
% change	-11.3	+7.0	+2.8	-1.4	-1.4	

A slight shift was noted between the pre and post results in the Disagree areas, with regard to career plans (see Table 5). On the post evaluation, fewer students were unclear about their future plans by the conclusion of the research period.

Table 5.--Have unclear career plans (in %).

Evaluation	Strongly Disagree	Dis-agree	Agree	Str. Agree	Missing	Total
Pre	42.3	21.1	21.1	14.1	1.4	100
Post	45.1	26.8	21.1	7.0	0.0	100
% change	+2.8	+5.7	0.0	-7.1	-1.4	

Shifts between the pre and post evaluations were not noticeable for Question 6 (see Table 6). In three of the categories, there were no shifts at all. The other two categories showed insignificant differences regarding the question of owing more than $5,000 in student loans upon graduation.

Table 6.--Will owe more than $5,000 in student loans upon graduation (in %).

Evaluation	Strongly Disagree	Dis-agree	Agree	Str. Agree	Missing	Total
Pre	43.7	8.5	7.0	39.4	1.4	100
Post	43.7	8.5	8.5	39.4	0.0	100
% change	0.0	0.0	+1.5	0.0	-1.4	
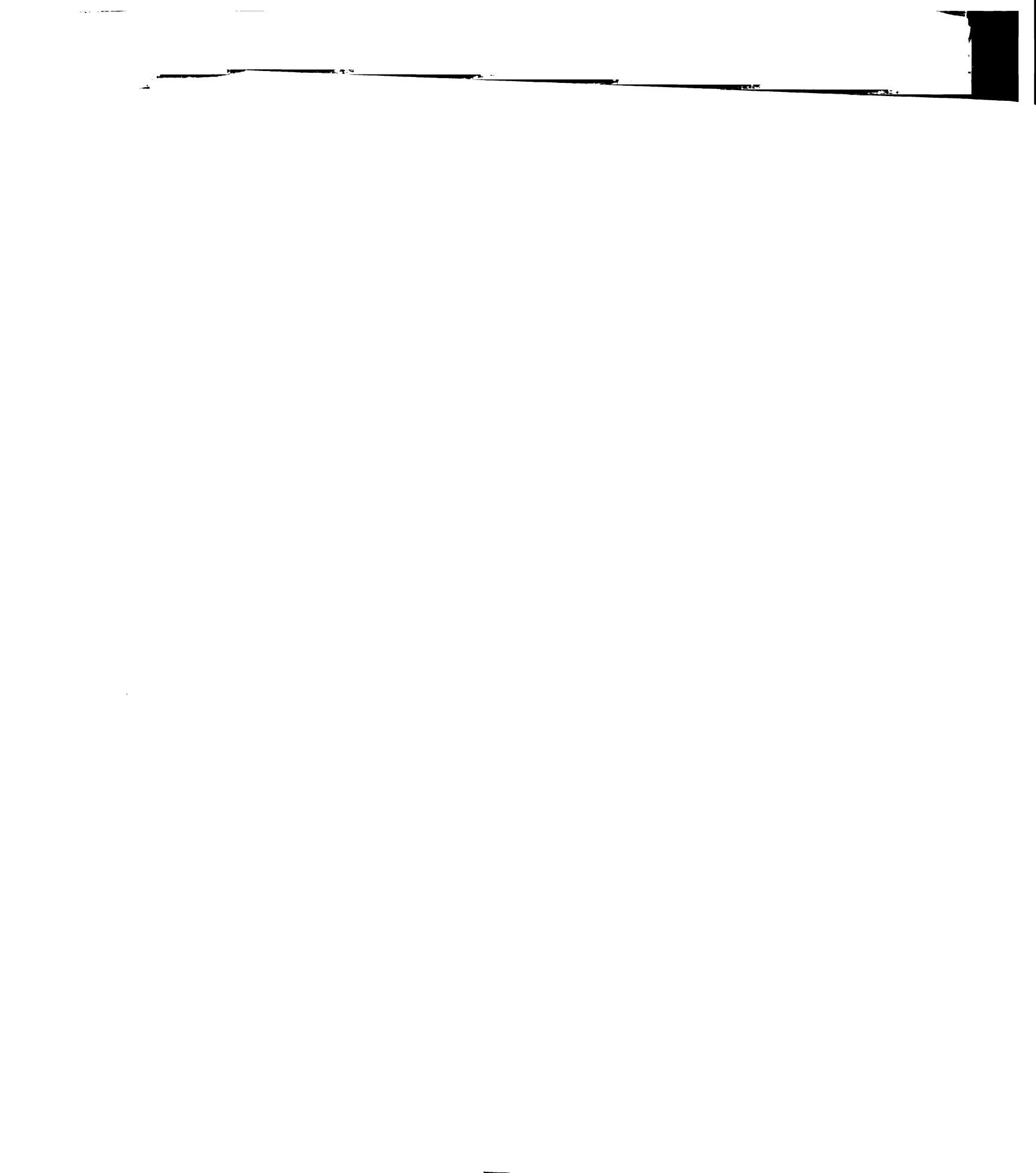
Slight shifts occurred during the post evaluation with regard to the question of whether respondents thought graduate or professional school was not affordable (see Table 7). In the post evaluation, more respondents indicated disagreement with the notion that they would not be able to afford graduate or professional school.

Table 7.--Think graduate or professional school is not affordable (in %).

Evaluation	Strongly Disagree	Dis-agree	Agree	Str. Agree	Missing	Total
Pre	19.7	31.0	32.4	14.1	2.8	100
Post	26.8	32.4	31.0	9.9	0.0	100
% change	+7.1	+1.4	-1.4	-4.2	-2.8	

The greatest shift between the pre and post evaluation with regard to respondents' confidence about their success in graduate or professional school was in the strongly agree category (-7.1%) (see Table 8). None of the shifts from pre to post was significant.

Table 8.--Confident of graduate or professional school success (in %).

Evaluation	Strongly Disagree	Dis-agree	Agree	Str. Agree	Missing	Total
Pre	1.4	2.8	18.3	76.1	1.4	100
Post	5.6	1.4	23.9	69.0	0.0	100
% change	+4.2	-1.4	+5.6	-7.1	-1.4	

The figures in Table 9 are based on responses to Question 9 on the post evaluation; this item was not on the pre evaluation. The question was broken down into five subcategories, to which respondents gave value ratings ranging from unsatisfactory to excellent. The five categories were as follows:

9a   The weekly campus activities
9b   The SROP Conference in Illinois
9c   Your research experience
9d   Your faculty mentor
9e   The entire program

The results showed that 94.3% of the respondents thought that the weekly campus activities were satisfactory to excellent. Also, 94.4% rated the CIC SROP Conference as satisfactory to excellent. Another 98.6% thought that the research experience was satisfactory to excellent. All of the respondents rated both the faculty mentor and the entire program as having been satisfactory to excellent.

Table 9.--Evaluation of the overall SROP experience.

