

ABSTRACT

SHAFER, DAVID MICHAEL. "Proxies" and "Partners:" Relationships between Grant Givers and Grant Receivers in Federal Fellowship Programs. (Under the Direction of James H. Svara.)

The purpose of this research is to identify and analyze the factors that have an impact on implementation and effectiveness of intergovernmental grant programs at the grantee-level to enable grantors to better select, control and learn from their grantees. Data are collected via both annual and final performance reports, as well as an on-line survey from 1997 cohort U.S. Department of Education Graduate Assistance in Areas of National Need Fellowship grantees. A model is developed to assess the extent to which grantee capacity has an impact on implementation quality, and the extent to which grantee capacity and implementation quality taken separately have an impact on effectiveness. Grantee capacity consists of the following dimensions: human resources, size of graduate program, organizational level, and capacity to cope with Federal constraints. Implementation quality consists of two dimensions: regulatory conformity and innovativeness. Effectiveness consists of three dimensions: retention, candidacy rate and diversity. Using multiple regression analysis, the findings indicate that when controlling for the other variables in the model, organizational level has the strongest positive relationship, and number of personnel the strongest negative relationship with regulatory conformity. Both variables have the strongest positive relationship with innovativeness. Organizational level also has the strongest positive relationship with diversity and candidacy rate. That is, grantees that house grant administration at the college, university or combination of college, university and/or departmental levels are likely to be more effective, conforming and innovative than grantees that house grant administration solely at the departmental level. The quantitatively derived

findings are then interpreted through the lenses of self-interested- and norm-based theories of administrative behavior. Using a combination of these perspectives, a two-by-two typology is developed that categorizes GAANN grantees as high-conforming partners, high-conforming proxies, low-conforming partners, and low-conforming proxies. Based on the assumptions underlying the typology, it is plausible that higher levels of innovativeness indicate a greater level of goal congruence between grantors and grantees. High conforming partners (i.e., grantees that are highly innovative and conforming) are the most effective in achieving programmatic objectives and are more likely to administer their grants at higher organizational levels than other grantee types.

**“Proxies” and “Partners:” Relationships between Grant Givers and Grant
Receivers in Federal Fellowship Programs**

by
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CHAPTER I. RESEARCH PROBLEM

Contextual and Theoretical Framework

Policy Problem and Its Importance

“Implementation research concerns the development of systematic knowledge regarding what emerges, or is induced, as actors deal with a policy problem” (O’Toole 2000: 266). Most of the implementation of federal programs is conducted through, among other mechanisms, intergovernmental grants (Kettl 1998: 38). One of the primary characteristics of the grant system is that the federal government, rather than implementing programs directly, delegates responsibility for implementation to state, local and/or private organizations to achieve federal goals and objectives. In other words, implementation is carried out by remote agents. This dissertation contributes to implementation research by identifying and analyzing the factors that have an impact on implementation of intergovernmental grant programs at the grantee-level. In addition, it assesses the extent to which variation in the quality of implementation has an impact on effectiveness. It does so by analyzing implementation of the U.S. Department of Education Graduate Assistance in Areas of National Need (GAANN) Fellowship program at U.S. institutions of higher education.

This study contributes to systematic knowledge of implementation in public administration in several ways. First, it expands the knowledge of how program funders and remote agents interact. As indicated above, achievement of federal goals and objectives through the intergovernmental grant system necessarily involves delegating discretion to state, local and private entities. According to Derthick (1970), “the essence of the grant system is that it entails the achievement of federal objectives by proxy” (197). When

delegating such discretion, it is essential that federal “proxies” have both the capacity and the willingness to use their discretion in such a way that leads to full implementation of a program. This is because in a democracy, it is important to seek ways to “tame and tether” discretion in order to hold administrators accountable to elected principals (Simon and Skolnick 1989, Walker 1993 in Maynard-Moody and Musheno 2000). According to Rourke (1992),

The American Public has a strong and well-recognized interest in preserving the responsiveness of its bureaucracy to political control. The varied ways in which the United States has successfully pursued this goal are envied in many parts of the world today, where bureaucracies are commonly seen as being remote organizations wholly indifferent to the needs and concerns of the people dependent upon them (546).

Thus, an understanding of the factors that have an impact on implementation will allow federal principals to develop better tools to hold their proxies accountable to democratic principles of governance.

Second, an understanding of why some proxies implement their programs as intended by their federal principals and others do not may assist the federal government in developing improved methods of selecting its proxies. For example, do human resources, such as the number or experience of the staff responsible for administering a grant at an institution, have an impact on the degree to which the grantee is able to conform with grant regulations? If so, federal principals perhaps should use such criteria to select its proxies.

If proxies do in fact have the necessary resources to implement a program in accordance with the federal regulations and even exceed minimal program requirements, but do not do so, it is critical to understand why. What motivates their decisions? Do proxies disagree in principle with certain programmatic objectives and goals? Do they fail to implement certain program components because it is “easier, safer, and more rewarding” not

to do so? (Maynard-Moody and Musheno 2000: 329). Do they view themselves as the "experts" who know as much or more about the task at hand than the funding agency? They may agree on the programmatic goals, but disagree on the prescribed means for achieving such goals?

Third, the study examines an alternative way of conceptualizing the parties in the implementation relationship. Although much of the implementation literature focuses on ways to select and control proxies, it may be more appropriate to view the recipient as a "partner" who knows how to achieve socially desirable ends but needs support to do it, and to view the funding agency as the "patron" who provides the support.¹ From this perspective, the federal government may seek ways to improve upon its own policies. If the federal government is viewed less as a controlling "principal" and more as an enabling "patron" that aims to support the goals of its "partner," then perhaps it should worry less about finding better ways to "tame and tether" its grantees and rather learn from and find better ways to serve them. The reasons behind disconnects between policy and implementation may be used by Congress to adjust program statutes, and/or by federal agencies to revise program regulations.

Thus, from a theoretical perspective, it may be important to differentiate among the remote agents that implement programs for the funding source. Some may be "proxies" for whom issues of conformity and control are paramount. Others, however, may be committed "partners" who may seek to go beyond minimal expectations to make their own contributions to the quality of implementation.

¹ Within the context of this work, the federal government (patron) serves the grantees (partners) by assisting them in accomplishing their goals. Whereas a "proxy" may not have similar goals as their respective "principal." The implication here is that goal congruence characterizes the patron-partner relationship.

Fourth, it is appropriate for the field of public administration to study implementation of institutionally awarded fellowship programs. Fellowships are a primary means by which many graduate students are supported. The U.S. Department of Education (DoEd), National Institutes of Health (NIH), National Science Foundation (NSF), U.S. Department of Agriculture (USDA) and other federal government agencies offer millions of dollars each year to institutions of higher education to support graduate fellowships in various areas of study. For example, from fiscal year 1988 to 2002, appropriations for the GAANN program totaled \$391,681,000 (U.S. Department of Education 1999 and 2002). Table 1-1 breaks down appropriations for the GAANN program since 1988.

Table 1-1. Appropriations for the GAANN Program: FY 1988 to 2002

Year	Amount (\$ in 000's)
1988	\$17,659
1989	\$12,844
1990	\$15,793
1991	\$24,885
1992	\$27,000
1993	\$27,498
1994	\$27,498
1995	\$27,252
1996	\$27,252
1997	\$30,000
1998	\$30,000
1999	\$31,000
2000	\$31,000
2001	\$31,000
2002	\$31,000

Source: U.S. Department of Education

There is a significant amount of funding provided to universities for fellowships through other similar federal programs, such as, the NSF Integrative Graduate Education and Research Traineeship (IGERT) program, the NIH National Research Service Award (NRSA)

Institutional Training Grant program and the USDA National Needs Graduate Fellowship Grant program.

From fiscal year 1998 to 2000, the IGERT program awarded a total of 57 grants to universities, each of 5-years duration and up to \$2.7 million in funds. In FY 2001 alone, IGERT awarded grants to 22 universities totaling \$57,820,000 over five years (IGERT 2002). NIH expects to award up to \$7.0 million under the NRSA program in fiscal year 2003 to support the first year of up to 30 projects (NIH 2002). Finally, in combined fiscal years 1999-2000, the USDA National Needs program awarded \$6,279,000 to 21 institutions of higher education to support 91 doctoral fellows (USDA 1999).

Given the large amount of funding allocated to federal fellowship programs and the fact that institutions of higher education are entrusted with implementing them, such programs warrant inclusion in the implementation literature. However, analyses of implementation of fellowship programs are in fact almost absent in such literature. This work will help to fill this void.

Fifth, the GAANN Fellowship program is an appropriate choice for studying implementation of institutionally awarded fellowship programs specifically and implementation through remote agents generally for three reasons. First, GAANN encompasses most of the features usually included within a fellowship program. Thus, the findings are potentially generalizable to other institutionally awarded fellowship programs, such as the IGERT, NRSA and the USDA programs above.²

Like other such programs, GAANN is a non-service award that seeks to encourage students to complete their degree requirements as quickly as possible so that they can enter

² Complete information on these programs is available at: www.nsf.gov/home/crssprgm/igert/start.htm; grants2.nih.gov/training/nrsa.htm; and faeis.tamu.edu/hep/menus/msgn~2.htm.

the workforce and hence contribute to their discipline. GAANN also provides institutions with funds to cover stipends, tuition, fees, and research- and course-related expenses similar to other such programs. Finally, GAANN and other institutionally-awarded fellowship programs have set Federal regulations that govern how all funds should be and should not be used, as well as other programmatic requirements that must be fulfilled. Although the required components of GAANN will be apparent from the specific measures included in the methodology section of this dissertation, the full regulations are included in Appendix A.

A second reason why GAANN is an appropriate choice for this research is that it is illustrative of other "project-based" grants in general where state, local or other entities that meet federal eligibility requirements apply for a grant. In project-based grants, the non-federal entity "describes in detail the proposed project, its capabilities for executing it, and the anticipated benefits to the public." The federal government then attempts to concentrate limited federal funds "where it is thought to do the most good" (Fesler and Kettl 1996: 297). In the case of GAANN, the competition is among institutions of higher education, the most qualified of which receive a GAANN grant.

Finally, the GAANN program is representative of a broad class of implementation situations. It is a categorical program awarded on a grant-in-aid basis. Agencies choose to undertake the program and are chosen in a competitive process to receive funds to carry out the program goals. This funding situation is different from block grants and from cases in which the agency is mandated to carry out instructions from the higher level agency. The findings of this research are potentially applicable to a wide range of organizations involved in implementation, and may affect the applicability of models of grantor-grantee relationships.

Theoretical Framework

The underlying questions to be examined in this work are these: What accounts for variation in implementation of intergovernmental grant programs at the grantee-level? Does variation in implementation lead to variation in levels of effectiveness? How does one interpret and explain variation in implementation and effectiveness in terms of models of grantor-grantee relationships? To answer these questions, one can examine a program as a whole or the way it is executed within specific agencies (Scheirer 1981 and 1994, Palumbo and Harder 1981). Berman (1978) states that implementing national policy consists of two classes of problems:

The federal government must execute its policy so as to influence local delivery organizations to behave in desired ways; we call this the *macro-implementation* problem. In response to federal actions, the local organizations have to devise and carry out their own internal policies; we call this the *micro-implementation* problem (164).

Although the dissertation focuses on contributing to a solution to the micro-implementation problem identified by Berman, the federal government may use the findings and conclusions to find better ways to select, influence and learn from its proxies/partners.

The starting point for understanding micro-implementation issues is to assess the extent to which variance in “grantee capacity” has an influence on variance in “implementation quality” and “effectiveness.” After quantitative analysis of these variables, rational choice and norm-based theories are employed to explain the nature of behavior by implementers at universities.

The major elements in the analysis are grantee capacity, implementation quality, and program effectiveness. Although the variables are defined in detail in the methodology section of the dissertation, they are briefly introduced at this point. The expected relationships among the variables are presented in Figure 1-1.

Figure 1-1. Expected Relationships Among Variables



Grantee Capacity

The dissertation first focuses on the amount of variation in implementation that can be explained by the grantee’s “capacity” to carry out a program. The hypothesis that variation in grantee capacity has an impact on variation in implementation quality is drawn from the input-output model of public administration. According to James Swiss (1991):

... Any discussion of efficiency and effectiveness... must begin by defining organizational input and output. The functioning of any organization, public or private, can be expressed in terms of an input/output model. [Inputs include]... anything that an organization uses to accomplish its purposes, including people, money, and equipment.... Organizational output is everything produced by an organization (9).

In this model, inputs feed the activities that produce the outputs. In the case of GAANN and other intergovernmental grant programs, the resource level (or “capacity”) of the various grantees is an important factor in attempting to explain implementation variation because resources are the tools that are at a grantee's disposal to manage a grant.

There are four dimensions of grantee capacity that will be analyzed for their relationship to implementation quality:

- 1) Human resources, including a) the number of personnel allocated to GAANN implementation and b) the experience of the grantee unit in administering prior GAANN grants;
- 2) The size of the graduate program of the grantee unit implementing GAANN;
- 3) The “organizational level” of the grantee unit, e.g., level in the organization and relationship to other offices that affect implementation;³ and
- 4) Capacity to cope with federal constraints from the grantees’ perspective. (In essence, narrowly written regulations that micro-manage implementation, as well as elements of federal program management, may act as environmental constraints on implementation and hence reduce its quality. Different grantees may have varying ability to cope with such regulations.)

Implementation Quality

As indicated by the above model, "implementation quality" is the dependent variable with relation to “grantee capacity” and an independent variable in relation to “program effectiveness.” Implementation quality has two dimensions: regulatory conformity and innovativeness. Regulatory conformity refers to the extent to which the actions of grantees are consistent with the federal guidelines regarding program implementation.

"Innovativeness" refers to the extent to which grantees exceed such requirements, developing and implementing program components as a result of receiving a GAANN grant that were designed specifically for GAANN Fellows.

³ In the case of GAANN, institutions may have more than one grant, and those grants may be administered by different units (e.g., departmental-level, college-level, university-level) with differing levels of influence over other units that are integral to grant management. For example, some "departmental" GAANN PI's at other institutions have significant problems in raising a GAANN Fellows' financial need to a level where they may receive the full stipend. This is because they are forced to have such need assessed entirely at their financial aid office, which may or may not decide to make allowances for individual special circumstances. Such PI's have little power to influence the financial aid office in their decisions or to take responsibility for such need assessment themselves. For example, at one institution, financial need is determined by the Graduate School (a university-level unit) in coordination with the Office of Financial Aid. The Graduate School appointed a "Financial Aid Officer" and convinced the Office of Financial Aid that it should have input into the process of need assessment for GAANN Fellows.

For example, rather than using all the “enhancement funds” associated with each GAANN grant for the purpose of providing fellows with general equipment and supplies, one university sets aside a portion of such funds for which fellows must write a "mini-grant" proposal to apply for funding. This teaches the fellows how to write proposals, which is an integral part of a faculty career. Another grantee holds monthly meetings where GAANN Fellows discuss their research with one another. These are coordinated by the GAANN PI and program director and were developed specifically for GAANN Fellows (GAANN Technical Assistance Workshop notes 2002). Grantees are not required to exceed minimal requirements in such ways, yet some do, which improves implementation and may increase effectiveness.

Program Effectiveness

Effectiveness is a dependent variable and refers to the extent to which a grantee has achieved the overall federal goals and objectives of the program. Grantees in the 1997 cohort have not had sufficient time to achieve the long-term goals of the GAANN program. Consequently, program effectiveness is measured in terms of immediate outputs. (This issue is discussed further in the methodology section of the dissertation.) These immediate outputs (the initial outputs of an organization) are used as surrogate measures for intermediate outputs at each GAANN institution. Intermediate outputs are “longer in range and have a wider social effect than immediate outputs” (Swiss 1991: 362). The three dimensions of effectiveness to be examined are as follows:

- 1) Retention rate of GAANN Fellows;
- 2) Candidacy achievement rate of GAANN Fellows; and
- 3) The percentage of GAANN Fellows at each institution from traditionally underrepresented groups.

It is important to note that immediate, and even intermediate outputs may not reveal the full impact of the program. They do however provide some indication as to whether or not a grantee is at least producing those results that are believed to lead to broader based outcomes.

Interpreting Administrative Behavior: Development of a Typology

Although Scheirer (1981) hypothesizes that grantee capacity will have an impact on implementation, she does note that “increasing staff or funding alone are not sufficient to bring about change” (69). Thus, the final stage of analysis in the dissertation is to analyze the findings related to variance in grantee capacity, implementation quality, and program effectiveness to assess the behavioral and value differences among the grantees that could account for the variation that is observed. Just because administrators (in this case GAANN PI's) have the capacity to conform to federal regulations or even exceed minimal program requirements in some aspects of their programs, does not mean that they will always do so. Put simply, although the lack of capacity may limit the quality of implementation, the presence of capacity does not necessarily assure high quality implementation. Decisions of officials responsible for administering the program determine resource allocation and the design of specific program features in the implementation process.

Two major factors in explaining human decisions in public organizations are self-interest and norms. Self-interest has been central to rational choice/principal-agent models. From this perspective, it is assumed that agents acting in their own self-interest are likely to “shirk” in order to accomplish their own goals, which may differ from those of their principal. “Shirking” occurs when an agent’s actions deviate from those actions favored by their principal. Within this framework, principals are concerned about how to maintain control of their agents in order to reduce shirking. They “seek to manipulate and mold the

behavior of agents so that they will act in a manner consistent with the principals' preferences" (Waterman and Meier 1998: 174). Agents therefore can be considered as remote proxies on whom the granting agency depends but whose performance is uncertain. The behavioral differences of proxies are represented by the bottom two quadrants of the typology presented in Figure 1-2. As the typology indicates, proxies may or may not conform, but they have no interest in going beyond minimum standards. That is, proxies do not have an interest in developing new programs or activities that go beyond implementation of required program components.

The norm-based approach stresses actions based on values. Grantees who are driven by norms are considered to be partners who have goals similar to those of the granting agency. The distinguishing feature in the performance of partners is their level of innovativeness. They will be more or less innovative in acting on their commitment to achieving program goals. Innovative grantees go beyond standard expectations regarding performance by adding features to the program on their own initiative. In the case of GAANN grantees, this means that they develop new programs or activities that are specifically for GAANN Fellows. As indicated in the top two quadrants of the typology, both partner types go beyond minimal standards when implementing a grant. However, their principled approach may lead to lack of conformity on value-based grounds.

When these two dimensions of administrative behavior are combined, a two-by-two table is created that defines four hypothetical types of grantees.

