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THE ROLE OF THE NATIONAL INSTITUTES OF HEALTH
EXTRAMURAL ASSOCIATES PROGRAM IN IMPROVING THE
BIOMEDICAL RESEARCH CAPACITY OF HISTORICALLY
BLACK COLLEGES AND UNIVERSITIES

A Dissertation Presented

by

THEODORE W. BLAKENEY

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
of the requirements for the degree of

DOCTOR OF EDUCATION

May 1995

School of Education

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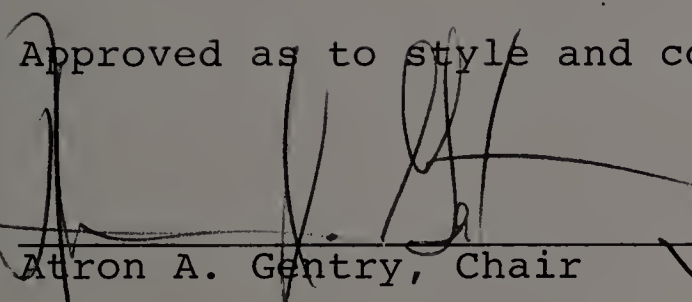
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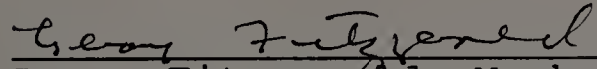
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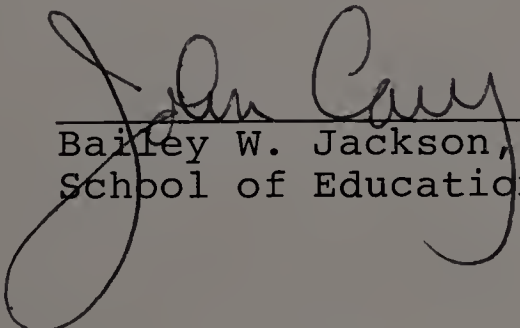
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Lastly, I extend special thanks to my family and friends for their personal support from the beginning to the end of this process.

ABSTRACT

THE ROLE OF THE NATIONAL INSTITUTES OF HEALTH
EXTRAMURAL ASSOCIATES PROGRAM IN IMPROVING THE
BIOMEDICAL RESEARCH CAPACITY OF HISTORICALLY
BLACK COLLEGES AND UNIVERSITIES

MAY 1995

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This research study explored the role the National Institutes of Health (NIH) Extramural Associates Program has played thus far in promoting Historically Black Colleges and Universities (HBCUs) federal funding efforts, thus directly affecting HBCU biomedical research success. The goal of this study was to determine the strengths and weaknesses of the Extramural Associates (EA) Program, as perceived by its participants, to better serve the HBCUs and to streamline the Program. The latter issue is of mounting concern because of increasing budgetary restraints within the National Institutes of Health. A secondary goal was to reaffirm a sense of community among the Program's participants, which is deemed essential to improving the Program.

The Extramural Associates Program was designed to promote the entry and participation of underrepresented minorities and women in biomedical and behavioral research through greater participation in the research funding mechanisms of the NIH. A survey was conducted of participants in the EA Program from HBCUs from 1978 to 1992 to determine aspects of the program which were most useful and aspects that may be improved to increase the effectiveness of the overall program. Of the fifty National Institutes of Health Extramural Associates Program graduates contacted to participate in this study, forty-three Associates responded to the survey from thirty-nine Historically Black Colleges and Universities (from twenty different states).

This study revealed that more resources are needed to provide for release time, administrative support, computer and office equipment, and facilities and office space. Development of the Institutional Plan should include the highest levels of the institution. More frequent communication is needed between the Associates and the EA Program and the National Institutes of Health. Regional workshops and technical assistant efforts need to be consistently offered to assure that EA institutions are kept abreast of the latest available resources at the National Institutes of Health and other governmental agencies. The effort to increase the pipeline of minority biomedical professionals

will be enhanced by the Extramural Associates Program effort and consistent followup. Funding for the Associates upon leaving the Program is viewed as pivotal to the long-term success of the Extramural Associates Program.

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C H A P T E R I

INTRODUCTION

The United States has long been the world leader in biomedical research, health care delivery, and in the training of health care professionals. In 1988, national health care expenditures in the United States totaled \$540 billion, more than the gross national product of many developed nations. Despite these vast resources, however, the United States ranked only 22nd in the world in terms of life expectancy at birth, down from 16th place in 1982.¹ In terms of infant mortality, the United States ranked a dismal 24th place.

The discrepancy between the size of our health care resources and health outcomes in the United States is perplexing. One explanation of the discrepancy may be the racial disparity that exists in the American health care system. The disparity exists in health care delivery, participation in biomedical research, and levels of health professional training.

The complex relationship between race, ethnicity, and health outcomes continues to spark discussions and research interest in the African American community and in the larger community. The discrepancies in health status between the African American community and the European

American community in the United States continues to spark keen interest in the underlying mechanisms which would help explain those observed differences. Differences in morbidity and mortality have been consistently observed in several disease categories, including cancer, cardiovascular disease, sexually transmitted diseases, injuries, and perinatal diseases. These critical disease categories where significant Black/White differentials exist will continue to be the focus of many investigations of researchers around the nation. However, the numbers of such researchers are small particularly among the racial/ethnic groups that seem to be the most impacted by the existing disparities.

Greater mortality due to cancer (including lung, cervical, and esophageal) in African Americans compared to European Americans has been well established. These increased risks may be due to many etiologic factors including addiction, physical environment, sexual activity, social environment, and nutrition. In addition, these increased risks have been exacerbated by issues like access to care, discrimination, and stress. Specific associations between the etiologic factors and cancer have not been adequately explained. For example, the efficacy of cigarette use as a predictor of lung cancer is of concern. Another example would be the association between vaginal infections and cervical cancer among young

African American women. Assessments of several psychosocial factors which impact on issues of health care seeking and coping could also be evaluated in this context.

Morbidity rates resulting from sexually transmitted diseases/human immuno deficiency virus (STD/HIV) are disproportionately high in the African American community. These higher rates are partially attributable to factors such as addiction (especially crack-cocaine), sexual activity/responsibility, and poverty. In addition, a desensitized health care system, discrimination, knowledge, and access to/trust of available health care services are additional factors which further impede STD/HIV intervention and prevention efforts among African Americans. Given that African Americans account for more than 25% of adult and adolescent Acquired Immuno Deficiency Syndrome (AIDS) cases in the United States, an examination of the association between socioeconomic status (SES)/urbanity/sexual responsibility and HIV infection would warrant investigation. The relationship between illicit drug use/SES and STD/HIV infection is another area where additional investigation is warranted. Psychosocial factors that might attenuate or exacerbate the likelihood of infection from an STD are an important aspect of the investigation of the Black/White STD rate differential.

Despite an overall decline in the infant mortality rate in the United States, the Black/White ratio has risen from 1.6 to 2.1. Demographic, psychological, addiction, social environment, nutrition, and socioeconomic status (SES) are among the maternal and paternal factors thought to contribute to the large differentials that persist. Quality of access to prenatal care is an institutionalized impediment that contributes to the racial/ethnic gap. The association between the above etiological factors and perinatal disease warrants further investigation. For example, because of intraracial variation, an assessment of the relationship between the risk factors for perinatal disease to SES would be helpful in assessing some underlying factors. Additionally, considering the disproportionate impact of the crack-cocaine epidemic on African Americans, another examination could explore the relationship between drug use and perinatal disease. Psychosociocultural factors (e.g., social disorganization, perceived personal stress, and job strain) that might impact maternal and infant health could also be addressed.

Not unlike many health outcomes, African Americans are at a high risk of affliction. The morbidity and mortality rates for injuries are no exception. Demographic, psychological, and environmental factors seem particularly germane to the higher rates among

African Americans (especially young African American males). Also, issues surrounding helplessness, life-style incongruity, social support, and perceived stress are additional factors thought to contribute to intraracial variability in the incidence of injuries. The relationship between those and other determinants and injury could possibly elucidate some of the underlying variables which would explain the observed differentials. An investigation of the relationship between state/trait anger/hostility and gender to intentional injury among African Americans seems worthy of additional investigation. Given that most differences in homicide by race disappear when SES is controlled, another potentially fruitful analysis would be an assessment of the association between injury type, SES, and other risk factors (e.g., life-style incongruity) that seem more characteristic of certain sub-populations. Social factors that affect issues like availability and quality of health care service should certainly be explored.

Cardiovascular disease (CVD), characterized by hypertension (HTN), renal disease, and stroke, is one of the major causes of death to, and has disproportionately affected, the African American community. Factors that are related to higher CVD rates include: psychological, physical activity, economic, stress (psychological and environmental), and discrimination. Also, quality of,

access to, and trust of health care services are additional factors that contribute to the higher morbidity and mortality rates among African Americans due to CVD. For example, given the differential risks for death that exist between Blacks and Whites, a study delineating the developmental age-gender specific risk factors of HTN could elucidate our understanding of HTN's etiology. Additionally, an investigation of the association between social and familiar disorganization and perceived environmental and personal stress to elevated blood pressure and renal functioning could contribute to the understanding of the basic mechanisms.

These set of potential research pursuits only begin to address the complexity of the White/Black differentials in morbidity and mortality rates for various disease groupings. The necessity of increasing the number and quality of African Americans and other minorities who are trained to address the vital health interests of minority groups in the country is not only of great importance to the affected minority groups but also to the nation as a whole. The United States attempts to reduce the overall morbidity and mortality among many of the same disease categories as part of the important initiative Healthy People 2000: National Health Promotion and Disease Prevention Objectives. This national effort of promoting health and preventing disease emphasizes the need to bring

attention and research targeted to those groups where the problems are most severe as a way of reducing the overall morbidity and mortality from various diseases in the United States.

Background

Numerous factors contribute to the disparity between minorities and Whites within the health care system in the United States. The higher infant mortality rates, higher morbidity rates, and lower standards of health care experienced by minorities, and particularly by Blacks, indicate a basic need not only for improved health policy at the national level, but also for increasing the education level of minorities and for additional efforts to increase the number of minorities pursuing biomedical careers.

An educated community, with enlightened role models and a sense of empowerment, is required to attack problems of such magnitude. Studies have shown that health care providers of the same cultural background as their parents tend to have better levels of communication with the patients--an important factor in the healing process. Historically Black Colleges and Universities (HBCUs) are responsible for having educated over three-quarters of all Black medical school graduates, as well as being the

major source of this country's Black leaders. Additionally, and by no means the least important factor, HBCUs provide strong minority role models in the biological sciences. Over half of all employed Black biology Ph.D.s are faculty at HBCUs and higher percentages of Black biological science majors are at HBCUs than at majority institutions.

The proportion of doctorates earned by underrepresented minorities in the fields of biological sciences and chemistry increased during the period 1975 to 1990, from 2.4% to 3.7%.² Hispanics showed the greatest gains, with the number of doctorates increasing from 35 Ph.D.s in 1975 to an average of 88 Ph.D.s per year from 1984 to 1990.³ Native Americans also showed some gains, although the number of Ph.D.s awarded to Native Americans was small, increasing from one Ph.D. in 1975 to an average of 14 Ph.D.s per year from 1984 to 1990.⁴ The overall trend was not upward, however, for African Americans. The number of Ph.D.s in biological sciences and chemistry awarded to African Americans decreased from 66 Ph.D.s in 1975 to an average of 56 Ph.D.s per year from 1984 to 1990.⁵ There were significant gender differences however. The number of Ph.D.s in biological sciences and chemistry earned by African American women increased from 16 in 1975 to 20 in 1990, whereas the number of Ph.D.s in these fields

earned by African American men decreased from 50 in 1975 to 20 in 1990.⁶

These findings reveal that although there has been moderate improvement in recent years in the number and proportion of Ph.D.s earned by underrepresented minorities, a general pattern of minority underrepresentation in the biological sciences has continued throughout the period.

Statement of the Problem

Despite recent federal and private efforts to promote HBCUs, they continue to be underfunded in comparison with non-minority institutions. In the last 20 years, the National Institutes of Health (NIH) minority programs have had some positive impact on HBCUs; but many years of inadequate federal funding and neglect will require additional time and resources to compensate for the resulting disadvantages.

Federal and private research grants and funding are of critical importance for the continued viability and advancement of all HBCUs, especially those offering biomedical and behavioral degrees. These HBCUs require expensive equipment in order to be competitive academically and in the research arena with majority institutions. In addition, the faculty members for HBCUs are often required to have doctoral science degrees,

necessitating competitive salaries and adding to administrative costs. Research activity is a major source of recognition for colleges and universities in the biomedical and behavioral fields. It helps to attract both quality faculty and students, and thus generates federal and private funding for the institutions. Thus, HBCUs are caught in a cycle of underfunding and limited research activity.

Contributing to the problem of limited research activity is the fact that, historically, HBCUs were founded with the purpose of advancing the education of Blacks, and not primarily as research institutions. Only 10 of the 117 HBCUs offer the master's of science and 4 offer doctorate degrees in the sciences. Even today, at the master's degree and doctorate levels, the field of education accounts for the largest percentage of Blacks, 25% and 20% respectively.⁷

Prior to the 1970s (independent of the quality of their work), HBCU science faculty were not encouraged to apply for federal research grants. Most of them had been trained in non-minority institutions under professors with federal grants. In contrast, teaching at HBCUs presented them with long hours, devoted primarily to teaching duties, limited funding, inadequate facilities, inadequate information on funding sources, limited knowledge of the grant-acquiring process, and little confidence in a system

that provided little support to continue their research interests. The ability of HBCUs to grant professional degrees has been profoundly affected by the obstacles to developing research agendas at these institutions.⁸

Purpose of the Study

This study examines the role of the National Institutes of Health Extramural Associates (EA) Program in stimulating the biomedical research capabilities of Historically Black Colleges and Universities (HBCUs). The EA Program, created in 1978, provides support to HBCUs and other minority and women institutions by teaching selected faculty members to acquire and manage federal funding, as well as to develop contacts within the policy-making Washington community. The EA Program was created to complement HBCU-funding initiatives such as those offered by the National Institutes of Health. To counter the previously cited disadvantages experienced by HBCUs, the EA Program aims to become a mechanism to decrease the funding gap between minority and majority institutions. In order to accomplish this, the EA Program must become more effective in reaching a wider audience and at the same time continue to update the training for previous EA participants, thus creating a more efficient network.

This study examines the issues involved in achieving the goal of reducing the gap between minority and majority institutions by bringing to light the EA Program's assets as well as identifying elements that may run counter to the objectives of the EA Program. The data, in the form of questionnaire responses, will be analyzed to examine some of these issues.

Questions to be addressed in this research study include:

- Do the Associates perceive that the EA Program has benefited them and their institutions?
- Do the EA Associates perceive that the EA Program has motivated faculty and students to pursue research?
- What increases in grant support and equipment acquisition have been achieved at participating HBCUs?
- Are there any predisposing success factors that should be considered during the EA selection process?
- What are the main strengths of the EA Program? What are its main deficiencies?
- What problems have arisen in the implementation of the knowledge acquired in the EA Program?

- Why have some HBCUs not participated in the EA Program? What modifications in the program should be made to facilitate HBCU participation?

An evaluation of the results of the questionnaire is made to determine how to improve the EA Program to better serve the needs of HBCUs. An analysis of the economic and political changes pertinent to the viability of HBCUs today will also be given.

This study is based on the opinions of past participants in the EA Program, with the ultimate goal of identifying factors that will improve the biomedical research capacity of HBCUs. To support this goal, the effectiveness of the EA Program must be increased to reach a larger number of HBCUs. This study will attempt to ascertain the relevant factors that would improve the EA Program's ability to support biomedical/behavioral research activity in the HBCU community.

Significance of the Study

The Extramural Associates (EA) Program is now in its 16th year and the National Institutes of Health (NIH) is currently evaluating the program. The results of the present study will be used to improve the EA Program by modifying the training component, based on the results of

the questionnaire, pinpointing deficiencies, highlighting strengths, and reinforcing the network of Extramural Associates through the exchange of ideas.

The Extramural Associate Research Development Award (EARDA) in 1994 provided funding to Extramural Associates who had attended the EA Program between 1991 and 1993. The EARDA is currently being proposed for fiscal year 1995. The goal of the 1995 EARDA is to provide funds to qualifying institutions to develop the expertise of a scientific faculty member or academic administrator who will receive training in the EA Program. The Extramural Associate then becomes the institutional focal point in promoting biomedical and behavioral research activity among students and faculty at EA institutions. The results of the present study will contribute to enhancing the selected Extramural Associate's role in support of generating more research activity at the EA institution.

Until this study, there have been no quantitative studies of the effectiveness of the Extramural Associates (EA) Program. The value of such a study can only benefit the EA Program and its goals. From such data, HBCUs may learn to better utilize the Extramural Associates Program in supporting an increase in sponsored program activities. This study will provide the EA Program with direct feedback from former program participants and provide an analysis of problems and concerns, as well as commendations.

The results of this study will be used to make recommendations for future program improvement.

Endnotes

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3. Ibid.
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5. Ibid.
6. Ibid.
7. National Center for Education Statistics, Digest of Education Statistics, 1990 [NCES 91-660] (Washington, D. C.: U. S. Department of Education, Office of Education Research and Improvement, February 1991).
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C H A P T E R I I

THE EXTRAMURAL ASSOCIATES PROGRAM

The Extramural Associates (EA) Program "is designed to promote the entry and participation of underrepresented minorities and women in biomedical and behavioral research. The EA Program is viewed as an investment that will yield multiple benefits to participating individuals and institutions, the National Institutes of Health (NIH), and, ultimately, to the vitality of health-related research in the Nation."¹

The EA Program, initiated in 1978 through the efforts of Dr. Zora Griffio, is unique in that it provides support to Historically Black Colleges and Universities (HBCUs) by enhancing their research-funding potential. By providing the necessary tools to seek and acquire federal funding, the EA Program helps to compensate for the lack of experience HBCUs have had in the acquisition of research funds and complements HBCU-funding programs. Because the training is on-site at the National Institutes of Health, Extramural Associates not only learn to effectively stimulate and manage grants and research projects but also develop important federal contacts.

Extramural Associates Program participants are selected on a competitive basis among the scientific

faculty and academic administrators from institutions that contribute significantly to the pool of minorities and women in science. Although a background in the life sciences is preferred, other scientists and academic administrators can apply. The selected parties become Extramural Associates (EAs) and spend from two to five months at the National Institutes of Health in Bethesda, Maryland, where they learn about the federal legislative and budgetary processes, policies and procedures related to the administration and awarding of grants and contracts, the review processes used by federal agencies for evaluating the scientific merit of proposals, and the principles and practice of organizational development.² The program also has sufficient flexibility so that each Associate can participate in activities related to their institution's interests in health-related research.

The objective of the EA Program is for Associates to return to their respective institutions to play an active role in promoting opportunities for faculty and students to participate in biomedical and behavioral research. NIH staff continue to work with the Associates after the program, promoting continuing contact with the federal sector. In this way, Associates act as liaisons for their institution's faculty and students to access opportunities at the National Institutes of Health and other federal agencies.

Throughout the EA Program and after its completion, Associates are requested to provide feedback to the National Institutes of Health. This information is essential in evaluating the EA Program's effectiveness. The Associate's institution is also expected to collect data pertaining to its own research goals and report back periodically to the EA Program on its progress.

Many HBCUs find it difficult to send faculty or administrative personnel to the EA Program because of the resulting staff shortage problem. Additionally, Associates have reported difficulties in executing the goals of the EA Program upon their return. Some of the difficulties are due to lack of release time, from busy teaching schedules, and insufficient funds for administrative and clerical support to carry out planned EA activities. As a result, a pilot program has been proposed that would award a 36-month grant to provide sponsored research administration support to the EA institutions that participate in the program.

Because of limited funding, the EA Program, which used to reimburse 100% of all travel and living expenses of the Associates, now reimburses only 75%, with the Associate institution making up the difference. Because of this cutback, smaller HBCUs may find it necessary to shorten their Associate internship at the National Institutes of Health or may be prevented from participating

at all. Additionally, the fact that the institution must advance travel and living expenses and be reimbursed later has been a restrictive factor. A typical one-bedroom facility costs around \$700 per month, in addition to food and transportation costs, requiring that the HBCU provide approximately \$1,000 up front for each month of the program.

An institution's application to the Extramural Associates (EA) Program involves several factors:

1. The eligible institution's nomination of an individual, by either the president or an equivalent official, from one of its current or potential key administrators of science.
2. A description of the institution's mission, goals, and plans as related to health-related research or research development programs, including current federal support.
3. A description of the expected responsibilities of the nominee upon returning to his or her institution.
4. A description of the potential benefits of the EA Program as applicable toward the advancement of minorities and women in the health-related sciences.

5. A letter of intent from the individual nominee describing his or her commitment to advancing minorities and women in health-related research and the ways in which the institution's health-related research activities would benefit from the nominee's participation in the program.
6. Three letters of reference for the nominee in addition to the nominee's curriculum vitae.

The second item cited, the so-called Institutional Plan, is of particular importance to the EA Program's review committee. The institution's commitment to the enterprise and its support of its nominee must be realistic and clearly described. Without an institution's commitment and support, it is recognized that the potential benefits of the EA Program are greatly diminished. The Institutional Plan enables the EA review committee to effectively target the highest-potential candidates who will become catalysts for change within their institutions. The Plan ultimately serves as a mission statement for the institution and its nominee upon return from the EA Program.

Endnotes

1. National Institutes of Health, "NIH Extramural Associates Program Semester Model" (Bethesda, MD: Office of the Director, National Institutes of Health, 1990).
2. Ibid.

C H A P T E R I I I
R E V I E W O F T H E L I T E R A T U R E

The literature presented in this chapter will illustrate the disparities in the health care system in the United States. The important role that Historically Black Colleges and Universities (HBCUs) are playing in addressing such inequalities will be highlighted. The historical importance of federal support of HBCUs will be covered, followed by a description of the National Institutes of Health (NIH) funding programs. Finally, the specific role of the Extramural Associates (EA) Program will be discussed. This review will provide a good framework from which the reader can consider the subsequent data analysis and discussion.

Disparities in the Health Care
System in the United States

Minority Americans are traditionally underserved in the health care system and traditionally underrepresented among health care providers. Within the four groups identified as "minority" Americans in this research study-- African Americans, Hispanic Americans, American Indians, and Asian Americans--there is great variability of health problems. For example, not all minority groups have the same rates of infant mortality or hypertension.

While every American hopes to enjoy a long, happy and productive life, minority Americans (i.e., African Americans, Hispanics, American Indians and Alaska Natives, and Asians and Pacific Islanders) suffer a disproportionate burden of illness and death compared to the predominantly White majority. The Report of the Secretary's Task Force on Black and Minority Health, published in 1985 by the Department of Health and Human Services (DHHS), indicated that this disparity was on the order of 60,000 "excess deaths each year among Blacks, compared to mortality rates among the country's majority population."¹

The report also indicated that the primary causes of these excess deaths were the following six major health problems:

- Heart disease, stroke, and hypertension
- Homicide and preventable accidents
- Cancers
- Infant mortality and perinatal morbidity
- Cirrhosis and liver failure
- Diabetes

In 1990, the DHHS published Health People 2000,² an overview of the current and projected health status of Americans. Again, the disparities between majority and minority Americans were evident, and the same six categories of health problems were identified as the primary

causes for the disparities. In addition, the disproportionate impact of the AIDS epidemic on minority populations was becoming apparent. Now it is known that Acquired Immuno Deficiency Syndrome (AIDS) is among the leading causes of death among African Americans and Hispanic Americans.

Minorities face increased risks from the beginning of life when the rates of low birth weight and infant mortality are elevated. Improving life-span must begin with addressing general problems, such as lack of prenatal care and low birth weight, and also specific health problems, such as fetal alcohol syndrome, fetal drug addiction, and sudden death syndrome. Concern about the early years of life must also include the well-being of mothers and issues related to maternal mortality and reproductive health.

While childhood is a generally healthy period of life, there are threats to well-being that challenge minority health. The problem of lead poisoning is reflective of the need to understand interrelationships of medical problems with the social and economic environment in which many minorities live. Other problems involve iron deficiency anemia, dental caries, child abuse, trauma, and unintentional injury. Adolescence provides new challenges as children move into adulthood and face a new set of risks to health. Early childbearing and sexually transmitted

diseases become issues of concern. Increasingly, the health of adolescents is beset by concerns such as violence and homicide, which have only recently been embraced by the health establishment. Substance abuse and suicide reflect not only risks to health and life, but may be indicators of the stress of the transition to adulthood. Mental health, alcohol abuse, and substance abuse issues require particular attention when dealing with adolescent concerns.