Question	Unsatis.	Satis.	Good	Excellent	Missing	Total
9a	4.2	23.9	53.5	16.9	1.4	100
9b	1.4	7.0	45.1	42.3	4.2	100
9c	0.0	1.4	35.2	62.0	1.4	100
9d	0.0	2.8	22.5	74.6	0.0	100
9e	0.0	1.4	40.8	57.7	0.0	100

Question 10 on the post evaluation asked respondents whether they would recommend the SROP program to their friends. Of the total respondent group, 97.2% said they would recommend the program to their friends.

T-Test Comparisons of Pre and Post Evaluation Responses

The t-test was used to compare the pre and post evaluation responses of different variable groups. Questions that were identical on both the pre and post evaluations were compared to test for differences between the variable groups. These were Questions 1 through 8. For the most part, no significant differences were found between individual variables.

What follows are examples of where a significant difference was detected among individual variables. The groups examined with the t-test for independent samples included gender, race, year in program, and grade point average. In the cases of race and gender, no significant differences were found between males and females or between black and nonblack participants in their responses to Question 1 through 8.

Gender

There were no observable significant differences (at the .05 alpha level) between the pre and post responses of males and females to Questions 1 through 8. The t-test for independent samples failed to provide evidence that a significant difference existed between males and females in how they responded to these questions on the evaluation instruments.

Race

There were no observable significant differences (at the .05 alpha level) between the pre and post responses of black and nonblack participants to Questions 1 through 8. The t-test for independent samples failed to provide evidence that a significant difference existed between blacks and nonblacks in how they responded to these questions on the pre and post evaluations.

Year in Program

The t-test for independent samples showed significant difference between the first-year and return participants in two areas: (a) likelihood of enrolling in professional school (Table 10) and (b) confidence of success in graduate or professional program (Table 11). The pooled variance estimate two-tailed probability figure showed that a significant difference existed between the two groups' perceptions regarding the likelihood of their enrolling in a professional program. Return students expressed more of an interest in enrolling in professional programs than did first-year students.

Table 10.--T-test: Likelihood of enrolling in a professional program.

Variable	Mean	t-Value	df	Pooled Variance Estimate
First year	.1224	2.07	61	.043
Return	-.2143			
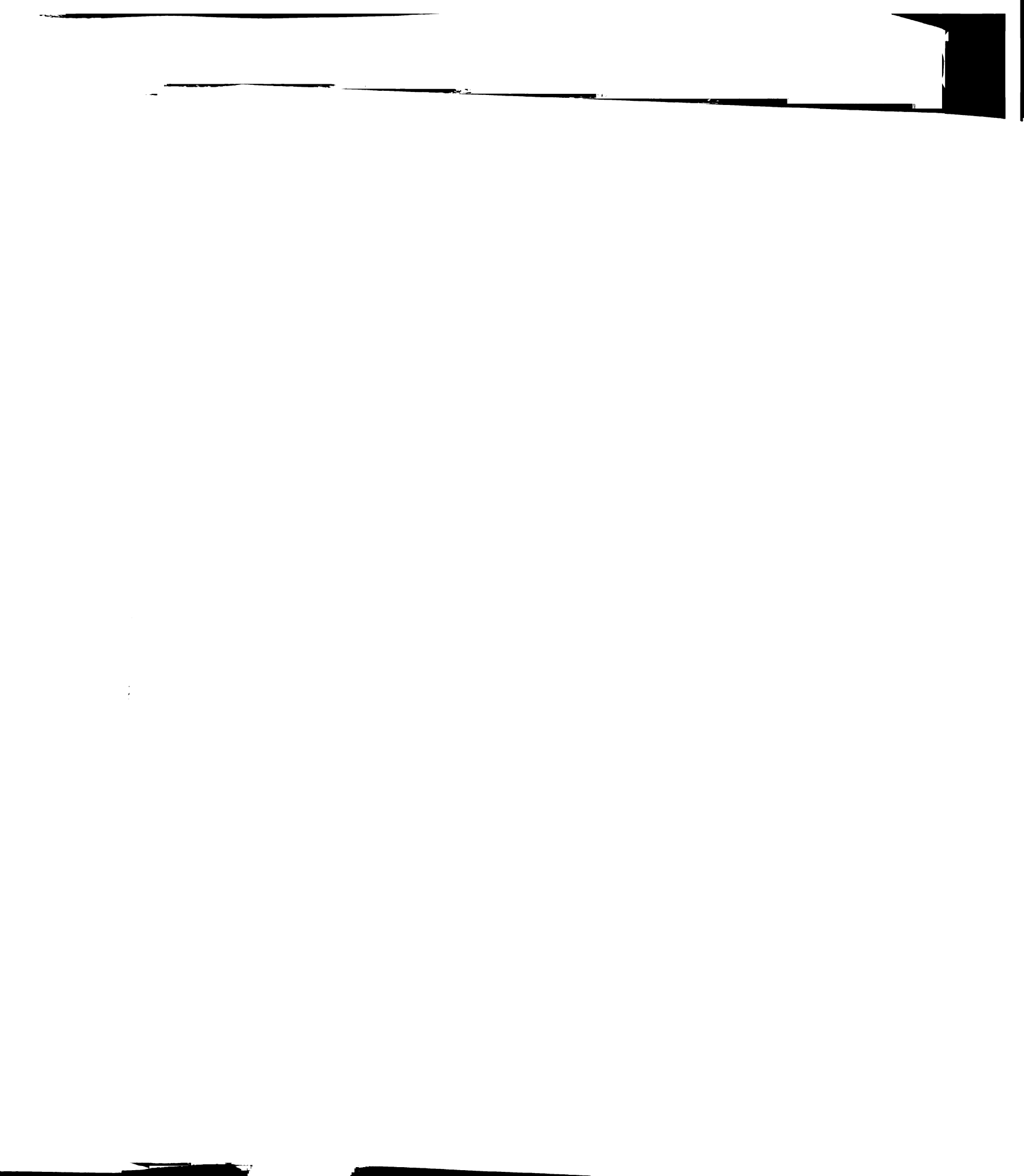
Because the t-test two-tailed probability showed significance, it was necessary to note the separate variance estimate t-value and two-tailed probability figures. Table 11 shows that there was a difference between first-year and return students with respect to their confidence of graduate or professional school success. The return students showed more gain in confidence between the pre and post evaluation than did the first-year students.

Table 11.--T-test: Confidence of graduate or professional school success.

Variable	Mean	Two-Tailed Prob.	Separate Var. Estimate t-Value	Separate Var. Estimate Two-Tailed Probability
First-year	-.1923	.001	-2.08	.042
Return	.1429			

Grade Point Average

For analysis purposes, respondents were separated into two grade-point groups: (a) those with grade point averages of 2.50 or less and (b) those with grade point averages of 2.51 or greater. In comparing the two groups, it was observed that in four instances there were significant differences in perceptions. In the event the pooled variance estimate did not show a significant difference, the separate variance estimate was examined. In most cases there were no significant differences in either of the two-tailed probability estimates. The areas where differences occurred are shown in Tables 12 through 15.

Students with less than a 2.50 grade point average perceived that they had less likelihood of enrolling in a professional school than did those with a grade point average of 2.51 and above (Table 12). Students with grade point averages of 2.51 and above perceived a greater likelihood of enrolling in a professional school.

Table 12.--T-test: Likelihood of enrolling in a professional school.