Figure 1-2. Typology of Interaction Modes

		Regulatory Conformity	
		Yes	No
Innovate	Yes	1. High-Conforming Partner	4. Low-Conforming Partner
	No	2. High-Conforming Proxy	3. Low-Conforming Proxy

According to this typology, a grantee may be a:

- 1) "high-conforming partner," both conforming to program requirements and implementing additional program components that exceed minimal program requirements (norm-based behavior);
- 2) "high-conforming proxy," conforming to minimal program requirements but not implementing any additional program components that exceed such minimal requirements (rational choice behavior);
- 3) "low-conforming proxy," neither conforming to minimal program requirements nor implementing any additional program components (rational choice behavior); or
- 4) "low-conforming partner," not conforming to minimal program requirements, but establishing a number of creative program components designed to achieve the same purposes as the federal program (norm-based behavior).

Norm-based theories may be used to understand the motivations behind the behavior of grantees characterized as "high-conforming partners." Such grantees engage in "partner" (as opposed to "proxy") behavior since they share the same values that govern the federal program. Such partners already intended to achieve goals similar to those advanced by GAANN, but simply needed the funds to do so. They look on the federal government as a "patron" that provides the funds needed to act on their value commitments. Patron and

partner goals and objectives are similar and this is reflected in their actions. For example, at the implementation quality level, a partner may conform to all program requirements and also exceed them by adding non-required components designed specifically for GAANN Fellows. Similarly, compared to proxies, a high-conforming partner would typically allocate more staff members to support program implementation, or may choose to house grant administration in an office above the departmental-level to give the program more visibility and clout.

Norm-based theories also may be used to describe the motivations behind the behavior of “low-conforming partners.” Decisions in this case are also norm-based. Again, the partner’s norms and values are similar to that of their federal patron, which encourages them to introduce program components that exceed program requirements. However, they do not conform to program requirements, perhaps because they disagree with certain requirements out of principle. For example, grantees may establish professional development seminars specifically for GAANN Fellows to provide helpful hints to them as to how to complete their Ph.D.’s in their respective “areas of national need” or initiate a “mini-grant” program as described above. These same grantees however may believe that all fellows should receive the same stipend regardless of financial need because they believe in the principle of competition based on merit, rather than distribution of funds based on say, the value of equity. Again, such partners may allocate more resources than the proxies described below due to their value-based commitment to the program and their lack of self-interest driven decisions.

Rational choice theory may be used to describe the motivations behind the behavior of both “conforming” and “nonconforming proxies.” Proxies may have an antagonistic

relationship with their principals and make decisions based on self-interest. Proxies that conform with program requirements, but choose not to exceed them may conform out of fear of an audit. They do not exceed minimal program requirements because it is easier and less costly not to do so. In addition, implementation of non-required program components is not necessary to secure future grant funding. They also will minimize the use of resources for grant activities.

Those who do not conform and do not exceed minimal program requirements are making self-interested decisions. Such PI's presumably view GAANN as just another funding source for their students or a means by which to increase their own prestige within the organization. In a large, well-funded institution, such proxies have access to other funding sources if GAANN funds are withdrawn. They weigh the costs of conformity with its benefits and find that given the limited audit resources of the U.S. Department of Education, that the risks are minimal. Similar to the conforming proxies, they minimize the resources allocated to grant management.

The norm-based and self-interest-based explanations of administrative behavior will be used to help illuminate the findings regarding both implementation quality and grantee capacity and to generate a number of alternative explanations of implementation by remote agents. The typology in Figure 1-2, which is based on both rational choice and norm-based theories of behavior, may be used to analyze variation in use of grantee capacity and implementation quality.

The Link between Implementation and Effectiveness

Thus, the capacity of a grantee and individual decisions may help explain implementation, but does variation in implementation help to explain variation in level of effectiveness? Variation in effectiveness may be due to a variety of economic and political factors that have nothing to do with a program. In addition, it may be due to failure of the activities to bring about the desired effects, or "theory failure" (Weiss 1997). According to Palumbo and Calista (1990):

Legislation is often not based on a sound program theory that correctly identifies what design conditions will get the target groups to behave in the desired fashion because we do not have such theories (4).

If a program is fully implemented and desired results not achieved, then it becomes important to explore whether or not the program theory is in fact appropriate. Although lack of effectiveness may be due to any number of environmental factors regardless of the strength of a program concept, theory failure may only be revealed under conditions of full implementation.

However, the program evaluation and implementation literature also suggests that such differences may be due to the varying ways in which a program has been implemented. According to Haas and Springer (1998), "lack of goal attainment does not necessarily mean the program concept is poor; it may simply mean the program was poorly implemented" (21). Therefore, this study assesses the importance of implementation as an independent variable in explaining variance in outcome achievement.

Research Questions

Nine research questions will be addressed. First, the dissertation assesses the extent to which there is variance in “capacity,” “implementation quality” and “effectiveness” among grantees:

- 1) To what extent do grantees vary in their level of capacity?
- 2) To what extent do grantees vary in the degree to which they conform with GAANN regulations as set forth in the Federal Register?
- 3) To what extent do grantees vary in their efforts to implement additional non-required program components?
- 4) To what degree do grantees vary in their level of effectiveness?

Second, the dissertation explores the reasons behind variation in implementation quality and effectiveness within the context of the model presented in Figure 1-1. Research questions are as follows:

- 5) To what extent does variation in the level of grantee capacity contribute to variation in conformity with the federal regulations among grantees?
- 6) To what extent does variation in the level of grantee capacity contribute to variation in PI efforts to implement additional non-required program components for GAANN Fellows?
- 7) To what extent does implementation variation account for variation in program effectiveness?
- 8) To what extent does variation in grantee capacity account for variation in program effectiveness?

Third, the dissertation assesses the extent to which the findings pertaining to variance in grantee capacity and implementation quality illuminate normative and rational choice institutional theories of administrative behavior:

- 9) Based on the findings and using norm-based and rational choice theories, how might one explain how universities approach and carry out their role in GAANN grant administration?

Summary of Dissertation Content

To address these questions, the dissertation is divided into five additional chapters. Chapter II is a review of the literature related to implementation variation. It starts with an examination of how the term “implementation” has been defined by other scholars, and how administrative discretion is linked to implementation. Then, it turns to a discussion of the variety of explanatory variables used in other works, and the relationship of the input-output model, as well as normative and rational choice theories in explaining implementation variation. It also reviews the literature assessing the link between implementation and effectiveness.

Chapter III focuses on the methodology used in this study. It discusses the conceptual and operational definitions of the independent and dependent variables, as well as the sampling and data collection techniques employed. It also explains the techniques used to analyze the relationships among the variables. Chapter IV analyzes the data and presents the findings related to each of the research questions. First, it describes the characteristics of the respondent universities and assesses the extent to which they are representative of the 1997 cohort. Second, it assesses the strength of the relationships among the variables in the model presented in Figure 1-1 using multiple regression analysis. Chapter V interprets the findings using the typology presented in Figure 1-2. Chapter VI presents a summary of the findings, conclusions, and implications of this work for other similar grant programs and our understanding of the implementation process. This chapter also discusses prospects for future research on this topic.

CHAPTER II. LITERATURE REVIEW

This dissertation contributes to public administration's knowledge of the factors that have an impact on variation in implementation of intergovernmental grants and to a better understanding of the behavior of remote agents. Factors identified in the literature include the resources of grantees, as well as the impact of decision modes on implementation.

Thus, after a brief discussion of how the term "implementation" has been defined in the literature, and how implementation of intergovernmental grants necessarily entails delegation of discretion, this chapter reviews the literature on the factors that have been hypothesized to have an impact on implementation variation. It focuses on variables that relate to "grantee capacity" and norm- and rational choice-based theories that help explain variation in implementation decisions. The chapter concludes with a discussion of competing hypotheses regarding the impact of implementation variation on effectiveness.

Defining Implementation

A number of scholars have made an effort to define the term "implementation." According to O'Toole (2000), "policy implementation is what develops between the establishment of an apparent intention on the part of government to do something, or to stop doing something, and the ultimate impact in the world of action" (266). Ripley and Franklin (1982) explain that implementation is "what happens after laws are passed authorizing a program, policy, a benefit, or some kind of other tangible output" (4). Similarly, implementation has been defined by Mazmanian and Sabatier (1983) as the "carrying out of a basic policy decision, usually incorporated in a statute but which can also take the form of important executive orders and court decisions"(20).

In all these definitions, implementation may be interpreted as the translation of policy into practice. Pressman and Wildavsky (1973) explain the steps in this translation process:

Policies imply theories. Whether stated explicitly or not, policies point to a chain of causation between initial conditions and future consequences. If X, then Y. Policies become programs when, by authoritative action, the initial conditions are created. X now exists. Programs make the theories operational by forging the first link in the causal chain connecting actions to objectives. Given X, we act to obtain Y. Implementation, then, is the ability to forge subsequent links in the causal chain so as to obtain the desired results (xv).

It is this translation process, the extent to which practice matches policy, and the factors that have an impact on it that are the subjects of this study.

Implementation of Intergovernmental Grants and Delegation of Discretion

The fundamental characteristic of intergovernmental grants is that implementation is not conducted directly by a federal agency, but rather by state, local and private agencies that receive grants or are governed by mandates. Numerous scholars have discussed the multiple layers of governmental and non-governmental organizations and agencies that are actually responsible for carrying out federal policies and programs (Derthick 2000, O'Toole 2000; Kettl 1988; Salamon 1981; Weidenbaum 1969). According to Derthick (2000),

Citizens and journalists routinely refer to "the government" as if there were only one--the Big One. That this is a country of many governments, though a patent fact, is nonetheless a fact that it takes a pedant or lawyer to insist on (27).

This dissertation assesses implementation variation not at the federal government level, but rather implementation variation of the same federal program among various grantees.

Variation in implementation is due in large part to the discretion delegated to administrators. Luther Gulick (1933) observed long ago that discretion permeates the bureaucracy from the top, all the way to the bottom, where public servants touch the public (62). In part, discretion is the antidote to lack of clarity in law. According to Fesler and

Kettl (1996), "passing a law in Congress means winning a majority of votes, and the path to coalition building is paved with compromises that render goals unclear" (286). Brodtkin (1990) indicates that the multiple and conflicting laws contained in statutes actually tacitly delegate policy-making discretion to the bureaucracy. Bureaucrats therefore must interpret policy and make tradeoffs among competing objectives (110). George Hale and Marian Palley (1981) conclude that the "intergovernmental grants system stands as a product of this haphazard and piecemeal policy process" (165).

Even if the goals and objectives in statutes and regulations were clear, discretion at the grantee level within a federal system of government is inevitable because the Congress cannot possibly cover every contingency:

... Legislators cannot master every technical issue or formulate rules governing every application of the law; it is unrealistic to expect the legislative branch to resolve every issue (Hale and Palley 1981: 70).

Discretion is a fact of intergovernmental implementation because statutes and regulations are often vague and do not cover every circumstance that may arise at the more local levels of government. According to Heyman (1987), although government is set-up as a hierarchical structure with the President at the top with control over all of the agencies, departments, bureaus and other divisions which have the obligation to simply obey policy directives,

this apparent structure is misleading insofar as it suggests a process dominated by the setting of policy from above and the carrying out of orders at the lower levels, with the intermediate levels solely responsible for transmission of orders or directions from higher levels, selecting, monitoring, and providing incentives to those at the lower levels (90).

Heyman's suggestion that a hierarchical set-up does not necessarily mean hierarchical control is illustrated by GAANN PI's who may at times actually "shape policy because of the enormous and irreducible discretion they have" (Palumbo and Calista 1990: 15).

Others have discussed how discretion increases with distance and when multiple organizations are involved, as is the case with intergovernmental grants. According to Salamon (1981),

...those who exercise authority on the federal government's behalf... frequently enjoy a substantial degree of autonomy from Federal control. State and local government agencies, for example, have their own source of independent political support, while many of the Federal government's private partners frequently find themselves in the fortuitous position of needing the Federal government less than the Federal government needs them. Instead of a hierarchical relationship between the Federal government and its agents, therefore, what frequently exists in practice is a far more complex bargaining relationship in which the Federal agency often has the weaker hand (260).

Pressman and Wildavsky (1973) also discuss how the multiplicity of decision points and actors in an intergovernmental program may lead to the failure of a program to achieve its goals and objectives. They illustrate this point in the context of the Oakland Project, which was an effort on the part of the Economic Development Administration to provide new jobs to minorities through economic development. Pressman and Wildavsky assert that "when a program depends on so many actors, there are numerous possibilities for disagreement and delay" (102).

Factors Having an Impact on Implementation

Numerous scholars have attempted to analyze the relative importance of the factors that have an impact on implementation using a wide range of variables. Ripley and Franklin (1982) describe implementation as a political process that includes the inputs of numerous, often competing, actors, interests, and points of view:

Implementation processes involve many important actors holding diffuse and competing goals and expectations who work within the context of an increasingly large and complex mix of government programs that require participation from numerous layers and units of government and who are affected by powerful factors beyond their control (9).

Other scholars have divided variables into "micro," "intermediate" and "macro" components. Scheirer (1981) suggests that macro variables include decision processes, control processes, obtaining resources and relations with the environment. Intermediate level processes include supervisory expectations, standard operating routines, technical requirements of the innovation, communication flow and work group norms. Individual level variables include behavioral skills, incentives and cognitive supports (32). Others have hypothesized that "formally authorized structures for implementation are altered in highly consequential fashions by a variety of forces: the choices of managers during implementation, the informal preferences and pressures of political bodies, the moves made by stakeholder institutions, and so forth" (Hall and O'Toole 2000).

Hale and Palley suggest that variation is due in part to the lack of enforcement of grant regulations. They indicate that grantors form constituency links with grantees, and therefore enforcement of regulations is often weak. In addition, grantors often do not have the staff resources to enforce the regulations and therefore use informal bargaining with grantees to resolve disputes. Rarely are funds withheld as a result of lack of compliance (Hale and Palley 1981: 91). In sum, non-federal proxies are often difficult to control due to the federal government's lack of real coercive power (Ripley and Franklin 1982).

Other scholars look to models of organizations to extract the variables that may have an impact on implementation. According to Elmore (1978), "understanding organizations is essential to the analysis of implementation" (185). Ferman (1990) states that "identifying the source of implementation failure is directly related to the organizational model employed by the analyst" (44). Ferman presents a concise summary of four organizational models and the variables on which they focus to analyze implementation. These include the rational model,

bureaucratic process model, organizational development model, and conflict and bargaining model.

In the “rational model,” which depicts organizations as efficiency maximizers emphasizing hierarchical control, implementation failure is the result of a breakdown in control or poor management. The “bureaucratic process model” also views implementation as a top-down process, the key features of which are discretion and routine. Here, routines may be impediments to implementation with top-level management being responsible for developing better routines to improve the possibility that policy goals are achieved. The “organizational development model” views implementation as a bottom-up process where “initiative and implementation begin at the bottom of the organization” (Ferman 1990: 46). In this model, “effective decision-making in organizations depends on the creation of effective work groups” (Elmore 1978: 209). Implementation failure is the result of a “lack of consensus among implementers on the policy goals and/or from the separation of policymaking from implementation” (Ferman 1990: 46). Finally the “conflict and bargaining model” views organizations as collections of individuals and units that act in their own self-interest. Competition, bargaining and conflict may derail the implementation process since “participants may converge on temporary solutions but no stable result is ever reached” (Elmore 1978: 186).⁴

The purpose of the above review was to demonstrate that a variety of variables have been analyzed in numerous studies. This dissertation focuses primarily on the micro-implementation problem, examining “what goes on inside the local agency primarily responsible for program implementation” (Palumbo and Calista 1990: 12). It adds to the

⁴ The above description of organizational models is based on Ferman 1990: 44-48.

literature in three ways by a) isolating "grantee capacity" as a factor in explaining variation in implementation, b) examining norm-based as well as self-interest based models of political-administrative relations and organizational behavior in explaining implementation, and c) focusing on institutionally-based grants.

Grantee Capacity

As indicated in Chapter I, the hypothesis that variation in grantee capacity has an impact on variation in implementation quality is drawn from the input-output model of public administration. As already mentioned, according to the input-output model, inputs include "anything that an organization needs to accomplish its purposes," and outputs "everything produced by an organization" (Swiss 1991: 9). In this model, inputs feed the activities that produce the outputs.

"Capacity" as used here has been identified by a number of other scholars as a variable that has an impact on implementation (Katz and Kahn 1966; Trice, Beyer and Hunt 1978; Lipsky 1980; Scheirer 1981). Capacity is analogous to the "production inputs" used in systems theory, on which the input-output model is based. Production inputs are those energies and materials related to the work of the organization in turning out a product, such as labor and materials. Katz and Kahn (1966) contend that actions in an open system are driven by production inputs. Scheirer (1981) states that an institution's resources is a variable that "vitally affects the course of implementation" (37). In explaining the importance of the quality of human resources, Scheirer suggests that "individual variation in implementation may develop...from differences in degree of competence in executing the technical skills required for the innovation" (1981: 55).

Yet another dimension of capacity is the grantee's ability to cope with federal regulations. Why do regulations have an impact on the degree to which institutions can use their full capacity? Sometimes a principal's control is exerted in such a way that it curtails, rather than facilitates, efficient and effective implementation, as well as goal achievement. Ideally, as Rourke (1992) argues, "politics should give government its direction in a democratic order and that highly trained officials within the bureaucracy should provide the knowledge and skill... will enable government policy to arrive safely at its destination" (546).

Coping is determined by the complexity of the regulations and the capacity of the grantee. A problem may occur when in order to tighten its control over an agency, Congress enacts narrow legislation that in effect micro-manages policies and programs, restricting the discretionary power of administrators to help policy arrive "safely at its destination." Granting agencies can do the same to grantees.

The "Education for All Handicapped Children Act of 1975" serves as an example of the impact of legislation that falls outside of Rourke's advice and may be used to shed light on the impact of federal regulations on implementation at the grantee level. The intent of the Act was to provide access to free and appropriate education designed to cater to the unique needs of handicapped children. However, the 22 pages of this legislation was as much concerned with how the program's purpose was to be achieved as with the purpose itself. It included instructions on how political executives were to organize their staffs and enumerated the specialists who were eligible to provide the services (*Lynn 1981: 17-21*). It left very little discretion to local officials and specialists who have expertise in dealing with

the needs of such children. In essence, Congress pretended to be knowledgeable educators, doctors and school administrators.

The regulations and program management governing GAANN are not as restrictive as in the Handicapped Children Act. However, it does prompt a very important question: To what extent do elements of the GAANN regulations and program management potentially have an adverse impact on implementation and goal achievement at the grantee level and, therefore, to what extent is ability to cope with regulations an attribute of successful implementing agencies? If one accepts the premise that discretion and flexibility are important for success, then the ability to cope with overly restrictive regulations may be an important variable in achieving effective implementation in spite of regulations.