Adult concerns, such as smoking, smokeless tobacco, and alcohol, demonstrate the relationship between life-style and health. These major risks to later disease must be addressed early with a goal of a healthier life-style and longer life. Unfortunately, problems of homicide, suicide, and unintentional injury continue into adulthood. Ethnically-related infertility becomes a problem in adulthood and one related to earlier risks to reproductive health. Concerns of the elderly include nutrition, inactivity, pharmacology, and pharmacokinetics. Because men tend to die at a younger age than women, the problems of the elderly are often the problems of women. Again, the interface of health with social and economic well-being must be considered.

In 1900, the average White American's life expectancy at birth was 49.7 years; the average Black's life expectancy at birth, however, was only 33.8 years, a

difference of nearly 16 years.³ With major improvements in socioeconomic conditions for Blacks after the 1900s, the gap between life expectancies for Whites and Blacks decreased to 5.6 years; the life expectancy for Whites was 75.3 years and 69.7 years for Blacks. However, in 1988, the gap widened to 6.4 years. The life expectancy for Blacks actually decreased to 69.2 years, while that of Whites rose slightly to 75.6 years.

Although higher incidences of homicide and AIDS have contributed to the recent decrease in Black life expectancy, the consistently higher incidence of infant mortality is the major contributing factor. Overall infant mortality has slowly decreased in the United States, but the rate for Black infants has remained nearly double that of Whites. In 1960, Blacks experienced 44.3 infant deaths for every 1,000 live births compared to 22.9 for Whites; and in 1981, Blacks suffered 20 infant deaths per 1,000 live births compared to 10.5 for Whites. In direct comparison, the percentage of Black women receiving prenatal care during the first trimester of pregnancy decreased from 62.7 in 1980 to 61.1 in 1988, and the percentage of babies born with no prenatal care at all increased from 8.8 in 1980 to 11 in 1988. In the past decade, however, the number of all women receiving early prenatal care has remained relatively steady at around 76%.⁴

Today, as referenced earlier, there continues to be a disproportionate number of deaths among Blacks due to heart disease, stroke, cancer, infant mortality, cirrhosis, diabetes, asthma, and AIDS and other sexually transmitted diseases. Blacks also have higher rates of obesity, cigarette smoking, and alcohol and cocaine usage, the latter contributing to mortality by unintentional injury, suicide, and homicide.⁵ Black males have twice the death rate from stroke as White males; and severe hypertension is four times as common among Black males as among White males, as is end-stage renal disease. Black males have a 25% higher risk than White males for cancer and a 45% higher chance of lung cancer.

There also exists a disparity in the type and quality of care received by Blacks and that received by Whites. DeRegt and colleagues reported that when clinically comparable conditions existed, Black women were less likely to undergo Cesarean sections and more likely to have low-birth-weight babies than White women.⁶ Furthermore, Black males are 30% to 50% less likely to undergo coronary bypass surgery or angioplasty as White males⁷ and 30% less likely to receive kidney transplants.⁸ Only 38% of Blacks with cancer survive five years, compared to 50% of Whites.

Within the context of morbidity and mortality disparities, it should be noted that Blacks are less

knowledgeable than Whites about cancer screening, detection, treatment, and rehabilitation.⁹ Blacks delay longer in seeking diagnosis and treatment than Whites, resulting in a higher percentage of advanced-stage cancer and more unfavorable prognosis for survival. Racial disparities in the medical treatment, regardless of income level, are prevalent.¹⁰ Blacks also experience greater numbers of deaths from house fires, asphyxiation from faulty heating, and other accidents, including job-related injuries and deaths.¹¹

Among the multiple factors influencing the health status of Blacks, the most significant are their unique demographic profile, environmental and occupational exposures, and stress patterns. A total of 83% of Blacks, compared with 76% of Whites, reside in metropolitan areas, where higher crime and accident rates prevail. The percentage of Black households headed by women is 43%, more than three and one-half times the percentage for Whites.¹² Among the 25 years and older population group, only 63% of Blacks have completed high school, and 11% are college graduates, whereas 77% of Whites completed high school and 21% are college graduates.¹³ The median family income for Blacks was \$18,098, compared with \$32,274 for Whites; and poverty levels are three times higher for Blacks than for Whites. Unemployment rates among Blacks are almost triple those for Whites. A total

of 23% of Blacks work as laborers and machine operators, as compared with only 14% of Whites; and Blacks constitute only 16% of the managerial and professional specialty occupations, as compared to 27% of Whites.

Economic hardship, inadequate housing conditions, discrimination, disrupted families, and limited education all impact directly on the mental health status of communities. Communities with higher levels of unemployment, instability, and crime have higher incidences of hypertension and alcohol and drug use, the latter being associated with increased risk for homicides.¹⁴ Death rates for homicide and legal intervention for Black males are seven times higher than those for White males, and four times higher for Black females than for White females.¹⁵ Mental disorders, including post-traumatic stress disorder, result from such traumatic experiences as interpersonal violence, physical and sexual assault and abuse, and accidents.

Improvements have been largely achieved in Black life expectancy and morbidity and mortality over this century; however, a disturbing gap persists between the White and Black populations. The same gap exists in the participation level in the biomedical research enterprise in the United States. The Black population is underserved by biomedical research in terms of both the investigation of pertinent diseases and conditions as well as being

underrepresented as participants in clinical trials. Although Blacks make up approximately 13% of the population of the United States and they comprise 27% of AIDS cases, in 1990 only 7% to 10% of patients in AIDS clinical trials were Black. A similar disparity also existed in cancer clinical trials. The deleterious effects of Black underrepresentation in clinical drug trials are exacerbated by differences in drug response between Blacks and Whites that are not analyzed in such trials and also by cultural barriers that affect the participation levels of Blacks in clinical trials.¹⁶

In August of 1985, the Department of Health and Human Services (DHHS) submitted its landmark Report of the Secretary's Task Force on Black and Minority Health.¹⁷ This was the first time the DHHS had consolidated minority health issues into one report. In response to the report, the Secretary of Health and Human Services stated that there was "a continuing disparity in the burden of death and illness experienced by Blacks and other minority Americans as compared with our nation's population as a whole." Despite this report and its recommendations, five years later the Council on Ethical and Judicial Affairs of the American Medical Association found it necessary to reacknowledge the persistence of racial disparities in national health care.¹⁸ It recommended that three approaches (comparable to those

cited by the Task Force on Black and Minority Health) toward eliminating the problem be given the highest priority:

1. Ensurance that Blacks are given better access to health care. This would be made possible through increased health insurance coverage, including Medicaid, and the provision of publicly-funded health care for inadequately insured patients.¹⁹
2. Increased awareness of and responsiveness to the particular medical and socio-cultural problems of Blacks. This would be achieved through physician education and by increasing the number of Blacks on medical school faculties and attending medical school. In addition, the American Medical Association advocated that the number of minority medical students be increased through (a) the expansion of minority recruitment efforts, (b) increased federal financial aid at the collegiate and medical school levels, (c) more affirmative action in medical school admission and faculty hiring process, (d) more supportive

academic programs for minority students, and (e) increasing competent and responsive student counseling and advisory services.²⁰

3. Enhanced practice parameters, to bring about more informed medical treatment decisions as they relate to Blacks. Specialty societies, with the assistance of the American Medical Association, should develop health care criteria to eliminate racial disparities. This would cover such issues as unbiased clinical trials and increasing the number of research efforts on diseases which affect Blacks.

The importance of increasing the numbers of Black physicians and biomedical researchers was emphasized in the recommendations of both the Task Force on Black and Minority Health and the American Medical Association. It has been shown that physicians practicing in predominantly Black neighborhoods tend to be Black themselves. Greater Black representation in medicine and in the biomedical research area would provide greater services to the Black health consumer,²¹ as well as provide role models for future generations of Blacks. In 1981, Blacks constituted only 1.7% of all medical school faculty in the

United States; and in 1986, this figure had risen only to 1.8%. In 1978, Black medical school graduates comprised 5.5% of the total, decreasing to 5.2% in 1987, even though the percentage of Blacks enrolling in medical school increased from 6.4% to 7.3% during this time.²²

Historically Black Colleges and Universities

Historically Black Colleges and Universities (HBCUs)--educational institutions serving primarily Blacks--are the greatest source of Black college graduates. There are currently 117 HBCUs, with upwards of 250,000 students--90% of them are Black. HBCUs are responsible for one-third of all degrees (including two-year degrees) granted to Blacks yearly, 70% of all Black college graduates, the undergraduate education for 75% of all Black science Ph.D.s, 85% of Black medical school graduates, one-third of all Black dentists, and one-half of Black pharmacists.²³ HBCUs also have higher retention and graduation rates for Black students than other institutions.

Of the 117 HBCUs, only five offer terminal degrees in the sciences (Ph.D., M.D., and D.V.M): Atlanta University Center (a consortium consisting of Clark Atlanta University, Morehouse, Spelman, and Morris Brown Colleges, Morehouse Medical School and Interdenominational Theological Seminary), Howard University, Meharry Medical

College, Tuskegee Institute, and Drew Medical School. Meharry Medical College and Howard University also offer the D.D.S. degree. The following 10 HBCUs offer the M.S. degree and have a research faculty, except for Xavier University, which is included in this group on the basis of its School of Pharmacy: Fisk University, Florida A&M University, Jackson State University, North Carolina Central University, Southern University at Baton Rouge, Tennessee State University, and Texas Southern University, Virginia State University, and Xavier University. Many of the other HBCUs have strong undergraduate programs, with faculty capable of performing biomedical research.

The influence of role models is critical. Gail Thomas noted that college science majors were more likely to have had previous contact with role models who were themselves scientists, and that there was the possibility that greater representation in a field was generally perceived as a sign of less discrimination and more opportunities for advancement.²⁴ HBCU faculties comprise over 65% of the employed Black biological science doctorates. Not surprisingly, a higher percentage of Black biological science majors can be found at HBCUs than at non-minority institutions.

HBCUs also offer their students an environment where they constitute the majority, rather than a minority, and

share a common cultural experience and sensitivity to Black issues. This fact alone relieves many societal stressors, creates a more supportive atmosphere, and helps students develop self-confidence, in a similar fashion to institutions sponsored by religious groups and all-female schools.

Federal Support of Historically Black
Colleges and Universities

Since the passage of the Higher Education Act of 1965, Historically Black Colleges and Universities (HBCUs) have received increasing federal support. In 1971, President Richard Nixon stated:

[C]olleges and universities founded for Black Americans are an indispensable national resource. Despite great handicaps, they educate substantial numbers of Black Americans, thereby helping to bring about a more rapid transition to an integrated society. Black institutions are faced with an historic inadequacy of resources. To help these institutions compete for students and faculty with other colleges and universities, the combined help of government at all levels, other institutions of higher learning, and the private sector must be summoned.²⁵

Later that year, the Senate Appropriations Committee made a commitment to encourage

. . . the General Research Support Branch to initiate a program for the development of the health sciences at predominantly Black colleges which have been unable to provide adequate preparation for definitive training in health research fields and the health professions. Since, historically, Black students have not

had equity of opportunity to become investigators in health research fields and to become physicians, dentists, and other health professionals, chiefly due to a lack of adequate research and teaching facilities, and the inability of Black institutions to compete for sufficient numbers of professionals, it is incumbent upon the Federal Government to rectify these inequities. To this end, the Committee suggests that \$2,000,000 be used to launch this program in FY 1972.²⁶

In response to the previous messages, the National Science Foundation sponsored the College Science Improvement Program providing support to four-year Historically Black Colleges as well as research grants for HBCU faculty. The U. S. Department of Education has since taken over the program, and its College Housing Loan Program sets aside 10% of its funds for HBCUs.

In 1969, 75% of Black medical school applicants were accepted; however, despite the Nixon Administration's urging, this acceptance rate fell to 43.9% in 1973-1974 and then to 39.4% in 1979-1980, while the non-minority acceptance rate rose from 34.7% to 47.9% in the same period.²⁷

In 1974, United States medical schools accepted minorities at a rate 9.7% higher than they accepted non-minorities. . . . However, by 1977-1978, minorities were being accepted at a rate of only 1% greater than non-minorities. . . . By 1981-1982, the non-minority rate had increased to 5.2% [greater than the minority rate].²⁸

Many educators attribute decreased affirmative action efforts to the Bakke reverse discrimination case of 1978.

Although the Supreme Court affirmed the constitutionality of programs giving advantage to minorities, it barred quota systems in college admissions. Since then, Presidents Jimmy Carter,²⁹ Ronald Reagan,³⁰ and George Bush³¹ have instituted measures to promote HBCU federal funding. In 1980, President Jimmy Carter signed an Executive Order to overcome discrimination by increasing the ability of HBCUs to provide a quality education and to participate in federally-sponsored programs. In 1981, President Ronald Reagan signed a new Executive Order, this one involving the private sector:

The Secretary of Education shall supervise annually the development of a federal program designed to achieve a significant increase in the participation by Historically Black Colleges and Universities in federally-sponsored programs. This program shall seek to identify, reduce, and eliminate barriers which may have unfairly resulted in reduced participation in, and reduced benefits from, federally-sponsored programs. This program will also seek to involve private sector institutions in strengthening Historically Black Colleges.³²

The White House initiative of HBCUs was spawned from this effort and still is a major stimulus for increasing the funding (grants, contracts, and cooperative agreements) received by HBCUs from the agencies of the federal government. Although the number of Blacks enrolled in college declined nationally, public HBCU enrollment increased by 13.2% from 1986 to 1989.

In 1989, President George Bush (Honorary Chairman of the United Negro College Fund) directed the establishment of the President's Board of Advisors on Historically Black Colleges and Universities, an advisory commission of the U. S. Department of Education,³³ with specific emphasis placed on Black representation in the fields of science and technology and the role of private sector assistance. President Bush also ordered that the Justice Department amend its brief to support the role of both public and private HBCUs.³⁴

In spite of many of the above efforts, the resource gap between the majority institutions and the Historically Black Colleges and Universities (HBCUs) has widened over the last twenty years. The kind of federal governmental support which permitted the majority institutions to build their sponsored research infrastructure has not been available to the HBCUs. The infrastructure support for the majority institutions consisted of research laboratories, equipment, major development grants, traineeships, fellowships, and exchanges. Almost all of these programs have been drastically reduced since 1980.

National Institutes of Health Support
of Historically Black Colleges
and Universities

As the federal focal point for health research, the National Institutes of Health (NIH) has long recognized the important role of Historically Black Colleges and Universities (HBCUs) in the promotion and support of minority health care. Along with the National Science Foundation and the U. S. Department of Education, the National Institutes of Health has been a major supporter of HBCUs by contributing extensively to their funding. As a consequence, NIH has played an important role in attempting to break the cycle of Black underrepresentation in the biomedical research arena in the United States.

As a result of increasing political pressure on the National Institutes of Health to be more responsive to minority health issues, in 1981, the National Institutes of Health formed the Committee on Black College Initiatives (CBCI) as part of its Civil Rights Plan,³⁵ in addition to its Minority Biomedical Research Support and Minority Access to Research Careers programs, which have been in place since 1972. The CBCI was to review NIH programs to determine and remedy unfair preclusion of HBCUs from federally-sponsored programs, as well as initiate efforts to increase HBCU participation in NIH programs. HBCU participation in agency programs would be monitored

periodically and a report submitted annually to the President by the Secretary of Education (White House Initiative).

The National Institutes of Health (NIH), an agency of the Department of Health and Human Services (DHHS), is the world's largest biomedical research organization today. Its mission is:

. . . to uncover new knowledge that will lead to better health for everyone. NIH works toward that mission by: conducting research in its own laboratories; supporting the research of non-federal scientists in universities, medical schools, and research institutions throughout the country and abroad; helping in the training of research investigators; and fostering and supporting biomedical communication.³⁶

The National Institutes of Health has a "continuing commitment to ensure that all Americans, including racial minorities and women, have an equal opportunity to participate in and contribute to biomedical and behavioral research."³⁷

As the principal biomedical research arm of the Department of Health and Human Services, the National Institutes of Health has as its overall mission:

. . . to improve the health of the American people through the acquisition of new knowledge in disease and disease prevention, including research in the basic sciences. Through congressional appropriations, the NIH funds biomedical and behavioral research related to a broad spectrum of disease and health problems. Funds are also provided for training research investigators to maintain and enhance the quality of biomedical and behavioral research in the future.³⁸

To help accomplish its mission, the National Institutes of Health is dedicated to increasing the number of scientists who are members of minority groups currently underrepresented in biomedical and behavioral research. The following racial/ethnic groups are currently underrepresented in biomedical and behavioral research nationally: Native Americans, Hispanics, African Americans, and Pacific Islanders. NIH's commitment is based on the premise that a growing pool of such experienced minority researchers will contribute greatly to progress in minority health, strengthen biomedical and behavioral research in general, and address the potential research labor shortage in the 21st century.

The impending shortage in the number of well-trained biomedical and behavioral researchers in this country has been noted in several recent publications. In Changing America: The New Face of Science and Engineering, the congressionally-established Task Force on Women, Minorities, and the Handicapped in Science and Technology estimated that to avoid a serious shortage of scientific personnel, there must be a significant increase in the number of minorities with doctoral degrees in science and engineering. Demographic trends show that, by the year 2000, approximately one-third of new entrance into the general work force will be minorities. Yet relatively few

minorities have been attracted to science careers in the past.

Since the 1970s, the NIH Office of Minority Programs (OMP), which coordinates policies related to minority health issues, has instituted a number of important programs designed to increase the numbers of minorities in the biomedical sciences and to enhance HBCU research capabilities:

- Minority Access to Research Careers (MARC)

Program.

- The MARC Predoctoral Fellowship Program

provides support for research training

leading to the Ph.D. or M.D./Ph.D.

degree in the biomedical sciences for

selected students who are graduates of

the MARC Honors Undergraduate Research

Training Program.

- The MARC Undergraduate Research Training

Program aims to increase the numbers of

minority students who can successfully

compete for entry into Ph.D. programs,

to develop a strong biological sciences

curriculum, and to strengthen biomedical

research training programs.

- The MARC Visiting Scientist Award

supports outstanding scientist-teachers

to serve as visiting scientists at minority institutions.

-- The MARC Faculty Fellowship provides opportunities for advanced research training for selected faculty members of HBCUs.

- Minority Biomedical Research Support (MBRS) Program. The purpose of the MBRS Program is to increase the number and quality of minority health scientists and to strengthen the capability of HBCUs to provide health career opportunities to their students and to conduct research in the health sciences.
- Research Centers in Minority Institutions (RCMI) Award. This program is designed to provide grants of up to \$1 million per year for five years to help HBCUs enrich their research environments. Its purpose is to establish research centers at HBCUs which offer doctoral degrees in the health professions or the science fields related to health.
- Academic Research Enhancement Award (AREA). This award provides research support to faculty at undergraduate and graduate institutions that have not traditionally

been major recipients of NIH funding. In 1989, 12% of AREA funds were awarded to HBCUs; however, in later years a smaller percentage of HBCUs received AREA grants.

- Extramural Associates (EA) Program. The EA Program is designed to enhance the capability of affiliated minority and women institutions in acquiring and managing grants and related research projects. It provides training to key scientific administrators so that they may gain knowledge of federal health-related programs, grants, and contract operations; grant support mechanisms; and the policies and procedures that govern grant awards.

NIH funding for research specifically focused on minority health has steadily increased over the years and in 1990 reached a total of \$425.7 million. Its Institutes, Centers, and Divisions (ICDs) have heavily supported minority health and assistance funding through disease research, education, prevention, early detection, intervention, and treatment programs; and the training and encouragement of minority biomedical scientists.³⁹ The National Heart, Lung, and Blood Institute (NHLBI) has been particularly active in its support of minority health, as a large number of diseases that disproportionately

affect minorities fall under its aegis. In 1990, over \$77 million of NHLBI funds were allocated to minority-related programs. Approximately \$7 million of this money supported minority research training and career development programs. The following NHLBI programs were founded in 1984 to specifically support HBCUs and increase minority student enrollment in the biomedical sciences:

- NHLBI Minority Summer Program in Pulmonary Research. This program encourages qualified minority school faculty and graduate students to develop interests and skills in pulmonary disease research at established pulmonary training centers and to stimulate pulmonary research.
- NHLBI Minority Institutional Research Training Program. This institutional training program offers awards in cardiovascular, pulmonary, and hematologic research to minority schools. This both trains graduate students for research careers in areas relevant to these diseases and stimulates cardiovascular, pulmonary, hematologic diseases research, prevention, control, and education.
- NHLBI Minority School Faculty Development Award. This program awards grants to

minority institution faculty members to work with a mentor at a nearby research center. The mentor will be an accomplished investigator in research areas relevant to cardiovascular, pulmonary, and hematologic diseases and resources.

In 1987, NIH took steps to increase minority representation in research studies. The NIH announced that all research proposals and applications for clinical research must include minorities in the study population, unless compelling justification is made for not doing so. To enforce this measure, in February of 1991 the NIH modified their scoring system for applications and proposals to include an evaluation of the appropriateness of the minority composition in the study design.

Future NIH efforts will be expanded further still. In the 1992 President's Budget, \$15 million was allotted to the Office of Minority Programs--now the Office of Research on Minority Health (ORMH)--for a new research facility improvement program. This program will provide for the renovation and construction of research facilities at HBCUs, allowing these institutions to become competitive with comparable non-minority institutions.

In its report accompanying the 1991 Labor, Health and Human Services, Education and Related Agencies appropriations bill, the House Appropriations Committee directed

the National Institutes of Health to "develop a plan that would substantially increase the funding and resources devoted to minority health during the next four years."⁴⁰

Working with the individual Institutes, Centers, and Divisions in their effort to promote minority health, the ORMH is in the initial stages of developing this comprehensive NIH plan. Over the next four years, it will implement a fact-finding team to assess current NIH programs and consider modifications to increase the attention given to minority health issues and enhance the status of minority scientists in biomedical research and research training in colleges and universities. After the fact-finding team analyzes the data and makes its recommendations, an action plan will be formulated to increase minority research and research training at the college and university level and ensure greater collaborative efforts among HBCUs, between HBCUs and non-minority institutions, and between HBCUs and private industry. An NIH Minority Program Advisory Board will then be appointed to provide guidance on policy matter and monitor implementation of the action plan.

In the meantime, the Office of Research on Minority Health will strive to (1) emphasize the relevance of minority research currently carried out at Institutes, Centers, and Divisions; (2) develop programs where HBCUs would be funded to organize education and outreach

programs in minority communities; (3) ensure that every NIH-supported research center conducting clinical research has a minority outreach component; and (4) encourage interdisciplinary research among Institutes, Centers, and Divisions.

In May of 1991, the National Institutes of Health Office of Minority Programs (OMP) formed an advisory Fact-Finding Team (FFT) to recommend ways by which NIH could (1) extend healthy life and reduce the burden of illness among minorities through targeted research and (2) significantly increase the participation of minorities in all phases of biomedical research.

The 53-person team was co-chaired by the then-President of Meharry Medical College in Nashville, Tennessee, and Dr. Norman C. Francis, President of Xavier University in New Orleans, Louisiana. Between May and September of that year, the Fact-Finding Team attended three major regional meetings convened by three OMRH in Arlington, Virginia; Atlanta, Georgia; and San Diego, California. At these meetings, Fact-Finding Team members gathered information and ideas from nearly 1,000 participants who represented a broad spectrum of educational, government, and community organizations and the biomedical and life sciences.

Following the San Diego regional meeting, the Fact-Finding Team drafted its recommendations and submitted

them to the Associate Director of Minority Programs, who in turn submitted them to the Director of the National Institutes of Health as guidance for future policy deliberations in regard to support for minority programs and research initiatives at the National Institutes of Health. The report also serves as an invaluable guide of the continued evolution of OMRH itself.

Following are some of the recommendations that are particularly relevant to the study at hand.

The Fact-Finding Team recommended that the Office of Research on Minority Health (ORMH) coordinate and review all NIH programs for minorities to reduce duplication of effort, to ensure that programs meet overall guidelines, to ensure the general and timely dissemination of research results among the minority communities, and to encourage collaboration between major research institutions and minority institutions.

The Fact-Finding Team fully supports the coordinating role played by ORMH within the NIH research community and asks that ORMH undertake even wider and more open communications about NIH activities for minorities; that it engage in strong outreach activities to form links with minorities in the biomedical community and with community-based organizations; that it review new program initiatives within NIH for their ability to impact minority problems; and that it serve as a central focus for coordinating NIH

efforts with those of other government agencies also addressing minority issues.