Grade Point	Mean	S.D.	Pooled Variance Estimate Two-Tailed	Separate Variance Estimate Two-Tailed
< 2.50	-.5000	.577	.060	.159
> 2.51	.0357	.538		

Students with less than a 2.50 grade point average had stronger perceptions that they would get a full-time job after earning a bachelor's degree than did their counterparts with higher grade point averages (Table 13). These perceptions stayed relatively consistent during both the pre and post evaluations.

Table 13.--T-test: Planning to get a full-time job.

Grade Point	Mean	S.D.	Pooled Variance Estimate Two-Tailed	Separate Variance Estimate Two-Tailed
< 2.50	.0000	.000	.799	.355
> 2.51	-.1053	.817		

Students with less than a 2.50 grade point average were more likely to be uncertain about their career plans. Students with more than a 2.51 grade point average did not seem to be as uncertain about their career plans. (See Table 14.)

Table 14.--T-test: Have uncertain career plans.

Grade Point	Mean	S.D.	Pooled Variance Estimate Two-Tailed	Separate Variance Estimate Two-Tailed
< 2.50	.0000	.0000	.766	.253
> 2.51	-.1525	1.014		

Students who had greater than a 2.50 grade point average showed greater change in confidence at the end of the program than did their counterparts with lower grade point averages (see Table 15). They were confident of success in graduate or professional school.

Table 15.--T-test: Confident of graduate or professional school success.

Grade Point	Mean	S.D.	Pooled Variance Estimate Two-Tailed	Separate Variance Estimate Two-Tailed
< 2.50	.0000	.0000	.802	.335
> 2.51	-.1017	.8030		

Analysis of Variance (ANOVA)

ANOVA was used to evaluate whether there was a connection between the different variables' relationships with each other, with respect to the pre and post evaluation comparisons. ANOVA also was used to examine the value of the responses provided for each variable individually. Comparisons included (a) gender/race and (b) class level, juniors/seniors. Two questions noted a relationship, and interaction process between the variables, indicating an interaction existed. The variables were race and gender combined. Questions on which the differences were noticed were (a) likelihood of enrolling in graduate school and (b) confidence of success in graduate or professional school. Tables were not developed for other questions on which there were no differences.

The ANOVA did not show significant differences for the race and gender responses independently. Race and gender together, however, showed the significance of F at .069, which was close to being significant at the .05 alpha level and worth looking at more closely. The examination showed that black males indicated a greater likelihood of enrolling in a graduate program after completing their undergraduate degree. Nonblack males indicated less likelihood of enrolling in a graduate program after the summer experience. Black females showed no change, and nonblack females indicated a slight change toward an increased likelihood of enrolling in a graduate program. (See Table 16.)
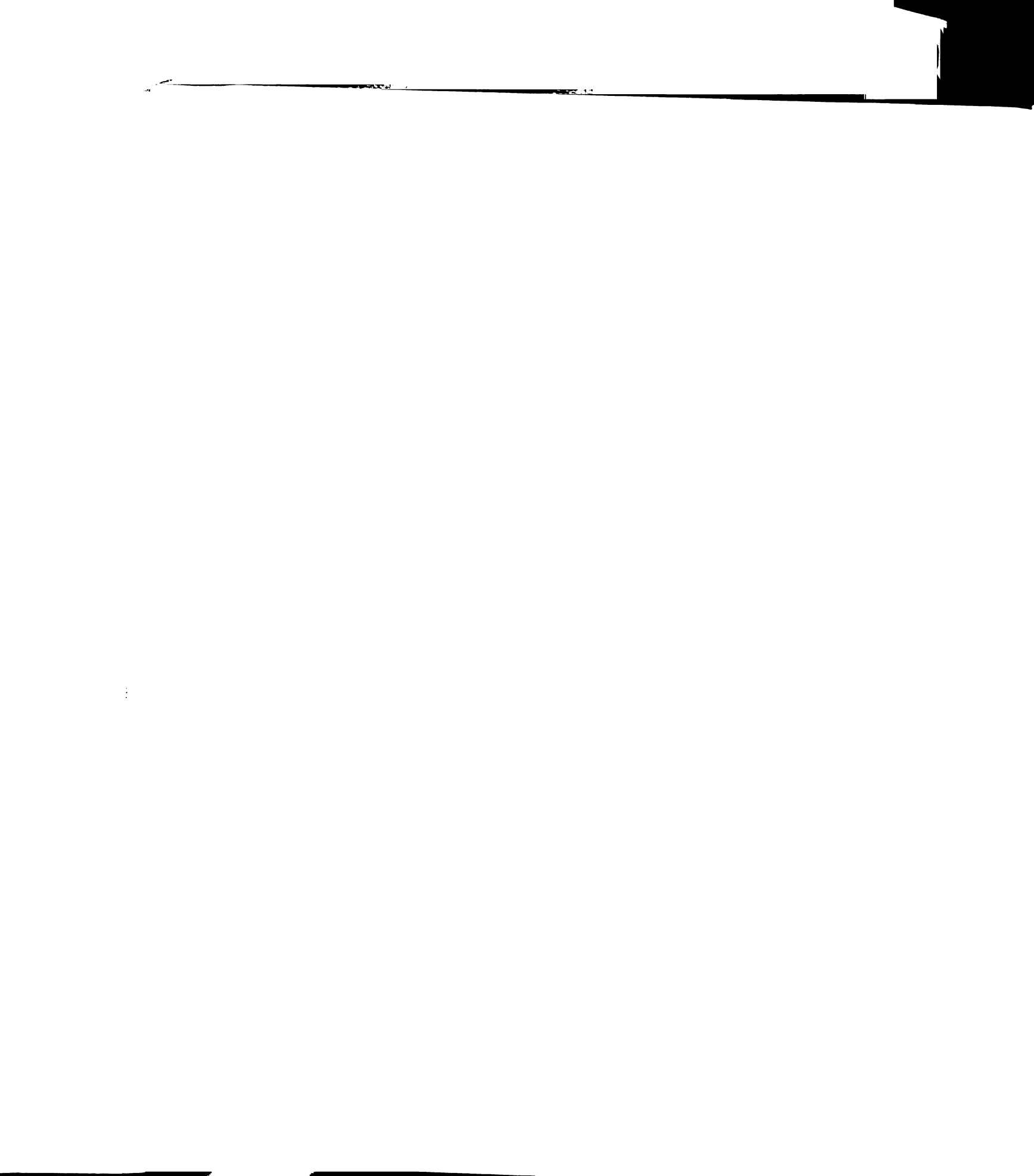
Table 16.--ANOVA: Likelihood of enrolling in a graduate school.

Variable	Black	Nonblack	Gender Raw Means	Sig. of F (Gender)
Female	.000	-.14	-.09	
Male	-.250	.30	.09	
Gender raw means	-.110	.07		.069
Sig. of F (race)	.069			

Both black males and females exhibited the most differences by the end of the research experience. The nonblack females showed little to no change in their pre and post responses. Nonblack males showed a small downward shift in their graduate or professional school success confidence level. The black males showed the most significant upward change at the end of the program and were most likely to indicate confidence about being successful in either graduate or professional school. (See Table 17.)

Table 17.--ANOVA: Confidence of success in graduate or professional school.