Rational Choice and Norm-Based Models of Administrative Behavior

Thus, the literature suggests that grantee capacity may be an important variable in explaining implementation variation. However, in some cases grantees may have all the necessary resources to fully implement a program, but still do not do so. Thus, capacity does not fully explain implementation variation. Other explanations focus on how administrators choose to relate to the formal policy-makers, rather than on the resources of an institution. This is illustrated in the classic debate between Finer and Freidrich. Finer (1941) stressed the importance of external controls because he distrusted administrators and believed that administrative discretion undermined democratic control. Finer stated that

... the servants of the public are not to decide their own course; they are to be responsible to the elected representatives of the public, and these are to determine the course of action of the public servants to the most minute degree that is technically feasible (336).

On the other hand, Freidrich (1940) stressed inner controls of administrators guided by values:

Responsible conduct of administrative functions is not so much enforced as it is elicited. But it has been the contention all along that responsible conduct is never strictly enforceable, that even under the most tyrannical despot administrative officials will escape effective control—in short, that the problem of how to bring about responsible conduct of the administrative staff of a large organization is, particularly in a democratic society, very largely a question of sound work rules and effective morale (19).

The current form of this debate is to explain administrative behavior as based on rational choice or norms. According to Ostrom (1998), “all long-enduring political philosophies have recognized human nature to be complex mixtures of the pursuit of self-interest combined with the capacity of acquiring internal norms of behavior and following enforced rules when understood and perceived to be legitimate” (2). This mixture of motivations also is illustrated in Scheirer’s suggestion that there are two reasons to adopt a program that may be categorized as “opportunity-based” and “problem-solving-based.” Those who are interested in adopting a program for opportunity-based reasons are interested in program adoption to perhaps secure additional financial resources or to facilitate personal career advancement. Those that adopt a program for problem-solving reasons are interested in achieving the outcomes that the program was intended to produce (Scheirer 1981: 34). Scheirer hypothesizes that “implementation is likely to be facilitated if those most influential in the decision to adopt the program are oriented towards problem-solving rather than toward personal or organizational opportunity” (1981: 35).

Scheirer and Ostrom's distinctions are analogous to the differences between "proxies" and "partners" developed in this research. Proxy behavior may be categorized as opportunity-based, while partner behavior involves the orientation associated with problem solving, although partners also contribute their own goals to those identified by the funding organization. Opportunity based behavior has its foundations in self-interested explanations

of organizational theory, while problem-solving based behavior has its foundations in normative models of organizational theory and political-administrative relations. Both theories are used to analyze the variation in grantee choices on use of their capacity and variation of implementation.

Norm-Based Theories of Behavior

In the quarter century prior to World War II, emphasis on structurally determined behavior was a central feature of the orthodox model of public administration (Henry 1975). Elements of this approach included the assumption that administrators were passive agents engaged in a value-free pursuit of organizational effectiveness and efficiency. However, Waldo (1948) demonstrated the value-loaded nature of public administration:

...despite occasional claims that public administration is a science with principles of universal validity, American public administration has evolved political theories unmistakably related to unique economic, social, governmental, and ideological facts (3).

Waldo observed that efficiency and strict accountability were themselves values and not elements in a “value-free” science of administration. Furthermore, he preferred that other values take precedence. Such values included those of freedom and equality inherent in the ideal of democracy. Others have followed Waldo’s lead in examining the centrality of values to public administration. During the “New Public Administration” many scholars emphasized values, particularly equity, as a guide to administrative behavior and criticized the notion of a value-neutral public administration (Marini 1971).

According to Frederickson (1971), the “New Public Administration” added “social equity” to the classic objectives and rationale (311):

It will always be the task of the public servant to balance the needs of efficiency, economy and social equity--but there can be no balance if the public servant understands the complexities of economy and efficiency but cannot plumb the details of fairness and equality (Frederickson 1997: 132).

La Porte (1971) agreed with Frederickson indicating that “public organizations have a responsibility to enhance social justice” (32). Henry (1975) also criticized those that viewed public administration as an “administrative science” indicating that

As a paradigm, administrative science cannot comprehend the supravalue of the public interest. Without a sense of the public interest, administrative science can be used for *any* purpose, no matter how antithetical to democratic values that purpose may be (383).

As discussed later in this chapter, other contributors to the normative model include Wamsley (1990), who suggested that institutions actually are repositories for regime values, as well as March and Olson (1984) and Peters (1999b) who used a “normative institutionalist perspective” to analyze institutional change. In addition, Svava’s model of “complementarity,” where the functions of elected and administrative officials are viewed as overlapping, is in part a normative model in that “administrators respect political supremacy and the need for accountability to elected officials, but they also understand their accountability to the public” (2002: 270). Svava (2001) states that

Complementarity entails separate parts, but parts that come together in a mutually supportive way. One fills out the other to create a whole. Complementarity stresses interdependence along with distinct roles; compliance along with independence; respect for political control along with commitment to shape and implement policies and ways that promote the public interest; deference to elected incumbents along with adherence to the law and support for fair electoral competition; and appreciation of politics along with support for professional standards (179).

Finally, other contributors to the normative model include those scholars in the field of administrative ethics. Some emphasize the content dimension of administrative ethics and stress the importance of codes of ethics in guiding administrative behavior (Gilman 1996;

Van Wart 1996; Bowman and Williams 1997, et. al.) Others stress the importance of the process dimension of ethics or a combination of content and process dimensions to guide administrative behavior (Denhardt 1988; Klemperer 1992; Kernaghan 1993; Stewart and Sprinthall 1994; Washington 1996). According to Denhardt (1988), the process component is the practice of questioning the values and standards that guide administrative action. Thus, following Waldo's lead, administrators are viewed as more than just tools to be used to implement laws and their work does not and should not stop with mere compliance (Rohr's "low road"). Administrators must engage in "principled reasoning" so that they can impartially examine whether an action is ethical or not (Stewart and Sprinthall 1994). Klemperer (1992) drives home the point that administrators must be able to think for themselves, rather than act merely as the tools of elected officials with the goal of only implementing policy effectively and efficiently. Klemperer uses the situation faced by the sparse resistance to National Socialism in Nazi Germany as a case in point, stating that "....tradition is not always ethical, and neither is law always tantamount to justice."

Studies of behavior by administrative "agents" also demonstrate the importance of values. Johnson and O'Connor examined implementation variation in the Pennsylvania Department of Public Welfare and found that failure to comply with policy regulations resulted when such regulations conflicted with workers' own "definition of being a responsible public official" (In Palumbo and Harder 1981: 147). Maynard-Moody and Musheno (2000) suggest that administrators often make decisions as "citizen agents," as opposed to the "state agents" whose behavior would be consistent with the orthodox model of public administration. That is, they make their own judgements first when making a decision and then look at the rules and procedures to help "enact or, if negative, to rationalize

their judgements” (347). Citizen-agents “use policy as one of several resources as they do their job client by client, citizen by citizen, kid by kid” (349).

Others have hypothesized that “individual implementation is positively related to cognitive clarity and/or to favorability about the program” (Scheirer 1981: 72). In Elmore’s description of what he calls the “implementation as organizational development model,” he explains that

The central problem of implementation is not whether implementors conform to prescribed policy but whether the implementation process results in *consensus of goals*, individual autonomy, and commitment to policy on the part of those who must carry it out (1978: 209, emphasis added).

Part of the foundation for norm-based approaches is found in organizational behavior theory. In essence, organizational behavior theory uses the individual as its unit of analysis and suggests that values and principles guide decision-making. It looks at intrinsic motivation as the guiding force behind administrative decision-making. For example, Abraham Maslow’s “hierarchy of needs” attempts to explain the internal motivations behind individual decision-making. An individual's needs are arranged like a ladder. At the top of this ladder are "self-actualizing" needs. "Self-actualizing people tend to focus on problems outside of themselves, have a clear sense of what is true and what is phony, are spontaneous and creative, and are not bound too strictly by social conventions" (Maslow 1943). Individuals are not motivated by self-interest, but rather by the desire to reach self-actualization.

Terry (1990) also examined values as a determinant of administrative behavior in his discussion of “administrative conservatism.” He defines this concept as a

dynamic process of strengthening and preserving an institution's special capabilities, its proficiency, and thereby its integrity, so that it may perform a desired social function... [It] is the willingness of administrative elites, out of traditional loyalty and moral principles, to *preserve* authority and distribution of power with regards to the propriety of an institutions existence, its functional niche, and its collective institutional goals (403).

In essence, administrators should defend the integrity of governmental institutions since they are repositories of regime values. He identifies institutions as embodying certain value commitments of society and holds administrators responsible for acting on those value commitments.

Similarly, Peters (1999a) uses the "normative institutionalist" perspective to explain administrative behavior, suggesting that institutions have a "logic of appropriateness" that influences behavior more so than self-interest (29). From this perspective, "action is often based more on discovering the normatively appropriate behavior than on calculating the return expected from alternative choices" (March and Olsen 1984: 744). This is similar to Wamsley's conceptualization of an "Agency:"

The Agency may have some of the positive attributes of an institution; but it *must* still have something more --- a normative order that is agential (1989: 151).

Wamsley (1989) outlines three dimensions of an institutions normative order. These dimensions include its mission, constitution and culture, all of which "must reflect a set of attitudes that are civic-spirited or 'other regarding' but more specifically Agential" (151). Therefore, administrative behavior is guided by the norms of the organization. Mouritzen and Svara (2002) "consider norm-driven behavior to be consistent with the values of democracy and professionalism and to be directed toward supporting other actors and advancing the public interest rather than simply advancing one's own interests" (266).

Thus, organizational behavior theory and normative institutionalism describe the attitudes and behavior of officials who implement programs in remote agencies in ways that

are consistent with the patron-partner relationship. The partner makes decisions based on their values of what is right and wrong and their own substantive goals for the program being implemented.

Rational Choice Theory

Another line of thought critical of an orthodox model in which passive administrators were controlled by structure has a political orientation. From this perspective, administrators are political actors engaged in competition with other actors. Sayre (1958) suggested that “public administration is one of the major political processes” and that “organizational theory in public administration is a problem in political strategy” (104). As indicated above, Ripley and Franklin (1982) describe implementation as a process dominated by internal and external political forces that have great influence over administrative decision-making. Aberbach and Rockman (1993) agree that political forces may have influence on administrative behavior, suggesting that “responsive incompetence” may result where selection of personnel is based on “responsiveness” to political doctrine rather than expertise. They indicated that there is a tradeoff between responsiveness and competence, and use certain appointments during the Reagan administration as a case in point. Furthermore, Wilson (1989) also contributed to a political model of bureaucracy, contending that different types of workers (operators, managers, and executives) have varying motivations behind their actions. For example, he suggests that “managers” focus on rewards such as a “sense of duty and purpose, the status that derives from individual recognition and personal power, and the associational benefits that come from being part of an organization” (157-158).

A particular version of this orientation that has come to be commonly used is rational choice theory. In this approach, the varied interests of political actors are viewed simply as

self-interest, the pursuit of which is the driving force in behavior. Whereas the primary unit of analysis in the normative models of public administration and the organizational behavior perspective is the public-serving and “self-actualizing” individual, the rational choice perspective focuses on the “self-interested” individual. In normative models, behavior is driven by endogenous norms (intrinsic motivators). In rational choice models, behavior is guided by exogenous interests (external rewards). The roots of the former perspective are in the field of psychology and the latter in economics. In fact, rational choice theory is often thought of as the economic study of non-market decision-making. Here, the self-interested individual tries to maximize his or her utility through the exercise of rational choice.

Rational choice theory, and its derivative, principal-agent theory, may help to explain administrative decision-making and its impact on implementation variation. Rather than being intrinsically motivated to reach “self-actualization” or to act according to norms of appropriateness, decisions from the rational choice perspective may be regarded as being extrinsically motivated. Downs (1967), argues that bureaucratic officials are significantly motivated by their own self-interest. His theory rests upon three hypotheses: First, bureaucratic officials seek to attain their goals rationally. They are utility maximizers given limited capabilities and the cost of information. Second, every official is significantly motivated by his own self-interest, even when acting in a purely official capacity. Third, every organization’s social functions strongly influence its internal structure and vice versa (Downs 1967).

In “The Calculus of Consent: Logical Foundations of Constitutional Democracy (1962), James M. Buchanan and Gordon Tullock also have much to say about the nature of decision-making using the tools of economics. They extend the assumptions of the economics to the behavior of the individual as he or she participates in the political process to develop a theory of

collective choice that explains how conflicting interests are reconciled in the realm of political choice (Buchanan and Tullock 1962). Elinor Ostrom agrees that “individuals are motivated by considerations of self interest... and will choose strategies that maximize their self interests” (Harmon and Mayer 1986: 257).

A derivative of rational choice theory is principal-agent theory. In its simplest form, principal-agent theory has the following basic components. First, there is some sort of contractual relationship between one principal (e.g., the buyer of a service) and one agent (the seller of the service). Principal-agent theory “views organizational interactions as relationships between a principal, who has a job to be done, and an agent, who agrees to do the job in exchange for compensation” (Kettl 2000: 18). Second, a lack of goal congruence characterizes this relationship. Agents seldom have goals that are identical to those of their principal (Kettl 1988, in Lynn 1992: 520). Third, “in such relationships, principals and agents alike seek their self interest” (Kettl 2000: 18). Fourth, the agent has an informational advantage over the principal. This informational advantage is in large part due to both the relatively greater expertise of the agent in carrying out a particular task, and sometimes to the remoteness of agents. This information asymmetry makes it difficult for the principal to evaluate its agent, and hence to control it. Finally, there are costs associated with monitoring an agent that also make control difficult.

Waterman and Meier (1998) present a variant on principal agent theory that relaxes its basic assumptions. That is, they assert that the constants of principal-agent theory are actually variables. Specifically, they indicate that often the assumption of a dyadic relationship is unrealistic, and that the level of goal incongruence and the characteristics of information asymmetries may vary. Waterman and Meier attempt to “combine information (e.g., technical

expertise) and goal conflict (as it relates to policy preferences of principals and agents), as variables, into a more dynamic model of the interaction between principals and their bureaucratic agents” (1998: 185). They conclude that

The various discrete models that have for so long dominated the bureaucratic literature are not at all mutually exclusive. They coexist in a more generalizable model of the bureaucratic process. Different circumstances (e.g., different information exchanges or different levels of goal consensus/conflict) can create different political outcomes (195).

Some of Waterman and Meier’s conclusions are applicable when interpreting grantor-grantee relationships in the case of GAANN. For example, in the case of a federal grant program like GAANN, there are multiple agents (the grantees) and one principal (the U.S. Department of Education). In addition, the level of goal incongruence may vary among grantees. However, the principal-agent model is a derivative of rational choice theory, and hence the central assumption of both is that actions are motivated by self-interest. Rational choice theory therefore is used in this dissertation to describe the principal-proxy relationship and the motivations behind proxy decision-making.

Using Alternate Models to Interpret Research Findings

Normative and rational choice models are useful tools in interpreting administrative behavior. Peters (1999b) used normative institutionalism, rational choice institutionalism, and historical institutionalism to analyze the prospects for success of the changes proposed by the National Performance Review (NPR). As indicated above, normative institutionalism emphasizes the role of values in defining an institution. From this perspective reform was possible but difficult because of the institutionalization of values. Peters suggests that Gore recognized this problem and understood that values needed to be changed in order to successfully implement components of the NPR. Rational choice institutionalism uses self-interest to analyze administrative behavior. From this perspective, NPR was doomed to fail

because many of the rules previously used by principals to control their agents were being removed by the proposed reforms. Finally, historical institutionalism stresses “the persistence of choices and the path dependency” of institutions” (333). From this perspective, change was not possible because of the entrenchment of past values and policies and the lack of any crisis to dislodge them. Peters summarized how these different theoretical models could be used to predict the prospects for successful change as follows:

For rational choice theorists institutions are highly mutable; if the correct set of rules or the correct payoff matrix is selected, then desired outcomes can be engineered. At the other end of this continuum historical institutionalists see institutions as largely immutable except in times of crisis of severe external challenge. Finally, the March and Olson perspective [normative institutionalism] sees change, while not particularly easy, as certainly possible. Further, if an organization is successful in producing a value change, then that change is likely to endure (351).

Mouritzen and Svara (2002) also interpreted administrative behavior through both normative and rational choice models. In a cross-national comparative analysis of top local government administrators (CEOs) in 14 countries, they assessed the extent to which institutions shape leadership at the “apex” of government (where politics meets administration). Their findings indicate that institutions do shape administrative behavior and that “leaders vary in their behavior both within as well as across institutions” (2). After using a quantitative approach in analyzing their data, they employed rational and normative institutionalism to interpret their findings. For example, from the rational choice institutionalist perspective, they contend that “forms of government differentially permit officials to accumulate their influence and pursue the ends they prefer” (265). From the normative institutionalist perspective, they find “consistency across countries in policy involvement, nonpartisanship, commitment and support for democratic ideals” (267). As is evident from the typology developed in Chapter 1, this dissertation acts on Mouritzen and Svara’s suggestion that “when explaining motivations for behavior, one should

look for a blend of exogenous interests and endogenous norms rather than using one explanation to the exclusion of the other” (290).

The Relationship Between Variation in Implementation and Effectiveness

Above, the literature pertaining to the various factors that have an impact on implementation has been reviewed. However, it is important to note that the purpose of implementation is to effectively achieve desired goals and objectives. The term effectiveness, as used here, and in numerous other works, simply means the ability of agencies to accomplish goals related to their missions (Wolf 1997: 6 and Wolf 1993: 161). A number of scholars have linked implementation to effectiveness (Haas and Springer 1998 and Salamon 1981). For example, Salamon (1981) hypothesizes that:

The more the indirect form of government action—i.e., the more it places important discretionary authority in the hands of nonfederal actors, and the more the interests and goals of these actors diverge from those of the federal government---the more difficult will be the *implementation* of the resulting program and the less likely will the program be to *achieve its goals* (267, emphasis added).

However others stress that there may be another reason for lack of effectiveness. Although the first has to do with implementation failure, as illustrated above, the second has to do with failure of the activities to bring about the desired effects, or "theory failure" (Weiss 1997 and Palumbo and Calista 1990). It is important to determine whether or not the program theory makes sense before simply assuming that a program was poorly implemented. For example, in his discussion of evaluability assessments, Wholey (1994) indicated that an evaluator should analyze the logical reasoning that connects program inputs to desired outcomes to see whether or not there was a reasonable likelihood that goals could be achieved.