These four major recommendations acknowledge that the National Institutes of Health is already expending significant effort in areas of minority health concerns. The Fact-Finding Team nevertheless urges the NIH to increase its support for targeted research to extend the life span of minorities and to improve their health status. All Americans (minority and majority alike) should expect to live long, happy and productive lives.

The Fact-Finding Team agrees with NIH that the addition of more minority researchers would contribute greatly to progress in minority health. In order to achieve an increase in the number of minority investigators, NIH must recruit and train more minority students. They could form that growing pool of experienced researchers with the insight and desire to improve the health status of America's minority population. At the same time, they could strengthen biomedical research in general.

But the current reality is that the recruitment of minority students into the sciences has not been successful, that the number of minorities in training programs is extremely low, and that retention and graduation levels for science majors are well below desirable levels.

The Fact-Finding Team believes that real progress in this area will come only if very young minority students

are exposed to (and expected by) the rewards of a career in the biomedical and life sciences. Programs must also be in place to nurture that interest and excitement throughout the students' elementary, middle and high school experience and on into higher education and career development.

Such a lifetime career path for minority scientists must lead to full integration into the biomedical research system, including service on study sections, success in the grants process, collaborative work with minority role models, and, additionally, specialty research training, publications and participation in clinical trials.

Because science teachers can play such a key role in generating enthusiasm for science among minority students, the Fact-Finding Team recommends that the National Institutes of Health cooperate in government programs that support the training and professional development of science teachers, especially minority teachers.

The Fact-Finding Team urges the National Institutes of Health to fund programs that enable minority science teachers, or teachers from schools with high concentrations of minority students, to participate in summer science training programs, to work in research laboratories, and to pursue graduate degrees. In particular, the National Institutes of Health should cooperate with the National Science Foundation to develop joint programs that

focus on minority teacher training. The Fact-Finding Team also recommends that the National Institutes of Health support workshops to improve attitudes among teachers and career counselors as to heighten their expectations of excellence from minority students who are interested in careers in science.

The National Institutes of Health should support programs that significantly increase the recruitment and retention of minority science students at the precollege and college entrance levels.

The Fact-Finding Team recommends that the National Institutes of Health (in partnership with higher education, foundations, industry, and community volunteers) expand the NIH Minority High School Student Research Apprenticeship Program (MHSSRAP) and other hands-on training programs in order to increase the number of minority student participants from an expected 3,000 in 1993 to 6,000 by 1995. The Fact-Finding Team also recommends NIH support for pre-freshman "bridging" programs (university-hosted orientation and remediation courses) to help up to 600 promising minority high school graduates each year make the transition to campus life and a science curriculum. The Fact-Finding Team further recommends the initiation of an NIH "Minority Science Scholars Program" to award four-year merit college scholarships for up to 500 minority students per year.

Since a great many minority students are in two-year community and junior colleges, the Fact-Finding Team recommends that the National Institutes of Health increase the transfer of talented minority students who have demonstrated scientific knowledge and skills in associate or technician programs at two-year institutions to baccalaureate programs in the biomedical and life sciences at four-year institutions.

The Fact-Finding Team recommends that the National Institutes of Health support collaborative agreements between two-year and four-year institutions so that good students can begin a quality science curriculum at one institution and continue their upper-level studies at a collaborating four-year institution. All four-year schools receiving NIH support for minority training programs should be required to recruit good minority students at nearby two-year schools. In addition, two-year schools with sufficient program strength and capable advisors should be able to offer their students support similar to the Minority Access to Research Careers (MARC) Program, which is currently limited to graduates of four-year institutions.

The Fact-Finding Team recommends that the National Institutes of Health continue to support the training of undergraduate minority students in the biomedical sciences. The MARC Program, so successful in supporting junior- and

senior-year science honor students at minority institutions, should be expanded to assist promising minority undergraduates at both minority and majority institutions, including two-year as well as four-year institutions.

The Fact-Finding Team recognizes the accomplishments of the MARC Program and recommends that it and/or similar programs be made available to more students (at least double the current number by 1995) at more institutions, adding positions at two-year and majority four-year institutions.

The Fact-Finding Team also recommends that the MARC Program be evaluated in order to identify those components that are successful as well as those that need to be strengthened through improvements in sign and cost-effectiveness. Such a program of evaluation and improvement would strengthen and prepare the MARC Program for further expansion and innovation. The Fact-Finding Team recommends that four-year institutions with MARC Programs be required to have a strong recruitment component at local high school and two-year and junior colleges. They also should become partners wherever possible with two-year colleges to offer MARC support to promising minority students at those two-year and junior colleges. The Fact-Finding Team recommends that additional flexibility be built into the MARC Program to accommodate non-traditional students and to prevent the loss of

promising students at critical points in the undergraduate careers.

The Fact-Finding Team recommends that the National Institutes of Health continue to use the MARC Predoctoral Fellowship Program and its various institutional training grants to support the transition of undergraduate minority research trainees to graduate and investigator training.

To further expand the pool of minority predoctoral students, the Fact-Finding Team recommends that the National Institutes of Health consider taking the following steps:

- The National Institutes of Health should continue support through graduate training not only for Minority Access to Research Careers (MARC) trainees but also for minority science graduates who have not been in MARC Programs. The stipends should be awarded to the institution of the student's choice for graduate education.
- Attributes that have been found to relate to the success of minorities in graduate schools should be given significant weight along with Graduate Record Examination (GRE) scores.
- The National Institutes of Health should allow the support of up to three persons

under a single Minority Investigator Research Supplement to an NIH grant, if the principal investigator is able to demonstrate his or her ability to provide a quality experience for these individuals (graduate students, teaching fellows, or others).

- The National Institutes of Health should provide a family allowance to the minority predoctoral and postdoctoral stipends for married students if the institutional finance office determines that they could not continue their education without such support.
- The National Institutes of Health should consider an extra year of fellowship support for minority students who require additional course work or selective tutorial activities to qualify for entrance into doctoral-level programs.
- The National Institutes of Health should recognize that many minority students pursue Master's degrees in the biomedical sciences rather than opting for the five-year Ph.D. degree program after undergraduate school usually for financial reasons. Students who

receive their Master's degree should be targeted for special encouragement and support to complete the Ph.D. degree.

- The National Institutes of Health should encourage private industry to directly assist predoctoral minority scientists and technicians to obtain the Master's degree and Ph.D. degree and other specialty training necessary to participate in industry's own contribution to biomedical research.

The National Institutes of Health should continue funding its full array of programs supporting the professional development of minority biomedical scientists as well as evaluating those programs in order to identify their strengths and weaknesses.

The National Institutes of Health should continue the MARC Postdoctoral Fellowships, the Visiting Scientist and Faculty Fellowship Programs, the Minority Research Supplement, the Minority Clinical Researcher Programs, the early grant and career development awards, and the Extramural Associates Program, all of which are used to advance the training and career development of minority scientists.

The Minority Biomedical Research Scientist (MBRS) Program should serve as a model for the development of research faculty. It should be evaluated for those

components which have made it successful and should be strengthened by improvements in design and cost effectiveness so that it may be extended in new ways to assist more researchers.

The Fact-Finding Team recommends that Extramural Associates from minority institutions who are trained by the National Institutes of Health have the opportunity to return to their institutions with seed money for small research grants which would involve faculty colleagues and thus help introduce them to the standards and processes in the competition for ROI Research Project Grant Funds.

In order to promote a general, positive environment for the success of these programs, the Fact-Finding Team also recommends that all grantee institutions demonstrate that they are actively recruiting, hiring, and advancing minorities--including minority input into research projects dealing with minority health concerns. This is a way of assuring their own future success in the review process. The National Institutes of Health should set the standards by recruiting more minority investigators for its own study sections and review panels and should consider inviting non-research minorities, as appropriate, to provide their special perspectives as non-voting reviewers on minority issues.

The National Institutes of Health must continue and, where possible, expand programs at institutions with

significant or predominant enrollment of minorities so that some may become "centers of excellence" for quality training of minority science students and state-of-the-art faculty research.

The Fact-Finding Team recommends that the National Institutes of Health consider identifying and funding such "centers of excellence in minority health" which would serve as centers of leadership in the investigation of minority health problems. In addition, these "centers of excellence in minority health" would serve as major training centers for investigators interested in these areas of research and as points from which important health information would be disseminated to minority communities. Such centers could help develop and become part of a "network of excellence" linking traditional research institutions to each other as well as to community-based research organizations dealing with minority health concerns. One model for establishing such centers is the Land-Grant College Act ("Morrill Act") passed by Congress in 1862 to stimulate cooperative research and development for the benefit of an entire region. Appropriate locations for establishing such centers would include the consortia of institutions that have proven success at producing minority professionals in the biomedical and behavioral sciences.

The Fact-Finding Team recommends that the Research Centers at Minority Institutions (RCMI) Program be expanded

to provide more infrastructure development at those traditional minority schools that train minority scientists, including those not offering a doctoral degree.

The Fact-Finding Team recommends that the Academic Research Enhancement Award (AREA) Program be expanded to increase the development of the necessary infrastructures within schools which have not yet been major participants in NIH programs but are engaged in training minority students.

Finally, the Fact-Finding Team strongly encourages the National Institutes of Health to continue its historic progress along the path that leads to the achievement of the twin goals of the NIH minority health initiative--to improve the health of minorities and to increase the participation of minorities in all phases of biomedical research.

The Fact-Finding Team recognizes and firmly supports the following steps to help the National Institutes of Health maintain its momentum of progress:

- The development and implementation of a comprehensive four-year plan (leading to a ten-year plan) to achieve the twin goals of the National Institutes of Health minority health initiative.
- The establishment of an Advisory Office of the Director.

- The dissemination of better data relative to minority health concerns not only within the National Institutes of Health but also between the National Institutes of Health and the larger research community.
- The promise of increased support for innovative ideas and projects as well as established programs on behalf of the nation's minorities.
- The commitment to achieve representative racial and ethnic diversity at every level throughout every Institute, Center, and Division at the National Institutes of Health.

Finally, to measure the success of its programs, the Office of Research on Minority Health (ORMH), in conjunction with the Institutes, Centers, and Divisions (ICDs), will develop a database to track all minority training and health-related programs. This will provide future guidance and the basis for reports to Congress. In this regard, the ORMH has already established a Minority Round Table with the National Science Foundation. Thus, the recommendations from the Fact-Finding Team would create the needed support from the National Institutes of Health to foster the development of more minority research

scientists and to augment the goals of the Extramural Associates (EA) Program.

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C H A P T E R I V
RESEARCH DESIGN AND METHODOLOGY

This chapter presents the research design and procedures used in conducting this study. It discusses the instruments used for data collection, including the use of a questionnaire and oral and written interviews.

Research Design

The purpose of this research study was to explore the role that the Extramural Associates (EA) Program has played in promoting federally-funded projects of Historically Black Colleges and Universities (HBCUs) that directly support HBCU biomedical research efforts. The ultimate goal of this study was to determine the strengths and weaknesses of the Extramural Associates Program (as best perceived by the participants) in order to (1) better serve the Historically Black Colleges and Universities and (2) improve the Extramural Associates Program. A secondary goal was to reaffirm the sense of community among the program's participants, which is deemed essential to betterment of the program. Suggestions for a more solid networking system will be presented. Another goal was to look for ways to more efficiently run the program as the National Institutes of

Health (NIH) becomes more concerned with the budgetary constraints it faces.

Research Methodology

The data for this research study was derived from a questionnaire (see Appendix B) completed by 43 Extramural Associates from 39 different Historically Black Colleges and Universities (HBCUs). These participants attended the Extramural Associates (EA) Program between the years of 1978 (the first year in which the Extramural Associates Program was offered) and 1992. The questionnaire was designed utilizing a Likert scale from "1" to "5", so that subjective data such as a respondent's feelings can be quantified for the study. The data was compiled into a database and various statistics compiled therefrom.

Because of the nature of some of the questions addressed, some of the data were not readily quantifiable. Therefore, to complement the data provided, written and oral interviews were conducted with various participants to clarify particular points as well as expand on issues that became evident from the questionnaire findings. Interview responses are found in Appendix C.

There were some limitations to the data as presented. Given the time frame involved (some participants attended the Extramural Associates Program 15 years ago) and the

economic and political changes that have taken place over the years, some of the data may not be strictly comparable with the remainder of the group. The Associates were divided into two groups, according to the year they attended the Extramural Associates Program, and a comparison was made between them so as to reveal any significant information. Additionally, an overall analysis of the data was carried out.

Other factors determined the questionnaire responses, such as the size and economic status of the attendee's institution as well as his or her influence in its administrative decision-making process. The latter, combined with the amount of time granted outside traditional duties, was seen to be correlated with an Associate's satisfaction with the results of the Extramural Associates Program.

In general, Associates found the Extramural Associates Program to significantly increase the number of grants and funding received by their institutions, at all levels. The main goal of the Extramural Associates Program is to make more Historically Black Colleges and Universities aware of the benefits of learning the grants administration process and to reduce the initial costs associated with attendance.

Instrumentation

Fifty National Institutes of Health Extramural Associates Program graduates were asked to participate in this research study (see Appendix A). They were asked to give their perceptions of the Extramural Associates Program by responding to 46 survey questions and providing any additional comments they would like about the Program (see Appendix B). The Extramural Associates questionnaire was designed to obtain feedback on the Extramural Associates (EA) Program. The results of the study of past Extramural Associates Program performance will be used to improve future experiences.

Forty-three Extramural Associates (hereafter referred to as Associates) responded to the questionnaire from 39 Historically Black Colleges and Universities (see Table 1). The anonymity of the participants was assured so as to obtain as candid a set of responses as possible. Therefore, in the following data, none of the institutions or participants shall be mentioned by name when there is possibility of identification.

The dates during which these Associates attended the Extramural Associates Program fell into two periods: from 1978 through 1984 and from 1988 through 1992. A total of 19 Associates responding to the questionnaire attended the Extramural Associates Program during the first period, and 24 Associates attended during the

Table 1. Extramural Associate Program participating in HBCU institutions

Institution	City	State
Alabama A&M University	Normal	AL
Alabama State University	Montgomery	AL
Albany State College	Albany	GA
Arkansas University	Pine Buff	AR
Benedict College+	Columbia	SC
Bethune-Cookman College	Daytona Beach	FL
Bowie State University	Bowie	MD
Cheney State College	Cheney	PA
Chicago State University	Chicago	IL
Clafin College	Clafin	SC
Clark University	Atlanta	GA
Coppin State University	Baltimore	MD
Delaware State University*+	Dover	DE
Elizabeth City State University	Elizabeth City	NC
Fayetteville State University	Fayetteville	NC
Florida A&M University	Tallahassee	FL
Hampton University+	Hampton	VA
Howard University+	Washington	DC
Jackson State University	Jackson	MS
Johnson C. Smith University+	Charlotte	NC
Kentucky State University	Frankfort	KY
LeMoyne-Owen College+	Memphis	TN
Lincoln University	Lincoln University	PA
Medgar Evers College	Brooklyn	NY
Morehouse College	Atlanta	GA

Continued, next page

Table 1 (Continued)

Institution	City	State
Morgan State University	Baltimore	MD
Norfolk State University	Norfolk	VA
North Carolina A&T University	Greensboro	NC
North Carolina Central University	Durham	NC
Paine College+	Augusta	GA
Prairie View A&M University	Prairie View	TX
Saint Augustine's College+	Raleigh	NC
Saint Paul's College+	Lawrenceville	VA
Tuskegee Institute+	Tuskegee Institute	AL
University of the District of Columbia	Washington	DC
Virginia Union University+	Richmond	VA
Voorhees College	Denmark	SC
Wiley College	Wiley	TX
Xavier University of Louisiana+	New Orleans	LA

* = Participated in the EA Program twice

+ = Private

second period. The fact that there were no responses for years 1985 through 1986 is a result of chance variability. The data were viewed in three ways whenever pertinent: (1) data from the group of all 43 respondents; (2) data from Associates having attended the Extramural Associates Program during the first time period; and (3) data from Associates having attended the Extramural Associates Program during the more recent time frame. Hereinafter, the Associates who attended the Extramural Associates Program during 1978 to 1984 will be referred to as the first group and Associates having attended the Extramural Associates Program during 1988 to 1992 will be referred to as the second group. In all tables, the shaded areas will denote data from the first group and the unshaded areas will denote data from the second group.

Not all Associates answered all questions on the questionnaire. Some questions were not applicable to the respondent's particular case; the respondents did not know the answer; or the respondents were unable to answer given that they had recently attended the Extramural Associates Program and were unable to come to a solid conclusion at the time. Bearing this in mind, this study calculated all averages weighted according to the number of actual responses. For example, if only 14 out of 19 Associates answered a question, the weighted average was the sum of the scaled answers divided by 14, rather than 19.

In addition to the questionnaire, 20 of the 43 Associates compiled written comments and 4 Associates made specific suggestions on how to improve the Extramural Associates Program.

This study has chosen not to associate the institutions of the Associates with any of the data. Although one can argue that the size and locality of an institution can affect the experience of the Associate and ultimately the questionnaire responses, the numbers of participants are not great enough to stratify the data by size of institution. In addition, the anonymity of the participants is protected. The results still accomplish the ultimate goal of revealing the strengths and weaknesses of the Extramural Associates Program and providing recommendations for the future.

Some of the answers proved themselves generally ill-suited to quantification, such as the amount of release time provided for the fulfillment of an Associate's Extramural Associates Program duties. Answers came in units that varied from percentages to semester hours to actual hours per week; and some were temporary, with time limits set on them (such as a single year). Because of the nonhomogeneity of certain answers, the study normalized them to "Yes"- "No" data. In this way, the answers still reveal the essence of the information

sought without compromising the data's integrity. Such questions are indicated where appropriate.

In general, the questionnaire was formulated to draw out recommendations for areas that were already known to be important from oral and written interviews with the participants, such as effects of release time, the institution's administrative backing, the institution's commitment to the Institutional Plan, and, of course, the availability of funds.

The data analysis presents responses to each question of the questionnaire, some one at a time and some in groups of related questions. The five-part scale used for the study questionnaire is as follows:

1 = "Not at all"; 3 = "Somewhat"; and 5 = "Very much".

Also used are: 1 = "Poor"; 3 = "Good"; and 5 = "Excellent".

These scales are indicated where appropriate (see Appendix B).

The data from the tables and figures in Chapter V were generated by Microsoft Access database software, or in tabular form as generated by Lotus 1-2-3.

The list of 39 different institutions from 20 different states that responded to the study questionnaire is presented in Table 1. The schools are public schools unless denoted by a "+", in which case they are private. Institutions having participated twice in the Extramural Associates Program are also identified with an "*".

C H A P T E R V
ANALYSIS OF THE DATA

The focus of this chapter is to present the analysis of the data collected for this study. Responses to each question of the Extramural Associate Questionnaire, some one at a time and some in groups of related questions, will be presented.

Presentation of the Data

Extramural Associate
Questionnaire Responses

Question 4: When was the last time you had active contact with the EA Program? As noted in Table 2, there are a number of Associates of the Extramural Associates (EA) Program who have been in contact with the National Institutes of Health (NIH) since they attended the Extramural Associates Program, as far back as 1978; and there are Associates who have not been in contact with the National Institutes of Health since they returned from the EA Program, even as recently as two years ago. Note that the further back an Associate attended the EA Program, the more likely he or she is to have changed positions within the institution or changed institutions altogether.

Table 2. Question 4: When was the last time you had active contact with the EA Program?

Year of Participation	Year of last Contact	Years Remain In Contact	Years Since Participation	Years w/o Contact
1978	1991	13	14	1
1978	1982	4	14	10
1979	1992	13	13	0
1979	1991	12	13	1
1980	1989	9	12	3
1980	1992	12	12	0
1982	1992	10	10	0
1982	1991	9	10	1
1982	1989	7	10	3
1983	1985	2	9	7
1983	1987	4	9	5
1983	1991	8	9	1
1983	1987	4	9	5
1983	1991	8	9	1
1984	1989	5	8	3
1984	1991	7	8	1
1984	1991	7	8	1
1984	1992	8	8	0
1984	1992	8	8	0
Average		7.89	10.16	2.26
1988	1992	4	4	0
1988	1990	2	4	2
1988	1992	4	4	0
1988	1990	2	4	2
1989	1992	3	3	0
1989	1992	3	3	0
1989	1990	1	3	2
1990	1991	1	2	1
1990	1991	1	2	1
1990	1990	0	2	2
1990	1991	1	2	1
1991	1991	0	1	1
1991	1992	1	1	0
1991	1992	1	1	0
1991	1992	1	1	0
1991	1992	1	1	0
1991	1991	0	1	1
1992	1992	0	0	0
1992	1992	0	0	0
1992	1992	0	0	0
1992	1992	0	0	0
1992	1992	0	0	0
1992	1992	0	0	0
Average		1.13	1.71	0.58
Average of all years		4.12	5.44	1.33

Shaded = 1978-1984, Unshaded=1988-1992

Questions 5 and 7: Upon your return from the EA Program, did your official status/position change? Has a new department been created to help fulfill EA Program activities? It is interesting to note that during the first period (1978-1984) slightly more than half (52.63%) of the Associates experienced a change in their official position, whereas in only 5.26% of the cases was a new department created to help fulfill EA Program activities. During the second period (1988-1992), however, while the percentage of changes in position did not increase by a significant amount (54.17%), new departments were created in 37.50% of the cases (see Table 3).

In reviewing the written comments, it should be noted that many of the Associates, in both time periods, acquired additional duties rather than experiencing a complete change in their roles. Therefore the creation of a new department can be viewed as more indicative of an institution's commitment to the EA Program than a change in an Associate's position as construed in the questionnaire used for this study.

Question 9: How successful has the EA Program been so far in furthering minority education at your institution? There are indeed many ways to foster minority education, whether it be via increased funding or moral support. The responses of the Associates are roughly the same for both time periods (see Table 4), in the 3.45 range, which

Table 3. Questions 5 and 7: Upon your return from the EA Program, did your official status/position change?

Has a new department been created to help fulfill EA Program activities?

Change in Position?		New Department Created?	
0	0	0	0
0	1	0	0
1	1	0	1
0	0	0	0
1	1	0	1
1	1	0	1
0	1	0	1
1	1	0	1
1	1	0	0
0	0	0	0
1	0	0	0
0	0	0	0
1	1	1	1
1	0	0	0
0	0	0	0
1	1	0	0
1	0	0	0
0	0	0	0
0	1	0	1
52.63%		5.26%	
	1		1
	0		0
	1		0
	0		0
	1		1
	54.17%		37.50%
All Respondents	53.49%		23.26%

0 = NO
1 = YES

Table 4. Question 9: How successful has the EA Program been so far in furthering minority education at your institution?

Year of Participation	1 = Not at all 5 = Very much
1978	4
1978	3
1979	4
1979	2
1980	5
1980	3
1982	3
1982	3
1982	3
1983	3
1983	5
1983	4
1983	4
1983	4
1984	3
1984	4
1984	1
1984	5
1984	3
Average	3.47

Year of Participation	1 = Not at all 5 = Very much
1988	4
1988	3
1988	5
1988	4
1989	5
1989	4
1989	4
1990	4
1990	1
1990	3
1990	1
1990	1
1991	2
1991	5
1991	3
1991	3
1991	5
1991	3
1992	4
1992	5
1992	1
1992	5
1992	4
1992	0
Average	3.43
Average of all years	3.45

Shaded = 1978-1984, Unshaded=1988-1992

is only slightly better than a neutral response. From the 1988-1992 data for this question, there is a noticeable lowering of opinion for Associates having attended the 1990 session. During this time, the EA Program was undergoing a major transitional period, including staff turnaround, and this had an effect on the Associates' experience.

Questions 10-12: To what extent did the EA Program enhance your leadership and promotional abilities? To what extent did the EA Program enhance your organizational and administrative skills? To what extent did the EA Program enhance your abilities to administer and manage the grants process? The 1978-1984 group of Associates ranked the improvement of skills from 4.06 through 4.42, which is considered to be fairly high (see Table 5 and Figure 1). The best area judged was in "learning about the grants process," followed by "organizational and administrative skills," "Leadership and promotion" were the lowest of the three skills ranked. The 1988-1992 group, on the other hand, displayed less satisfaction with the skills they learned. "Organizational and administrative skills" dropped to last place, at 3.79. The "grants process" remained high, however, at 4.29 (only a slight drop from prior years). The scores from both groups for these three questions were among the highest in the entire questionnaire.

Table 5. Questions 10-12: To what extent did the EA Program enhance your leadership and promotional abilities?

To what extent did the EA Program enhance your organizational and administrative skills?

To what extent did the EA Program enhance your abilities to administer and manage the grants process?