Variable	Black	Nonblack	Gender Raw Means	Sig. of F (Gender)
Female	-.600	.00	-.25	
Male	.310	-.14	.03	
Gender raw means	-.180	-.07		.008
Sig. of F (race)	.008			

The significance in Tables 16 and 17 was a result of interactions of race and gender, not because of the variables themselves. Separately, neither the race nor the gender variables showed any significant differences between the pre and post evaluations.

Oral Interviews

For the purpose of this study, oral interviews were conducted with students who met the following criteria: (a) were past participants of the McNair or SROP program and (b) had either graduated, been out of the program for at least two years, or were no longer eligible, for whatever reason, to reapply for the undergraduate research experience. Because black males experienced the most dramatic shift in perceived confidence toward being successful in graduate or professional school, the researcher determined that the oral-interview subjects also should be black males, to gain a clearer perspective on why this phenomenon occurred.

Interviews were intended to identify further with the black males, in an attempt to understand why they perceived their self-confidence increased by the end of the summer. Questions were intended to determine what, if anything, contributed to this phenomenon. Specifically, the questions attempted to (a) gain clues as to why the program had this effect on black males having increased self-confidence and (b) probe the respondents to identify anything else in their lives, at that time, that might have affected their growth in self-confidence during the summer research period. In reviewing the participants from 1992, it became

evident that most of the black males were still currently enrolled as undergraduates, either at MSU or at their home institution.

Interviews were conducted with those who fit the specific parameters described above and who agreed to participate anonymously in this study. Using those criteria, only three student participants qualified for the interview. The three were assigned code numbers so that their identities could be kept confidential. Numbers were assigned in the order in which the individuals were interviewed. The results of the interviews are paraphrased below.

Interviewee 1

1.   **What clues do you have as to why black males' self-confidence increased at the end of the research period?**

Before the program begins, you haven't had research experience or worked with a faculty mentor. The process is a growing, learning experience. Through the summer I learned to enjoy the challenges involved with research, and the paper at the end showed what had been learned. At the CIC Big Ten Conference, there were lots of research students and lots of black males. Seeing so many people with common interests together was interesting and exciting. The sheer number of minorities together in a positive arena at the conference was good to see.

During the summer there was a big push to go to graduate school, but it wasn't until the summer was over that the idea sunk in that I could "go for it." I had learned that academia is positive, and being with so many students having common goals, promoting research and education, helped me to become more
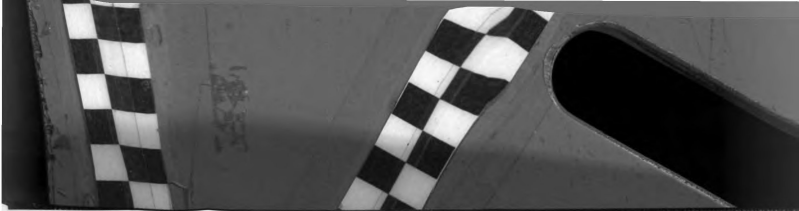
focused. Other campus activities provide opportunities to meet minorities with similar goals, but they are mostly for social purposes. These social events throw others off track, worrying about looking good and other things that are not educationally focused.

2. **Was there anything else, in your personal life for example, that might have influenced why you (or other black males) had an increase in self-confidence with regard to being successful in graduate/professional school?**

Lots of things were going on that summer. I had graduated in June and had been given a job offer right away. The job would begin right after the SROP/McNair program, and I felt overall pretty confident of myself. It helped that my family has always been very supportive of me and were quite proud of my being the first person in the family to get a bachelor's degree.

I didn't think it would be possible to go to graduate school at first because my grades were mediocre, and I'd always had to work while going to school. But I learned from professors that graduate school was more focused and smaller, and after awhile I began to feel more confident about the concept.

Last summer was my second year in the program. I think it allowed me to grow and develop differently from my first year. I knew what I wanted and how to go for it. I could measure "do-able" tasks. I grew from the experiences, getting to know the faculty mentors and learning how my discipline and background could help me get a graduate degree.

Interviewee 2

1.   **What clues do you have as to why black males' self-confidence increased at the end of the research period?**

My self-esteem increased by working with a faculty mentor, doing independent research, and doing all of this without a grade. The research built up my confidence because I was more organized and seemed to accomplish more, too. Making research presentations, developing materials, and working independently all helped my confidence. People who presented information during the weekly seminars talked about graduate school, writing personal statements, and so on, were all beneficial to me. As a black male, I feel motivated whenever I have a chance to work with or be around other black males wanting to improve their skills.

I think that nonblack males who come from backgrounds that are different from mine have different levels of expectations. Maybe the reason why there was a change in the self-confidence of black males is that they have lower levels of self-confidence, and therefore the changes were more dramatic. On the other hand, the other participants might have come in with higher levels of confidence and did not have as obvious a change.

2.   **Was there anything else, in your personal life for example, that might have influenced why you (or other black males) had an increase in self-confidence with regard to being successful in graduate/professional school?**

This last summer, I was a third-year participant. I think my knowledge of the program helped me try to get more out of the experience. My mentor was very supportive of my work. This was my second year working with the same
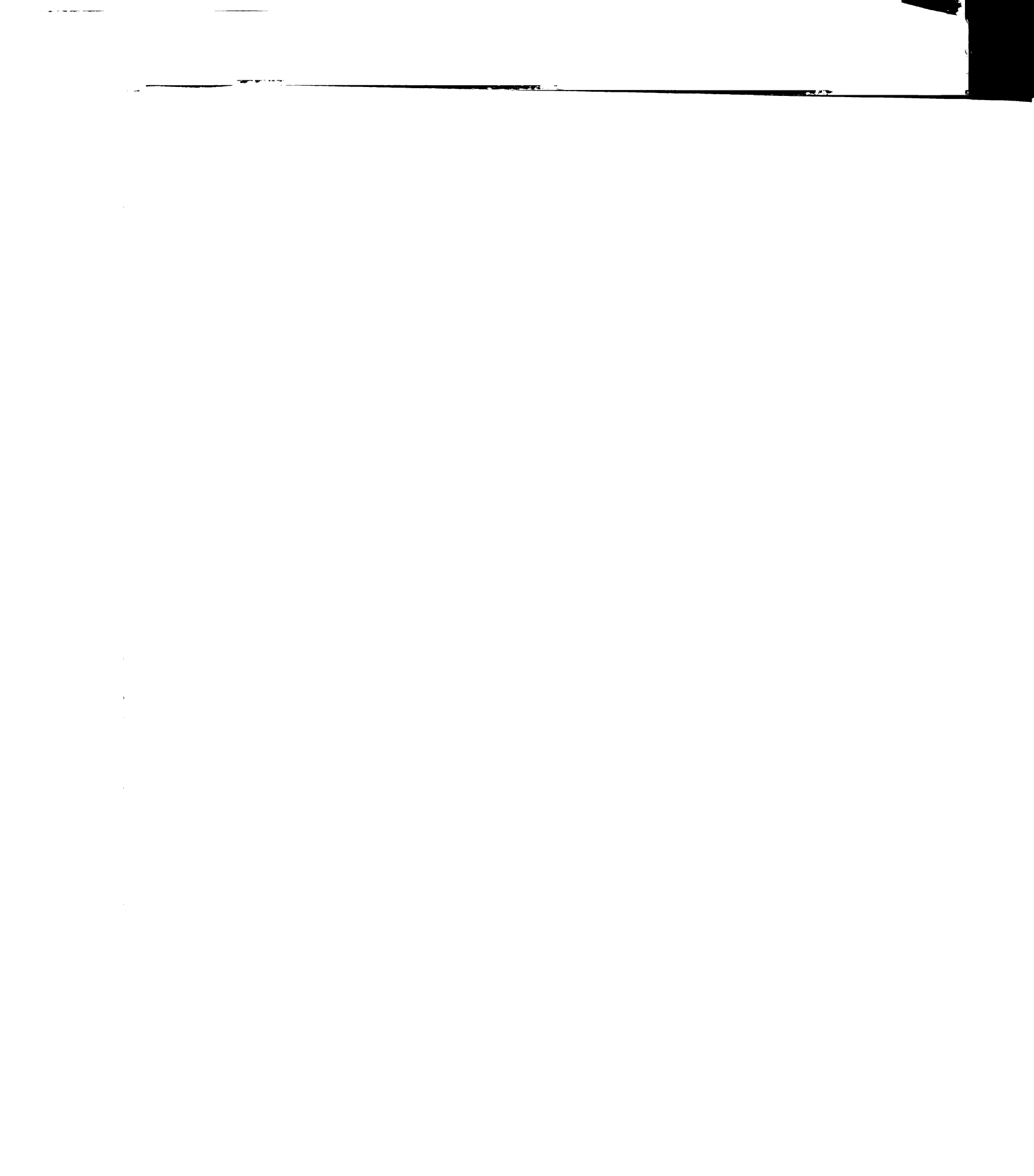
mentor. It felt nice to get to know her on a more personal level. I thought she had more trust in me, and this was a big confidence booster.