Similarly, Pressman and Wildavsky (1974) suggest that failure to achieve programmatic objectives, rather than being due to faulty implementation, may in fact be the result of goals being set too high by “top federal officials who wish large accomplishments from small resources in a short time” (xvii). Ripley and Franklin (1982) agree that domestic policies and programs are often oversold by elected officials and thus will fail in meeting their clientele’s expectations.

Although it is outside of the scope of the dissertation to assess the extent to which GAANN’s program theory is appropriate to achieve desired outcomes or whether or not its goals have been set too high, this study does test the proposition in the literature that variation in implementation may lead to variation in effectiveness among grantees. However, if one were to attempt to test whether or not a theory underlying a program is appropriate to achieve desired objectives, such an assessment would only be possible through evaluating the level of effectiveness among grantees that conformed with all program requirements.

CHAPTER III. METHODOLOGY

This dissertation uses the example of the GAANN program to illustrate variation in implementation. Therefore, before discussing the conceptual and operational definitions of the variables, data sources and sampling techniques employed, it is important to briefly present some background on the GAANN program, the full description of which is provided as Appendix A.

The GAANN Fellowship program is sponsored by the U.S. Department of Education. It was first authorized in 1986 and first funded in fiscal year 1988 under Title IX of the Higher Education Act. Since fiscal year 2000, it has been part of Title VII. The GAANN fellowship program provides three-year grants to institutions of higher education to

assist graduate students with excellent records who demonstrate financial need and plan to pursue the highest degree available in a field designated as an area of national need (GAANN Web Site 2002).

The Secretary of Education determines areas of national need in consultation with the National Science Foundation, National Academy of Sciences, National Endowment for the Arts and Humanities, and federal and nonprofit agencies and organizations. In fiscal year 1997, the cohort used for this study, proposals were funded in the areas of biology, chemistry, computer science, engineering, mathematics, physics, as well as a number of interdisciplinary programs.

GAANN not only provides funds to universities to cover fellows' stipends, but also an institutional payment to cover fellows' tuition and required fees. The stipend is currently \$18,060, or the level of a fellow's financial need, whichever is less. Financial need must be determined in accordance with Title IV, Part F of the Higher Education Act, which is the same methodology used in determining financial need eligibility for federal student loans.

The institutional payment is currently \$10,857. After an institution covers fellows' tuition and fees, it may use the balance of the institutional payment to cover their research-and course-related equipment, supply and travel expenses.

Grantees formulate their own methods for selecting fellows. To be eligible, a student must be academically qualified, plan to pursue a Ph.D. in a funded research area, and be a U.S. citizen or permanent resident. Grantees must conform with a variety of regulations and implement a number of program components. For example, they must ensure that fellows are making satisfactory academic progress; engage in a one-year supervised teaching experience; and are funded by institutional or GAANN funds until they graduate, or for five years, whichever is less. Grantees also must fulfill a 25% matching requirement, which may be provided through additional fellowships, fellowship supplements, tuition remission, or other similar means.

Conceptual and Operational Definitions of Variables⁵

Grantee Capacity

Grantee capacity is an independent variable that has four dimensions:

- 1) human resources, including the number of personnel responsible for grant implementation and the experience of the grantee unit in managing GAANN grants;
- 2) size of graduate program;
- 3) organizational level of the grantee unit; and
- 4) ability of the grantee to cope with the constraints inherent in the federal regulations and program management.

⁵ See Appendix B for a presentation of the specific values used for each of the on-line survey and other items.

Human Resources

The construct “human resources” has two dimensions: 1) the number of personnel allocated to GAANN administration; and 2) the grantee unit’s prior experience in managing GAANN grants.

Data for the first dimension were gathered from items 1 and 4 on the web survey. Item 1 asked respondents for the number of PI’s of record associated with their 1997 GAANN grant. Item 4 asked respondents for the amount of time each type of staff member cumulatively spent annually in helping to implement GAANN. In item 4, respondents indicated the percent of time each type of staff member (administrative assistants, professional program managers, or others) spent on GAANN administration. They indicated whether each type of staff spent 70-100%, 40-69%, 10-39%, or less than 10% of their time in implementing GAANN.

When coding this measure the mid-point for each interval was used: .85, .55, and .25. and .05 respectively. Total staff time allocated to GAANN was calculated by adding the midpoints of each interval for each type of employee. The amount of human resources allocated to GAANN management was calculated by adding the number of PI’s of record associated with the 1997 GAANN grant to the estimated percentage of time staff, other than the PI (s), spent annually in implementing GAANN

The second dimension measures prior experience in GAANN management. Data for this dimension also were gathered from responses to the GAANN web survey. Respondents were asked to indicate whether or not their department/unit received GAANN funding prior to 1997. Those responding “yes” received a score of 1, and those responding “no” received a score of 0.

Although it is possible to determine the dollar amount of funding received by each grantee in the 1994 and 1995 fellowship competitions, dichotomizing this measure is appropriate since each dollar granted does not necessarily lead to one additional unit of experience. What is important is that the grantee unit in fact has prior experience in implementing GAANN. Such experience provides GAANN program implementers a better understanding of the GAANN regulations and of what works and does not work in achieving GAANN and grantee goals and objectives.

Size Graduate Program

Size of graduate program is measured by the total number of full-time graduate students seeking the terminal degree in the recipient department/program. The greater the size of the grantee unit, the greater the resources available (capital and otherwise) for grant administration. Data on this measure were collected from 1997 performance reports.

Organizational Level of Grantee Unit

Institutions may have more than one grant and those grants may be administered by different units at different institutions with varying levels of influence. The level of the organizational unit in which a grantee is housed may have an impact on how well a grantee can influence other units that are integral to grant management. It is assumed that university level units have more influence and resources than college units, and college units greater influence and resources than departmental ones. Where two or more units collaborate to implement GAANN, influence is increased.

Therefore, one could measure this variable at the ordinal level. That is, university level units could receive 3 points, college level units 2 points, and departmental units, 1 point. Where two units collaborate to implement GAANN, one might assume that the resources of both units are combined. Thus, these values could be added. For example, a

grant administered by both a departmental and college-level unit would receive a score of 3. A grant administered by a college and university-level unit would receive a 5. Similarly, a grant implemented by a departmental and university-level unit would receive a score of 4. Although a score of 3 could be given to a university level unit acting alone, as well as a college and departmental unit acting together, it is assumed that the combined resources of a departmental and college level unit are equal to those of a university level unit.

However, as will be discussed in Chapter IV, in this research only 9 grants were administered at levels other than solely at the departmental level. Therefore, any finding that indicates the higher the organizational level, the greater the implementation quality may be true in the case of this data set, but generalizing this finding or using it in policy formulation is questionable. What is clear is that administering the grant at a higher level has measurable consequences, but one cannot argue with confidence that the *higher* the level at which the program is administered, the greater the impact. As a result, organizational level is transformed into a dummy variable. Those grants housed solely at the departmental level receive a score of 0, and those housed at the college level, university level, or combination of any of the three levels receive a score of 1. Data were available from responses to a question on the web survey that asked for the unit where PI (s) worked.

Ability to Cope with Federal Constraints

Federal constraints consist of those boundaries under which a GAANN grant is implemented that are external to the grantee. There are two dimensions of such constraints: those having to do with the federal regulations and those having to do with program management. Data were gathered to assess grantee perceptions as to the extent to which the restrictive nature of federal regulations and grant management may have interfered with their

ability to implement GAANN. Grantees were asked to respond on the web survey to the following statements from “strongly agree” to “strongly disagree:”

- The regulatory requirement to use the FAFSA interfered with our ability to implement the GAANN program.
- The regulatory requirement for a one-year supervised teaching experience interfered with our ability to implement the GAANN program.
- Regulatory restrictions that disallow use of GAANN funds for overhead interfered with our ability to implement the GAANN program.
- Late award notification interfered with our ability to implement the GAANN program.

Lack of ability to cope with federal regulations may be viewed as “negative capacity.” Each item is scored from 1 (“strongly agree”) to 4 (“strongly disagree”).” An index was created for each grantee by averaging their scores on all items. By averaging these figures, rather than adding them, the impact of responses of “don’t know” were minimized.

Implementation Quality

As noted previously, “implementation quality” is conceptually defined as 1) the degree to which grantees conform to the federal guidelines regarding program implementation, and 2) the extent to which PI’s implement non-required components designed specifically for GAANN Fellows.

Regulatory Conformity

Regulatory conformity is measured by responses to questions 11, and 15 to 30 on the on-line survey, attached as Appendix B. Items on the survey are based on GAANN regulations in the Federal Register. Likert scaled items 18-28 are coded such that grantees receive a score from 1 to 5 based on the extent to which they conformed with each regulation. Responses of “don’t know” are scored as a 1, the same score as for a lack of conformity. If the PI was unaware of a regulation, he or she could not have conformed with

it (except inadvertently). For multiple-choice items 11, 15, 29 and 30 grantees received either a score of 5 for conformity or 1 for non-conformance. The mean of regulatory conformity scores from all items was calculated to yield a conformity index for each grantee.

Innovativeness

Innovativeness refers to efforts to develop programs or activities that are specifically for GAANN Fellows. This excludes normal university activities where GAANN Fellows were simply required or encouraged to participate. From a review of all 1997 performance reports, there was a clear difference between those efforts that were implemented as a result of the GAANN grant and were designed for GAANN Fellows, and those that were already existing programs where fellows were simply encouraged or required to participate. For the purposes of this measure, the former activities are considered innovations and the later are not.

Most PI's when completing the annual reports indicated that there were activities at their institutions where GAANN Fellows were either required or encouraged to participate. In all of these cases, such activities were really part of the already existing practices at an institution. It takes less effort to require or encourage fellows to participate in already existing activities than it does to actually create new ones for the Fellows. Thus, innovations as defined in this work are those that were designed for GAANN Fellows and either 1) expand on existing program components as outlined in the federal regulations, or 2) have nothing to do with the federal regulations but are meant to achieve GAANN goals.

For example, teaching effectiveness workshops specifically for GAANN Fellows are an expansion of the supervised teaching requirement. GAANN research-related seminars, group meetings, social activities and special mentoring are examples of those that have

nothing to do with the federal regulations yet are meant to achieve GAANN goals. For the purpose of the definition of innovativeness here, it is not relevant as to whether or not activities are expansions or programmatic add-ons. What really matters is whether or not they were developed specifically for GAANN Fellows. Such innovations indicate that a grantee is going that extra mile to achieve GAANN goals.

Data on the extent to which each grantee was innovative in administering GAANN were gathered through responses to item 10 on the on-line survey. Multiple-choice options for this item were developed through an analysis of the narrative sections of the 1997 GAANN performance reports. Item 10 reads as follows:

Check all programs or activities that were developed specifically for GAANN Fellows. (Please do not check normal university activities where GAANN Fellows were simply required or encouraged to participate.)

The sum of the number of innovations checked or added to item 10 yielded a grantee's final "innovativeness" score. Values ranged from 0 to 5.

Effectiveness

Effectiveness is a dependent variable and refers to the extent to which a grantee has achieved the overall federal goals of the program. The overall Federal goal of GAANN is to "sustain and enhance the capacity for teaching and research in areas of national need" (Federal Register 1993: 65838). Another goal that is written into the federal regulations includes a requirement that an institution will "set forth policies and procedures to ensure that in making fellowship awards under this part the institution will seek talented students from traditionally underrepresented backgrounds" (Federal Register 1993: 65844).

Given the fact that using the 1997 cohort will mean that many of the long-term goals will not have been achieved by any of the grantees (e.g., Ph.D. completion rate and employment after graduation.), program effectiveness is measured in terms of immediate

outputs. Here immediate outputs will be used as surrogate measures for intermediate outputs of GAANN at each institution (see Swiss 1991: 361). Data from each institution is compared to the others to determine the extent to which effectiveness varies as a function of institutional capacity and implementation.

Retention

To what extent did GAANN Fellows at each institution remain enrolled in their respective programs? GAANN Final Reports submitted by grantees in fall 2000 asked PI's to indicate whether or not each fellow 1) was enrolled but, not yet advanced to Ph.D. candidacy, 2) left graduate school after completing the master's degree, 3) received the Ph.D., or 4) withdrew for personal or academic reasons. Retention is measured by the percentage of fellows who either were still enrolled or had received the Ph.D. by fall 2000. This percentage is calculated by dividing the number of fellows who were either still enrolled or who had received the Ph.D. by 2000 by the total number of fellows appointed to the 1997 GAANN grant.

Candidacy Achievement Rate

Candidacy is one of the final stages of efforts to achieve the Ph.D. Although many of those who achieve candidacy may later withdraw from a graduate program as "ABD," most will probably graduate. Since it is not appropriate to assume that most of the 1997 cohort fellows had graduated by the time final reports were submitted by grantees in fall 2000, candidacy rate is used as a rough surrogate for degree completion rate.

Candidacy rate is measured as the percent of fellows who 1) began their graduate programs either in Fall 1997 or any semester in 1996, and 2) achieved candidacy or the Ph.D. by 2000. Candidacy rate is calculated by dividing the number of fellows who meet the above

qualifications by the total number of fellows who began their graduate programs in Fall 1997 or at any point in 1996.

The reason for the 1996/Fall 1997 cut off point is that some institutions appointed GAANN Fellows who began their graduate programs as early as 1988. Others appointed fellows as late as 1999. By analyzing data only for those that began in 1996 or Fall 1997, the effect of year of graduate program entry is minimized. For example, if an institution appointed a number of fellows who began their graduate programs well before the beginning of the 1997 GAANN program, their candidacy rate would be artificially inflated. If fellows who began their graduate programs in 1999 were included, the percentage would be artificially deflated. Of course, different institutions may define candidacy in different ways. However, data for this measure were available from GAANN performance reports where PI's were asked to identify fellows who achieved candidacy according to their own institution's definition.

Diversity

The extent of diversity of the fellows appointed to each grant was measured by the percentage of students from underrepresented groups appointed to fellowships. According to the GAANN program, "underrepresented groups" include females of any ethnic origin, as well as American Indian/Alaskan Natives, African Americans, Native Hawaiians or Pacific Islanders, or Hispanics. Data were available from Final Reports.

Data Sources

On-Line Survey

An on-line web survey was created to collect data for measures of grantee capacity and implementation quality. The survey includes Likert-scaled and multiple-choice items. Most of the items related to “conformity” correspond directly to each of the GAANN regulations. As already mentioned, item 10 is in multiple-choice format and is designed to assess the level of “innovativeness” in implementing GAANN.

Prior to asking 1997 cohort grantees to complete the on-line survey, it was carefully reviewed by the U.S. Department of Education GAANN program office and piloted with several current GAANN grantees. Pilot grantees were asked to complete the survey on-line and to provide any suggestions for improvement. After further refinement of the survey, an e-mail was sent to all 67 1997 cohort grantees requesting that they complete the survey.

Annual and Final Performance Reports

Grantees are required to submit both annual and final performance reports to the U.S. Department of Education. Annual reports are due each April and final reports 90 days after the end of the grantee’s project period. Examples of both reports are included in Appendix C.

There were 59 1997 annual performance reports available for analysis. The 1997 reports include information related both to grantee capacity and conformity, as well as a narrative section where grantees were expected to respond to the following:

Attach a brief narrative statement comparing your project’s objectives and activities, as proposed in your approved grant application, with the level of accomplishment attained for each objective and activity. If a planned objective or activity was not attained or conducted, explain why and what if any, corrective measures were taken.

The narrative section not only yielded qualitative data on the accomplishments and activities of each program, but also information that was used to construct the item on the survey to assess the extent to which each grantee was “innovative.” There were 48 final performance reports available for analysis, which were used primarily to gather data to measure “effectiveness.”

Sampling Procedure

The primary unit of analysis is the grantee. A census of all grantees awarded GAANN funds by the U.S. Department of Education in 1997 was conducted and data from those who responded analyzed. The reason for using the 1997 cohort is that this was the only cohort for which annual and final report data were available from the GAANN program office.

There were 67 grantees at 46 institutions of higher education in the 1997 cohort. Annual reports were available for 59 of the grantees and final reports for 48. All 67 grantees were asked to complete the on-line survey, and 49% (33 grantees) responded. The 33 respondents represented 27 institutions, or 59% of institutions in the 1997 cohort. The characteristics of the grantees responding to the survey, along with response rates when the grantees are stratified by several of these characteristics, are included in the next chapter. Attached as Appendix D is a spreadsheet with GAANN data used in this study, which includes a complete list of 1997 cohort grantees for whom annual and final performance reports were and were not available.

Data Analysis

The next chapter analyzes the data via multiple regression analysis. Such an analysis not only reveals the total amount of variance in each dependent variable explained by all independent variables in a given model, but also the relative importance of each of the variables within each model. The relationships to be critically examined in Chapter IV are as follows:

- 1) The amount of variance in “conformity” explained by the combination of variables included as dimensions of “grantee capacity;”
- 2) The amount of variance in “innovativeness” explained by the combination of variables included as dimensions of “grantee capacity;”
- 3) The relative importance of each dimension of “grantee capacity” in explaining variation in each dimension of “implementation quality;”
- 4) The amount of variance in each dimension of “effectiveness” taken separately explained by the combination of “conformity” and “innovativeness.”
- 5) The relative importance of each dimension of “implementation quality” in explaining the variation in each dimension of “effectiveness;”
- 6) The amount of variance in each dimension of “effectiveness” explained by the combination of variables included as dimensions of “grantee capacity;”
- 7) The relative importance of each dimension “grantee capacity” in explaining the variation in each dimension of “effectiveness.”

The extent to which the findings can be interpreted by various theories of behavior within organizations is examined in Chapter V by:

- 1) Identifying the degree of consistency between the levels of implementation quality and the hypothetical types that have been created.
- 2) Examining the plausibility of interpretations of the findings from both theoretical perspectives.

Limitations of Methodology Employed

There are two methodological concerns that relate to data collection methods that should be addressed at this point. First, when conducting a census where not all in the census are included in data analyses, it may be argued that the characteristics of the respondents are systematically different than non-respondents. This has potential to impact generalizability of the findings. Chapter IV will address this concern by analyzing the extent to which respondent grantees are representative of all 1997 cohort grantees.

Second, it is important to note a pitfall related to “local history” effects using data from one cohort of GAANN grants. For example, retention of Ph.D. students, which is one component of effectiveness, may be affected by economic conditions. In years where the job market is strong for students in areas of national need (primarily science, math and engineering) the salaries companies offer to students with only a master’s degree are irresistible to most graduate students who are receiving a relatively small GAANN stipend. Thus, economic conditions (which vary during different periods of time) may adversely affect retention rates and have nothing to do with the GAANN program.