Year of Participation	Leadership/Promotional	Organizational/Administrative	Administer/Manage Grant Process
1978	5	4	4
1978	4	3	4
1979	4	5	5
1979	4	5	4
1980	0	5	5
1980	3	4	4
1982	3	4	5
1982	4	3	4
1982	5	4	4
1983	2	4	4
1983	3	3	3
1983	5	4	5
1983	5	5	5
1983	5	3	5
1984	4	5	4
1984	4	5	5
1984	4	4	4
1984	5	5	5
1984	4	5	5
1988	5	3	5
1988	3	2	4
1988	4	5	5
1988	4	5	5
1989	4	4	4
1989	5	5	5
1989	3	3	4
1990	5	5	4
1990	4	3	4
1990	5	3	5
1990	4	4	4
1990	1	3	3
1991	3	5	4
1991	4	3	4
1991	3	4	4
1991	3	3	4
1991	4	4	5
1991	5	5	5
1992	4	3	5
1992	4	4	3
1992	3	4	4
1992	3	3	5
1992	5	5	5
1992	4	3	3
'78-'84 Average	4.06	4.21	4.42
'88-'92 Average	3.83	3.79	4.29
Average All years	3.93	3.98	4.35

1=Not at all, 5=Very much

Shaded = 1978-1984, Unshaded=1988-1992

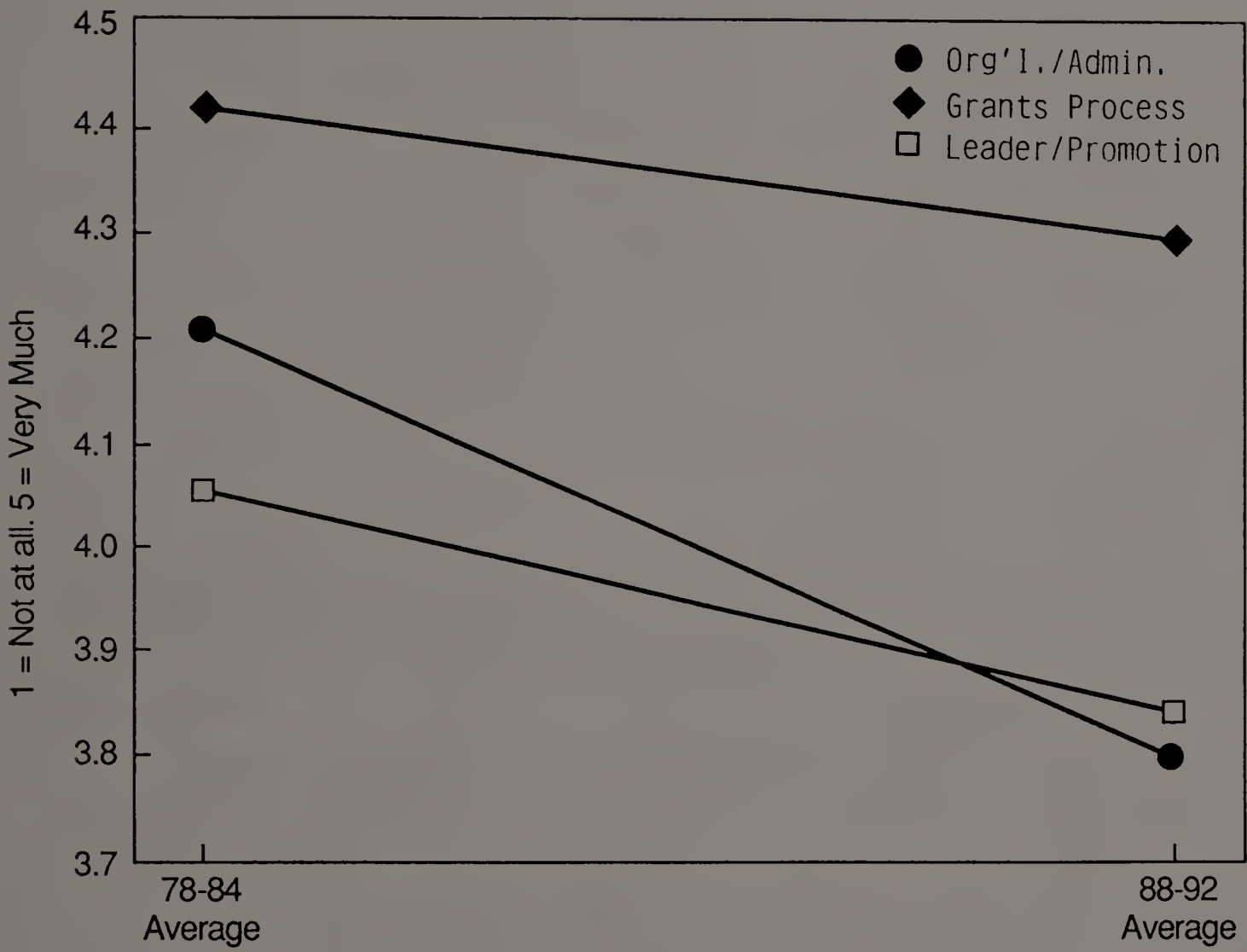


Figure 1. Extent EA Program enhanced skills

Question 13: Upon your return from the EA Program, were you given release time? Table 6 illustrates the findings for Question 13. Only 52.63% of the 1978-1984 group of Associates received release time, compared to a significant improvement at 62.5% of the 1988-1992 group of Associates. Overall, 58.14% were granted release time.

Question 14 (a)-(d): Upon your return, how responsive was your institution in providing you with (a) adequate release time, (b) adequate clerical support, (c) adequate facilities and office space, and (d) computer support and office equipment? In all cases, the 1988-1992 group ranked higher than the 1978-1984 group, especially concerning "release time" (see Table 7 and Figure 2). On the other hand, none of the values were particularly high, with a peak at 33.3 for "release time." "Facilities and office space" did not keep pace with the remaining variables in the question, dropping from first position to second in the ranking.

Question 15: Did your institution provide you with funding in support of the EA Program? A total of 31.58% of the 1978-1984 group of Associates received funding, compared to a very slight increase of 37.5% for the more recent EA Program participants (1988-1992). On the average, 34.88% received funding from their institutions in support of their Extramural Associates duties (see Table 8).

Table 6. Question 13: Upon your return from the EA Program, were you given release time?

Release Time?	
0	1
0	1
1	0
0	0
1	1
1	1
1	1
1	1
0	1
0	1
1	1
0	0
1	0
0	1
0	0
1	1
1	0
0	0
1	1
	1
	1
	0
	1
	0
	1
52.63%	62.50%
All respondents	58.14%

0 = NO
1 = YES

Table 7: Question 14 (a)-(d): Upon your return, how responsive was your institution in providing you with (a) adequate release time, (b) adequate clerical support, (c) adequate facilities and office space, and (d) computer support and office equipment?

Year of Participation	Release Time	Clerical Support	Facilities/ Office Space	Comp. Supp./ Office Equip.
1978	1	1	1	1
1978	1	1	5	5
1979	3	4	4	4
1979	2	1	1	1
1980	1	1	1	1
1980	3	1	1	1
1982	3	3	3	2
1982	4	2	3	3
1982	1	1	1	1
1983	1	1	2	2
1983	3	3	3	3
1983	1	2	2	2
1983	3	1	2	1
1983	1	3	3	3
1984	1	3	2	2
1984	4	1	1	1
1984	1	1	3	1
1984	1	1	4	3
1984	4	5	5	5
1988	4	4	5	5
1988	4	5	4	4
1988	5	5	5	5
1988	1	1	1	1
1989	3	1	0	5
1989	4	2	2	2
1989	5	5	5	5
1990	4	4	4	4
1990	4	1	1	1
1990	4	5	5	5
1990	2	1	1	1
1990	1	1	1	1
1991	1	1	1	1
1991	3	0	0	4
1991	1	1	2	1
1991	0	3	0	0
1991	0	0	0	0
1991	3	3	4	4
1992	0	3	5	3
1992	5	5	4	4
1992	1	1	1	1
1992	5	1	1	1
1992	5	4	4	5
1992	5	5	4	4
'78-'84 Average	2.05	1.84	2.47	2.21
'88-'92 Average	3.33	2.82	3.00	3.05
Average all years	2.73	2.37	2.74	2.66

1=Not at all, 5=Very much

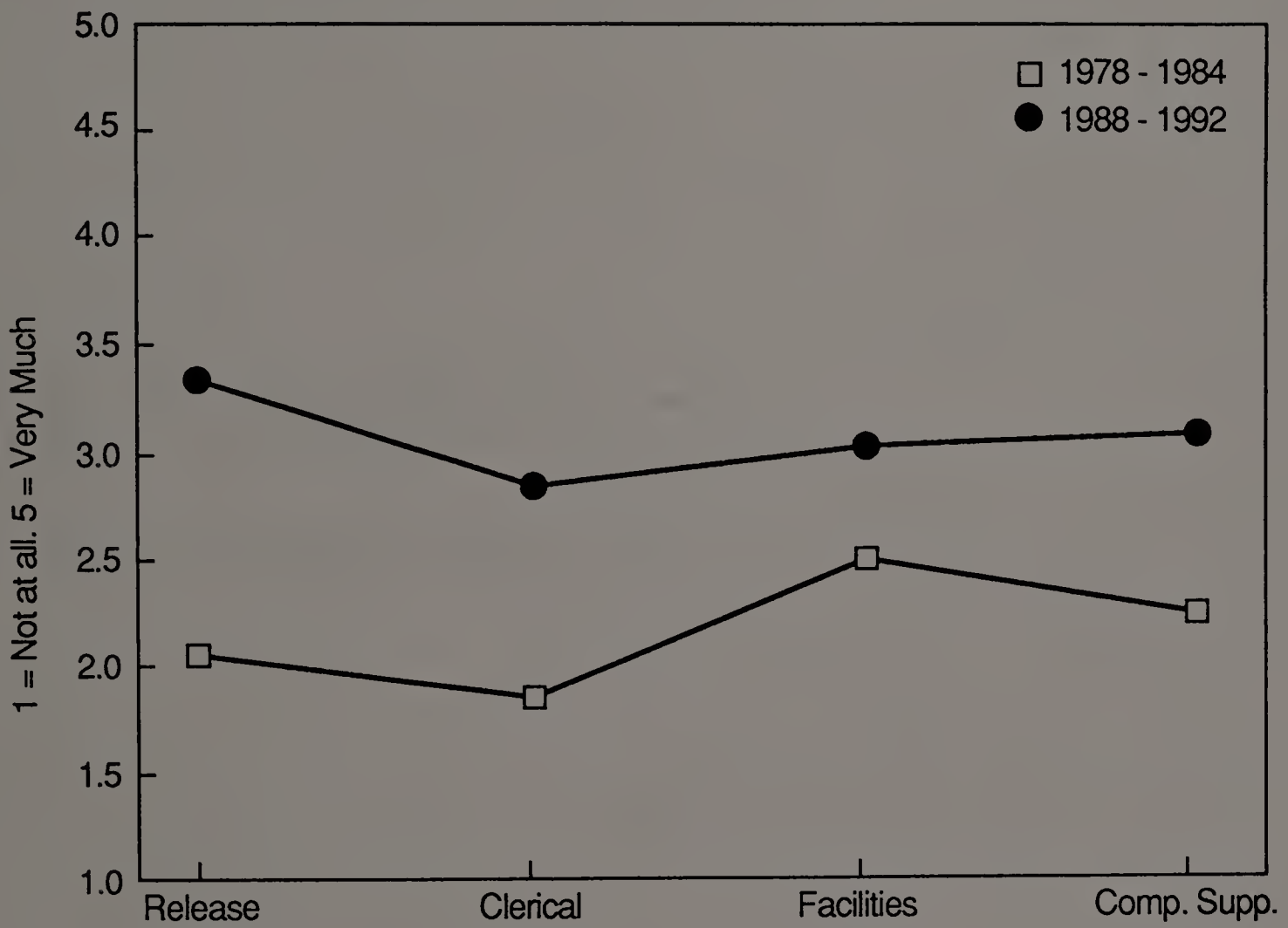


Figure 2. Institution responsiveness

Table 8. Question 15: Did your institution provide you funding in support of the EA Program?

Support Funding?	
0	1
1	0
1	1
1	0
0	1
0	0
0	1
1	1
0	0
0	1
1	0
0	0
0	0
0	0
0	0
0	0
1	0
0	0
0	1
	1
	0
	0
	0
	1
	37.50%
	34.88%
All respondents	

0 = NO
1 = YES

Question 16: How responsive was your institution in its funding of the EA Program? This question, while related to the previous one, was intended to ascertain the participants' subjective feelings relating to their institutions' funding support (see Table 9). Later it will be shown that the actual receipt of funding was not correlated with the Associate's perception of the institution's level of effort in this respect. In general, however, the responsiveness of EA institutions was deemed below average. The 1978-1984 group ranked their institutions' responsiveness at an average of 1.88 out of 5 and the 1988-1992 group was slightly higher, with 2.9--just below what may be considered to be acceptable. One must note, however, that several Associates in the 1988-1992 group were very content with their institution's responsiveness, ranking it at 5, while none of the 1978-1984 group went higher than a 4.

Question 17: Did you receive outside funds to support your participation in the EA Program? The 1978-1984 group of Associates received outside funding in 32.58% of the cases, in contrast to only 16.67% for Associates attending the 1988-1992 period. Overall, only 23.25% of the Associates received outside funding (see Table 10).

Question 20: Upon your return, how closely was the Institutional Plan followed? Overall, Associates ranked this question slightly below the norm, at 2.93 out of 5.

Table 9. Question 16: How responsive was your institution in its funding of the EA Program?

Year of Participation	1 = Not at all 5 = Very much
1978	2
1978	1
1979	3
1979	0
1980	1
1980	1
1982	1
1982	4
1982	1
1983	4
1983	4
1983	1
1983	1
1983	0
1984	1
1984	1
1984	1
1984	4
1984	1
Average	1.88

Year of Participation	1 = Not at all 5 = Very much
1988	4
1988	4
1988	5
1988	1
1989	5
1989	2
1989	3
1990	5
1990	1
1990	4
1990	1
1990	3
1991	1
1991	0
1991	3
1991	0
1991	0
1991	5
1992	2
1992	4
1992	1
1992	1
1992	1
1992	5
Average	2.45
Average of all years	3.45

Table 10. Question 17: Did you receive outside funds to support your participation in the EA Program?

Outside Funding?	
0	1
0	0
1	0
0	0
1	0
1	1
1	0
0	0
0	0
0	0
1	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
1	0
	1
	0
	0
	1
	0
31.58%	16.67%
All respondents	23.26%

0 = NO
1 = YES

The 1988-1992 group fared slightly better at 3.14, as compared to the 1978-1984 group, at 2.67 (see Table 11). The 1978-1984 group had many more low scores and fewer high scores than the 1988-1992 group. The standard deviation was much greater for the 1978-1984 group.

Questions 19 and 21-24: How closely did you collaborate with the president and administration in developing the Institutional Plan? How good were your communications between the president, administration, and faculty when developing the Institutional Plan? To what extent did the faculty participate in developing the Institutional Plan? To what extent did the administration participate in developing the Institutional Plan? To what extent did the president participate in developing the Institutional Plan? Of all the variables ranked by the 1978-1984 group, only the participation of the administration was ranked above 3, at 3.21. Faculty participation was the lowest ranking, at 2.42. The 1988-1992 group ranked all but one variable somewhat higher than the 1978-1984 group. It should be pointed out that faculty participation remained the lowest-ranked variable in both groups, rising only to 2.91 during the 1988-1992 period. The president's participation diminished with time, dropping from 2.89 to 2.79. Administrative participation remained top ranked. (See Table 12 and Figure 3.)

Table 11. Question 20: Upon your return, how closely was the Institutional Plan followed?

Year of Participation	1 = Not at all 5 = Very much
1978	0
1978	3
1979	3
1979	1
1980	1
1980	1
1982	2
1982	4
1982	1
1983	5
1983	3
1983	2
1983	3
1983	5
1984	2
1984	4
1984	1
1984	3
1984	4
Average	2.67

Year of Participation	1 = Not at all 5 = Very much
1988	5
1988	3
1988	3
1988	2
1989	3
1989	4
1989	4
1990	4
1990	1
1990	4
1990	2
1990	1
1991	2
1991	0
1991	3
1991	0
1991	3
1991	3
1992	5
1992	4
1992	1
1992	5
1992	4
1992	3
Average	3.14
Average of all years	3.45

Table 12. Questions 9 and 21-24: How closely did you collaborate with the president and administration in developing the Institutional Plan?

How good were communications between the president, administration, and faculty when developing the Institutional Plan?

To what extent did the faculty participate in developing the Institutional Plan?

To what extent did the administration participate in developing the Institutional Plan?

To what extent did the president participate in developing the Institutional Plan?

Year of Participation	Closeness of Collaboration	Quality of Communs.	Partic. of Faculty	Partic. of Admin.	Partic. of President
1978	3	3	2	4	3
1978	2	1	5	1	1
1979	4	3	2	3	3
1979	1	2	2	2	3
1980	1	1	1	1	1
1980	2	1	1	5	0
1982	4	1	3	2	4
1982	4	3	1	4	2
1982	1	1	1	1	1
1983	5	4	4	5	5
1983	3	5	4	4	4
1983	2	2	2	3	3
1983	4	3	2	3	3
1983	3	2	1	5	3
1984	4	3	4	4	2
1984	3	4	4	4	3
1984	3	1	1	3	3
1984	3	3	3	3	3
1984	3	5	3	4	5
1988	5	4	3	5	5
1988	4	3	2	4	3
1988	4	4	3	4	3
1988	2	1	2	2	1
1989	5	5	3	5	5
1989	5	4	3	5	5
1989	3	4	5	4	3
1990	4	4	2	4	3
1990	1	1	1	1	1
1990	4	3	3	4	2
1990	1	2	1	2	1
1990	5	5	5	3	4
1991	3	2	2	5	5
1991	0	0	0	2	1
1991	3	4	4	5	5
1991	0	0	0	5	2
1991	1	1	1	1	1
1991	5	4	3	5	4
1992	5	4	5	4	3
1992	5	4	4	5	4
1992	5	4	2	4	1
1992	5	5	5	4	2
1992	5	4	4	3	2
1992	3	3	1	4	1
'78-'84 Average	2.89	2.53	2.42	3.21	2.38
'88-'92 Average	3.77	3.41	2.91	3.75	2.79
Average all years	3.37	3.00	2.68	3.51	2.83

1=Poor, 5=Excellent

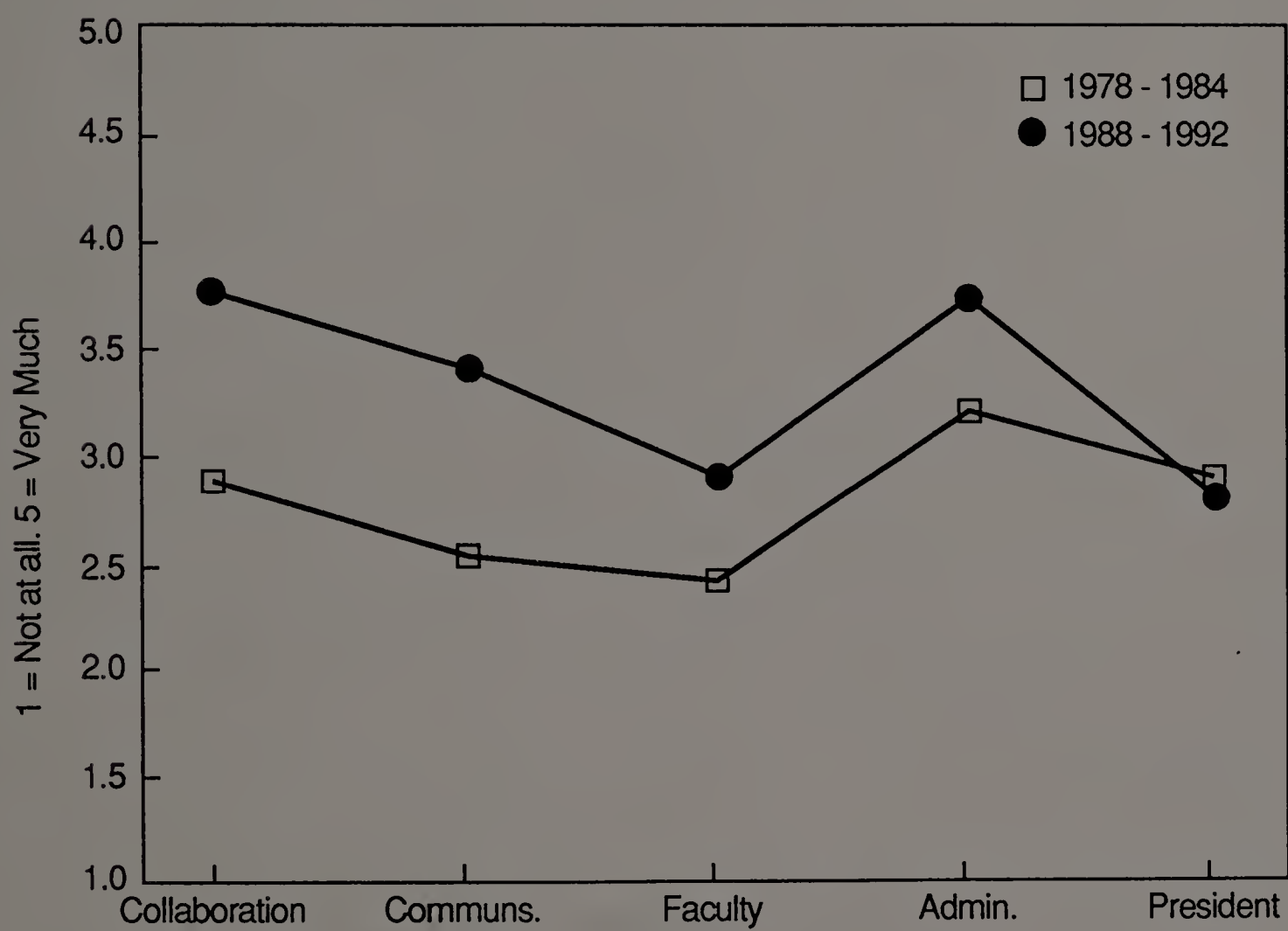


Figure 3. Collaboration and president participation

A total of 43% of the Associates who attended the EA Program during the 1988-1992 time period gave closeness of collaboration the highest ranking. Only 5% (1 out of 19) of the Associates from the 1978-1984 group ranked this variable at 5.

Quality of communication ranked higher in the 1988-1992 group, where 63.4% of the Associates ranked this variable a 4 or higher, compared to only 21% of the Associates in the 1978-1984 group.

A total of 29% of the Associates in the 1988-1992 group ranked presidential participation at 1, "Poor", compared to 16% of the 1978-1984 group.

Question 25 (a)-(c): How successful was the Institutional Plan in (a) stimulating overall research, (b) motivating students to participate in research, and (c) motivating faculty to participate in research? Scores for the success of the Institutional Plan in stimulating overall research remained fairly steady between the two periods, with a change from 3.0 to only 3.05. Success in motivating faculty research rose from 3.26 to 3.38. Success in motivating student research dropped from being first ranked (at 3.32) to second ranked (at 3.19). No average scores were lower than 3.0. The median success of the Institutional Plan at stimulating overall research was higher for the 1988-1992 group than the first. (See Table 13 and Figure 4.)

Table 13. Question 25 (a)-(c): How successful was the Institutional Plan in (a) stimulating overall research, (b) motivating students to participate in research, and (c) motivating faculty to participate in research?