The first year I worked with her, she helped me out a lot more, worked closer with me, trained me, critiqued me, and was always there. She put a lot of pressure on me. By the second year, she was spending less time mentoring me. It made me feel a lot better not to be under such close supervision. She didn't have to look over my shoulder as much, and I felt like I was being treated like a graduate student. I was given the chance to work on my own.

In general, being with peers in familiar surroundings presented a positive environment. Being accepted in the SROP/McNair program alone makes you feel good. Then seeing your peers, black males and others, building good relationships and friendships helps to keep you motivated.

Now I get calls all the time from faculty and others looking out for me. I guess you could say they are bugging me, but I like it because I know they are trying to help. I have thought about a faculty career and gained some interest through the years. SROP/McNair helped me come up with this decision. I plan to graduate in May and have applied for postbaccalaureates in pre-med and teaching certification programs. I'm still waiting for word of acceptance.

Interviewee 3

1. **What clues do you have as to why black males' self-confidence increased at the end of the research period?**

The SROP/McNair program gave us an idea of what graduate school is like. It wasn't as intimidating as I initially thought it would be, and it made me feel

more confident at the end. I now feel more aggressive about graduate school. Something to think about, regarding the surveys, is that people answer surveys differently. Responses might not be completely honest.

I know that I feel more confident because I enjoyed my research. I narrowed down my area of study, enjoyed my major, and felt the program helped me focus. The freedom the program allowed me made me feel credible.

To be brutally honest, I think fear of failure contributed to the differences in the responses. At first, you don't know what graduate school is, and you don't want to fail; therefore, you try not to bite off more than you can chew. The media, publicity, and so on, contribute to a negative perception of black males. It becomes best to go with what you are able to be successful at, just to graduate and be a success that way. After the summer, after the research, the paper, and so on, I learned that this was not so bad. I felt this was not inhibiting. It might have been intense, but when you enjoy it, it is not too bad. I enjoyed it.

The first year I was in the program, I didn't know what I was doing, what to expect. The second year, I felt more confident. I had more ideas and wanted to become more dependable. I knew that, as a peer administrative leader (peer mentor), I would have new students dependent on me. I wanted for them the same things that I got. I pushed myself and them.

2. **Was there anything else, in your personal life for example, that might have influenced why you (or other black males) had an increase in self-confidence with regard to being successful in graduate/professional school?**

A lot of things were going on in my life at the time. The program really helped me focus on my plans. In fact, I developed two plans. I had lots of

problems then (racial incidents, work stress, and so on) and was amazed at how I came to be where I was. My personal life included a family. They motivated me to make more plans and to put them into practice. I had more than just myself to look forward to and to take care of.

Most of my peers, black males from lower socioeconomic backgrounds, don't have much in common with me now because now I want to go to graduate school and don't fear success as much. That's a problem for my peers who still do have fears.

I think black males have a different attitude and way of looking at things than do other groups. The example is the survey results. Being in the program allowed me the opportunity to do more. My attitude changed.

Discussion of the Oral Interviews

The interviewees seemed to have had positive experiences with the research program. Consistent with the data from the evaluation instruments, they spoke highly of their faculty mentors, research experience, and overall increase in confidence with respect to being successful in a graduate or professional school program. When they were questioned specifically about the racial/gender phenomenon, none of the interviewees initially was able to explain the reason, and all of them expressed surprise at the data-analysis results.

When the interviewees were probed to reflect on their experiences, they offered some opinions, guesses, and interpretations. This researcher believes that the students did not pay much attention to how their racial/gender characteristics had been addressed while they were in the program. Although

they know it was a unique environment, targeting promising minorities, they did not seem to spend much time thinking about whether the speakers and others were specifically addressing them positively.

On the other hand, in a recent conversation with the researcher, a former McNair participant (a nonblack female) revealed that she had done some thinking about the racial messages she had received. In essence, she said: I felt that the CIC Conference was unwelcoming. If you weren't black, you weren't heard about. Speakers, when referring to hardships and challenges, almost always used examples from blacks. I realize that blacks were the focus of support, yet I did not like the fact that, if you weren't black, no support was made readily or easily available. I did not feel encouraged. Even when there were nonblack speakers, little if any reference was made to students who were from nonblack backgrounds. Overall, the research experience and campus activities were very helpful, but I have to be honest in saying that I was not comfortable with the frequent racial comments directed my way. In addition, I did not like being ignored some of the other times.

The preceding comments differ from the black males' perceptions of their experiences. Their explanations of why this phenomenon occurred made sense. However, they seemed not to recognize the careful attention that the CIC and local SROP/McNair programs gave to including blacks in the confidence-development process.

Summary

The t-test and ANOVA showed the following results:

1.   There were no significant differences between males' and females' perceptions, nor were there significant differences between black and nonblack participants' perceptions.

2.   Students with less than a 2.50 grade point average indicated less likelihood of enrolling in graduate programs and were most likely to plan on getting a full-time job after earning their bachelor's degree. They were also more likely to have unclear career plans and were not as confident about being successful in a graduate or professional program as were their peers with higher grade point averages.

3.   Black males indicated the greatest likelihood of enrolling in graduate school upon completion of their undergraduate degrees. They were also more likely than nonblack males to feel more strongly about their ability to be successful in graduate or professional school at the end of the research experience.