CHAPTER IV. FINDINGS AND ANALYSIS

This chapter is divided into two sections. The first section presents an analysis of the response rates to the GAANN survey using descriptive statistics. The data indicate that the respondents to the survey are in fact representative of the entire 1997 GAANN cohort, and that the characteristics of the respondents were not systematically different than non-respondents. The second section answers the research questions presented in Chapter I through quantitative methods. Again, interpretation of the findings using the typology presented earlier will be presented in Chapter V.

Analysis of Survey Response Rates: Respondent Versus Population Characteristics

As indicated in Chapter III, 33 (49%) of the 67 grantees responded to the GAANN survey. The 33 grantees represented 59% of the GAANN institutions that received a 1997 grant. Tables 4-1 to 4-5 imply that the respondents are similar to the population. Proportions are similar in terms of geographical region, prior experience in administering GAANN grants, field of study, institution type (public or private), and institutional Carnegie classification. A complete list of all grantees is presented as Appendix E.

Table 4-1 below divides grantees according to the seven regions of the U.S. they represent and presents the percent of grantees from each region in both the population and among survey respondents. Table 4-2 divides grantees into two categories: those awarded new three year GAANN grants in 1994 and/or 1995, and those who did not receive such funding, thus measuring most recent prior experience with implementation of GAANN.⁶

⁶ Although this is not the same measure of experience as will be used in the quantitative analysis later in this chapter, it does measure the same concept. The reason for reporting experience with 1994 and 1995 grants at

Table 4-3 divides the grants funded in 1997 into the seven broad areas of study to assess the extent to which each area was represented among respondents. Table 4-4 presents data on the proportion of public versus private institutions in the population and among respondents. Table 4-5 shows the proportions of grantees in the four Carnegie classifications represented by 1997 cohort institutions.

Table 4-1. Geographical Region of Grantees

Region	% in Population (N=67)	% Represented By Respondents (N=33)
Northeast	18% (12)	15% (5)
Southeast	9% (6)	15% (5)
South	10% (6)	15% (5)
Midwest	34% (24)	30% (10)
West	21% (14)	18% (6)
Southwest	6% (4)	6% (2)
Puerto Rico	1% (1)	0% (0)

Table 4-1 indicates that all regions, except Puerto Rico, are represented among respondents. In addition, the regional distribution of grantees among respondents is roughly proportional to the distribution in the population, with the exception of the Southeast, which is slightly over-represented among respondents.

Table 4-2. Prior Experience of Grantees

GAANN Support in 1994 and/or 1995	% in Population (N=67)	% Represented By Respondents (N=33)
Yes	40% (27)	42% (14)
No	60% (40)	58% (19)

Source: GAANN Program records.

Table 4-2 illustrates that the distribution of grantees in the population and among survey respondents in terms of most recent prior experience in administering GAANN grants is very similar. As indicated in Chapter III, prior experience is one of the dimensions of grantee

this point, rather than data on all prior experience as reported in GAANN surveys, is that 1994 and 1995 data are available for most grantees.

capacity used as an independent variable in this study. Prior experience here is measured by whether or not a grantee received new funding from GAANN in 1994 and/or 1995.

Table 4-3. Grantee Field of Study

Field of Study	% in Population (N=67)	% Represented By Respondents (N=33)
Biology	13% (9)	18% (6)
Chemistry	16% (11)	9% (3)
Computer Science	7% (5)	3% (1)
Engineering	28% (19)	30% (10)
Mathematics	9% (6)	6% (2)
Physics	15% (10)	18% (6)
Interdisciplinary	10% (7)	15% (5)

Source: GAANN Program records.

Table 4-3 indicates that each of the major fields of study supported by GAANN in 1997 was represented among respondents to the survey. These are the general fields of study as defined by the GAANN program. Interdisciplinary grants are those where departments or programs collaborate to develop a unique research area. For example, at NC State University the departments of Electrical and Computer Engineering, Materials Science and Engineering, Chemical Engineering, Chemistry and Physics were jointly funded by GAANN to support fellows in the interdisciplinary research area of electronic materials. Although all fields of study in the population were represented by respondents, grantees that received funding in chemistry and computer science were slightly underrepresented. Those receiving funds for interdisciplinary programs were slightly over-represented.

Table 4-4. Public Versus Private Institutions

Type of Institution	% in Population (N=46)	% Represented By Respondents (N=27)
Public	70% (32)	81% (22)
Private	30% (14)	19% (5)

Note: Public versus private institutions are defined by the Carnegie Foundation.

Table 4-4 indicates that the proportion of public versus private institutions among survey respondents is roughly similar to the population. 35.7% of all private institutions supported in 1997 responded to the survey, versus 68.7% of public institutions. It is important to note that only 5 private institutions out of the 27 responding to the GAANN survey are included in the analysis that follows. Private universities therefore are underrepresented in the dataset used for this research, which may have implications for generalization of the findings to such institutions.

Table 4-5. Carnegie Classification of Institutions

Carnegie Classification	% in Population (N=46)	% Represented By Respondents (N=27)
Doctoral Extensive	78% (36)	81% (22)
Doctoral Intensive	17% (8)	15% (4)
Masters	2% (1)	4% (1)
Medical	2% (1)	0% (0)

As indicated in Table 4-5, most of the institutions in both the population and among respondents were housed at "doctoral extensive research universities." A much smaller percentage of institutions represented doctoral intensive and master's institutions. The one medical institution funded in 1997 was not among the respondents. The following are definitions of each of the Carnegie Classifications represented by 1997 GAANN cohort grantees:

- **Doctoral Extensive Research Universities:** Those that typically offer a wide range of baccalaureate programs, and are committed to graduate education through the doctorate. They award 50 or more doctoral degrees per year across at least 15 disciplines
- **Doctoral Intensive Research Universities:** Those that typically offer a wide range of baccalaureate programs, and are committed to graduate education through the doctorate. They award at least ten doctoral degrees per year across three or more disciplines, or at least 20 doctoral degrees per year overall.

- Masters Colleges and Universities: Those that typically offer a wide range of baccalaureate programs and are committed to graduate education through the master's degree. They award 40 or more master's degrees per year across three or more disciplines.
- Medical Schools and Medical Centers: Those that award most of their professional degrees in medicine. In some instances, they include other health professions programs, such as dentistry, pharmacy, or nursing" (Carnegie Foundation Web Site 2002).

**Systematic Differences Between Respondents and Non-Respondents:
Measures of Capacity, Regulatory Conformity, and Effectiveness**

Table 4-6 below demonstrates that there are not any systematic differences between respondents and non-respondents that could have had an impact on the findings in terms of measures of grantee capacity, implementation quality and effectiveness. The fact that the respondents and non-respondents did not systematically differ means that the findings based on survey data are potentially generalizable to the non-respondents, and hence the entire population of 1997 cohort grantees.

Table 4-6. Characteristics of Respondents Versus Non-Respondents

Type	Mean Size of Graduate Program	% Conforming to Financial Need Regulations	Diversity	Retention Rate	Candidacy Rate
Respondents	119 (N=32)	66.7% (N=33)	45% (N=25)	85% (N=25)	43% (N=25)
Non-Respondents	100 (N=30)	73% (N=22)	50% (N=22)	86% (N=22)	51% (N=22)

Source: GAANN Performance Reports.

The average number of full-time graduate students in recipient departments or programs varied between respondents and non-respondents by only 19 students. In addition, the percent of students from underrepresented groups varied by only 5%, retention rates by only 1% and candidacy rates by only 8%.

The percent of grantees conforming to the financial need regulations is one of many dimensions of regulatory conformity discussed in Chapter III. Final performance reports

indicated that 73% percent of non-respondent grantees conformed with this requirement. That is, they always assessed financial need in accordance with the federal guidelines. Responses to GAANN survey item 24, which asked grantees to indicate whether or not they used the federal methodology to assess financial need, indicated that approximately 67% actually did so at all times. Although this is not a complete measure of regulatory conformity, the fact that the proportion of those conforming with this major requirement among respondents and non-respondents is similar (a difference of only 6%) indicates that the respondents may not differ in a systematic way in terms of this characteristic.

Answers to the Research Questions

In the sections that follow, the research questions presented in Chapter I will be answered through an analysis of data generated from GAANN surveys, as well as annual and final reports. Again, the central research questions are as follows.

1. To what extent does capacity vary among GAANN grantees?
2. To what extent do grantees vary in the degree to which they conform with GAANN regulations as set forth in the Federal Register?
3. To what extent do grantees vary in their efforts to implement additional non-required program components ("innovativeness")?
4. To what degree do grantees vary in their level of effectiveness?
5. To what extent does variation in the level of grantee capacity contribute to variation in regulatory conformity?
6. To what extent does variation in the level of grantee capacity contribute to variation in PI efforts to implement additional non-required program components for GAANN Fellows ("innovativeness")?
7. To what extent does grantee capacity and/or implementation variation account for variation in program effectiveness?

*Variation in Grantee Capacity Among Survey Respondents*⁷

The findings indicate that there was much variation within each of dimension of grantee capacity among survey respondents. Table 4-7 illustrates this variation.

Table 4-7. Variation within Dimensions of Grantee Capacity

Descriptive Statistic	Number of Personnel (N=32)	Size of Graduate Program (N=32)	Ability to Cope with Federal Constraints (N=32)
Mean	2.27	119	2.66
Standard Deviation	1.29	141	.58
Minimum	1	6	1.33
Maximum	7.3	659	4

Note: For the above variables, the greater the score, the greater the grantee capacity. Measures for each are described in detail in Chapter III.

As the table indicates, the number of personnel responsible for GAANN implementation ranged from 1 Principal Investigator (PI) without any staff support to 7.3 PI's and staff. Size of graduate program also varied. The range between large and small graduate programs was quite significant, with a spread of 653 students.⁸ Of all grants implemented by respondents, 23 were administered solely at the departmental level, 2 solely at the college level, 2 solely at the university level, 2 through a combination of departmental and college-level units, and 3 through a combination of departmental and university-level units. The scores for organizational level were dichotomized. Grants housed solely at the departmental level received a score of 0. Those housed at the college level, university level, or combination of any of the three levels received a score of 1.

⁷ Data for 1 of the 33 respondents is not included in the following analysis since responses to survey questions were not reliable and data were neither available from annual nor final reports.

⁸ One grantee had 659 graduate students in its program. Although this score may be considered as an outlier, this grantee was not excluded from the analysis that follows. When the same regression analyses were conducted excluding this case, the findings remained approximately the same. In addition, based on an assessment of residual plots, this case did not appear to have extreme influence on the strength of the model.

Finally, ability to cope with federal constraints ranged from 1.33 to 4 and was based on responses to items 6-9 on the GAANN survey that asked grantees to indicate the extent to which each of four federal constraints interfered with their ability to implement GAANN. The higher the score, the greater the capacity to cope with the federal regulations and federal program management. Survey responses indicated that grantees were most able to cope with the teaching requirement and the regulatory restrictions that prohibit the use of GAANN funds for overhead. They were least able to cope with late award notification and the regulatory requirement to use the FAFSA to assess financial need for GAANN Fellows. Table 4-8 summarizes responses to each of the survey items.

Table 4-8. Extent to Which Federal Constraints Interfere with Grantees' Ability to Implement the GAANN Program

Survey Item	Strongly Agree	Agree	Disagree	Strongly Disagree
The regulatory requirement to use the FAFSA interfered with our ability to implement the GAANN program.	25%	41%	31%	3%
The regulatory requirement for a one-year supervised teaching experience interfered with our ability to implement the GAANN program.	0%	18%	39%	42%
Regulatory restrictions that disallow use of GAANN funds for overhead interfered with our ability to implement the GAANN program.	0%	13%	47%	40%
Late award notification interfered with our ability to implement the GAANN program.	25%	41%	31%	3%

Source: GAANN Survey

The following quotes extracted from GAANN surveys and annual reports illustrate how regulations and program management may affect implementation. In the first case, late award notification had an impact on recruiting ability. In the second case, the grantee was able to cope with this constraint. (The second quote has been altered to preserve anonymity.)

Our biggest problem was that the grant was awarded after the recruiting season was over in the first year. And in the subsequent years, grants for new fellows were cut. So the upshot was that we were not given a proper chance to recruit ANY quality candidates for this program, which we would otherwise certainly would have been able to do (GAANN Survey).

[Our program] developed an attractive brochure describing the GAANN program at [our university]. This particular brochure and other already existing program flyers and pull-out bingo-cards were sent to each and every electrical engineering and physics department in the U.S. as well as to student chapters of IEEE and SPS. These mailings were conducted in Summer 1997 and were then followed up with phone-calls in fall 1997. [Our program] made special use of professional contacts of the faculty members to attract underrepresented students. The Director also made many telephone calls, in addition to writing letters, to such interested students to follow up on their application for admission (GAANN Annual Report).

The following two quotes from GAANN surveys illustrate how universities may or may not have difficulty coping with the requirement to determine financial need in accordance with the GAANN regulations:

We made one offer that had to be rescinded because the student had too much money in the bank.

Why is it necessary to have a means test for GAANN students? In our program we have NEVER had any student fail the means test. It seems to be a waste of time and effort to go through this exercise to determine financial need for graduate students when virtually all of them qualify for the full fellowship.

In the first quote, the financial need regulation had an impact on how well the grantee could recruit the best and the brightest graduate students to the GAANN program. The second indicates that some universities have found ways to assess financial need at the full stipend level for almost all fellows.

Variation in Regulatory Conformity Among Survey Respondents

There also was significant variation in terms of regulatory conformity among survey respondents. Respondents were scored on a scale from 1 to 5, with 1 being the least conforming and 5 being the most conforming. The actual regulatory conformity range among respondents was from 3.47 to 5, with a mean of 4.5. On average, of the respondents 9 percent (3) "sometimes conformed" with the regulations scoring from 3.47-3.73, a full 75% (24) "almost always conformed" (4.07-4.93), and only 16% (5) "always conformed" with the regulations. Table 4-9 indicates the percentage of grantees that "always conformed," "almost always conformed," "sometimes conformed," "almost never conformed," and "never conformed" with each GAANN regulation. The numbering on the table corresponds with item numbers on the web survey attached as Appendix B.

Table 4-9. Level of Conformity with Each GAANN Regulation

GAANN Requirement to:	Always	Almost Always	Sometimes	Almost Never	Never
15. Provide a supervised teaching experience for Fellows	53%	N/A	N/A	N/A	47%
18. Select Fellows on the basis of academic excellence	53%	38%	3%	6%	0%
23. Determine Fellows' stipend levels according to financial need	63%	19%	13%	0%	6%
24. Determine Fellows' financial need in accordance with the "federal methodology"	66%	6%	19%	0%	9%
21. Appoint only Fellows intending to pursue teaching or research careers	68%	29%	3%	0%	0%
26. Provide Fellows with funding after the termination of their GAANN appointment	72%	22%	3%	3%	0%
29. Use GAANN funds only for expenses permitted in the federal regulations	81%	N/A	N/A	N/A	19%
28. Ensure Fellows are not engaged in gainful non-curriculum related employment while on GAANN tenure	84%	9%	0%	0%	6%
25. Ensure Fellows are enrolled full time	91%	6%	3%	0%	0%
27. Provide Fellows with <u>no more than</u> five years of GAANN support	91%	3%	6%	0%	0%
20. Appoint only Fellows intending to pursue the doctorate	94%	3%	3%	0%	0%
30. Evaluate the GAANN program for the purpose of program improvement	94%	N/A	N/A	N/A	6%
11. Implement methods to recruit students from underrepresented groups	97%	N/A	N/A	N/A	3%
19. Appoint only Fellows who are U.S. citizens or permanent residents	97%	3%	0%	0%	0%
22. Monitor Fellows' academic progress	97%	3%	0%	0%	0%

Notes: N/A is indicated in cells where data were not collected due to dichotomization of conformity levels (Items 11,15,29, and 30 on the GAANN survey). Percentages may not sum to 100% due to rounding.

The areas where conformity varied the most related to the supervised teaching requirement, criteria used to select fellows, and the financial need requirement. A full 47 percent of respondents did not conform in some way with the supervised teaching requirement. Conformity with this regulation was assessed through an analysis of responses to item 15 on the survey which asked respondents to indicate the methods used to provide fellows with a supervised teaching experience. This regulation requires that fellows engage in a supervised teaching experience equivalent to at least a half-time teaching assistantship. Thus, those respondents indicating that they did not use any methods, did not require teaching at least equivalent to a half-time teaching assistantship, or did not include some sort of supervision were coded as non-conforming.

The regulations also indicate that stipend amounts should not exceed a fellow's level of financial need. Therefore, to gauge level of conformity within this dimension, respondents were asked simply whether or not they determined Fellows' stipend levels in accordance with their financial need. Of the 32 respondents, 63% always conformed with this regulation, 19% almost always conformed, 13% sometimes conformed, and 6% never conformed.

A number of survey respondents commented on their discontent regarding this regulation. A few quotes from GAANN surveys are included below since this regulation has been the primary source of contention between GAANN and its grantees. Some respondents believe that GAANN fellowships, like almost all other fellowships, should be based on merit. Others assert that even if the financial need component remains as part of the GAANN regulations that the methodology for determining financial need for fellows is flawed.

GAANN Fellowships are not competitive in attracting the best students to doctoral study in engineering and science because they are based on financial need. They should be based on merit.

The financial need requirement is humiliating and should be abolished by the politicians who established it. The GAANN grants should be merit grants, and indeed the stipends are now tied (at least in principle) to the stipends of the NSF Fellowships, which are merit awards. The whole FAFSA financial needs process is time consuming for staff and students and completely unnecessary. It is followed up on our campus by further evaluations, with broad criteria, by the Student Financial Aid Office and our own PI and Departmental Manager. All of this is an enormous waste of time and could result in a student not receiving the full amount of the stipend. So far we have been able to avoid that.

Eliminate the federal methodology as a means for need determination. It is designed for undergraduates, rather than graduate students who may have quit their job to attend graduate school. Fellows are not allowed to have any outside employment.

Finally, only 53% of grantees selected fellows on the basis of academic excellence.