Year of Participation	Overall Research	Student Research	Faculty Research
1978	3	3	3
1978	3	3	3
1979	3	5	4
1979	2	2	2
1980	1	1	1
1980	3	3	3
1982	4	4	4
1982	3	3	4
1982	1	1	1
1983	4	5	5
1983	5	5	5
1983	3	4	4
1983	2	2	2
1983	3	2	4
1984	3	4	3
1984	4	5	4
1984	3	3	3
1984	4	4	4
1984	3	4	3
1988	4	4	4
1988	3	3	4
1988	4	3	4
1988	1	3	1
1989	3	0	0
1989	4	4	4
1989	4	5	4
1990	4	4	4
1990	1	2	1
1990	4	2	4
1990	2	2	2
1990	1	3	1
1991	2	2	2
1991	3	3	3
1991	4	3	4
1991	3	3	3
1991	3	4	4
1991	3	3	3
1992	4	4	5
1992	4	4	4
1992	0	0	0
1992	0	0	0
1992	5	5	5
1992	1	1	5
78-'84 Average	3.00	3.32	3.26
'88-'92 Average	3.05	3.19	3.38
Average All years	3.02	3.25	3.33

1=Not at all, 5=Very much

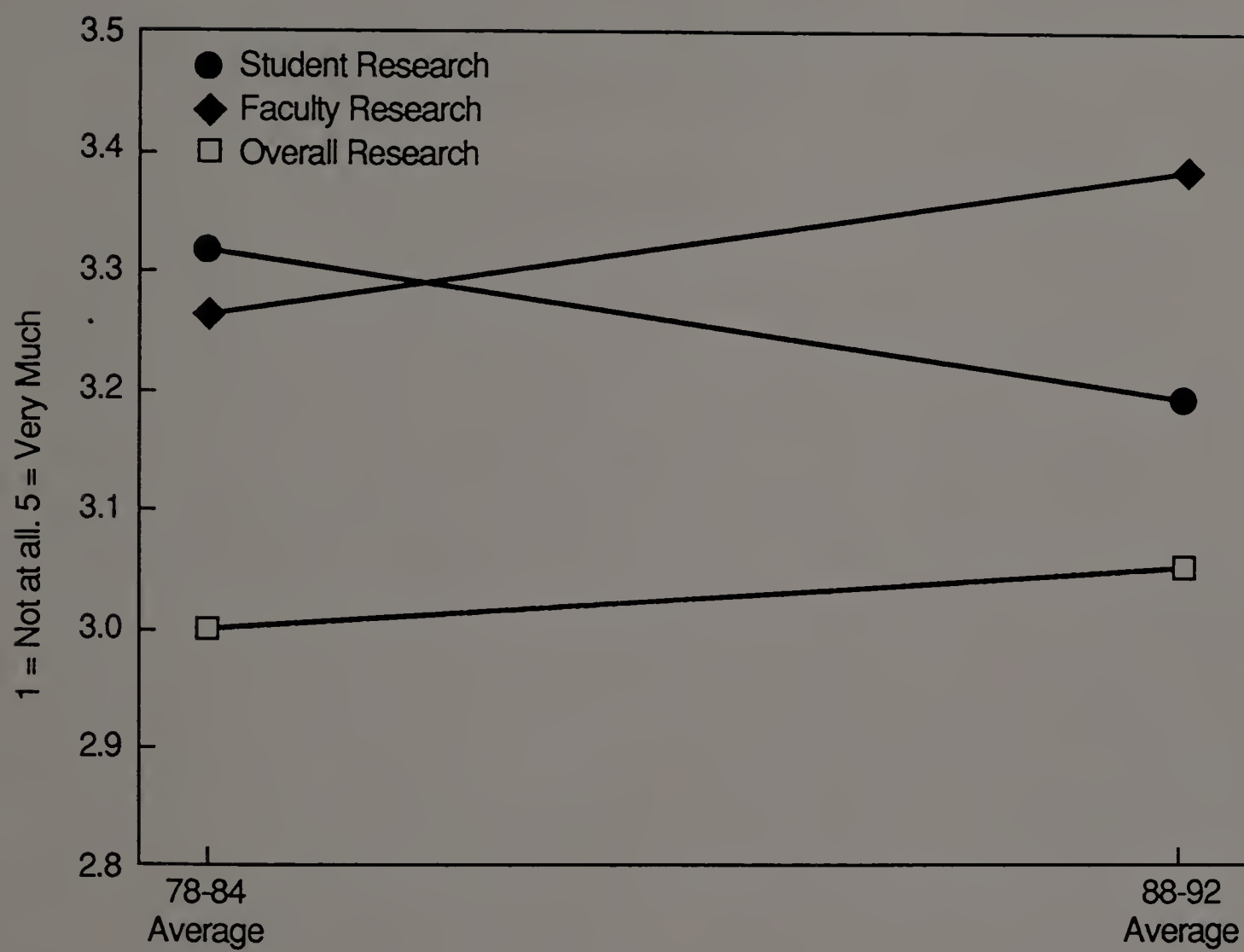


Figure 4. Institutional Plan's promotion of research

Question 26 (a)-(f): Evaluate the importance of the following in successfully following the Institutional Plan: (a) funds, (b) release time, (c) clerical support, (d) computer support, (e) facilities and office space, and (f) administrative support. All variables for this question were ranked consistently higher by the 1988-1992 group than the 1978-1984 group, with the lowest rating by the 1988-1992 group being 3.58 for "facilities and office space" and the highest rating for "administrative support" at 4.33. The only change in order of importance was for "facilities and office space," which was initially ranked fourth in importance but dropped to last in importance for the 1988-1992 group of Associates.

"Administrative support" was ranked highest by all, followed by "release time" and then "funds." (See Table 14 and Figures 5 and 6.)

Question 27: How effective are NIH controls in ensuring the Institutional Plan is followed? As noted in Table 15, there was only a slight difference between the average rating given by the 1978-1984 group and that given by the 1988-1992 group, rising from 2.26 to 2.37. A total of 36.8% of the 1978-1984 group, however, gave the lowest rating of 1, compared to only 18% who did so out of the 1988-1992 group.

Questions 28, 30, 33, and 32: How often did you contact the NIH after your return? How cooperative is the

Table 14. Question 26 (a)-(f): Evaluate the importance of the following in successfully following the Institutional Plan: (a) funds, (b) release time, (c) clerical support, (d) computer support, (e) facilities and office space, and (f) administrative support.

Year of Participation	Funds	Release Time	Clerical Support	Computer Support	Facilities/ Office Space	Admin. Support
1978	4	4	4	4	5	5
1978	3	2	3	4	5	3
1979	3	5	3	3	5	3
1979	2	2	2	2	2	2
1980	1	1	1	1	1	1
1980	1	3	1	1	1	1
1982	5	5	5	5	5	5
1982	4	4	4	4	4	4
1982	5	5	1	1	1	5
1983	4	4	4	4	4	4
1983	5	5	4	5	4	4
1983	0	0	0	0	3	5
1983	4	4	4	3	4	5
1983	3	3	3	3	3	3
1984	5	3	3	3	2	5
1984	1	4	1	1	1	4
1984	0	0	0	0	0	0
1984	1	1	1	1	1	1
1984	3	3	3	4	4	5
1988	5	5	5	4	5	5
1988	4	3	2	2	3	4
1988	5	4	5	5	5	5
1988	5	5	4	4	5	5
1989	1	4	1	5	1	3
1989	3	5	3	2	2	4
1989	5	5	4	4	5	5
1990	4	4	4	4	4	4
1990	1	1	1	1	1	1
1990	5	5	5	5	3	5
1990	5	5	5	5	5	5
1990	2	3	5	5	5	5
1991	5	5	5	4	4	4
1991	3	3	1	2	1	2
1991	2	1	2	3	2	3
1991	5	5	3	3	3	5
1991	4	1	1	1	1	4
1991	5	5	5	5	5	5
1992	5	5	4	3	3	5
1992	5	4	4	5	5	5
1992	5	5	5	5	5	5
1992	5	5	5	5	5	5
1992	5	5	4	5	4	5
1992	3	5	4	4	4	5
'78-'84 Average	3.18	3.41	2.76	2.88	3.06	3.61
'88-'92 Average	4.04	4.08	3.63	3.79	3.58	4.33
Average all years	3.68	3.80	3.27	3.41	3.36	4.02

1=Not at all, 5=Very much

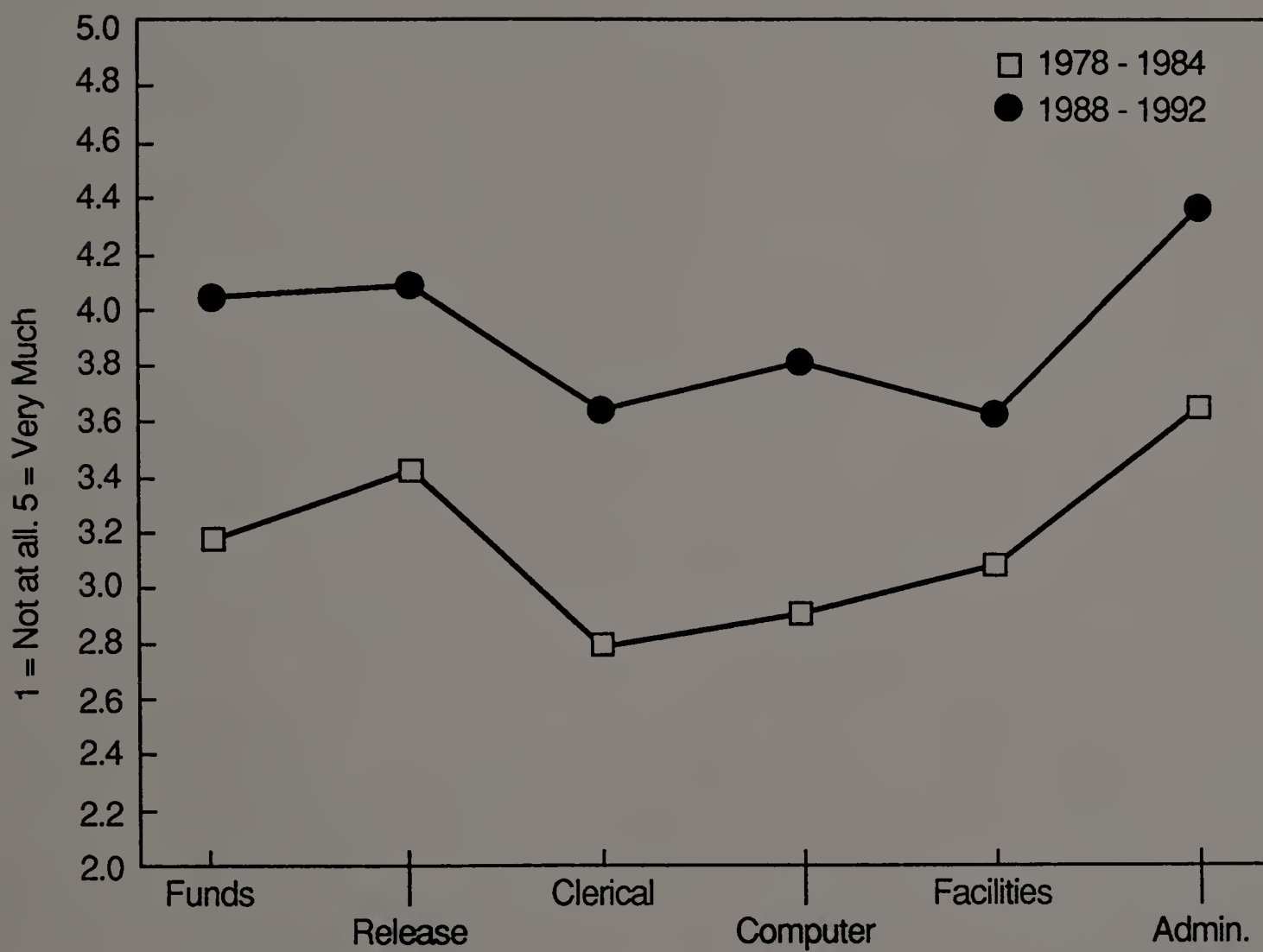


Figure 5. Importance to following the Institutional Plan (A)

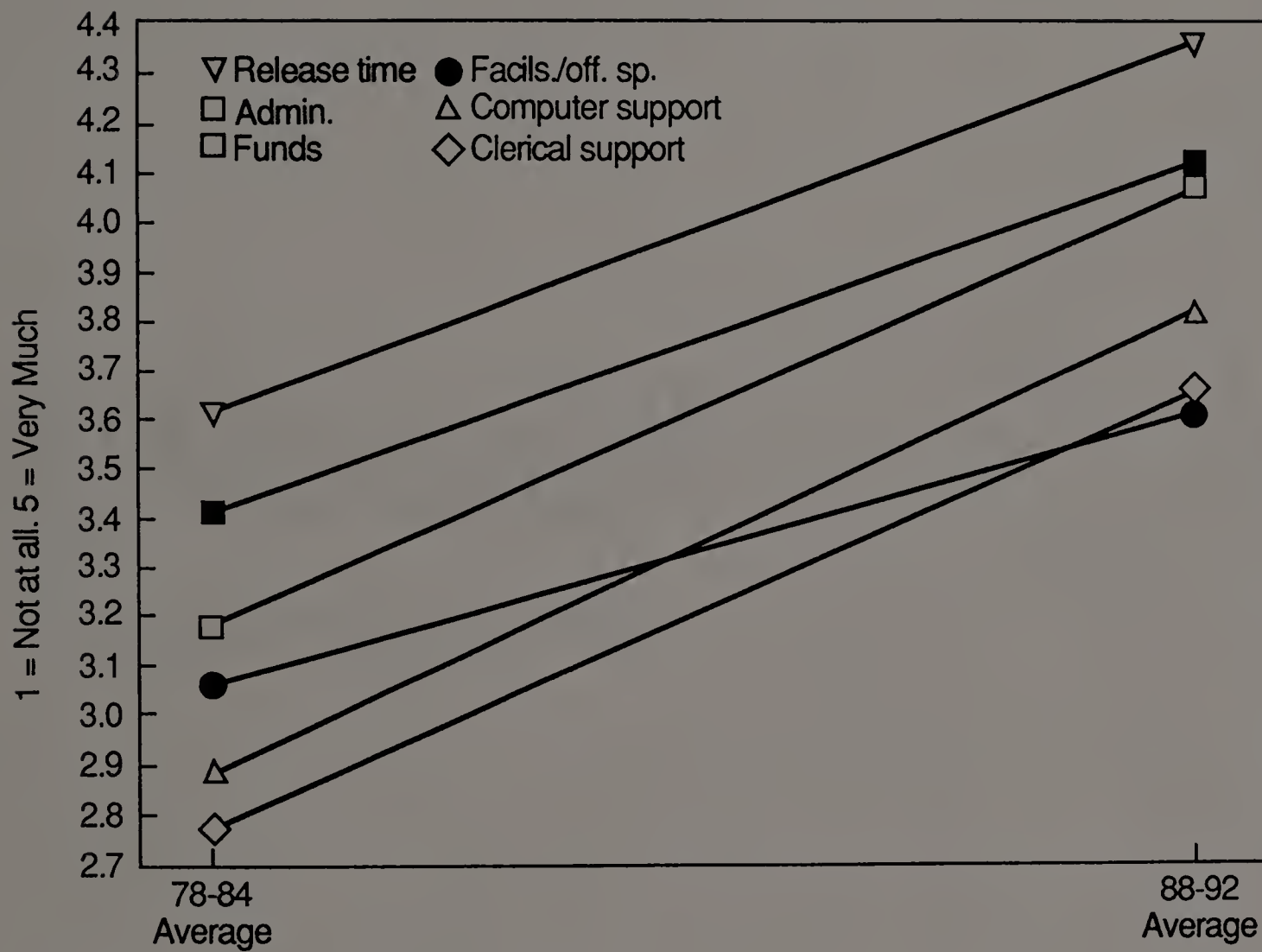


Figure 6. Importance to following the Institutional Plan (B)

Table 15. Question 27: How effective are NIH controls in ensuring the Institutional Plan is followed?

Year of Participation	1 = Not at all 5 = Very much
1978	2
1978	3
1979	2
1979	2
1980	1
1980	1
1982	5
1982	2
1982	1
1983	3
1983	4
1983	3
1983	1
1983	1
1984	1
1984	4
1984	1
1984	3
1984	3

Average

2.26

Year of Participation	1 = Not at all 5 = Very much
1988	2
1988	3
1988	2
1988	0
1989	2
1989	3
1989	3
1990	3
1990	1
1990	3
1990	1
1990	1
1991	2
1991	2
1991	3
1991	2
1991	1
1991	3
1991	3
1992	3
1992	4
1992	2
1992	3
1992	5
1992	0

Average

2.45

Average of all years

2.37

NIH in response to your requests? How often have you used NIH technical assistance? How would you rate the quality of NIH technical assistance? Frequency of National Institutes of Health (NIH) contact dropped somewhat between the two periods, from 3.58 to 3.48, as did use of technical assistance (3.23 to 2.91). Technical assistance quality also dropped slightly, from 3.65 to 3.59, but was still over the norm. Ranking of NIH cooperativeness, on the other hand, rose from 3.83 to 4.40. (See Table 16 and Figure 7.)

Question 29: How would you evaluate NIH followup support? Table 17 illustrates the Associates belonging to the 1978-1984 group rated NIH's followup support below average, at 2.61; the 1988-1992 group rated it at 3.29. During 1992, there was a noticeable peaking of NIH followup support. This corresponded to a staff increase at NIH during this period. Again, a low during 1991 was visible, which relates to the transitional period and staff turnover experienced by NIH, as previously mentioned.

Question 31 (a)-(f): Evaluate the usefulness of the following in improving NIH followup support: (a) newsletter, (b) regular update meetings, (c) ongoing regional workshops, (d) regular national workshops, (e) on-line computer communications, and (f) participant networking. All methods were rated to be of higher utility by the 1988-1992 group than by the 1978-1984 group, with update meetings ranked

Table 16. Questions 28, 30, 32, and 33: How often did you contact the NIH after your return?

How cooperative is the NIH in response to your requests?

How often have you used NIH technical assistance?

How would you rate the quality of NIH technical assistance?

Year of Participation	NIH Contact	NIH Cooperation	Use of NIH Tech. Assist.	Tech. Assist. Quality
1978	4	5	3	3
1978	2	3	2	3
1979	5	5	3	4
1979	4	4	4	4
1980	2	5	2	4
1980	3	0	3	3
1982	5	3	4	4
1982	3	3	3	3
1982	3	4	3	3
1983	3	5	3	3
1983	4	3	3	4
1983	4	5	5	5
1983	3	3	4	3
1983	4	3	0	0
1984	3	3	3	3
1984	4	5	5	5
1984	4	3	2	0
1984	3	3	3	3
1984	5	4	4	5
1988	4	4	4	4
1988	3	4	3	3
1988	3	5	3	4
1988	4	5	3	2
1989	4	4	4	5
1989	4	5	3	3
1989	4	4	3	3
1990	4	5	3	3
1990	3	0	2	2
1990	5	4	5	5
1990	1	4	3	4
1990	1	5	3	3
1991	3	4	2	2
1991	0	3	2	4
1991	4	4	3	3
1991	3	4	2	4
1991	5	5	5	5
1991	4	5	3	5
1992	0	0	2	3
1992	3	5	2	4
1992	3	4	1	3
1992	0	0	0	0
1992	5	5	3	5
1992	3	0	0	0
'78-'84 Average	3.58	3.83	3.28	3.65
'88-'92 Average	3.48	4.40	2.91	3.59
Average all years	3.53	4.13	3.08	3.62

1=Not at all, 5=Very much

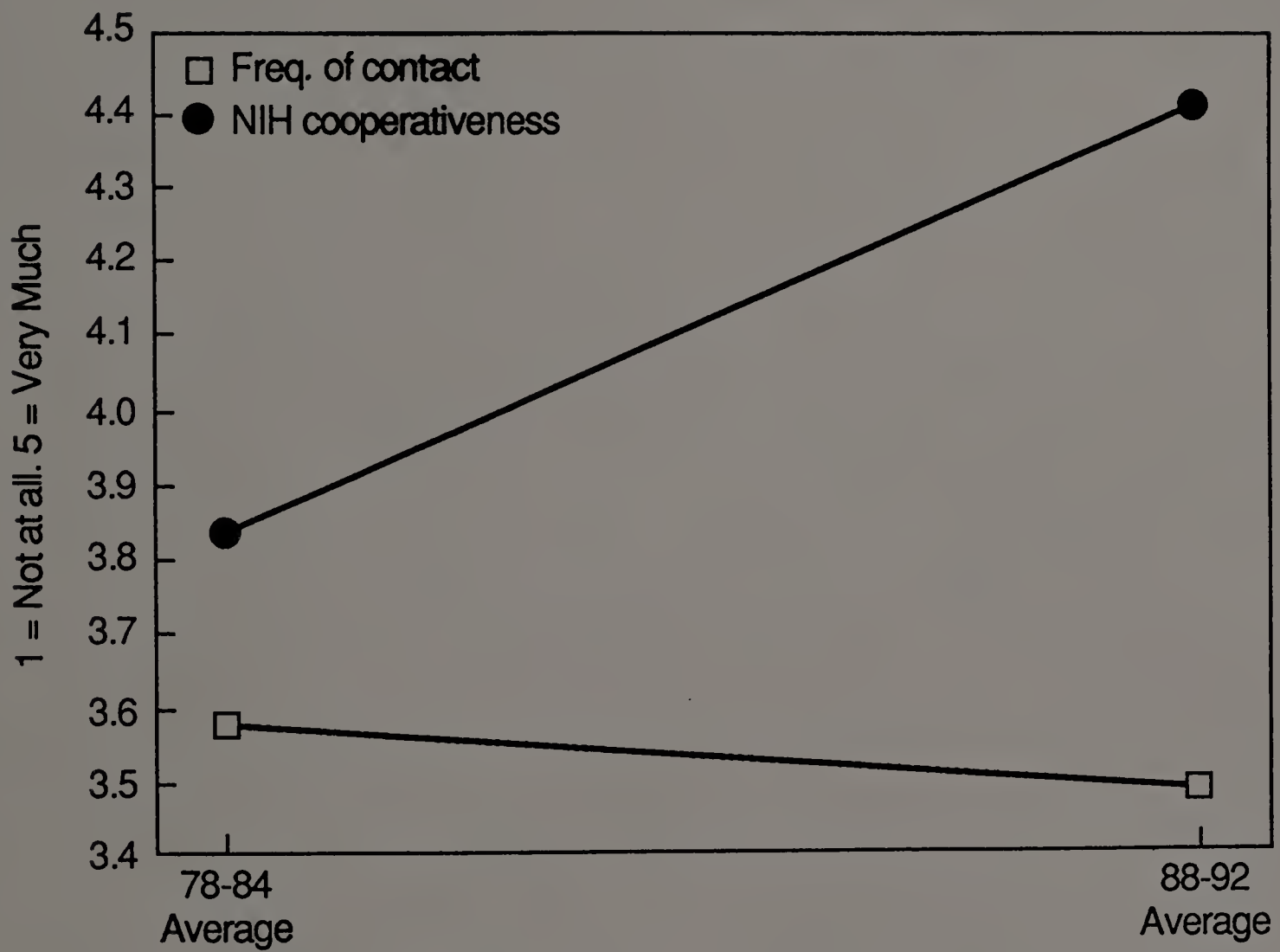


Figure 7. Frequency of NIH contact and cooperation

Table 17. Question 29: How would you evaluate NIH followup support?

Year of Participation	1=Poor 5=Excellent
1978	2
1978	3
1979	3
1979	4
1980	1
1980	0
1982	2
1982	3
1982	2
1983	3
1983	3
1983	4
1983	1
1983	1
1984	3
1984	4
1984	2
1984	3
1984	3
Average	2.61
1988	3
1988	4
1988	3
1988	3
1989	4
1989	3
1989	3
1990	5
1990	1
1990	3
1990	3
1990	2
1991	2
1991	2
1991	3
1991	3
1991	3
1991	5
1992	0
1992	5
1992	4
1992	0
1992	5
1992	0
Average	3.29
Average of all years	2.97

first by both. The 1988-1992 group ranked all methods at similar values, between 3.96 and 4.52. The newsletter was considered the least useful by the both groups. (See Table 18 and Figure 8.)

Question 35: Were you or someone else from your institution invited to become a member of a study section? As noted in Table 19, a total of 63.16% of the 1978-1984 group replied "Yes", compared to 54.17% of the 1988-1992 group. Overall, 58.14% replied "Yes".

Question 36: Did your institution receive any grants as a direct result of the EA Program? Table 20 illustrates a total of 68.42% of the 1978-1984 group received grants as a result of the EA Program, versus only 41.67% of the 1988-1992 group. Overall, 53.59% reported receiving grants as a direct result of the EA Program.

Questions 34 and 41: To what extent has your institution benefited from your relationship with the NIH? To what extent has the EA Program contributed to increases in funding at your institution? In both cases, the 1978-1984 group of Associates reported higher values than the 1988-1992 group. The extent of institutional benefit dropped from 4.05 to 3.61, while EA contribution to increased funding dropped from 3.42 to 3.14, at roughly the same rate. The two variables are strongly correlated. (See Table 21 and Figure 9.)

Table 18. Question 31 (a)-(f): Evaluate the usefulness of the following in improving NIH followup support: (a) newsletter, (b) regular update meetings, (c) ongoing regional workshops, (d) regular national workshops, (e) on-line computer communications, and (f) networking among participants.