4.   Females in the program did not demonstrate much change from the pre to the post evaluation. However, they did show a slight decrease in the level of confidence in their ability to be successful in graduate or professional school at the end of the research experience.

5.   The nonblack males experienced the most dramatic decline in their confidence of being successful in graduate or professional school.

6.   Returning students were more likely to profess interest in professional programs than were first-year students. Also, they showed more confidence in their success in graduate or professional school at the end of the program.

The oral interviews revealed that there may exist racial as well as gender differences in perceptions about the research and social experiences. The responses of three black males to the interviews contrasted sharply to the casual comments volunteered by a nonblack female. However, the comments of the interviewees seemed to correlate with the findings with respect to increases in level of confidence.

In general, the black males confirmed the results of the data analysis. The discussions with them did not shed much light on why they, either individually or as a group, had the highest level of confidence development. On the other hand, the nonblack female was very certain about her perceptions and pointed out that speakers and programs were somewhat biased against nonblacks and, as a result, had negatively influenced her self-confidence.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS, RECOMMENDATIONS, AND REFLECTIONS

Introduction

Seventy-one students participated in both the pre and post CIC SROP evaluation study. Although 80 students participated in the MSU research program, only those cases in which both evaluations were available were included in the data analyses. Three methods of analysis were used to compare and contrast the pre and post responses: (a) a difference method, (2) a t-test, and (c) ANOVA.

Qualitative induction was used to analyze responses to the oral interviews with past program participants who either (a) were currently enrolled in graduate school or (2) had not been a SROP/McNair participant for at least two years. These conditions were implemented so as not to jeopardize the confidentiality or applicant status of the volunteer subjects.

Summary

Some responses on the pre and post evaluations showed subtle differences, especially when the variables were separated or examined with other variables for interactive connections. These differences were measured

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after a 10-week summer research period. For the most part, students in the program, regardless of gender, race, grade point average, class level, or year in the program seemed pleased with their participation in the research experience and with their faculty mentors.

The evaluations were distributed 10 weeks apart, at the beginning and the end of the summer research period. This period of time is one of the longest in the Big Ten CIC SROP programs, many of which last only eight or nine weeks. All participating SROP programs annually have collected the pre and post surveys and have sent the information to the CIC headquarters. To the researcher's knowledge, MSU is the first CIC institution to analyze the data from its own program.

Purpose of the Study

The purpose for this research was to determine what, if any, perceptual changes took place on the part of students who participated in the Michigan State University SROP and McNair programs with respect to their decisions regarding whether to pursue graduate studies.

Research Question

The research question posed for this study was: Does participating in the SROP and McNair programs influence the perceptions of the participants? If so, in what way?

Research Hypotheses

The following hypotheses, stated in the null form, were formulated for this study:

Ho 1: There are no differences between pre and post program surveys, with regard to participants' interest in graduate schools.

Ho 2: There are no differences between pre and post program surveys, with regard to participants' interest in pursuing careers as college or university professors.

Ho 3: There are no differences between pre and post program surveys, with regard to participants' confidence in their ability to be successes in graduate or professional schools.

Literature

The literature review revealed little information regarding undergraduate students' perceptions with respect to their decisions to pursue graduate education. Literature regarding (a) racial diversity, (b) academic persistence, (c) college life, (d) minority representation and promotion in higher education, (e) graduate school preparation, and (f) demographics was quite accessible. Less has been written on nonblack minorities and black females than on black males.

For the most part, the literature was concerned with retention of black males. Articles discussing undergraduate minority programs generally focused on African American students and, to lesser degrees, on Hispanics or Native Americans. No materials were found that specifically addressed Asian American, low-income/first generation Caucasian, or disabled students as being part of the underrepresented population needing access to or accommodation in an undergraduate graduate-preparation research program.

Method

Four methods of statistical inquiry were used: (a) a difference method to compare pre and post responses, (b) a t-test to compare averages and means of the pre and post survey "pairs," (c) ANOVA to look at more than two groups of variables, and (d) qualitative induction to analyze the responses to the oral interviews. Procedures used to investigate the research hypotheses included (a) formulating the research hypotheses, (b) identifying the sample population and the period being investigated, (c) identifying the instruments to be analyzed, (d) collecting both written and oral data, and (e) analyzing the collected data.

Analysis of the Hypotheses

Chapter IV provided the results of the pre and post evaluation analysis. Based on the results of the data analyses, the following decisions were made with regard to the research hypotheses.

> Ho 1: There are no differences between pre and post program surveys, with regard to participants' interest in graduate schools.

The ANOVA indicated that there was a significant difference between black and nonblack males with regard to their interest in graduate schools. Black males indicated a greater likelihood of enrolling in a graduate program after completing their undergraduate degree. Nonblack males indicated less likelihood of enrolling in a graduate program after the summer research experience. Black females showed no change, and nonblack females indicated a slight change toward an increased likelihood of enrolling in a graduate program. Based on these results, the null hypothesis was rejected.

Ho 2: There are no differences between pre and post program surveys, with regard to participants' interest in pursuing careers as college or university professors.

No significant differences were found between the pre and post surveys with regard to respondents' interest in pursuing careers as college or university professors. Therefore, the null hypothesis was not rejected.

Ho 3: There are no differences between pre and post program surveys, with regard to participants' confidence in their ability to be successes in graduate or professional schools.

Significant differences were observed in three instances: (a) between first-year and returning students, (b) between students with grade point averages below 2.50 and those with grade point averages of 2.51 and above, and (c) between racial/gender groups. A significant difference was found between first-year and returning students' confidence in their success in graduate or professional school. Returning students showed a more positive change on the post survey.

Students with a 2.51 or higher grade point average showed a greater positive change at the end of the program than did students with lower grade point averages. They tended to feel more strongly that they would be successful in either graduate or professional school.

Black males showed the most significant change at the end of the program and were more likely to feel confident about being successful in either graduate or professional school. Nonblack males showed a decrease in their level of confidence about being successful in graduate or professional school. Black females showed slightly less confidence than the black males, and

nonblack females showed virtually no change from pre to post evaluation. Based on these results, Hypothesis 3 was rejected.

Summary of findings regarding the hypotheses. Two of the three research hypotheses were rejected because significant differences were found between groups. In the case of the third hypothesis, regarding students' confidence in their ability to be successful in graduate or professional schools, three groups of students seemed to be more positively affected than the other groups. Those achieving a grade point average of 2.51 and above, black males, and students who were in their second or third year of program participation demonstrated the most positive growth in confidence.

Females, regardless of race, had less change to show for their program experience. The most negatively affected group was the nonblack males, whose levels of confidence showed a decline from the pre to the post evaluation.

Conclusions

It would appear that black males perceived the most positive shift in confidence as a result of the program. Nonblack males and females, although positive about their research experience and faculty mentors, seemed to have gained little in confidence toward pursuing graduate or professional school. Nonblack males experienced the least progress, by the end of the program, and actually indicated less confidence with respect to being successful in graduate or professional school than any other group.

Students with a 2.51 or better grade point average had more likelihood of enrolling in graduate programs, had clearer career plans, and were more

confident of being successful in a graduate or professional program. Students with less than a 2.50 grade point average had exactly the opposite perceptions with respect to their self-confidence development and career plans.