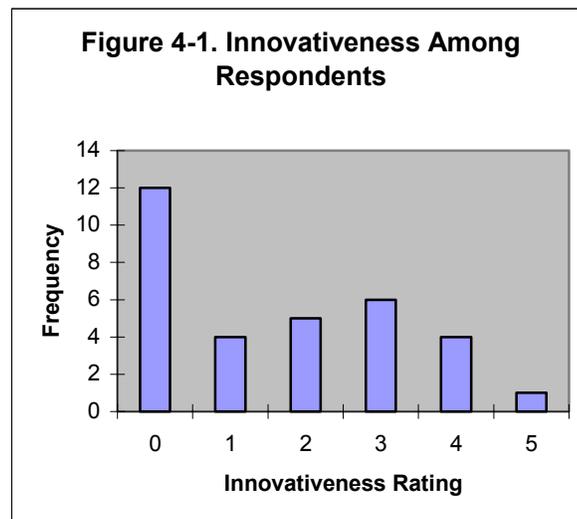
According to the regulations, Fellows are to be selected according to merit criteria and subsequently their stipend level is to be determined by financial need. It is apparent that these two regulations may conflict to an extent to many PI's. Perhaps they are selecting students on the basis of financial need so that they do not make fellowship offers to students who will not accept them.

In sum, there are two patterns that emerge from Table 4.9. First, in general grantees conform with the federal regulations. The lowest level of conformity is 53% and the highest 97%. There were not any grantees that did not conform with any of the regulations or even with most of the regulations. In contrast to the picture painted in the literature of proxies that deviate substantially from the directions of principals, there is no evidence of such behavior among these grant recipients. For this reason, the typology presented in Figure 1-2 does not include a category for nonconforming proxies, but merely relatively low conforming ones. Second, although there was a generally high level of conformity among grantees, lack of conformity seemed to manifest itself within the most central regulations of GAANN:

teaching, selection, and financial need. The implications of this finding are examined in Chapter V.

Variation in Innovativeness Among Survey Respondents

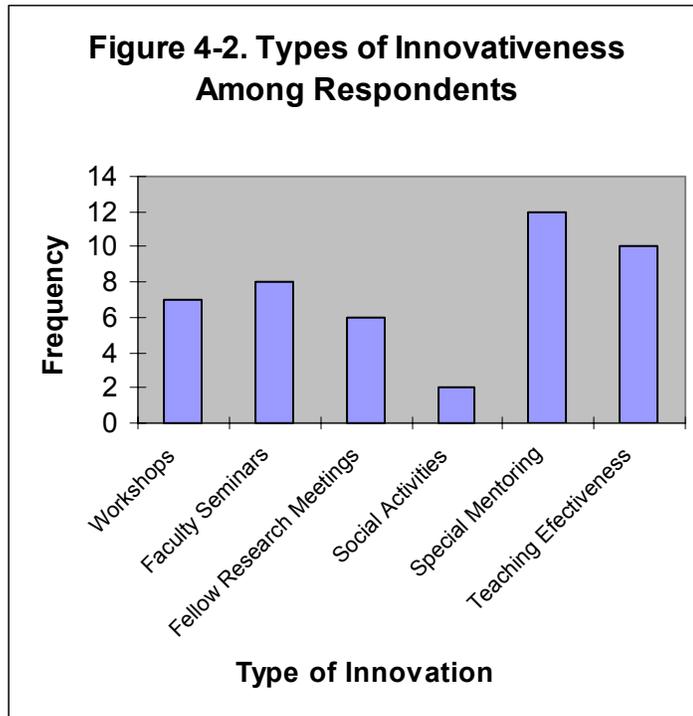
Figure 4-1 illustrates the extent to which respondents varied in the extent to which they were innovative.



Source: GAANN Surveys

Rates ranged from 5 for the most innovative to 0 for those that were not innovative at all. A full 37.5% of grantees did not go beyond minimal program requirements when implementing GAANN. However, most grantees did to some degree create program components that were not mandated.

Figure 4.2 indicates the frequencies of the types of innovations implemented by respondent institutions, including GAANN professional development seminars/workshops, GAANN research related seminars at which faculty discuss their research, GAANN Fellow group meetings where fellows share their research with each other, GAANN social activities, mentoring for GAANN Fellows, not provided to others, and teaching effectiveness seminars and workshops for GAANN Fellows.



Source: GAANN Surveys

Over half of the grantees with at least one innovation provided special mentoring to GAANN Fellows, and half provided programs to improve teaching effectiveness.

Variation in Effectiveness Among Survey Respondents

Table 4-10 describes the variation within each of the dimensions of effectiveness.

Table 4-10. Variation Within Dimensions of Effectiveness

Descriptive Statistics (N=25)	Diversity	Retention Rate	Candidacy Rate
Mean	45%	85%	43%
Standard Deviation	18.6%	10.5%	32.9%
Minimum	15%	62%	0%
Maximum	86%	100%	100%

Note: 25 respondents had useable final report data relating to effectiveness.

For each of the above items, the higher the percentage, the greater the level of effectiveness.

The findings indicate that respondents varied significantly in terms of the percent of students appointed from underrepresented groups, retention rates and candidacy rates. The table also indicates that grantees were most successful in their efforts to retain GAANN Fellows and

substantially less successful in terms of the percent of their fellows achieving candidacy by 2000.

Table 4-10 also indicates that respondent grantees appointed an average of 45% of their students from underrepresented groups as defined by GAANN. Although this seems high, it is important to note that women from all ethnic groups are included in GAANN's definition of underrepresented groups. When white females are excluded from the data, only 12.1% were from underrepresented racial and ethnic groups: 8% African American; 3.8% Hispanic; and .3% Native American. However, this exceeds the national percentages for African Americans pursuing graduate degrees in science and engineering, which ranged from 4.7% in 1997 to 4.9% in 1999. The percentage of GAANN Fellows who were either Native American or Hispanic was similar or slightly lower than the national percentages.

Nationally, the percent of Hispanics in science and engineering graduate programs ranged from 3.7% in 1997 to 4% in 1999. Native Americans accounted for .4% of such graduate students from 1997 to 1999 (NSF 2001a). The percentage of women appointed as GAANN Fellows slightly exceeded the national percentages. On average, 34% of the students appointed to GAANN Fellowships were women. The national percentage of women pursuing graduate degrees in the science and engineering fields supported by GAANN ranged between 31% in 1997 to 32% in 1999 (NSF 2001b).

Relationships Among Variables⁹

Multiple regression analysis was used to assess the strength of the relationships between grantee capacity and implementation quality, implementation quality and effectiveness, and between grantee capacity and effectiveness. Tables 4-11 to 4-13 below present the amount of variance in the given dependent variables that can be attributed to the combination of variables in a given model. In addition, standardized regression coefficients (or beta weights) are presented to assess the relative importance of each of the independent variables within each model. Significance levels are not reported since a census, rather than a random sample, of 1997 cohort grantees was conducted.

Grantee Capacity and Implementation Quality

Table 4-11 indicates the strength of the relationship between the variables that comprise the constructs of grantee capacity and implementation quality.

Table 4-11: Grantee Capacity and Implementation Quality

Grantee Capacity	Regulatory Conformity	Innovativeness
Number of Personnel	-.256	.182
Prior Experience	-.008	.011
Size of Graduate Program	-.089	-.095
Organizational Level	.207	.248
Ability to Cope with Federal Constraints	.092	-.023
R²	.106	.087

Note: Figures are standardized regression coefficients.

The findings indicate that grantee capacity explains approximately 11% of the variance in regulatory conformity. The standardized regression coefficients reveal that variables having the strongest influence on regulatory conformity when controlling for the other variables in

⁹ Regression output, as well as a correlation matrix that includes the independent relationships among all variables, is included as Appendix F.

the equation are number of personnel and organizational level. There is a negative relationship between number of personnel and regulatory conformity. That is, the greater the number of personnel, the lower the regulatory conformity. Possible explanations for this negative relationship will be discussed in Chapter V. Grantees that administer their GAANN programs in units outside the department or in a combination of units are more likely to conform with the federal regulations than those housed solely at the departmental level.¹⁰ Grantee capacity explains approximately 9% of the variance in innovativeness. Again, organizational level and number of personnel have more influence on innovativeness than any other variables in the model. In this case, however, both relationships are positive.

Implementation Quality and Effectiveness

Table 4-12 presents the strength of the relationship between implementation quality and effectiveness.

Table 4-12: Implementation Quality and Effectiveness

Implementation Quality	Diversity	Retention Rate	Candidacy Rate
Regulatory Conformity	-.326	.248	.185
Innovativeness	.248	.104	.296
R²	.139	.081	.141

Note: Figures are standardized regression coefficients.

The findings indicate that implementation quality accounts for approximately 14% of the variance in diversity, 8% of the variance in retention rate, and 14% of the variance in candidacy rate. Regulatory conformity has a slightly greater impact than innovativeness on diversity and retention rate, and slightly less of an impact than innovativeness on candidacy rates. The relationship between regulatory conformity and diversity, however, is negative. The negative relationship between regulatory conformity and diversity may in part be

¹⁰ See Appendix G for regression output that resulted when organizational level is measured at the ordinal level.

explained by the findings that indicate that late award notification had an adverse impact on many grantees' ability to implement GAANN (see Table 4-8). Late award notification for some grantees meant that they were unable to use GAANN funds to recruit new graduate students into their program. Diversity is not increased when such funds are used to recruit already enrolled graduate students.

Grantee Capacity and Effectiveness

Finally, Table 4-13 presents the relationships between grantee capacity and effectiveness to the exclusion of implementation quality.

Table 4-13: Grantee Capacity and Effectiveness

Grantee Capacity	Diversity	Retention Rate	Candidacy Rate
Number of Personnel	.206	.125	-.340
Prior Experience	-.315	-.015	.242
Size of Graduate Program	.030	.103	-.307
Organizational Level	.144	.164	.417
Ability to Cope with Federal Constraints	-.094	.298	-.557
R²	.171	.215	.435

Note: Figures are standardized regression coefficients.

The findings indicate that grantee capacity accounts for approximately 17% of the variance in diversity, 22% of the variance in retention rate, and a full 44% of the variation in candidacy rate. The most important explanatory factor in the model having an impact on diversity is prior experience, even though it is a negative relationship. Number of personnel and organizational level have the strongest positive relationships with diversity when controlling for other variables in the model. Ability to cope with federal constraints seems to have the strongest positive relationship with retention rate and the strongest negative relationship with candidacy rate. Organizational level and prior experience have the strongest positive relationships with candidacy rate. Another notable finding is that the relationship grantee capacity and effectiveness appears to be stronger than the relationship

between implementation quality and effectiveness (see Table 4-12). As later discussion will indicate, a particular combination of the elements of implementation quality is associated with higher levels of effectiveness.

Model Strength when Controlling for Carnegie Classification

As indicated in Table 4-5, 19 percent of the institutions responding to the survey were either from doctoral intensive or master's institutions. Certain characteristics of these institutions are different than those of doctoral extensive institutions and hence one may argue that the findings will be skewed due to their inclusion in the study. Thus, it is important to investigate whether or not the characteristics and performance of doctoral extensive institutions is different from that of the entire sample that includes doctoral intensive and master's institutions. Tables 4-14 to 4-16 indicate the relationships among the variables when only such grantees are included in the data. The values of standardized regression coefficients and R^2 from the prior analysis using all institutions are in parentheses.

**Table 4-14: Grantee Capacity and Implementation Quality:
Grantees from Doctoral Extensive Institutions**

Grantee Capacity	Regulatory Conformity	Innovativeness
Number of Personnel	-.311 (-.256)	.164 (.182)
Prior Experience	-.123 (-.008)	-.024 (.011)
Size of Graduate Program	-.246 (-.089)	-.012 (-.095)
Organizational Level	.304 (.207)	.243 (.248)
Ability to Cope with Federal Constraints	.132 (.092)	.054 (-.023)
R²	.196 (.106)	.099 (.087)

Notes: Figures are standardized regression coefficients. The values of standardized regression coefficients and R^2 from the prior analysis using all institutions are in parentheses.

**Table 4-15: Implementation Quality and Effectiveness:
Grantees from Doctoral Extensive Institutions**

Implementation Quality	Diversity	Retention Rate	Candidacy Rate
Regulatory Conformity	-.487 (-.326)	-.081 (.248)	.092 (.185)
Innovativeness	.403 (.248)	.410 (.104)	.312 (.296)
R²	.248 (.139)	.149 (.081)	.128 (.141)

Notes: Figures are standardized regression coefficients. The values of standardized regression coefficients and R² from the prior analysis using all institutions are in parentheses.

**Table 4-16: Grantee Capacity and Effectiveness:
Grantees from Doctoral Extensive Institutions**

Grantee Capacity	Diversity	Retention Rate	Candidacy Rate
Number of Personnel	.185 (.206)	.114 (.125)	-.369 (-.340)
Prior Experience	-.369 (-.315)	-.181 (-.015)	.114 (.242)
Size of Graduate Program	.004 (.030)	-.020 (.103)	-.336 (-.307)
Organizational Level	.183 (.144)	.309 (.164)	.474 (.417)
Ability to Cope with Federal Constraints	-.091 (-.094)	.307 (.298)	-.572 (-.557)
R²	.199 (.171)	.268 (.215)	.437 (.435)

Notes: Figures are standardized regression coefficients. The values of standardized regression coefficients and R² from the prior analysis using all institutions are in parentheses.

As when data from all respondents were used in the analysis, controlling for the other variables in the models, organizational level and number of personnel were the most important predictors of regulatory conformity and innovativeness. The direction of their relationships also remained the same. Interestingly, the relationship between regulatory conformity and the three measures of effectiveness were either negative or weak. In contrast, the relationships between innovativeness and each of the three dimensions of effectiveness

were relatively strong and all positive, and this is especially pronounced in the relationship between innovativeness and diversity.

When conducting the same multiple regression analyses for the 27 grantees housed at the 22 doctoral extensive institutions, the strength of the model only slightly increased. The amount of variance in regulatory conformity explained by grantee capacity increased from approximately 11% to 20%. The amount of variance in innovativeness explained by grantee capacity increased from 9% to 10%. Similar to the findings using data from all respondent grantees, the relationship between grantee capacity and effectiveness was stronger than (or approximately the same as) the relationship between implementation quality and effectiveness. Chapter V will interpret these findings through the lens of rational choice and normative theories of public administration to further explain the variance in grantee capacity, implementation quality and effectiveness.

CHAPTER V.

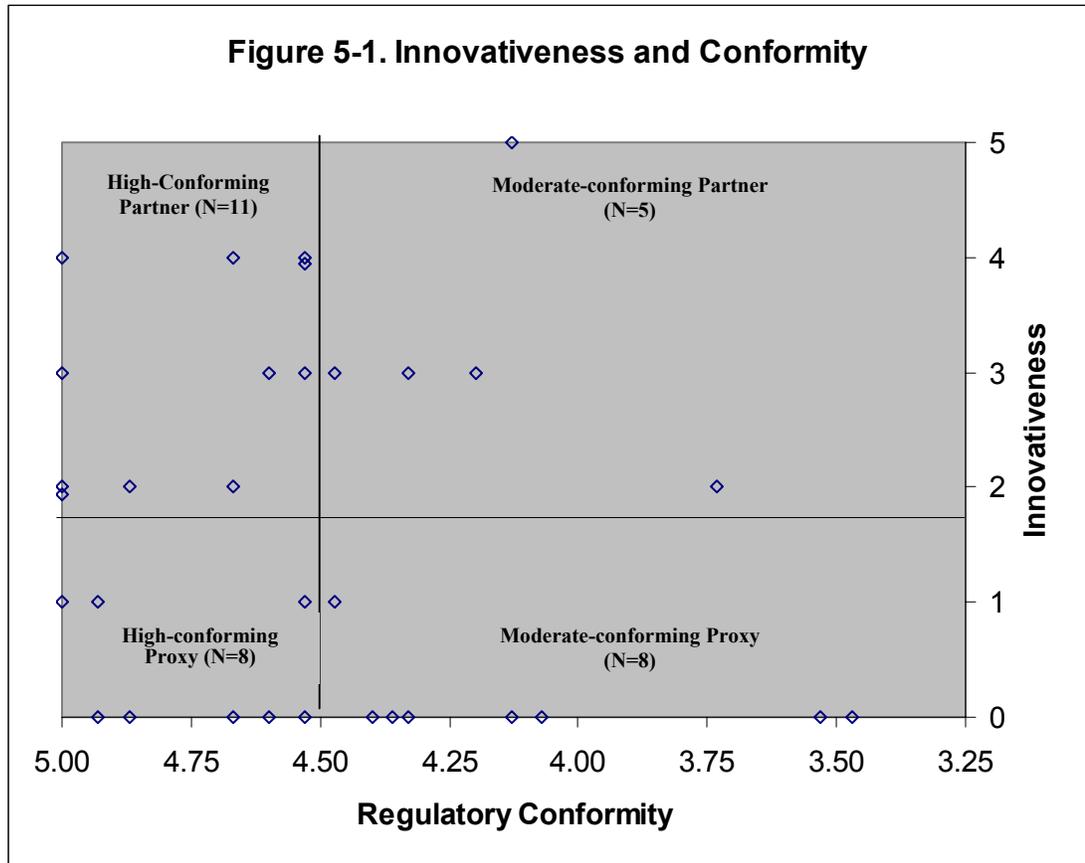
INTERPRETATION OF THE FINDINGS

The presentation of the findings in Chapter IV indicates that the level of conformity to program regulations varies within a narrow range and the level of innovation varies widely. Furthermore, there is wide variation in the level of effectiveness among grantees, especially within the dimensions of diversity and candidacy rate. Based on these findings, how might one explain how universities approach and carry out their role in GAANN grant administration? This chapter interprets the variation in grantee capacity, implementation quality, and effectiveness using norm- and rational choice-based theories of administrative behavior. Based on this interpretation, alternative hypotheses will be generated that may assist scholars explaining at least some of the variation in implementation quality and effectiveness that remained unexplained by the model analyzed in Chapter IV. Although these hypotheses will not be tested in this work, there is sufficient evidence to merit their testing in future research.

Interpretation of the Variation in Grantee Capacity, Implementation Quality, and Effectiveness Using Rational Choice and Normative Theoretical Perspectives

Are there other plausible explanations for the variance in implementation quality, besides grantee capacity? It is after all quite obvious that differences in the level of grantee capacity clarify only a small portion of the variation in the quality of implementation among grantees. To understand what factors may contribute to differences in performance and effectiveness, it is useful to return to the typology developed in Chapter I. The typology used rational choice and normative theories of administrative behavior to predict how grantees might be arrayed in the way that they carried out their responsibilities within the context of

an intergovernmental program. Using the findings of the analysis, each grantee can be placed in its appropriate cell in the two-by-two table. The results are displayed in Figure 5-1.



The vertical and horizontal lines indicate the demarcation points of grantee type. The division for innovativeness is a rate of zero or one for the “proxy” category and two or more for the “partner” category. The division for conformity is less clear-cut. Grantees with a rating over 4.5 are considered high-conforming and those with scores of 4.5 or below are considered moderate-conforming.