Year of Participation	Newsletter	Update Meetings	Workshops Regional	Workshops National	Comm. via Computer	Networking
1978	4	4	4	4	3	3
1978	4	4	4	4	4	4
1979	3	5	3	3	5	5
1979	4	4	4	4	0	4
1980	3	4	4	3	4	5
1980	1	2	2	2	4	4
1982	5	5	5	5	5	5
1982	4	4	4	4	4	4
1982	5	3	5	3	3	5
1983	5	5	5	5	5	5
1983	1	3	3	5	6	2
1983	1	3	3	5	3	4
1983	2	4	2	4	3	4
1983	4	5	5	5	2	2
1984	3	6	5	5	3	4
1984	3	4	0	3	3	3
1984	5	5	4	4	3	5
1984	3	5	3	5	3	3
1984	4	5	5	1	3	3
1988	4	5	4	5	5	3
1988	3	4	4	4	3	2
1988	3	4	5	5	5	5
1988	4	5	5	5	5	3
1989	5	5	5	5	5	5
1989	5	5	5	5	5	5
1989	4	5	5	5	5	5
1990	3	4	4	3	3	3
1990	5	5	5	5	5	5
1990	3	5	3	5	4	4
1990	4	3	4	2	2	5
1990	5	3	5	5	5	4
1991	3	4	3	3	5	5
1991	5	5	5	5	5	5
1991	5	5	5	5	5	5
1991	5	5	4	5	5	4
1991	5	5	5	5	5	5
1991	3	5	5	5	4	5
1992	1	4	4	4	0	4
1992	4	4	4	4	5	5
1992	3	4	5	4	2	4
1992	0	0	0	0	0	0
1992	5	5	5	4	5	5
1992	4	5	4	5	4	5
'78-'84 Average	3.37	4.16	3.89	3.89	3.61	3.89
'88-'92 Average	3.96	4.52	4.48	4.48	4.41	4.39
Average all years	3.69	4.36	4.22	4.21	4.05	4.17

1=Not at all, 5=Very much

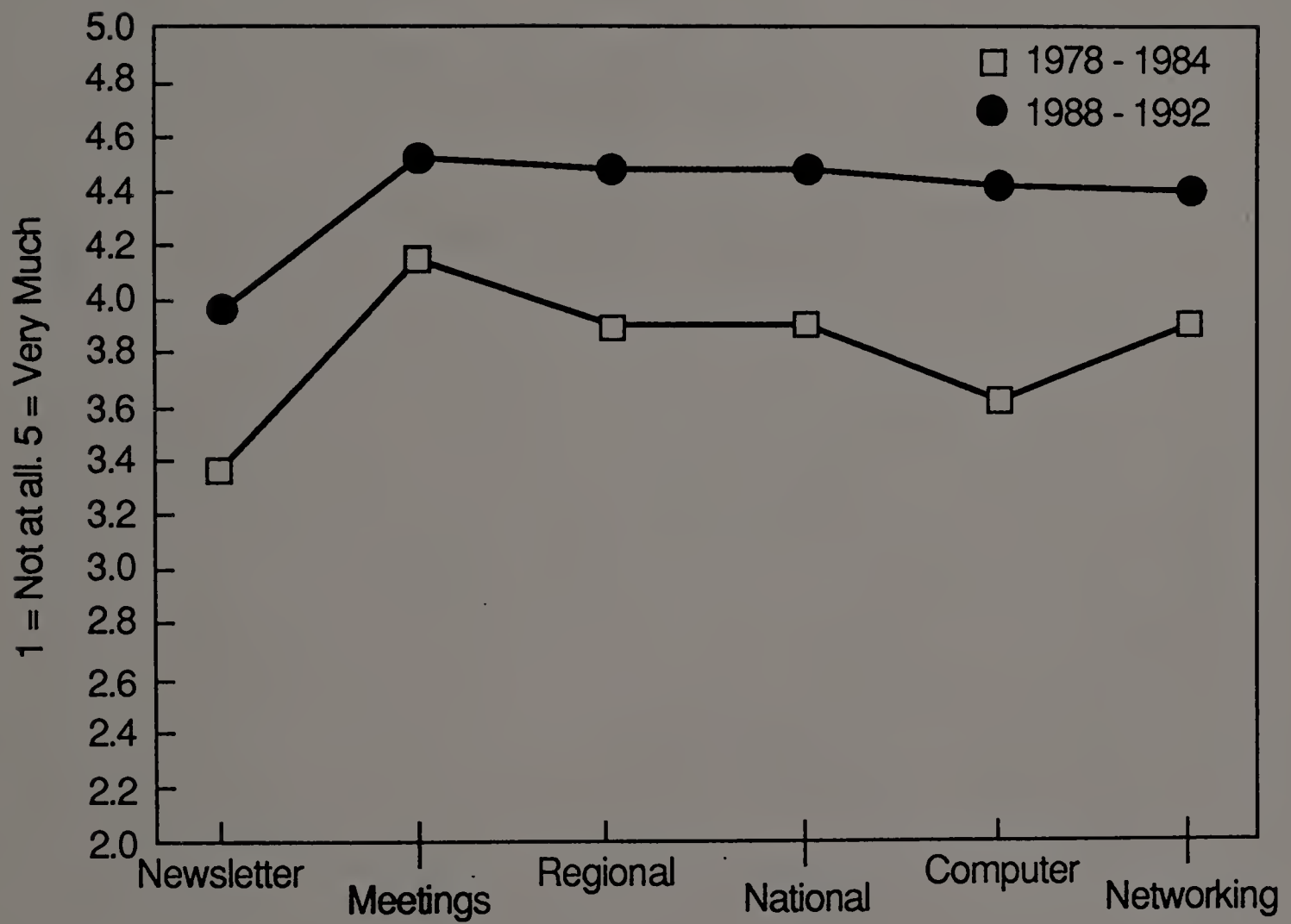


Figure 8. Usefulness in NIH followup support

Table 21. Questions 34 and 41: To what extent has your institution benefited from your relationship with the NIH?

To what extent has the EA Program contributed to increases in funding at your institution?

Year of Participation	Extent of Benefit	Increased Funding
1978	5	4
1978	3	3
1979	5	5
1979	3	3
1980	5	1
1980	3	3
1982	4	1
1982	4	3
1982	4	1
1983	3	3
1983	5	5
1983	4	5
1983	5	5
1983	4	3
1984	3	3
1984	5	6
1984	3	3
1984	5	5
1984	4	4
1988	5	3
1988	4	4
1988	3	5
1988	3	5
1989	5	4
1989	5	4
1989	4	4
1990	5	5
1990	2	1
1990	5	3
1990	2	2
1990	1	1
1991	3	2
1991	4	1
1991	4	4
1991	4	0
1991	4	3
1991	3	3
1992	4	0
1992	4	4
1992	1	1
1992	0	0
1992	4	3
1992	4	4
'78-'84 Average	4.05	3.42
'88-'92 Average	3.61	3.14
Average all years	3.81	3.28

1=Not at all, 5=Very much

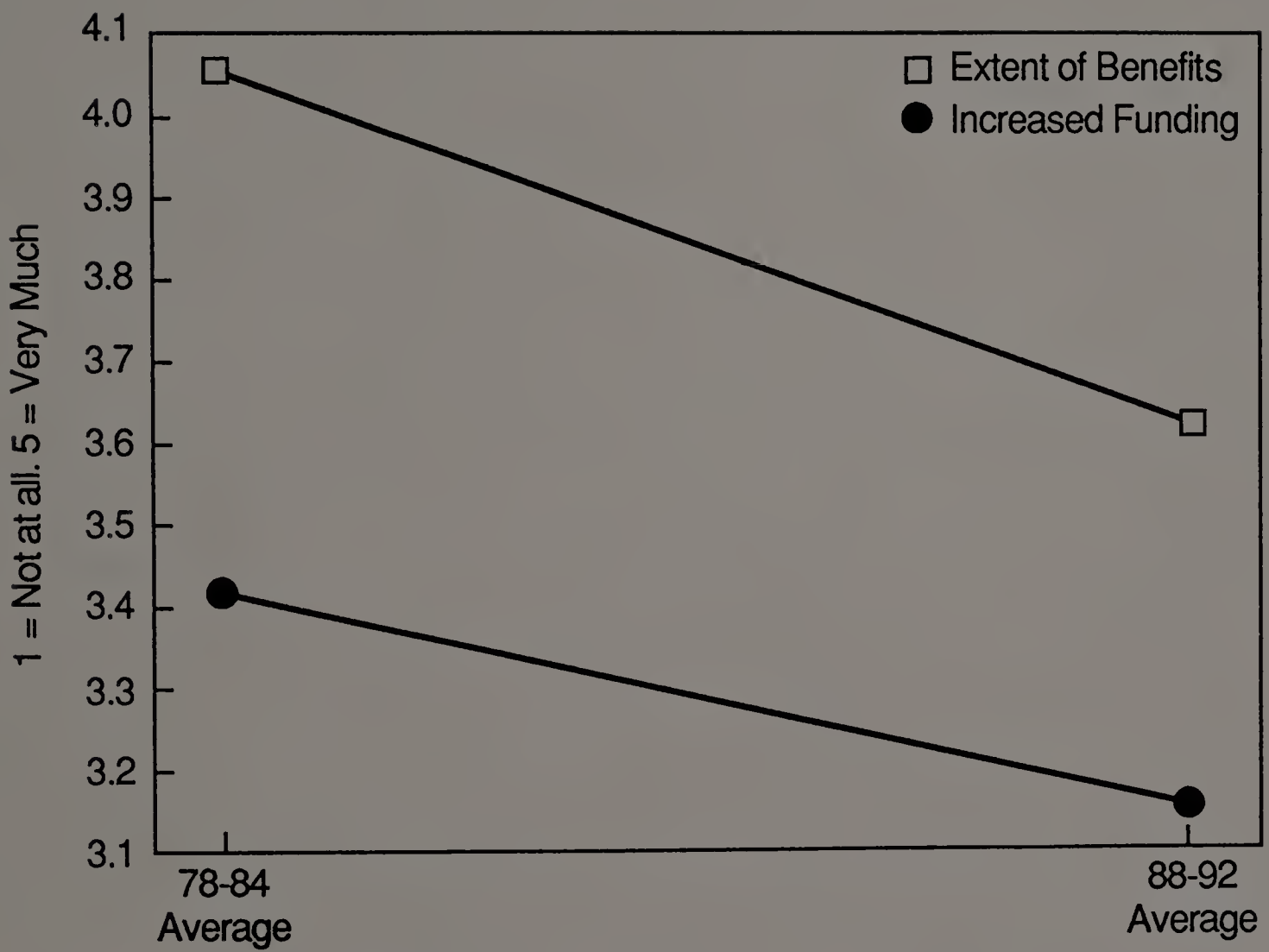


Figure 9. Benefits and increased funding

Question 42 (a)-(f): To what extent did the following factors contribute to the EA Program's overall success:
(a) funds, (b) release time, (c) clerical support,
(d) computer support and office equipment, (e) facilities and office space, and (f) administrative support? Again, the 1988-1992 group reported higher values than the 1978-1984 group for all elements. "Administrative support" had the highest ranking for the 1978-1984 group (at 3.8) but was tied in first place at 4.0 with "release time" by the 1988-1992 group. "Release time" was ranked third in importance by the 1978-1984 group, at 2.87. "Funds" ranked a consistent second and "computer support and office equipment" rose from last to third with time. (See Table 22 and Figures 10 and 11.)

Questions 43-45: Did your participation in the EA Program contribute to an increase in the number of federal, state, local, and private proposals written? Did your participation in the EA Program contribute to an increase in the number of federal, state, local, and private grants approved? Did your participation in the EA Program contribute to an increase in the number of federal, state, local, and private grants funded? The EA Program made the greatest contributions to proposals written, funding approved, and funding granted in the federal sector. The rankings were among the highest scores in the entire questionnaire. EA Program participation contributed to

Table 22. Question 42 (a)-(f): To what extent did the following factors contribute to the EA Program's overall success: (a) funds, (b) release time, (c) clerical support, (d) computer support and office equipment, (e) facilities and office space, and (f) administrative support?

Year of Participation	Funds	Release Time	Support-Clerical	Comp./Equip.	Facilities	Support-Admin.
1978	2	2	4	4	4	5
1978	3	2	3	4	5	3
1979	4	2	3	3	3	3
1979	3	3	3	3	3	3
1980	1	1	1	1	1	1
1980	0	0	0	0	0	0
1982	3	3	3	3	3	3
1982	4	4	4	2	4	4
1982	5	5	2	2	2	5
1983	2	1	1	2	2	5
1983	5	5	5	5	5	5
1983	0	0	0	0	0	0
1983	4	4	4	3	3	5
1983	0	0	0	0	0	0
1984	4	2	2	2	2	5
1984	1	4	1	1	1	4
1984	0	0	0	0	0	0
1984	1	1	1	1	1	1
1984	4	4	5	4	4	5
1988	4	4	4	4	4	4
1988	4	5	3	3	3	3
1988	5	5	5	5	5	5
1988	5	5	3	3	5	4
1989	4	4	1	4	1	5
1989	4	4	4	4	4	4
1989	5	5	5	5	5	5
1990	4	4	4	4	4	4
1990	0	0	0	0	0	0
1990	2	4	4	4	4	4
1990	5	5	5	5	5	5
1990	1	1	1	1	1	1
1991	0	0	0	0	0	0
1991	1	3	1	3	1	1
1991	5	5	4	4	4	5
1991	0	0	0	0	0	0
1991	3	1	1	1	1	4
1991	5	5	5	5	5	5
1992	0	0	0	0	0	0
1992	4	4	4	4	4	4
1992	0	0	0	0	0	0
1992	0	0	0	0	0	0
1992	3	3	4	5	5	4
1992	5	5	2	2	3	5
'78-'84 Average	3.07	2.87	2.80	2.67	2.87	3.80
'88-'92 Average	3.83	4.00	3.33	3.67	3.56	4.00
Average all years	3.48	3.48	3.09	3.21	3.24	3.91

1=Not at all, 5=Very much

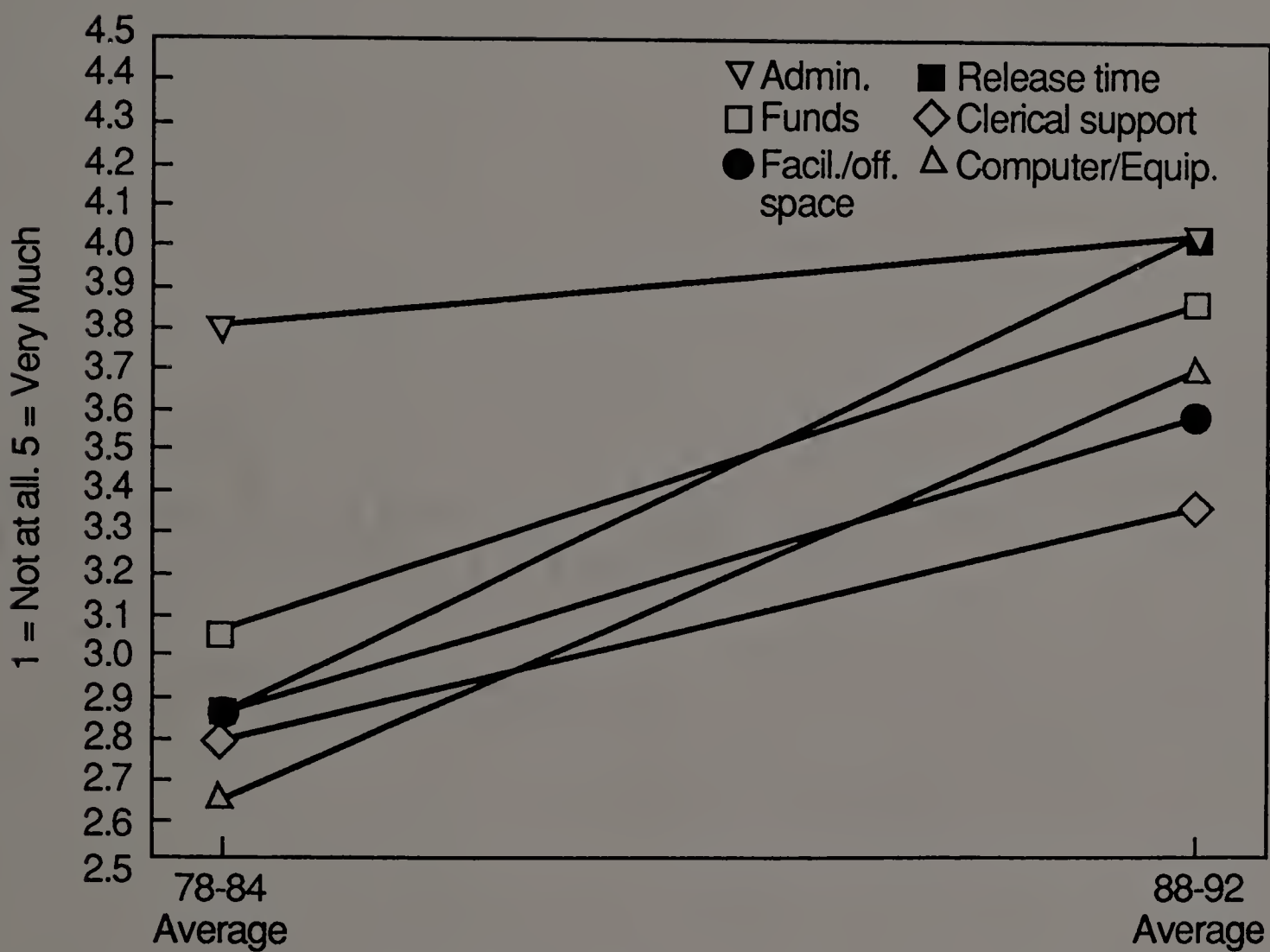


Figure 10. Contribution to EA Program's success (A)

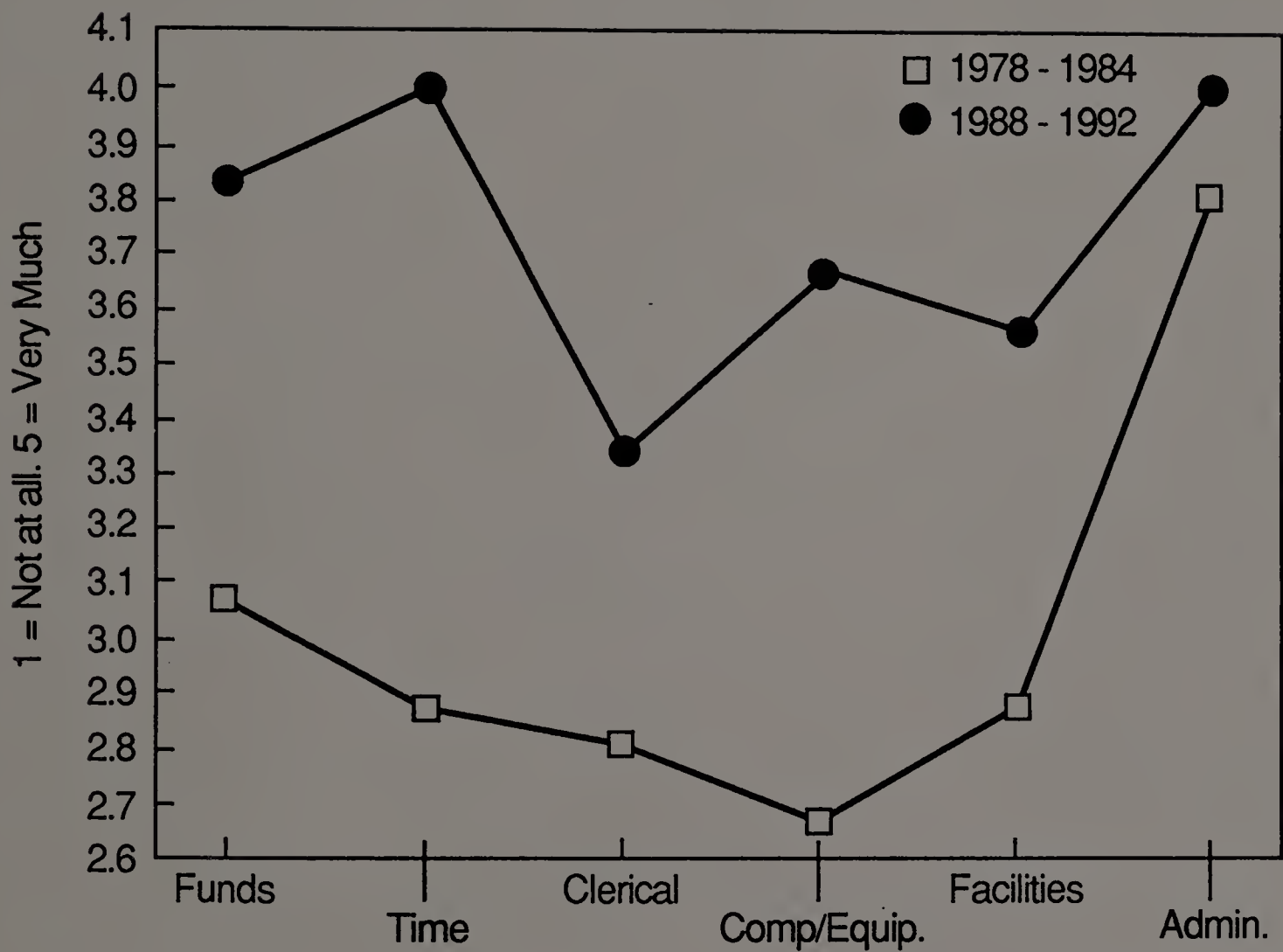


Figure 11. Contribution to EA Program's success (B)

increased state funding granted (which ranked second overall). Local EA Program participation had only a minimal impact on private funding and had the least impact on local funding. Overall, proposals written ranked highest, followed by grants approved, and, lastly, contribution to grants funded. Also, EA Program participation was rated as contributing less in all areas by the 1988-1992 group than by the 1978-1984 group. (See Table 23 and Figures 12, 13, and 14.)

Question 46 (a)-(g): Given more funds to further the success of the EA Program at your institution, how would you distribute them among the following categories:

(a) clerical support, (b) administrative support, (c) computer support and office equipment, (d) release time, (e) travel expenses, (f) continuing EA education, and (g) marketing efforts? Both the first group (1978-1984) and the second group (1988-1992) of Associates ranked "release time" as the most important area for funding. The 1978-1984 group ranked "continuing EA education" and "administrative support" to be second. The 1988-1992 group ranked "continuing EA education" second as well but "administrative support" came in last. "Computer support and office equipment" came in third place for the 1988-1992 group. "Marketing efforts" were ranked last place with the 1978-1984 group, but rose to fourth place with the 1988-1992 group. (See Table 24 and Figure 15.)

Table 23. Questions 43-45: Did your participation in the EA Program contribute to an increase in the number of federal, state, local, and private proposals written? Did your participation in the EA Program contribute to an increase in the number of federal, state, local, and private grants approved? Did your participation in the EA Program contribute to an increase in the number of federal, state, local, and private grants funded?