Implications for Additional Research

By federal law, at least two-thirds of participants in the McNair program must be both low-income and first-generation college students. SROP, on the other hand, does not require generation or income verification. It is concerned with recruiting only underrepresented minorities, regardless of income or educational generation.

MSU is the only institution to have both a CIC Big Ten SROP and a U.S. Department of Education funded McNair program housed and coordinated together. It would be interesting to see whether a significant difference exists between SROP and McNair program participants' postbaccalaureate achievements.

Based on the results of this study, it would appear that African American students, males in particular, had the most to gain in confidence with regard to their perceptions of graduate school success. It would be interesting to see whether the increased self-confidence in the black males significantly affected the percentage of black males achieving success in graduate or professional school, i.e., the completion of terminal degrees.

It would be valuable to see how MSU compares to other institutions in terms of participants' perceptions of campus-based activities and other categories included in the pre and post evaluations. Because of racial diversity,

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unique to the MSU SROP, it would be interesting to see whether this factor played a significant role in students' perceptions of increased confidence in their graduate school success.

Not done in this study but seriously considered as a future study possibility is the comparison of eligible students selected for SROP/McNair and students who were not participants in the research programs, to see whether the programs played a significant role in the students' pursuit of a postbaccalaureate education. Such a study would be complex because locating a comparable sample pool might be difficult.

It would be helpful to see, in a few years, whether there have been perceptual changes among the different groups of students who participated in the programs. It would be interesting to investigate whether the SROP has become noticeably different in its administrative approach with regard to what the ethnically and racially underrepresented students' needs are and who the target students should be.

Something that will not be known, unless a long-term longitudinal study is completed, is whether the increased self-confidence toward pursuing graduate school actually resulted in an increased number of African American males completing doctorate degrees. In particular, does the change in level of self-confidence accurately reflect who will complete graduate degrees?

The CIC pre and post evaluations focused on the students' perceptions of graduate school, faculty careers, and research experience. An examination of the results showed that, despite high ratings for the mentor and the research

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project, little shifting occurred in favor of becoming a faculty member. Participants' interest in pursuing a graduate degree increased, but the lack of enthusiasm with regard to a faculty career is a topic that institutions might want to examine more closely if they are genuinely interested in recruiting undergraduate students for faculty roles.

As a result of the research experience, participants experienced a variety of changes with respect to their self-confidence about being successful in a graduate or professional school program. Concern about the need to recruit, train, and hire new faculty continues to grow. The research experience, while beneficial in terms of exposing students to the intimate details of MSU faculty/ research life, failed to achieve the positive results desired by the CIC, MSU, and the McNair program--that is, increasing participants' interest in pursuing faculty careers.

Research is needed on both the student researchers and their faculty mentors. Institutional support is critical for both parties if preparing undergraduate students for faculty positions is to remain a national concern and goal. Statistics regarding the educational pipeline have increased the push to reverse the trend; however, that effort may not be enough to keep up with the increase in the number of racial minorities in the United States.

Boyer (1990) explored the dilemma that many faculty members face--how to use their time more effectively. In Scholarship Reconsidered: Priorities of the Professoriate, Boyer noted that undergraduate students themselves have

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become increasingly concerned about the priorities of faculty members. He

wrote:

> At the very heart of the current debate--the single concern around which
> all others pivot--is the issue of faculty time. What's really being called into
> question is the reward system, and the key issue is this: what activities
> of the professoriate are most highly prized? After all, it's futile to talk
> about improving the quality of teaching if, in the end, faculty are not given
> recognition for the time they spend with students. (p. xi)

He continued this thought by explaining:

> In the current climate, students all too often are the losers. Today,
> undergraduates are aggressively recruited. In glossy brochures, they're
> assured that teaching is important, that a spirit of community pervades the
> campus, and that general education is the core of the undergraduate
> experience. But the reality is that, on far too many campuses, teaching
> is not well rewarded, and faculty who spend too much time counseling
> and advising students may diminish their prospects for tenure and
> promotion. (pp. xi-xii)

The issue of faculty rewards is critical, yet it is an area that has received

little attention. The Council of Graduate Schools in Washington, D.C., developed

several booklets and brochures targeting minority recruitment strategies, and

only one, Research Student and Supervisor: An Approach to Good Supervisory

Practice (1992e), addressed the faculty mentor role.

Recommendations

For the purpose of this study, the following recommendations are made:

1.   **There may be a need to begin shifting focus from the black
       male participants and to give more attention to students of
       other races, including Asian Americans and Caucasians.**

The decreased level of confidence for nonblack males at the end of the

summer indicates that not all of the students felt equally supported and

encouraged. Such a discovery may mean that the programs need to be adjusted

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to be more accommodating of all participants or that recruitment may need to be more focused, specifically on those populations targeted by the CIC. However, of the groups targeted by the CIC, only the black males perceived that they had greater confidence of graduate/professional school success at the end of the research experience.

Should recruitment become more selective, it still would not resolve the fact that black males appeared to have gained the most from the research experience. Understandably, black males are a target population and of great national concern. However, when dealing with students who are underrepresented, there may need to be a shifting in focus so that these other students might also experience similar boosts in confidence about pursuing graduate education.

2. **There may be a need to revise the race/ethnicity categories in the SROP pre and post evaluations.**

Upon reviewing the CIC SROP pre and post evaluations, the researcher noticed that Caucasian was not listed as a race/ethnicity category. This oversight would appear not to be very significant, considering the intention and original focus of SROP. But given the results of this study and the nature of the MSU SROP, this omission might provide insight into how some of the students' perceptions were affected throughout the research program.

Historically, the focus of the SROP and McNair programs has been to encourage underrepresented minorities to pursue doctoral studies. According to the CIC, those "eligible" to be in SROP are African Americans, Hispanics, and

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Native Americans. Because of MSU's affirmative action policy, Asian Americans are allowed to participate but have to be supported with institutional funds.

Federal law requires that two-thirds of the McNair participants be from both low-income and first-generation backgrounds, regardless of race. The other one-third of the participants may be from groups considered underrepresented, but they need to be either low-income or first-generation students.

All McNair participants are considered SROP participants at MSU, but not all SROP participants qualify for the McNair program. As a result of the unique blend of SROP and McNair programming at MSU, the institution is the only Big Ten CIC SROP to have Caucasian participants. Few Big Ten institutions include Asian Americans among their participants.

3. **There may be a need to explore additional subjects related to issues concerned with preparing undergraduates for the graduate school application process, i.e., faculty/ undergraduate student mentoring relationships, and/or nonblack students' perceptions toward SROP/McNair.**

Numerous other related studies remain to be conducted. By conducting such research, future investigators and administrators may gain a better understanding of the effect that undergraduate programs have on students' perceptions about pursuing graduate education. Further research might be conducted on (a) faculty/student mentoring and its effect on undergraduate students' plans with regard to graduate school, (b) nonblack students' perceptions with regard to SROP/McNair, and (c) other topics associated with preparing undergraduate students to pursue postbaccalaureate education.

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In <u>Moving Beyond the Myths: Revitalizing Undergraduate Mathematics</u>

(National Research Council, 1991), concern was expressed about the low

numbers of women and minorities pursuing mathematics as a career.