One may debate the breaking points for categorizing the grantees. Grantees actually range on a continuum from most to least innovative, and from most conforming to least conforming. Dichotomizing the innovation rates is easier to understand for analytical

purposes. In addition, it is easy to justify since those with two or more innovations have clearly demonstrated their commitment to exceed minimal requirements, whereas true innovativeness is questionable for those with only one or no innovations. The division of conformity rates is more arbitrary. The cutoff of 4.5 is appropriate because it is the mid-point between “always conforming” and “almost always conforming.” Thus, those that fall above this mid-point may be considered “high conforming” and those below it “moderate conforming.”

As discussed in Chapter IV, the level of conformity among grantees is generally high. It is therefore not appropriate to characterize any of the grantees as non-conforming or even low-conforming as indicated by Figure 1-2. Consequently, the less conforming grantees are now labeled “moderate-conforming.” Furthermore, although a two-by-two table will continue to be used here, it is possible that in other studies involving a different kind or more widely varying group of grantees, a two-by-three table would be more appropriate. The literature would suggest that there are low-conforming grantees even though none were found in this sample.

Thus, using the modified terminology, the grantees in this study can be categorized as follows: 11 high-conforming partners, 8 high-conforming proxies, 8 moderate-conforming proxies, and 5 moderate-conforming partners. Again, the categories are not exact and it is evident that there is not extensive variation on one of the dimensions. Those to the left of the solid vertical line are highly conforming and those to the right are relatively non-conforming. Grantees placed above the solid vertical line are moderately to much more innovative than

those below it. We shall examine the extent to which the typology is a useful analytical tool that assists in an interpretation of the findings.¹¹

In the upper half of Figure 5-1, all grantees categorized as "partners" are identified. In the upper left quadrant of the typology are grantees categorized as "high-conforming partners" and in the upper right, "moderate-conforming partners." As explained in Chapter I, high-conforming partners tend to conform with the regulations and implement additional program components that exceed minimal requirements. Moderate-conforming partners may not conform to all program requirements, but they do establish a number of additional non-required program components designed to achieve the same goals as their patron. There were 16 partners among respondent grantees. Presumably, partners make decisions on value-based grounds and share the same goals as their patron. They may or may not conform to certain regulations. If partner type grantees are guided by values, the lack of conformity in the case of the moderate-conforming partners is due to disagreement in principle with certain regulations, not because they were easier not to implement.

In the lower half of Figure 5-1, all grantees categorized as proxies are identified. In the lower left quadrant are those grantees categorized as "high-conforming proxies," and in the lower right, those categorized as "moderate-conforming proxies." High-conforming proxies usually adhere to minimal program requirements but implement few, if any additional program components that exceed minimal requirements. Moderate-conforming proxies conform with fewer program requirements and implement few if any additional program components. There were 16 proxies among respondent grantees. Presumably, self-

¹¹ Alternative calculations were made to determine if the findings would change when shifting the position of the vertical line. The relative scores in Tables 5-1 to 5-3 below remained approximately the same.

interest, rather than values guides proxy behavior. Table 5-1 indicates the mean conformity and innovativeness rates for each quadrant in the typology.

Table 5-1: Conformity and Innovativeness By Grantee Type

Grantee Type	Mean Conformity Score	Mean Innovativeness Score
High-Conforming Proxies	4.76	0.38
Moderate-Conforming Proxies	4.10	0.13
High-Conforming Partners	4.76	3.00
Moderate-Conforming Partners	4.17	3.20

As noted previously, there is a clear difference in the level of innovation among grantees in this study, whereas the difference in the level of conformity is modest.

Alternative Explanations of Variation in Implementation Quality Using the Typology

As is apparent from Figure 5-1, not all grantees are concentrated in one quadrant or another. They are distributed among all four quadrants. As indicated at the outset of this work, just because grantees have the capacity to conform to regulations and to be innovative in their implementation efforts, does not mean that they always will do so. This is illustrated by the negative relationship between number of personnel and regulatory conformity that emerged in Chapter IV. In addition, the fact that grantees vary by type within a model based on normative and rational choice theories of administrative behavior means that this assertion is supported. Thus, differing modes of decision-making may be used to help interpret the variance revealed in Chapter IV and hence to generate a number of hypotheses that may deserve future testing.

The partners located at the top of Figure 5-1 initiated far more innovations than their proxy counterparts. In fact, with one exception, moderate conforming proxies did not initiate any additional program components. This may indicate goal congruence in the relationship between partners and patrons. As discussed in Chapter I, one of the assumptions of the

norm-based approach is that grantees that are driven by norms are considered to be partners who have goals similar to those of their grantor. This is not the case for the relationship between principals and proxies who often pursue their own goals. A hypothesis that may deserve testing in future research immediately can be derived through such an interpretation of the results and may help explain the variance in innovativeness not explained by the model analyzed in Chapter IV:

Hypothesis 1. The greater the level of goal congruence between grantee and grantor, the more likely the grantee will be innovative in its efforts to implement a grant.

Another interesting interpretation of the findings emerges from a review of Figure 5-1. Whereas 69% of partners conformed to GAANN regulations, only 50% of proxies conformed. Perhaps goal congruence has a positive impact on regulatory conformity as well. Proxies are more divided and more unpredictable than partners in terms of their level of conformity presumably because they only conform when it is in their interest to do so. Therefore, two additional hypotheses emerge:

Hypothesis 2. Partners are more likely than proxies to conform to federal guidelines; and thus,

Hypothesis 3. The greater the level of goal congruence, the greater the probability of conformity with federal regulations.

Alternative Explanations of Variation in Grantee Capacity Using the Typology

Rational choice and normative theories also may help explain variation in grantee capacity. Table 5-2 indicates the resource allocation levels for proxies and partners.

Table 5-2. Capacity Level by Grantee Type

Grantee Type	Mean Organizational Level	Number of Personnel	Size of Graduate Program	Capacity to Cope With Federal Constraints
Proxies Total	1.19	2.06	106	2.64
High-Conforming Proxies	1.25	1.79	90	2.42
Moderate-Conforming Proxies	1.13	2.33	121	2.87
Partners Total	1.88	2.48	132	2.68
High-Conforming Partners	1.82	2.43	96	2.75
Moderate-Conforming Partners	2.00	2.61	214	2.53

It is true that finite resources of an institution may dictate capacity levels allocated to grant implementation. However, even with limited resources, administrators at institutions of higher education can decide to allocate more or less of those resources in ways that affect program implementation. In short, decision-making plays a role in determining whether finite resources will be allocated to grant implementation or used elsewhere. Furthermore, some decisions involve the design of the program rather than costing more or less resources. For example, proxies typically do not house grant implementation at the college or university levels, or at a combination of levels. The average organizational level for proxies is closer to the departmental level—coded 1--- and the average for partners is at the college level--- coded 2. The findings presented in Table 4-11 indicate that organizational level is positively related to the level of both conformity and innovativeness, and we see the difference here as well. The programs of partner types are administered at the college level; the programs of proxies are administered at the departmental level. Presumably, the blending of college and departmental perspectives among the partners contributes to a higher goal congruence, and, in turn, to greater innovativeness and more careful attention to program regulations. This difference is not primarily explained by greater resources or knowledge about administering federal programs, as the remaining columns in the table indicate. Thus, the following

hypothesis may help explain resource allocation decisions in terms of the organizational level at which a grant is managed:

Hypotheses 4. The higher the organizational level at which a grant is housed, the greater the level of goal congruence between a grantee and grantor (and hence, the greater the level of conformity and innovativeness).

As indicated in Table 5-2, there is little difference in terms of the number of personnel allocated to grant administration. Proxies on average allocate only slightly fewer (approximately two-fifths of a staff member less) personnel than partners, 2.06 and 2.48 respectively. In addition, capacity to cope with federal constraints varied little among the grantee types. It appears that capacity can be used by grantees to both find ways to conform and implement additional program components, as well as to deviate from the regulations and to get away with implementing few additional program components.

In addition, in general there is little difference between proxies and partners in terms of the size of the graduate program in which a grant is housed. However, within each of the groups, it is clear that moderate-conforming grantees tend to be housed in larger graduate programs. This is supported by the data presented in Tables 4-11 and 4-14, which indicate a negative relationship between size of graduate program and level of conformity.

In the case of moderate-conforming proxies that are on average the second largest programs among the four types, this may be because they have sufficient resources to be able to shirk in their implementation of GAANN. Perhaps they do not need the GAANN funding as much as smaller programs and hence, they weigh the costs and the benefits of conformity versus non-conformity and then conform only when it is in their interest to do so. From this perspective, another possibility is that the larger the graduate program the greater the transaction costs of managing a grant. Transaction costs in this sense have to do with

coordination of the various actors responsible for implementing a program. In larger graduate programs there are more actors to coordinate than in smaller ones. Therefore, it is cheaper not to conform than it is to take measures that would be required to tighten up program administration and conform with certain regulations.

In the case of moderate-conforming partners that are the largest programs, moderate conformity is not necessarily because it is easier or cheaper not to conform or harder to conform. If one assumes that partners make decisions on norm-based grounds, moderate-conforming partners may share the same goals as their patrons, but because they disagree in principle with certain regulations, they do not adhere to them. They disagree with some of the means to achieve GAANN goals. On the other hand, as with the moderate-conforming proxies, simple constraints on time may dictate their level of conformity with the regulations. However, these time constraints combined with disagreement in principle with certain regulations (e.g., the financial need regulation) may have the effect of low conformity, especially in cases of partners housed in larger graduate programs. Thus, although the following hypothesis was already tested in Chapter IV, based on the above analysis, it may merit further testing in future research:

Hypothesis 5. The larger the size of the graduate program where a grantee is housed, the lower the probability that the grantee will conform with the federal regulations.

In contrast, it is interesting to note that size of graduate program is not related to level of innovativeness.

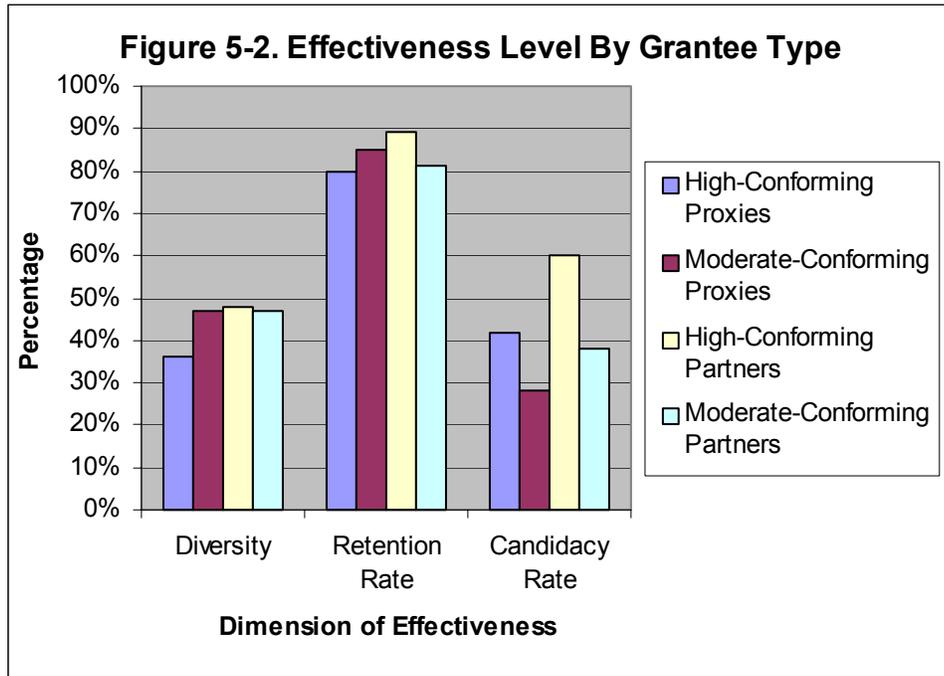
Alternative Explanations of Variation in Effectiveness Using the Typology

It may be possible that some of the variance in effectiveness that was not explained by implementation quality can be explained in part through application of the assumptions underlying the typology. Table 5-3 presents effectiveness ratings by general grantee type.

Table 5-3. Effectiveness Level by Grantee Type

Grantee Type	Diversity	Retention Rate	Candidacy Rate
Proxies Total	42%	83%	34%
Partners Total	48%	86%	52%

The table indicates that partners are universally more effective than proxies. However, as indicated by Figure 5-2, this advantage with respect to effectiveness comes entirely from high-conforming partners.



Moderate-conforming partners have effectiveness rates that match the proxies while high-conforming partners have the highest scores on all three dimensions of effectiveness.

Admittedly, the differences are not great with regard to diversity and retention, but the high-

conforming partners have the highest scores. The difference in candidacy rates between high conforming partners and all other grantee types provides the clearest support for the contention that the level of effectiveness may be greater for grantees that combine high conformity with high innovativeness in their implementation of GAANN.

High-conforming partners demonstrate acceptance of the need to be accountable to the grantor as evidenced by their high regulatory conformity rate. They also act independently and on their own initiative to add innovative features to their programs. The combination of high conformity and high innovation produces higher levels of effectiveness as measured in Figure 5-2 by immediate outputs. Either lower conformity or lack of innovation depresses effectiveness. In future studies, one would presume that the higher effectiveness rate would show up in the examination of intermediate (longer-range) outputs as well. This is because the immediate outputs used in this study are surrogates for intermediate outputs. In addition, the differentials could be even greater because intermediate outputs are better measures of the true impact of a program.

It appears that it is the combination of conformity and innovation that is most conducive to effectiveness. Thus, the following hypothesis may be generated:

Hypothesis 6. Where both the level of conformity and innovations are high, the greater the level of effectiveness. (i.e., High-conforming partners are likely to be more effective than any of the other types of grantees.)

Thus, rational choice and normative theories may be combined to create a typology that helps to explain variation in grantee capacity, implementation quality, and perhaps effectiveness. In addition, they can be used to generate a number of alternative hypotheses that may merit future testing. The next chapter will summarize the findings, and evaluate the implications of them for other grant programs and for public policy making in general.

CHAPTER VI. CONCLUSIONS AND IMPLICATIONS

Summary of Findings

This dissertation contributes to implementation research and practice by expanding our knowledge of how program funders and remote agents interact. Specifically, within the context of institutionally-based grants, it 1) assesses the extent to which grantee capacity may be viewed as a factor in explaining variation in implementation and effectiveness; and 2) examines norm- and self-interest-based models of decision making as a means to explain implementation variation.

A number of key findings emerge from a quantitative analysis of the relationships among grantee capacity, implementation quality, and effectiveness. First, there is variation among grantees both in terms of their level of innovativeness where variation is great and conformity with the GAANN regulations where variation is modest. At least a part of the variation in the two dimensions of implementation quality may be attributed to differences in grantee capacity. Grantee capacity accounts for approximately 11% of the variance in regulatory conformity and 9% of the variance in innovativeness. For Doctoral Extensive institutions, which by definition offer 50 or more doctoral degrees per year across at least 15 disciplines, approximately 20% of the variance in regulatory conformity and 10% of the variance in innovativeness is explained by grantee capacity. Although the model only slightly strengthens with these institutions, there may be utility in future research that seeks to isolate grantees housed at Doctoral Extensive institutions as the unit of analysis.

More importantly, another finding that emerges is that relative to other variables in the model, organizational level of a grantee unit and number of personnel allocated to GAANN implementation have the greatest influence on both dimensions of implementation

quality. Those grantees housed outside the department or in a combination of units are more likely to have higher conformity and innovativeness rates. The number of personnel allocated to grant administration actually has a negative impact on conformity, when just the opposite had been expected. This finding illustrates the point made at the outset of this work that just because grantees have the capacity to conform with federal regulations does not necessarily mean that they will always do so. Administrators may decide to conform or not to conform on self-interested or norm-based grounds.

Approximately 14% of the variance in diversity, 8% of the variance in retention rate and 14% of the variance in candidacy rate could be explained by implementation quality when all respondent grantees were used in the analysis. When only data from Doctoral Extensive institutions are analyzed, the variance explained for each of the above dimensions of effectiveness is approximately 25%, 15%, and 13% respectively. Regulatory conformity has a slightly greater impact than innovativeness on diversity and retention rate, and slightly less of an impact than innovativeness on candidacy rate. In the case of grantees from Doctoral Extensive institutions, innovativeness becomes the most important factor in predicting all three dimensions of effectiveness.

It is important to note that although the types of innovations cited by grantees (see Figure 4-2) can be logically connected to retention and candidacy rates, none of the innovations cited relate to recruitment, which is the type of innovation that would logically lead to increased diversity. Future research should seek to isolate innovations in recruitment to determine the extent to which they lead to greater diversity. In the case of this work, possibly the positive relationship between innovativeness and diversity can be explained in part by the assumptions underlying the typology. That is, grantees that were the most

innovative in other ways (i.e., partners) may have been more likely to implement recruiting efforts not reported in the data collected for this dissertation.

Finally, there is a strong relationship between grantee capacity and effectiveness when excluding implementation quality from the equation. When all grantees are used in the analysis, capacity explains approximately 17% of the variance in diversity, 22% of the variance in retention rates and a full 44% of the variance in candidacy rate. These values change little when only grantees from Doctoral Extensive institutions are used in the analysis: approximately 20%, 27% and 44%, respectively.

A number of interesting interpretations of the findings emerge through use of the typology developed in this study. As indicated in Chapter I, using norm- and self-interest-based models, it is assumed that higher innovativeness is a characteristic of grantees that share the same goals as their patrons. Presumably, such grantees make decisions based on their own values about what the program should accomplish. Thus, these grantees are “partners” in the enterprise of accomplishing program goals with the granting agency. A low level of innovation presumably indicates that the grantee views itself as a “proxy” and operates in terms of its own interests, which may but do not necessarily match those of the grantor. Proxies look like “agents” in principal-agent relationships, whereas partner grantees complement the grantors and add their own commitment to that of the funding agency.

When grantees are grouped according to their level of innovativeness and conformity in Figure 5.1, there are grantees in each of the cells. When the characteristics of each of the four types and their levels of effectiveness are examined, the following conclusions emerge. First, the greater the level of goal congruence between grantor and grantee, the greater the level of innovativeness and conformity on the part of the grantee. Second, goal congruence

seems to be positively related to level of resources allocated to grant implementation as indicated by the level at which a grant is housed at an institution of higher education. Third, high levels of conformity and innovativeness in combination seem to yield higher levels of effectiveness in the case of GAANN grantees.