Year of Participation	Participation in EA Program contributed to an increase in the number of				Participation in EA Program contributed to an increase in the number of				Participation in EA Program contributed to an increase in the number of			
	Federal Proposals Written	State Proposals Written	Local Proposals Written	Private Proposals Written	Federal Grants Approved	State Grants Approved	Local Grants Approved	Private Grants Approved	Federal Grants Funded	State Grants Funded	Local Grants Funded	Private Grants Funded
1978	4	3	2	2	4	1	2	2	4	1	2	2
1978	3	3	3	3	3	3	3	3	3	3	3	3
1979	5	2	2	5	5	1	1	5	5	1	1	5
1979	0	3	1	1	5	3	3	1	2	2	2	2
1980	3	3	3	3	4	4	4	4	4	4	4	4
1980	6	1	1	4	0	1	1	4	0	0	0	0
1982	4	3	2	5	2	2	2	3	2	2	2	3
1982	3	3	3	3	3	3	3	3	3	3	3	3
1982	1	1	1	1	3	3	3	1	3	3	3	1
1983	4	3	2	3	3	2	2	3	3	2	2	3
1983	5	3	3	3	5	3	3	3	5	3	3	4
1983	5	4	3	3	5	4	3	3	5	4	3	3
1983	5	3	3	3	5	3	3	3	5	3	3	3
1983	5	3	3	3	5	3	3	3	5	3	3	3
1984	5	4	4	4	5	4	4	4	5	4	4	4
1984	5	4	4	4	5	4	4	4	5	4	4	4
1984	5	3	3	4	5	3	3	4	5	3	3	4
1984	5	5	5	5	5	5	5	5	5	5	5	5
1984	4	3	2	2	4	3	2	2	4	3	2	2
1988	4	4	3	3	3	2	2	2	3	2	2	2
1988	4	1	1	1	3	2	1	1	3	2	1	1
1988	5	5	3	2	5	5	3	2	5	5	3	2
1988	5	5	1	1	5	5	1	1	5	5	1	1
1988	4	1	3	4	4	0	3	3	4	0	3	3
1988	4	3	3	3	4	3	3	3	4	3	3	3
1988	4	2	2	2	4	2	2	2	4	2	2	2
1988	4	2	2	2	4	2	2	2	4	2	2	2
1990	5	5	5	5	5	5	5	5	5	5	5	5
1990	4	2	1	1	4	1	1	1	4	1	1	1
1990	4	1	1	1	4	1	1	1	4	1	1	1
1990	4	2	3	4	4	1	1	1	4	1	1	1
1990	1	1	1	1	1	1	1	1	1	1	1	1
1991	5	4	4	4	5	2	2	2	5	2	2	2
1991	5	1	5	1	5	1	1	1	5	1	1	1
1991	5	5	0	5	5	4	4	4	5	4	4	4
1991	3	0	3	0	0	0	0	0	0	0	0	0
1991	5	2	2	5	4	3	3	3	4	3	3	3
1991	4	3	1	1	4	3	3	3	4	3	3	3
1992	0	0	0	0	0	0	0	0	0	0	0	0
1992	4	0	0	3	4	1	1	1	4	1	1	1
1992	1	1	1	1	1	1	1	1	1	1	1	1
1992	0	0	0	0	0	0	0	0	0	0	0	0
1992	4	5	4	4	4	4	4	4	4	4	4	4
1992	4	1	3	1	4	0	0	0	4	0	0	0
78-84 Average	4.11	3.00	2.39	2.84	3.65	2.87	2.38	2.83	3.61	2.78	2.24	2.78
'88-'92 Average	4.00	2.50	2.65	2.60	3.40	2.33	2.61	2.16	3.21	2.35	2.20	1.94
Average all years	4.05	2.74	2.63	2.67	3.61	2.82	2.60	2.49	3.41	2.57	2.22	2.37

Shaded = 1978-1984, Unshaded=1988-1992
 1=Not at all, 5=Very much

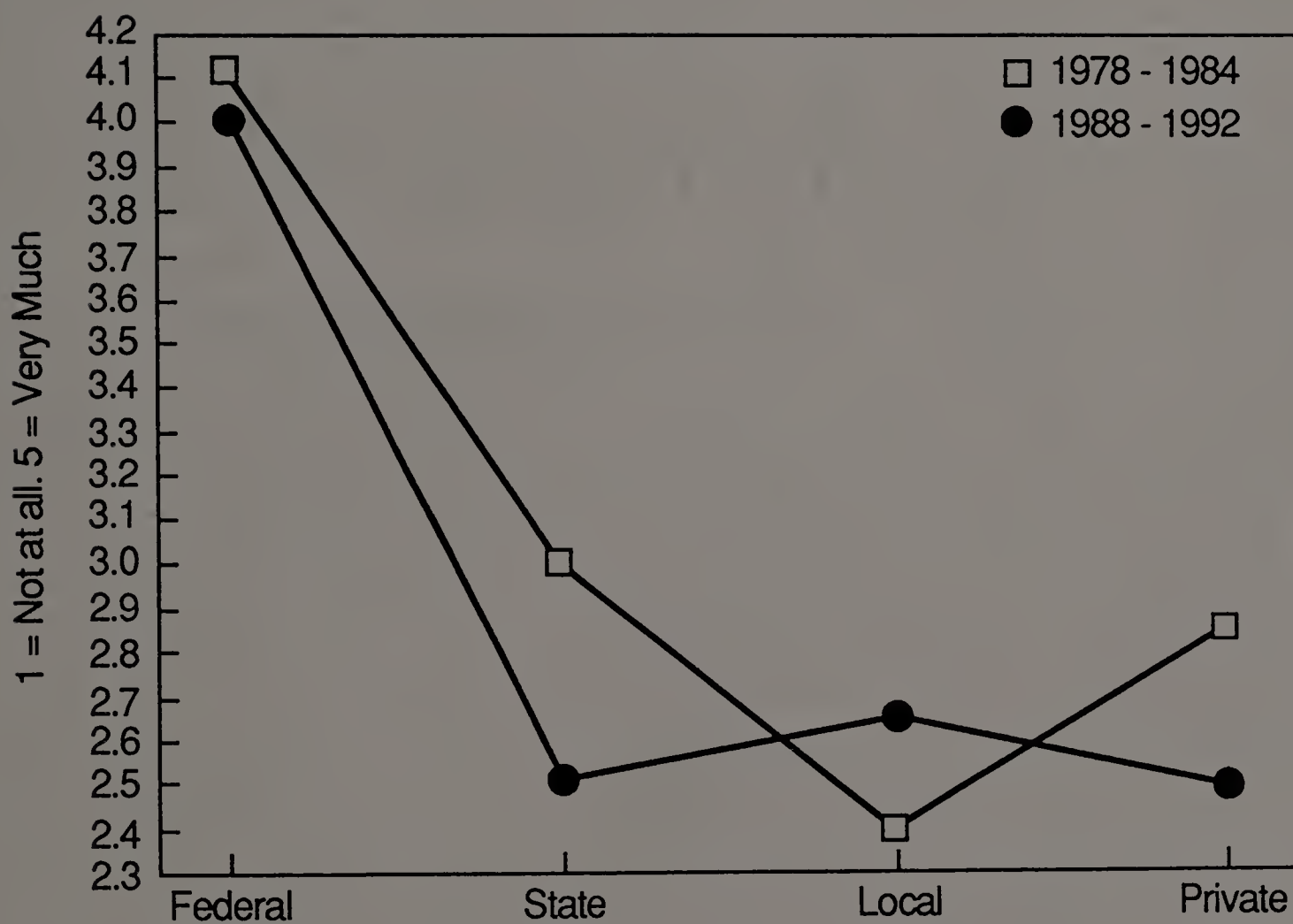


Figure 12. EA contribution to proposals written

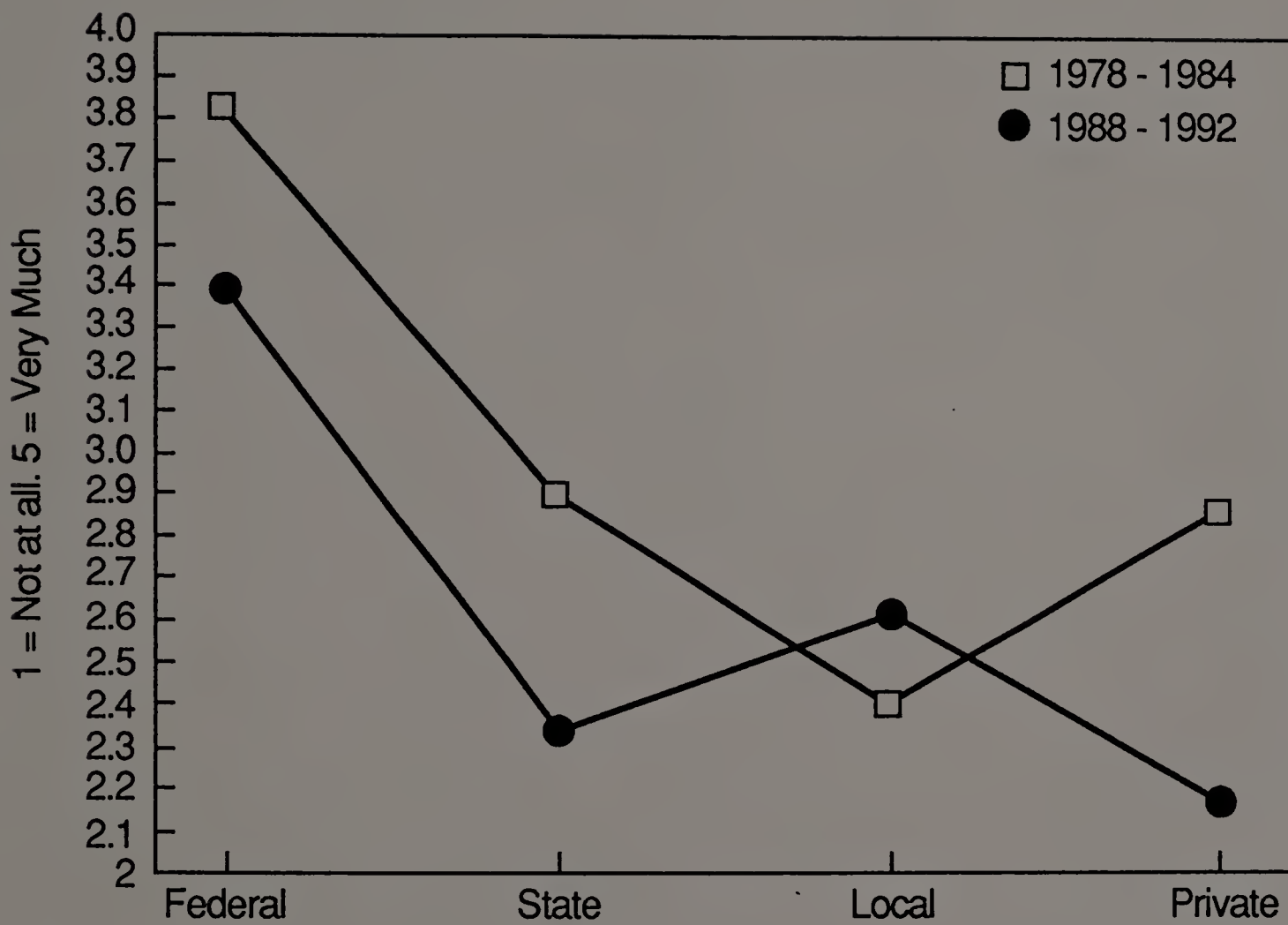


Figure 13. EA contribution to grants approved

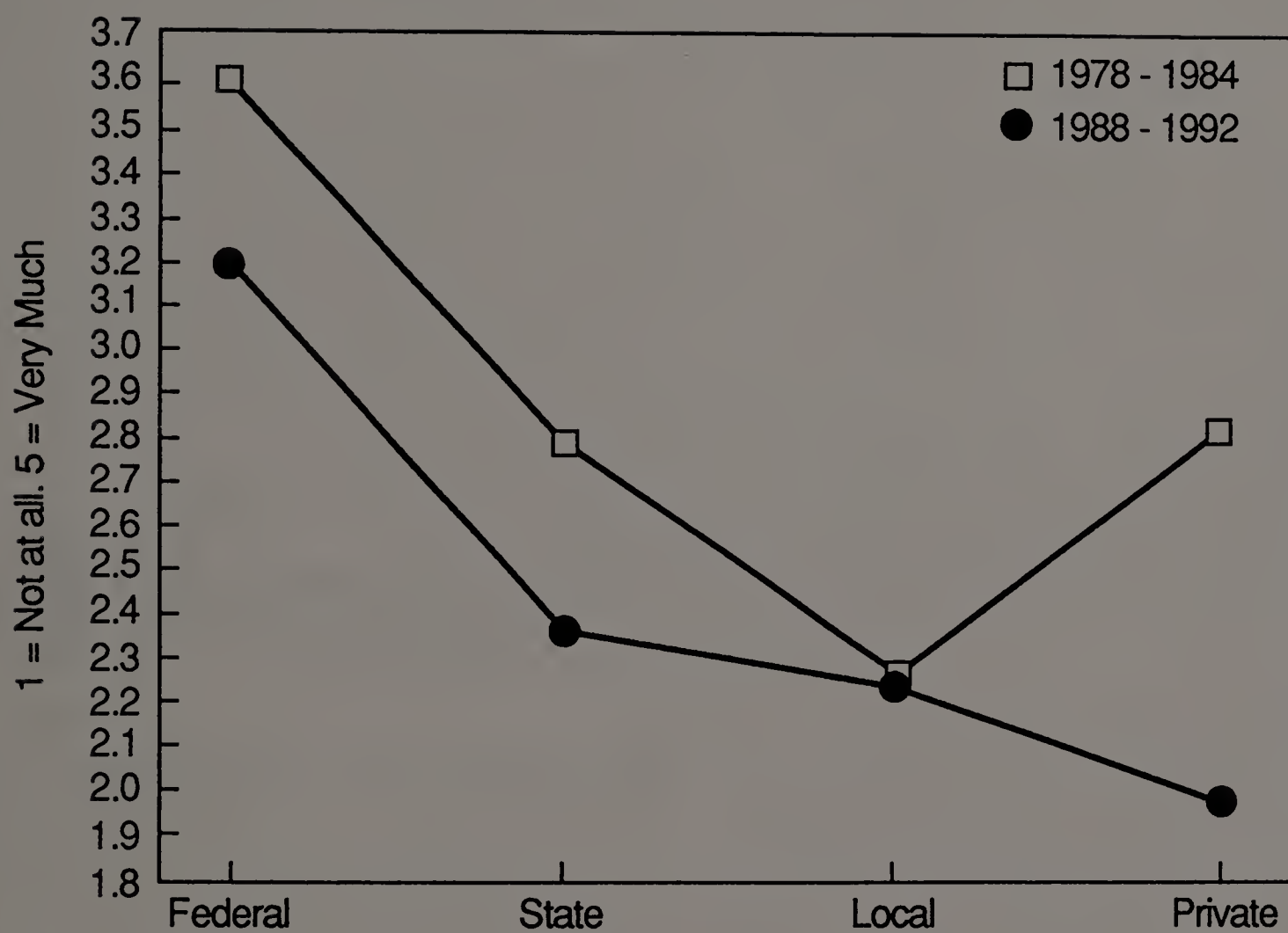


Figure 14. EA contribution to grants funded

Table 24. Question 46 (a)-(g): Given more funds to further the success of the EA Program at your institution, how would you distribute the funds among the following categories: (a) clerical support, (b) administrative support, (c) computer support and office equipment, (d) release time, (e) travel expenses, (f) continuing EA education, and (g) marketing efforts?

Clerical Support	Admn. Support	Computer/ Off. Equip.	Release Time	Travel Expenses	Cont'g EA Education	Marketing Efforts
3	5	3	4	3	2	2
3	3	5	4	5	3	3
3	4	4	5	5	5	3
3	4	4	5	5	5	4
3	1	4	4	2	2	4
4	4	2	5	3	3	4
4	5	4	4	4	4	5
2	2	2	4	3	4	3
3	2	3	5	2	5	0
4	4	4	1	2	3	4
3	4	4	4	5	5	5
5	3	3	5	4	2	2
5	5	2	3	3	3	3
5	1	1	5	1	5	1
2	4	4	4	3	5	2
2	5	2	5	4	4	2
5	5	5	5	5	2	2
4	4	4	5	3	3	3
1	4	5	5	5	4	3
4	5	4	4	4	5	4
2	3	3	4	4	3	2
2	3	5	5	4	5	5
0	5	3	5	3	5	5
5	5	4	5	4	5	5
4	2	4	5	3	5	4
3	5	5	5	4	4	3
3	4	3	3	4	4	2
5	1	3	5	1	4	1
3	4	4	5	3	4	4
4	2	5	5	4	4	4
4	4	4	5	5	4	2
0	0	0	0	0	0	0
4	4	5	5	4	5	4
0	0	0	0	0	0	0
4	3	5	5	4	4	3
5	5	2	4	3	3	5
0	0	0	0	0	0	0
3	3	3	5	5	5	4
3	2	2	4	3	2	4
0	0	0	0	0	0	0
3	4	5	5	4	5	5
3	1	3	5	3	5	3
3.37	3.63	3.42	4.32	3.53	3.63	3.06
3.53	3.40	3.75	4.60	3.65	4.30	3.70
3.45	3.51	3.59	4.46	3.59	3.97	3.39

1=Not at all, 5=Very much

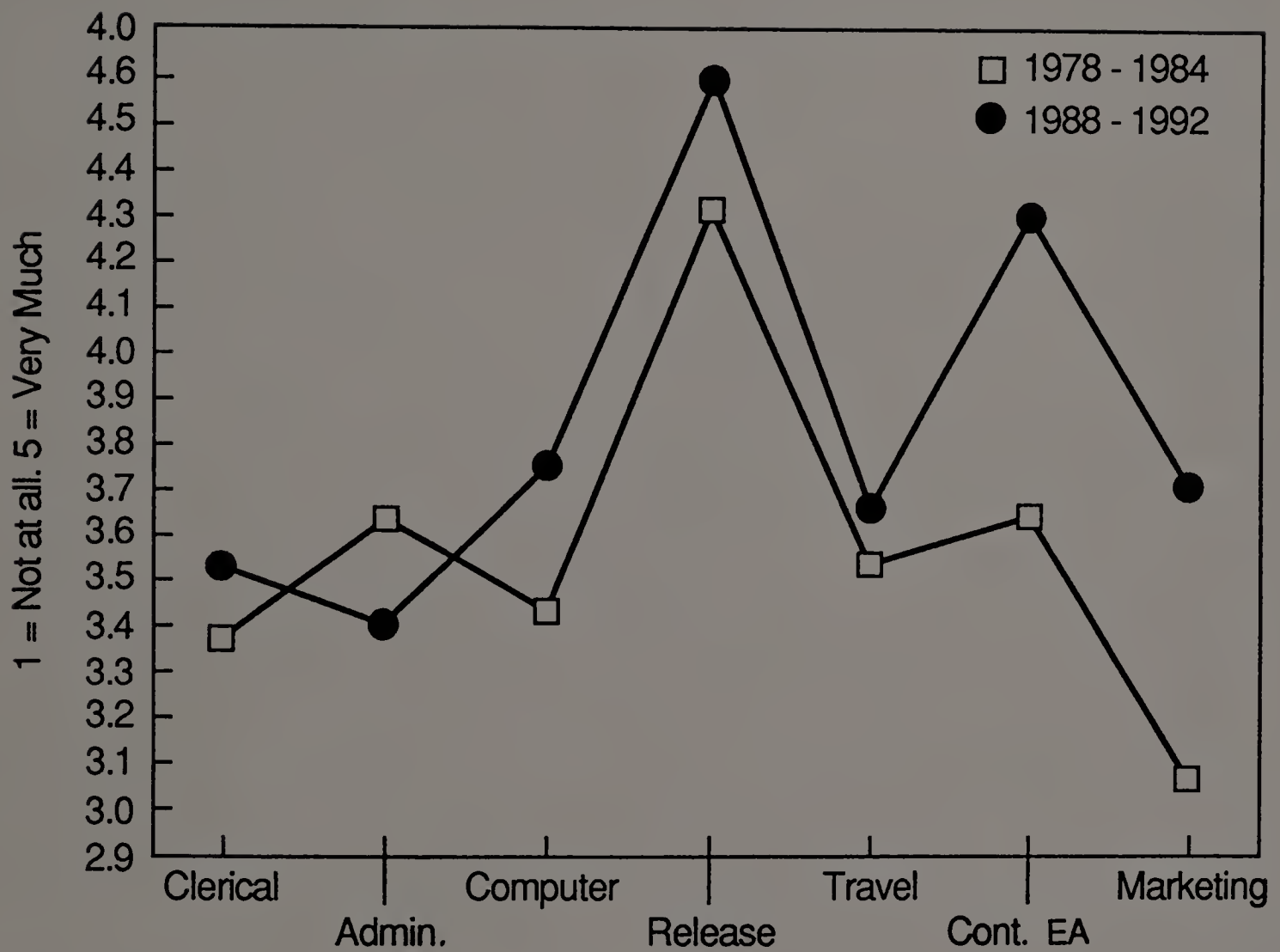


Figure 15. Distribution of further funds

Overview of the Data

It is worth noting those items with weighted averages that varied significantly between the two groups of Associates (see Table 25). Significant changes have been arbitrarily chosen to be those with an absolute value of 0.8 or more. This value corresponds to slightly less than 25% of the range between the lowest possible value ("1", since "0" denotes the absence of response except for "Yes"- "No" questions) and the highest ("5"). All such changes were positive, except for Question 37 concerning the extent students participated in NIH programs as a direct result of the EA Program, and Question 42(d), which gauges the benefit of participating in the EA Program upon increasing the number of private grants funded. Following is a list of the question items whose averaged responses were significantly higher for Associates who attended the EA Program during the second time period, 1988-1992:

- Question Items 14 (a), (b), and (d): The level of responsiveness of an Associate's institution in providing (a) adequate release time, (b) adequate clerical support, and (d) adequate computer support.
- Question Item 16: The responsiveness of an institution in its funding support of the EA Program.

Table 25. Significant changes (greater than 0.8 diff.) and significant high values over all (at least 3.8) between 1978-1984 and 1988-1992

**Significant changes (greater than 0.8 diff.)
Between '78-'84 and '88-'92**

Quest. No.	'78-'84	'88-'92	Total	Changes
14a	2.05	3.33	2.73	1.28
14b	1.84	2.82	2.37	0.98
14d	2.21	3.05	2.66	0.83
16	1.88	2.90	2.45	1.02
19	2.89	3.77	3.37	0.88
21	2.53	3.41	3.00	0.88
26a	3.18	4.04	3.68	0.87
26c	2.76	3.63	3.27	0.86
26d	2.88	3.79	3.41	0.91
31e	3.61	4.41	4.05	0.80
37	3.42	2.35	2.83	-1.07
42b	2.87	4.00	3.48	1.13
42d	2.67	3.67	3.21	1.00
45d	2.78	1.94	2.37	-0.84

**Significant high values over all (at least 3.8)
Between '78-'84 and '88-'92**

Quest. No.	'78-'84	'88-'92	Total	Changes
10	4.06	3.83	3.93	-0.22
11	4.21	3.79	3.98	-0.42
12	4.42	4.29	4.35	-0.13
26b	3.41	4.08	3.80	0.67
26f	3.61	4.33	4.02	0.72
30	3.83	4.40	4.13	0.57
31b	4.16	4.52	4.36	0.36
31c	3.89	4.48	4.22	0.59
31d	3.89	4.48	4.21	0.58
31e	3.61	4.41	4.05	0.80
31f	3.89	4.39	4.17	0.50
34	4.05	3.61	3.81	-0.44
39	3.83	3.92	3.88	0.08
40	3.94	4.25	4.12	0.31
42f	3.80	4.00	3.91	0.20
43a	4.11	4.00	4.05	-0.11
46d	4.32	4.60	4.46	0.28
46f	3.63	4.30	3.97	0.67

- Question Item 19: How closely an Associate collaborated with the president and administration in developing the Institutional Plan.
- Question Item 21: The degree to which the Institution Plan was followed upon returning from the EA Program.
- Question Items 26 (a) and (c)-(e): The importance of (a) funds, (c) clerical support, (d) computer support, and (e) facilities and office space as they relate to successfully following the Institutional Plan.
- Question Item 31(e): The usefulness of a newsletter in improving NIH followup support.
- Question Items 42 (b) and (d): The extent (b) release time and (d) computer support and office equipment related to the EA Program's overall success.

Additionally, although there were several averaged responses for all participants (i.e., the total weighted average response to a question, and not that for only a single group of Associates) that were on the high end of the range (above 3.8), there were no correspondingly low (below 1.2) averages. Following is a list of question

items that elicited a total averaged response of 3.8 or higher:

- Question Item 10: The extent to which the EA Program enhanced leadership and promotional abilities.
- Question Item 11: The extent to which the EA Program enhanced organizational and administrative skills.
- Question Item 12: The extent to which the EA Program enhanced abilities to administer and manage the grant process.
- Question Items 26 (b) and (f): The importance of (b) release time and (f) administrative support, as they relate to successfully following the Institutional Plan.
- Question Items 31 (b)-(f): The usefulness of (b) regular update meetings, (c) ongoing regional workshops, (d) regular national workshops, (e) on-line communications, and (f) participant networking as methods of improving NIH followup support.
- Question Item 34: The extent to which an Associate's institution has benefited from his or her relationship with NIH.

- Question Item 39: The importance of research qualifications for the position of Extramural Associate.
- Question Item 40: The importance of grants administrative skills to the position of Extramural Associate.
- Question Item 42(f): The contribution of administrative support to the EA Program's overall success.
- Question Item 43(a): The degree to which participation in the EA Program contributed to increasing the number of federal proposals written.
- Question Item 46(d): The extent to which funds should be directed toward obtaining release time as it relates to the success of the EA Program.
- Question Item 46(f): The extent to which funds should be directed toward continuing EA education as it relates to the success of the EA Program.