Recommendations and suggestions were provided for faculty in the profession,

administrators, and students. Among other suggestions, the National Research

Council listed the following goals:

* Elevate the importance of undergraduate teaching.

* Engage mathematics faculty in issues of teaching and learning.

* Teach in a way that engages students.

* Achieve parity for women and minorities and the disabled.

* Establish effective career paths for college teaching.

* Broaden attitudes and value systems of the mathematics profession.

* Increase the number of students who succeed in college mathematics.

* Ensure sufficient numbers of school and college teachers.

* Elevate mathematics education to the same level as mathematical research.

* Link colleges and universities to school mathematics.

* Provide adequate resources for undergraduate mathematics. (back cover)

Goals like these are a good start if concern about women, minorities, and

the disabled in higher education is to be viewed seriously. The term "minorities"

needs to include all racial groups and may need to include gender minorities

(males in predominantly female fields and vice versa), regardless of race.

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Programs like SROP and McNair are good starts for increasing the diversity of the work world and of faculty/research careers in particular. The strategies used in these programs seem to have been somewhat successful. It would be good to expand these strategies to be more inclusive of others, as well.

Reflections

Because the length of time between the CIC pre and post testing periods was only 10 weeks, the researcher did not anticipate that there would be significant differences in participants' perceptions. Results of the data analysis revealed that there were significant differences on two of the three hypotheses.

This study was not intended to polarize, emphasize, or otherwise exaggerate black versus nonblack participants' responses and reactions. By using the ANOVA method, there had to be a recognition of the race and gender variables and how they affected the research results. On a positive note, it was encouraging to learn that black males appeared to fare well, perceptually, in this study. The other participants did not have the same level of success.

The researcher believes that, whether the black males interviewed in this study were aware of it or not, great attention **was** paid to their self-confidence development by both the CIC and the MSU SROP/McNair programmers. Both the CIC and MSU have made an effort to include other racial groups, but not to the same extent as African Americans. The CIC's Alliance for Success Panel, which is composed of representatives from cooperating historically black colleges and universities, traditionally has served as an active recruitment model for many of the African American student participants, a primary target group.

APPENDIX

Information prov

Conference ma:

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Gender: Fema

Race/
Ethnicity:

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_____

City

Phone (___)

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Host Univers

Current GPA

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CIC SUMMER RESEARCH OPPORTUNITIES PROGRAM
PARTICIPANT INFORMATION SURVEY
1992

Information provided on this survey will be entered in the CIC's SROP database for use in preparing Conference materials (e.g., name tags) and in evaluating the effectiveness of the program. Please complete both sides of the page, and please print clearly.

Name_____ SSN_____

Gender: Female_____ Male_____   Year of Birth_____

Race/   African (Black) American _____   Native American _____
Ethnicity: Mexican Amer. (Chicano) _____   Other Hispanic   _____
             Puerto Rican   _____   Other (Specify) _____
             Asian American   _____   _____

Is this your first year as an SROP participant?   Yes_____   No_____

Local (Summer) Address   Permanent (Parent's) Address

_____   _____

_____   _____
City   State   Zip   City   State   Zip

Phone (___)_____   Phone (___)_____

Student's Status and Program:

Home University _____

Host University (if different from home) _____

Current GPA _____   Level: Soph._____   · Jr._____   Sr. _____

Major _____

SROP Research Field _____

Student's Mentor:

Name_____   Title_____

Mentor's Department_____   Phone_____

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PRE-PROGRAM EVALUATION

1. What is the likelihood that you will enroll in graduate school (Master's or Ph.D.) upon completion of your undergraduate degree?

    _____ Most Definitely   _____ Probably   _____ Possibly   _____ None

2. What is the likelihood that you will enroll in professional school (e.g., Law, Medicine, or Dentistry) upon completion of your undergraduate degree?

    _____ Most Definitely   _____ Probably   _____ Possibly   _____ None

Indicate the extent to which you agree or disagree with the statements listed below concerning your education and career plans and aspirations.

		Strongly Disagree			Strongly Agree
3.	I plan to get a full-time, regular job immediately after I earn my bachelor's degree.	1	2	3	4
4.	I hope to become a professor at a college or university some day.	1	2	3	4
5.	My career plans are unclear at this time.	1	2	3	4
6.	By the time I earn my bachelor's degree, I will owe over $5,000 for student loans.	1	2	3	4
7.	I don't think I will be able to afford to go to graduate or professional school.	1	2	3	4
8.	I am confident that I would be successful if I went to graduate or professional school.	1	2	3	4

What or who motivated you to participate in this program?

_____

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Name_____

Host Institution_____

Local (Fall) Add_____

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Project Title_____

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CIC SROP END-OF-PROGRAM SURVEY

1992

Name_____ SSN_____

Host Institution_____

Local (Fall) Address   Permanent Address (Parent or Relative)

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City   State   Zip   City   State   Zip

Phone (___)_____   Phone (___)_____

Research Project and Mentor

Project Title_____

Mentor_____

Do you plan to continue working on your project with your mentor during the academic year?

                                          Yes_____   No_____

Do you have any plans to present the results of your research at a professional meeting?

                                          Yes_____   No_____

Do you expect to be listed as an author on an article or book chapter as a result of your research work this summer?

                                          Yes_____   No_____

Funding for the SROP is provided by private foundations and federal agencies in addition to the CIC institutions themselves. Your response to this survey and to future follow-up surveys will enable us to provide the appropriate summary information required by these outside foundations and agencies for continued and renewed funding. Thank you for your help.

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END OF PROGRAM EVALUATION

1. What is the likelihood that you will enroll in graduate school (Master's or Ph.D.) upon completion of your undergraduate degree?

_____ Most Definitely   _____ Probably   _____ Possibly   _____ None

2. What is the likelihood that you will enroll in professional school (e.g., Law, Medicine, or Dentistry) upon completion of your undergraduate degree?

_____ Most Definitely   _____ Probably   _____ Possibly   _____ None

Indicate the extent to which you agree or disagree with the statements listed below concerning your education and career plans and aspirations.

		Strongly Disagree			Strongly Agree
3.	I plan to get a full-time, regular job immediately after I earn my bachelor's degree.	1	2	3	4
4.	I hope to become a professor at a college or university some day.	1	2	3	4
5.	My career plans are unclear at this time.	1	2	3	4
6.	By the time I earn my bachelor's degree, I will owe over $5,000 for student loans.	1	2	3	4
7.	I don't think I will be able to afford to go to graduate or professional school.	1	2	3	4
8.	I am confident that I would be successful if I went to graduate or professional school.	1	2	3	4

9. Please rate the entire program and each of its components.
   (1 = excellent, 2 = good, 3 = satisfactory, 4 = unsatisfactory)

a.	The weekly campus activities	1	2	3	4
b.	The SROP Conference in Illinois	1	2	3	4
c.	Your research experience	1	2	3	4
d.	Your faculty mentor	1	2	3	4
e.	The entire program	1	2	3	4

10. Would you recommend the SROP program to your friends?   _____Yes   _____No

11. Do you have any comments about the program or its components or any suggestions for improving it?

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