Interpretation of the Data

As revealed in the responses to Questions 5 and 7, as well as in oral and written interviews with the Associates,

most Associates are expected to carry on with their conventional teaching load and other regular administrative duties upon their return. This can be seen by the fact that few new departments are created to support the Associates in their new roles. Upon their return, most Associates are given increased responsibilities, but very little organizational development or reorganization is carried out by the institution to help them implement the Institutional Plan. This has resulted in a loud plea for increased funds to be directed to release time, as mentioned in the "Overview of the Data".

Question 14 revealed that "office space and facilities" failed to keep pace with the other Associate requests (e.g., "release time" and "computer support"), even though institutional responsiveness to these other factors was not ranked particularly high by most of the Associates. This, combined with outright complaints in the written reports of Associates, leads one to believe that adequate office space and facilities are lacking in a number of EA institutions.

In the same vein, few Associates received adequate funding from their institutions in support of the EA Program. This is revealed in Questions 15 and 16, where most Associates rated their institutions' funding support of the EA Program below par. To exacerbate this condition, private funding in support of the EA Program has decreased with time.

In general, it appears that the Institutional Plan is not very closely followed. The Institutional Plan is of major importance because it defines a common mission for the faculty, administration, and leadership of an institution, enabling better communication and cooperation toward a common goal, which ultimately is that of obtaining more research funds. All communication must be supported by the president and the president must therefore be fully involved in the development of the Plan. However, the data show that this is not always the case, and the data even appear to show decreasing participation on the part of the president.

In cases where the Institutional Plan is not supported by key members of the administration, there is little motivation and cooperation from the administration and faculty to assist in its implementation. Unfortunately, faculty are the least involved in the development of the Institutional Plan. As faculty are the main persons responsible for motivating junior faculty members and students toward research, their lack of involvement may explain why student research participation has been dropping.

Administration is usually the most involved participant in developing the Institutional Plan. If faculty are less aware of the administrative issues involved in the grants process, they will not be able to identify the needs

of their institution upon arrival to the EA Program. As a result, the faculty lack ownership of the issues at hand and are unfamiliar with the grant-funding mechanisms at their own institution. The data reveal that administrative support is crucial if the EA Program is to be successful upon an Associate's return to his or her institution. This has also been expressed in oral and written reports from Associates. Additionally, there is an urgent need for increased release time if Associates are expected to implement the Institutional Plan upon returning to campus from the EA Program, and this in turn requires more funding.

Smaller schools that have little funding from the beginning are caught in a Catch-22. They lack the funds to provide release time and facilities to their Associate to accomplish a job intended to provide them with increased funds. Motivation is also lacking due to frustration and lack of support from the institution.

The National Institutes of Health controls to ensure that the Institutional Plan is followed are inadequate. The EA Program provides little followup support and, unless the Associate makes a concerted attempt to contact NIH, communication ultimately breaks down and the network fails. Workshops and regular update meetings are highly desirable; however, they are not sponsored by the NIH on a consistent basis. Private funding in support of the EA Program has decreased over the years, contributing to a

lack of opportunities to obtain research experience and technical assistance that would enhance a sponsored research entity.

Fewer Associates and their institutional colleagues are being invited to become members of a study section. This is the result of a peer review process that requires members to publish in refereed research journals and, as most of the EA institutions are primarily teaching institutions, they are handicapped at making the transition toward focusing on research and therefore stand little chance of being selected.

Computer support and office equipment is also becoming a crucial factor in enhancing the competitiveness of the faculty at minority and women institutions. Funds are needed to purchase, operate, and maintain such equipment, as well as to train faculty and administrative staff in their use. Specific office space is often necessary as well to lodge such equipment.

Finally, clerical and technical assistance in the grant administration process is needed so that the Associate may adequately assist researchers to meet funding application deadlines without undue hardship.

C H A P T E R VI

SUMMARY AND RECOMMENDATIONS

Based on the data obtained from this research study, funding is solely needed to provide for (1) release time, (2) administrative support, (3) computer and office equipment, and (4) facilities and office space. Development of the Institutional Plan should begin at the highest level and involve both the administration and faculty members prior to the Associate's arrival at the National Institutes of Health. The Extramural Associates (EA) Program and the National Institutes of Health must ensure more frequent communications with Associates in the Extramural Associates Program, become more involved in an institution's implementation of its Institutional Plan, and ensure that institutions live up to their commitments to support the Extramural Associates Program.

Regional workshops and technical assistance on a continuing basis will keep Extramural Associates institutions aware of the latest resources within the federal government, especially in the Public Health Service, at the National Institutes of Health, and at the National Science Foundation.

The Extramural Associates Program and the National Institutes of Health must help those institutions without

adequate funds to obtain needed computer and office equipment. The new initiatives recommended by the Office of Research on Minority Health (ORMH) need to be implemented in order to foster the needed growth by the Extramural Associates institutions.

The Extramural Associates Program should continue to make minority and women faculty aware of the opportunities in the behavioral and biomedical sciences, encouraging their participation, to fill the current need to increase the pipeline of biomedical professionals.

APPENDICES

APPENDIX A

PARTICIPANT CONSENT FORM

To Participants in This Study:

I am presently conducting a dissertation research project as part of the requirements for the Doctor of Education degree at the School of Education, University of Massachusetts Amherst. The title of my research study is "The Role of the National Institutes of Health Extramural Associates Program in Improving the Biomedical Research Capacity of Historically Black Colleges and Universities." This research study will explore the role the National Institutes of Health Extramural Associates Program has played thus far in promoting Historically Black Colleges and Universities (HBCUs) federal funding efforts, thus directly affecting HBCU biomedical research success. The ultimate goal of this study is to determine the strengths and weaknesses of the Extramural Associates Program, as perceived by its participants, to (1) better serve the HBCUs and (2) streamline the Program. The latter issue is of mounting concern because of increasing budgetary restraints within the National Institutes of Health. A secondary goal is to reaffirm a sense of community among the Program's participants, which is deemed essential to improving the Program.

You are one of fifty National Institutes of Health Extramural Associates Program graduates who is being asked to participate in this study. You will be asked to give your perceptions of the Extramural Associates Program by responding to forty-six survey questions and by providing any additional written comments you would like to make about the Program. As part of the dissertation, I may use the material from the "Additional Comments" section as a "profile" in your own words. Data will be reported in the aggregate. In addition, results from this survey may be included in manuscripts to professional journals for publication.

Participation in this study is voluntary, and you are free to participate or not to participate without prejudice. You may withdraw from part or all of this study at any time.

Study Participant
Page 2

The results of the study will be available for participant review prior to the final oral examination or other publication. The information received will be strictly confidential and will be used only for the purposes of this research study. However, because of the small number of participants (approximately fifty) and owing to the nature of the questionnaire, there is some risk that respondents may be identified as a participant in this study.

In signing this form, you are assuring me that you agree to participate in this research study and will make no financial claims for the use of your material as responded to in the questionnaire.

Thank you for your cooperation and assistance.

Sincerely,

Theodore W. Blakeney

I, _____, have read the above statement and agree to participate in this research study under the conditions stated above.

Signature of Participant

Date

APPENDIX B

QUESTIONNAIRE TO PARTICIPANTS OF THE
EXTRAMURAL ASSOCIATES PROGRAM

EXTRAMURAL ASSOCIATE QUESTIONNAIRE

This questionnaire has been designed to obtain detailed feedback on the Extramural Associates (EA) Program. The results will be used in a study of past EA Program performance in an effort to improve future experiences. All participants are urged to give their most honest opinions to ensure valid data. Given the nature of the questionnaire, respondents may be easily identified; however, to ensure candid responses, information herein will be held strictly confidential and will be used only for study purposes. Data will be reported in the aggregate. Completion of the questionnaire will take approximately 15 minutes.

Thank you for your time and effort in completing this questionnaire. Your cooperation is crucial to the betterment of the EA Program.

GENERAL

1. Institution: _____
2. Year participated in EA Program: _____
3. Position upon participation: _____
4. When was the last time you had active contact with the EA Program? _____
5. Upon your return from the EA Program, did your official title/status/position change? Yes _____ No _____
6. What was your new title and role?

7. Has a new department been created at your institution to help fulfill EA Program activities? Yes _____ No _____

8. What is its title and role?

- | | | | | | | |
|-----|--|--------------------|---|--------------------|---|-------------------|
| 9. | How successful has the EA Program been so far in furthering minority education at your institution? | 1
Not
at all | 2 | 3
Some-
what | 4 | 5
Very
much |
| 10. | To what extent did the EA Program enhance your leadership and promotional abilities? | 1
Not
at all | 2 | 3
Some-
what | 4 | 5
Very
much |
| 11. | To what extent did the EA Program enhance your organizational and administrative skills? | 1
Not
at all | 2 | 3
Some-
what | 4 | 5
Very
much |
| 12. | To what extent did the EA Program enhance your abilities to administer and manage the grant process? | 1
Not
at all | 2 | 3
Some-
what | 4 | 5
Very
much |

RELEASE TIME AND GENERAL SUPPORT

Please note that the questions in this section pertain to your institution's support of your EA duties and your other activities.

- | | | | | | | |
|-----|--|---------------|---|---------------|---|--------------|
| 13. | Upon your return from the EA Program, how many hours of release time were you given to fulfill your EA duties? | | | | | |
| 14. | Upon your return, how responsive was your institution in providing you with | Not
at all | | Some-
what | | Very
much |
| | a. adequate release time? | 1 | 2 | 3 | 4 | 5 |
| | b. adequate clerical support? | 1 | 2 | 3 | 4 | 5 |
| | c. adequate facilities and office space? | 1 | 2 | 3 | 4 | 5 |

	Not at all		Some- what		Very much
d. computer support and office equipment?	1	2	3	4	5

FUNDS

15. What funding (budget) did your institution provide you in support of the EA Program? (Please include clerical support, computer equipment, etc.)

	1	2	3	4	5
16. How responsive was your institution in its funding support of the EA Program?	Not at all		Some- what		Very much

17. From what other sources did you receive funds to support your participation in the EA Program?

18. How much money did these other sources provide?

DEVELOPMENT OF THE INSTITUTIONAL PLAN

	1	2	3	4	5
19. How closely did you collaborate with the president and administration in developing the Institutional Plan?	Not at all		Some- what		Very much

	1	2	3	4	5
20. Upon your return, how closely was the Institutional Plan followed?	Not at all		Some- what		Very much

	1	2	3	4	5
21. How good were communications between the president, administration and faculty when developing the Institutional Plan?	Poor		Good		Excel- lent

22.	To what extent did the faculty participate in developing the Institutional Plan?	1 Not at all	2	3 Some- what	4	5 Very much
23.	To what extent did the administration participate in developing the Institutional Plan?	1 Not at all	2	3 Some- what	4	5 Very much
24.	To what extent did the president participate in developing the Institutional Plan?	1 Not at all	2	3 Some- what	4	5 Very much

SUCCESS OF THE INSTITUTIONAL PLAN

25.	How successful was the Institutional Plan in	<u>Not</u>		<u>Some-</u>		<u>Very</u>	
		<u>at all</u>		<u>what</u>		<u>much</u>	
a.	stimulating research overall?	1	2	3	4	5	
b.	motivating students to participate in research?	1	2	3	4	5	
c.	motivating faculty members to participate in research?	1	2	3	4	5	
26.	Please evaluate the importance of the following factors as they relate to successfully following the Institutional Plan:	<u>Not</u>		<u>Some-</u>		<u>Very</u>	
		<u>at all</u>		<u>what</u>		<u>much</u>	
a.	Funds	1	2	3	4	5	
b.	Release time	1	2	3	4	5	
c.	Clerical support	1	2	3	4	5	
d.	Computer support	1	2	3	4	5	
e.	Facilities/office space	1	2	3	4	5	
f.	Administrative support	1	2	3	4	5	

FOLLOWUP AND NIH SUPPORT

- | | | | | | | |
|-----|--|--------------------|---|---------------------|---|---------------------|
| 27. | How effective are NIH controls in making sure the Institutional Plan is followed? | 1
Not
at all | 2 | 3
Some-
what | 4 | 5
Very
much |
| 28. | How often did you contact NIH after your return? | 1
Not
at all | 2 | 3
Some-
what | 4 | 5
Very
much |
| 29. | In general, how would you evaluate NIH followup support? | 1
Poor | 2 | 3
Good | 4 | 5
Excel-
lent |
| 30. | How cooperative is NIH in responding to your requests? | 1
Not
at all | 2 | 3
Some-
what | 4 | 5
Very
much |
| 31. | How useful would these methods be in improving NIH followup support: | Not
at all | | Some-
what | | Very
much |
| | a. Newsletter | 1 | 2 | 3 | 4 | 5 |
| | b. Regular update meetings | 1 | 2 | 3 | 4 | 5 |
| | c. Ongoing regional workshops | 1 | 2 | 3 | 4 | 5 |
| | d. Regular national workshops | 1 | 2 | 3 | 4 | 5 |
| | e. On-line communications (i.e., via computer) | 1 | 2 | 3 | 4 | 5 |
| | f. Networking among participants | 1 | 2 | 3 | 4 | 5 |
| 32. | How do you rate the quality of NIH support in the form of technical assistance (i.e., consultation with Health Research Administrators)? | 1
Poor | 2 | 3
Good | 4 | 5
Excel-
lent |
| 33. | How often have you used it? | 1
Never | 2 | 3
A few
times | 4 | 5
Very
Often |

EA PROGRAM BENEFITS

34. To what extent has your institution benefited from your relationship with NIH? 1 2 3 4 5
Not at all Some-what Very much
35. Were you or someone from your institution invited to become a member of a study section? Yes _____ No _____
36. Did your institution receive any grants as a direct result of the EA Program? Yes _____ No _____
37. To what extent did students from your institution participate in NIH programs as a direct result of the EA Program? 1 2 3 4 5
Not at all Some-what Very much
38. To what extent did faculty from your institution participate in NIH programs as a direct result of the EA Program? 1 2 3 4 5
Not at all Some-what Very much
39. How important are research qualifications to the position of Extramural Associate? 1 2 3 4 5
Not at all Some-what Very much
40. How important are grants administration skills to the position of Extramural Associate? 1 2 3 4 5
Not at all Some-what Very much
41. To what extent has the EA Program contributed to increases in funding? 1 2 3 4 5
Not at all Some-what Very much
42. To what extent did each factor contribute in the EA Program's overall success:
- | | 1 | 2 | 3 | 4 | 5 |
|-----------------|---|---|---|---|---|
| a. Funds | 1 | 2 | 3 | 4 | 5 |
| b. Release time | 1 | 2 | 3 | 4 | 5 |

	Not at all	2	Some- what	4	Very much	5
c. Clerical support	1	2	3	4	5	
d. Computer support/ office equipment	1	2	3	4	5	
e. Facilities/office space	1	2	3	4	5	
f. Administrative support	1	2	3	4	5	
43. Did your participation in the EA Program contribute to an increase in the number of proposals written?						
	Not at all	2	Some- what	4	Very much	5
a. Federal	1	2	3	4	5	
b. State	1	2	3	4	5	
c. Local	1	2	3	4	5	
d. Private	1	2	3	4	5	
44. Did your participation in the EA Program contribute to an increase in the number of grants approved?						
	Not at all	2	Some- what	4	Very much	5
a. Federal	1	2	3	4	5	
b. State	1	2	3	4	5	
c. Local	1	2	3	4	5	
d. Private	1	2	3	4	5	
45. Did your participation in the EA Program contribute to an increase in the number of grants funded?						
	Not at all	2	Some- what	4	Very much	5
a. Federal	1	2	3	4	5	
b. State	1	2	3	4	5	
c. Local	1	2	3	4	5	
d. Private	1	2	3	4	5	

46. Given more funds to further the success of the EA Program at your institution, how would you distribute them among the following categories:

	Very little	2	Moder- ately	4	Great deal
a. Clerical support	1	2	3	4	5
b. Administrative support	1	2	3	4	5
c. Computer support/ office equipment	1	2	3	4	5
d. Release time	1	2	3	4	5
e. Travel expense	1	2	3	4	5
f. Continuing EA educa- tion	1	2	3	4	5
g. Marketing efforts	1	2	3	4	5
h. Other (please specify) _____	1	2	3	4	5

APPENDIX C
INTERVIEW RESPONSES

INTERVIEW RESPONSES

RESPONDENT 1

As noted, I have implemented our EA plan from a portion consciously off to the side of our Development (Institutional Advancement) Office, expecting to get more done that way. I believe this perception has been correct for the most part. We, in the Division of Natural Sciences and Mathematics, have been quite successful in various funded programs (both federal and private). We have also innovated, without funded programs, in close interactions with The Medical College of Georgia and The Medical University of South Carolina.

Increasingly, the problem for me has been that of wearing too many hats. As of July 1992, I resigned as Division Chairperson but continue actively in at least four roles:

- Professor of Biology (3 courses this semester)
- Director of the Pre-Professional Sciences Program
- Director of the HCOP Program
- EA (collectively all my grants writing, assisting, review, etc., for self and colleagues)

It is exhausting and comes close to burnout!

RESPONDENT 2

When I returned, I found that without release time it was impossible to work effectively with faculty not already involved in research. It takes time to "coach" faculty re-entering research. We had a grants person who was not interested in the kind of hard work this takes (basically he is/was lazy). My later administrative position put me over this person. I tried to motivate him, and later actually worked on "building a file" to remove him because he really was ineffective. However, because I got no support from above (change of administration) and he had some sort of tenure (although not a faculty), he is still there (and I am no longer an administrator!).

Our institution has MBRS and MARC (and a few other non-science grants) as well as some NSF-funded grants for educational training projects. A new faculty in biology has an NSF grant of some substance. We are not, in general, competitive for "regular" NIH grants.

MBRS and MARC do not provide sufficient funds for faculty release time for them to become competitive.

RESPONDENT 3

The impact of the EA Program depends upon the institution and the individual. I would say that my participation in the program had more of an effect on me than it did on the institution. We were in a position to increase our grant activity anyway. I was helpful to new faculty in particular in my new role. Changing upper levels of campus administration may hinder a returning EA from doing what was expected. I think it would be interesting for you to track the career progress of returning EAs. I suspect that of those who participated five years ago or more, most are not in the same position that they assumed on their return.

I imagine that the NIH database can track very well the influence of EA participation on NIH funding for particular institutions, and I would like to see these data. How much can directly be ascribed to the EA Program is questionable, of course.

RESPONDENT 4

Despite little actual institutional support, we managed to get funding in excess of \$2,000,000 over the past three years.

RESPONDENT 5

As you can see from my responses, many items given a low rating may improve with time. The Grants Office has only been in existence for two months. My 50% position is funded for one year only. I desperately need a grant to fund my release time for another year. I have lots and lots of moral support but no money.

RESPONDENT 6

Five months should be spent under the guidance of the EA staff and NIH mentors, as currently exists during the academic year. The remainder of time should be spent at the EA's institution while the EA remains under the IPA agreement. The EA will then devote more time to implementing the plans as stated in the proposal in a timely fashion.

RESPONDENT 7

Despite little support shown by our new President (when I returned from EA in 1988, the Chancellor and the President were suddenly replaced), we were able to expand the MBRS program and obtain an HCOP grant for our school.

The EA experience has certainly helped my success in obtaining grants and the frequency of submitting

grant applications. It seems years after the EA participation, and the changes in personnel and infrastructure in NIH have gradually eroded the network which was established by EAs when we were in NIH. In view of this observation, a follow-up meeting is important. However, the last one I attended in 1990 did not seem to have a lasting effect. It is important to reestablish our connections. A smaller group of EAs meeting with NIH officials would foster a better one-to-one setting and it may precipitate a more personable relationship.

RESPONDENT 8

It is my understanding that EA will be provided administrative support at the college to establish an office to promote research and training of faculty and students. Until such time, it is impossible to evaluate effectiveness of the EA Program.

It is my firm belief that NIH should provide funds to support the activities of the EA Office at least for a period of three years--through RASA mechanism or something similar to that--to the tune of at least \$100,000-\$150,000 per year. I was very optimistic that I would be coming back to the university with such an award. Needless to say, I am disappointed and feel that my time will not be put to best use.

I was also expecting to bring office equipment, including furniture and computers, from NIH. Unfortunately, even those things did not materialize.

RESPONDENT 9

Currently, I am a postdoctoral fellow at the university. After completing the Fellowship Program, my Post-EA plan will be implemented. While the post-doc was part of my Post-EA plan, the interruption due to mobilization for Desert Storm was completely unexpected. Overall, the support from my administration has been disappointing and their attitudes toward my efforts and new motivations have been disgusting. After returning from the EA Program, I was treated as if I had been on a vacation and had a tremendous workload; I was told that I had 50% release time with twice the workload than when I had no release time. It was awful the way the university treated my EA contract: \$4,800 of my salary is still being held in a research fund! I cannot get over the anger!

RESPONDENT 10

The EA Program was excellent in its organization, pedagogy, practical application, and networking with other universities and the components of the federal government.

My institution at the time (1979) merely did not utilize my skills, information flow, expertise, nor was an opportunity provided me to have an administrative opportunity or to develop grants, contracts, etc.

Upon moving to two new institutions, I had an opportunity to be MBRS Director at both, to direct the _____ Institute at one and to hold key administrative roles in both (Head of the Biology Department at one and Director of the Division of the Natural Sciences at the other).

My NIH/EA experiences have given me excellent skills in proposal development and grantsmanship, etc.

RESPONDENT 11

The greatest need of returning EAs is a source of funding from NIH to support start-up activities upon their return. The institutions should be required to match these funds as a reflection of institutional commitment to the EA mission.

RESPONDENT 12

The program was excellent! What advantages you took and what contacts you made varied quite a bit. I strongly support the program concept and truly believe our institution would not be where it is if I had not been an EA.

RESPONDENT 13

There is no doubt that my participation in the EA Program and its follow-up have given me and my institution a marked advantage in obtaining funds and prestige among NIH and other federal agencies.

RESPONDENT 14

It is too soon to evaluate the effects and outcome of the EA Program. I am in the process of building an impact on the administration and they seem to be appreciative of my efforts.

RESPONDENT 15

Professional grantsmanship has become a much more emphasized element of EA functioning in later years and under later directors than it was in the very earliest days of the EA Program.

RESPONDENT 16

There needs to be more communication between the NIH and the EAs. Also, a network of EAs should be established so that we can find out what we are all doing.

There should be a more frequent newsletter outlining activities and programs at the NIH that would be of interest to the EAs.

Bottom line: Let's talk among ourselves, both NIH and EAs. There is no post-training EAs and then cutting them out of the loop.

RESPONDENT 17

The big problem I face here at the university is funding. The college is experiencing growth in the student body but the budget is very tight.

With no funding available and no release time, I have been operating the Office of Sponsored Research as an overload. I have found that my workload has been increased with the increase in student numbers. In addition to the workload has been the increased time in operating an office and grant writing.

I believe that to be successful I will need to find funding to operate an office.

The other problem I have is a Vice-President of Academic Affairs who has no understanding of research needs and scholarly activity. The VP has never done research, does not see a need for research, and does nothing to encourage research at the college. I believe a large club applied to the EA Office might help.

RESPONDENT 18

If the EA Program could be designed so that the EA returned to the campus with funds from NIH to assist the faculty and build the research office support, the program would be of greater benefit. I was fortunate to have an established research office for me to be a part of. It would have been impossible without that.

Now I need access to information about NIH. Since 1988, the Institute and Divisions have changed. Providing EAs with access to computer information systems or newsletters could help or an annual update on the changes at NIH.

RESPONDENT 19

Due to budget constraints, the institution has been unable to establish an Office for Sponsored Research. The institution is presently working at the feasibility of such an office. In the meantime, my role is limited to providing faculty with appropriate grant information and providing technical assistance as requested.

RESPONDENT 20

I feel that one of the greatest benefits that I received through the EA Program was the contacts that I made at NIH, EPA, NSF, and many other places that we

interacted with. The contacts with NIH have been invaluable. This has been particularly beneficial to minority students for summer programs, internships, and even for future employment. Because of the contacts, I have served on review committees for EPA, NSF, and also NIH. The university here has used the expertise that was gained through the program to have me review and recommend state grants for funding. These have been particularly successful. I feel that much of what I can now apply was gained through the EA Program--in sitting through review panels, interacting with different Institutes, and contacts outside of NIH, particularly NSF. Although I do not have an office set up for my work as an EA, it has been possible to work with the Development Office relative to grants. Information on grants such as the AREA grant, etc., I supply directly to faculty. Overall, I am able to achieve many things for both faculty and students that would not have been possible because of lack of knowledge. However, the EA Program is prepared to be of great service to the university.

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