Interestingly, the process of matching the grantees in this study to the typology may lead to a major potential revision in future research. There are no institutions that are appropriately classified as non-conforming. It is possible that in other types of programs that work through other kinds of organizations, the range in the variation in conformity would be greater. Therefore, it is possible that the two-by-two table used here should be expanded to a two-by-three table in future studies. Truly low-conforming proxies may have more clearly different characteristics and levels of effectiveness. True low-conformity may be incompatible with being a partner. Perhaps this is an empty cell in the typology, or perhaps there are low conforming “agents” found in the implementation of some programs that are innovative but clearly non-conforming.

Implications and Generalizability of Findings

Prior to discussing how this research may be generalized for use in public administration research and practice, it is important to note that Chapter IV placed much emphasis on the fact that the survey respondents were indeed representative of the population and did not have characteristics that were systematically different than non-respondents. This emphasis was necessary because the technique employed to gather data was non-random in nature. Although a census was conducted, not all grantees in the 1997 cohort responded, which is tantamount to non-random sampling. However, given that representativeness has been demonstrated, with the exception that private institutions were

underrepresented, it is feasible that the findings may be generalized to other grantees in the 1997 cohort, and perhaps to other GAANN cohorts as well. The fact that private universities were underrepresented may have implications for generalizability of the findings to such institutions. Future research using a larger or different dataset should be designed to determine if there are in fact systematic differences between public and private institutions that may have an impact on the findings, especially with respect to their level of regulatory conformity.

As already indicated, there were not any truly low-conforming grantees among respondents. There is no reason to believe that conformity rates among respondents are systematically different than rates among non-respondents. Final performance reports indicate that 73% of non-respondent grantees conformed with the requirement to assess financial need in accordance with the federal methodology. This is compared with the approximately 67% of respondents that conformed with this requirement (see Table 4-6). The fact that the proportion of respondents and non-respondents that conformed with this central regulation is similar, implies that grantees responding to the survey are representative of the entire 1997 cohort in terms of their regulatory conformity rates.

It is also important to note that the measures of effectiveness used in this study are immediate outputs. Specifically, candidacy rate was used as a rough surrogate measure for graduation rate. The reason for using immediate outputs was in part because the 1997 cohort of GAANN fellows could not have been expected to have completed their Ph.D.'s by the time the final performance reports were submitted in 2000. However, even if an earlier cohort had been used in this study, data on intermediate or longer-range outputs, such as time-to-degree, Ph.D. completion rates, and employment after graduation, still would not

have been readily available. This is because the status of GAANN Fellows is not tracked by the U.S. Department of Education after completion of their fellowship tenure. Lack of data collection on true programmatic outcomes is certainly not limited to the GAANN program. The fact that outcome data are not collected by many such programs means that research to determine the true effectiveness of institutionally awarded fellowship programs will be somewhat limited. Thus, it is suggested that granting agencies require institutions to report outcome data as one of the conditions of receiving an award.

As mentioned in Chapter I, given the similarities between GAANN and other federally-funded traineeship/fellowship programs, the findings may turn out to be useful guides for other similar programs. However, it is suggested that prior to vast generalization of the findings, that future research expand the data set to include other GAANN cohorts, as well as data on other institutionally awarded fellowship programs. Although this study certainly serves as the foundation for such research, such inclusion of additional data may be used to more clearly establish justification for such generalizations.

Given the above qualifying remarks, there are several ways in which the findings may be put into practice by grantors and in future implementation research. First, from the perspective of a grantor, the findings of this study may be used to better select remote agents. As has been demonstrated, grantors should select grantees that have a strong demonstrated goal commitment to their programs. Those with stronger goal commitments to a program are more likely to conform to program guidelines and to be innovative their implementation efforts. One way to determine whether or not grantees have such goal commitments is to require information in grant proposals as to the level of resources they are willing to commit

to a project. Although this is already standard practice, such information should be more critically evaluated by grantors prior to authorization of funding for a project.

Again, it is understood that institutions of higher education are constrained by limited resources. However, administrators at least have the discretion to determine the level at which to house grant administration. They can either choose to force departments in isolation to use their own expertise and resources in implementing a grant, or they can choose to combine departmental resources with the additional experience and clout that college- and university-level units have to offer.

University- and college-level involvement not only yields greater resources for grant implementation, but also demonstrates that an institution is committed to a program's goals. Future research will explore in more detail whether or not conformity and innovativeness increase as organizational level increases. However, grantors should note that grantees housed at the college level, university level, or a combination of departmental, college and/or university levels are more likely to conform to the federal regulations, implement a greater number of innovations, and be more effective in achieving programmatic goals than those housed solely at the departmental level.

This relationship between organizational level, implementation quality and effectiveness may not only be explained by the likelihood that such grantees have greater resources and political clout within their organizations. This finding also may suggest that universities as opposed to departments are more likely to share the same goals as their grantors and make the decision to use their capacity in support of grant implementation. As previously discussed, discretion increases with distance. The more the remote the grantee, the greater the ability it has to implement a program free from the control of the grantor.

Departments are further removed from the grantor, whereas college and university level units have fewer internal levels of an organization to which they must report and therefore may be more responsive to grantor goals. Higher-level units may also have a greater appreciation of the negative impact of noncompliance on the entire institution.

Some grant programs already recognize this connection between resource allocation and goal congruence. For example, the National Science Foundation Alliances For Graduate Education and the Professoriate (AGEP) program virtually insists that an upper-level administrative official be appointed as a PI to each of its grants. AGEP is designed to encourage students from underrepresented groups to pursue the doctorate in science, mathematics and engineering. Its program officials recognize that such goals often entail a change in the entire culture of a university. This is often a top down, rather than bottom-up process.

Second, the findings of this study may be used by grantors to better control their remote agents. As the application of the typology demonstrated through the use of rational choice and normative theories of administrative behavior, control is more of an issue when a grantee is categorized as a proxy, rather than a partner. This is because goal congruence between grantor and grantee means that the grantee is more often than not going to be innovative and conforming in its implementation efforts. Partners make the most reliable grantees and hence finite grantor resources should be focused on monitoring those identified as proxies.

Third, the findings of this study may be used by grantors to better learn from remote agents. If one accepts the assumptions of the typology developed in this dissertation, level of innovativeness emerges as a key indicator of goal congruence. High innovativeness suggests

that the grantee shares the goals of the grantor and is willing to invest more of its own resources and ideas in making the program a success. Innovators also tend to be more attentive to regulations. Using level of innovation to identify potential partners and proxies, the grantors may be able to more effectively deal with grantees. Potentially, they can learn much from the partners. When a partner does not conform, we assume it is for value-based reasons. Thus, there is much to learn from moderately conforming partners who have principled reasons for not conforming with certain regulations. It is incumbent on the grantor to ask why they did not conform. Only through an investigation of the rationale behind the limited instances of non-conformity on the part of partners can grantees gain valuable insights that can be used for program improvement.

This may not be the case with truly low-conforming grantees even if they are highly innovative. The grantees with low conformity may take on the characteristics of proxies. For proxies, lower levels of conformity may be more likely because behavior may more purely reflect self-interested calculations. The grantor therefore may need focus efforts on finding methods to control the activities of proxies.

That said, it is important to note that in general grantees have a good track record in terms of their level of regulatory conformity. First, there are few extremes reported in Table 4.9, which assesses level of conformity with each of the GAANN regulations. Second, as indicated in the literature review, regulations may conflict with one another. This may lead to low conformity with one or both of the conflicting regulations. For example, Table 4-9 indicates a low conformity score with the requirement to select students on the basis of academic excellence. It is possible that some outstanding students are not selected because they do not have financial need, not because PI's choose not to select the best and the

brightest into their GAANN programs either out of principle or self-interest. Third, Figure 5-1 indicates that a full two-thirds of grantees fall into the high conformity category. The remaining one-third did not have scores lower than 4.5, which means that they conformed with many of the regulations. Thus, although some grantees seem to misuse their discretion in some cases, most do not. In general therefore, with controls in place GAANN grantees can be trusted to implement grants for their federal principals or patrons. This contention that grantees can be trusted also is consistent with Svava's (2001) notion of complementarity that blends acceptability of accountability and independence, as well as interdependency and reciprocal influence (see chapter II).

Fourth, the findings provide insight into the impact of the sometimes conflicting goals that may be contained within the same program. The process of bargaining and compromise that is inherent in policy formulation may result in a lack of compatibility among programmatic goals. The possibility that conflicting goals may have an adverse impact on level of implementation quality is exemplified by the low conformity scores with both the requirement to select students on the basis of academic excellence and in accordance with their financial need. Again, given that both merit and financial need criteria are used in appointing students to a GAANN Fellowship, it is possible that some outstanding students may not accept a fellowship offer because their need-based stipend would not be competitive with other offers. Legislators may want to review the GAANN regulations for such conflicts and then make a decision on the true purpose of this program.

Fifth, the method of inquiry developed through the typology may be generalized to other related fields of study, institutionally awarded fellowship programs, similar grant programs, and virtually any situation where there is a grantor-grantee relationship. For

example, as mentioned above, the typology may be used to identify certain grantee types to identify those that require additional control and those from whom advice for program improvement should be sought. This could be expanded to include research that focuses on grantees that are not universities and even to legislative-agency relations.

In conclusion, although the type of capacity necessary to carry out different categories of grants may differ, what almost always remains constant is administrative discretion. Administrators may use their discretionary space to make implementation decisions, and most of the time capacity allocation decisions as well. Thus, the typology that was developed in this work may serve as a foundation for future research that aims to evaluate variation in decisions in virtually any administrative context. Self-interest and norms are at the heart of most administrative decisions, thus the typology is a useful analytical tool that should be further refined and applied to other situations in which there is a grantor-grantee relationship.

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APPENDICES

Appendix A.
1997 GAANN Regulations

PART D—GRADUATE ASSISTANCE IN AREAS OF NATIONAL NEED

SEC. 941. PURPOSE.

In order to sustain and enhance the capacity for teaching and research in areas of national need, it is the purpose of this part to provide, through academic departments and programs of institutions of higher education, a fellowship program to assist graduate students of superior ability who demonstrate financial need.

(20 U.S.C. 1134i) Enacted October 3, 1980, P.L. 96-374, sec. 904, 94 Stat. 1486; amended October 17, 1986, P.L. 99-498, sec. 901(a), 100 Stat. 1555; amended July 23, 1992, P.L. 102-325, sec. 901, 106 Stat. 768; amended December 20, 1993, P.L. 103-208, sec. 2(j)(37), 107 Stat. 2484.

SEC. 942. GRANTS TO ACADEMIC DEPARTMENTS AND PROGRAMS OF INSTITUTIONS.

(a) GRANT AUTHORITY.—

(1) IN GENERAL.—The Secretary shall make grants to academic departments and programs and other academic units of institutions of higher education that provide courses of study leading to a graduate degree in order to enable such institutions to provide assistance to graduate students in accordance with this part.

(2) ADDITIONAL GRANTS.—The Secretary may also make grants to such departments and programs and to other units of institutions of higher education granting graduate degrees which submit joint proposals involving nondegree granting institutions which have formal arrangements for the support of doctoral dissertation research with degree-granting institutions. Nondegree granting institutions eligible for awards as part of such joint proposals include any organization which—

(A) is described in section 501(c)(3) of the Internal Revenue Code of 1986, and is exempt from tax under section 501(a) of such Code;

(B) is organized and operated substantially to conduct scientific and cultural research and graduate training programs;

(C) is not a private foundation;

(D) has academic personnel for instruction and counseling who meet the standards of the institution of higher education in which the students are enrolled; and

(E) has necessary research resources not otherwise readily available in such institutions to such students.

(b) AWARD AND DURATION OF GRANTS.—

(1) AWARDS.—The principal criterion for the allocation of awards shall be the relative quality of the graduate programs presented in competing applications. Consistent with an allocation of awards based on quality of competing applications, the Secretary shall, in making such grants, promote an equitable geographic distribution among eligible public and private institutions of higher education.

(2) DURATION.—The Secretary shall approve a grant recipient under this part for a 3-year period. From the sums appropriated under this part for any fiscal year, the Secretary shall not make a grant to any academic department or program of an institution of higher education of less than \$100,000 or greater than \$750,000 per fiscal year.

(3) REALLOTMENT.—Whenever the Secretary determines that an academic department or program of an institution of higher education is unable to use all of the amounts available to

it under this part, the Secretary shall, on such dates during each fiscal year as the Secretary may fix, reallocate the amounts not needed to academic departments and programs of institutions which can use the grants authorized by this part.

(c) PREFERENCE TO CONTINUING GRANT RECIPIENTS.--

(1) IN GENERAL.--The Secretary shall make new grant awards under this part only to the extent that each previous grant recipient has received continued funding in accordance with subsection (b)(2).

(2) RATABLE REDUCTION.--To the extent that appropriations under this part are insufficient to comply with paragraph (1), available funds shall be distributed by ratably reducing the amounts required to be awarded by subsection (b)(2).

(20 U.S.C. 1134m) Enacted October 3, 1980, P.L. 96-374, sec. 904, 94 Stat. 1487; amended October 17, 1986, P.L. 99-498, sec. 901(a), 100 Stat. 1555; amended July 18, 1988, P.L. 100-369, sec. 7(c), 102 Stat. 837; amended July 23, 1992, P.L. 102-325, sec. 901, 106 Stat. 768.

SEC. 943. INSTITUTIONAL ELIGIBILITY.

(a) ELIGIBILITY CRITERIA.--Any academic department or program of an institution of higher education that offers a program of postbaccalaureate study leading to a graduate degree in an area of national need (as designated under subsection (b)) may apply for a grant under this part. No department or program shall be eligible for a grant unless the program of postbaccalaureate study has been in existence for at least 4 years at the time of application for assistance under this part.

(b) DESIGNATION OF AREAS OF NATIONAL NEED.--After consultation with the National Science Foundation, the National Academy of Sciences, the National Endowments for the Arts and the Humanities, and other appropriate Federal and nonprofit agencies and organizations, the Secretary shall designate areas of national need, such as mathematics, biology, physics, chemistry, engineering, geosciences, computer science, or foreign languages and area studies. In making such designations, the Secretary shall take into account the extent to which the interest is compelling and the extent to which other Federal programs support postbaccalaureate study in the area concerned.

(20 U.S.C. 1134n) Enacted October 3, 1980, P.L. 96-374, sec. 905, 94 Stat. 1487; renumbered and amended October 17, 1986, P.L. 99-498, sec. 901(a), 100 Stat. 1556; amended July 23, 1992, P.L. 102-325, sec. 901, 106 Stat. 769; amended December 20, 1993, P.L. 103-208, sec. 2(j)(38), 107 Stat. 2484.

SEC. 944. CRITERIA FOR APPLICATIONS.

(a) SELECTION OF APPLICATIONS.--The Secretary shall make grants to academic departments and programs of institutions of higher education on the basis of applications submitted in accordance with subsection (b). Applications shall be ranked on program quality by geographically balanced review panels of nationally recognized scholars. To the extent possible (consistent with other provisions of this section), the Secretary shall make awards that are consistent with recommendations of the review panels.

(b) CONTENTS OF APPLICATIONS.--An academic department or program of an institution of higher education, in its application for a grant, shall--

(1) describe the current academic program of the applicant for which the grant is sought;

(2) provide assurances that the applicant will provide, from other non-Federal funds, for the purposes of the fellowship program under this part an amount equal to at least 25 percent of the amount of the grant received under this part;

(3) set forth policies and procedures to assure that, in making fellowship awards under this part the institution will seek talented students from traditionally underrepresented backgrounds, as determined by the Secretary;

(4) set forth policies and procedures to assure that, in making fellowship awards under this part, the institution will make awards to individuals who—

(A) have financial need, as determined under criteria developed by the institution;

(B) have excellent academic records in their previous programs of study;

(C) plan teaching or research careers; and

(D) plan to pursue the highest possible degree available in their course of study;

(5) set forth policies and procedures to ensure that Federal funds made available under this part for any fiscal year will be used to supplement and, to the extent practical, increase the funds that would otherwise be made available for the purpose of this part and in no case to supplant those funds;

(6) provide assurances that, in the event that funds made available to the academic department or program under this part are insufficient to provide the assistance due a student under the commitment entered into between the academic department or program and the student, the academic department or program will endeavor, from any funds available to it, to fulfill the commitment to the student;

(7) provide that the applicant will comply with the limitations set forth in section 945;

(8) provide assurances that the academic department will provide at least 1 year of supervised training in instruction for students; and

(9) include such other information as the Secretary may prescribe.

(20 U.S.C. 1134a) Enacted October 3, 1980, P.L. 96-374, sec. 905, 94 Stat. 1488; renumbered and amended October 17, 1986, P.L. 99-498, sec. 901(a), 100 Stat. 1556; amended July 23, 1992, P.L. 102-325, sec. 901, 106 Stat. 770.

SEC. 945. AWARDS TO GRADUATE STUDENTS.

(a) COMMITMENTS TO GRADUATE STUDENTS.—

(1) In general.—An academic department or program of an institution of higher education shall make commitments to graduate students (including students pursuing a doctoral degree after having completed a master's degree program at an institution of higher education) at any point in their graduate study to provide stipends for the length of time necessary for a student to complete the course of graduate study, but in no case longer than 5 years.

(2) SPECIAL RULE.—No such commitments shall be made to students under this part unless the academic department or program has determined adequate funds are available to fulfill the commitment either from funds received or anticipated under this part, or from institutional funds.

(b) AMOUNT OF STIPENDS.—The Secretary shall make payments to institutions of higher education for the purpose of paying stipends to individuals who are awarded fellowships under this part. The stipends the Secretary establishes shall reflect the purpose of this program to encourage highly talented students to undertake graduate study as described in this part. In the case of an individual who receives such individual's first stipend under

this part in academic year 1993-1994 or any succeeding academic year, such stipend shall be set at a level of support equal to that provided by the National Science Foundation graduate fellowships, except such amount shall be adjusted as necessary so as not to exceed the fellow's demonstrated level of need according to measurements of need approved by the Secretary.

(c) TREATMENT OF INSTITUTIONAL PAYMENTS.—An institution of higher education that makes institutional payments for tuition and fees on behalf of individuals supported by fellowships under this part in amounts that exceed the institutional payments made by the Secretary pursuant to section 946(a) may count such payments toward the amounts the institution is required to provide pursuant to section 944(b)(2).

(d) ACADEMIC PROGRESS REQUIRED.—Notwithstanding the provisions of subsection (a), no student shall receive an award—

(1) except during periods in which such student is maintaining satisfactory progress in, and devoting essentially full time to, study or research in the field in which such fellowship was awarded, or

(2) if the student is engaging in gainful employment other than part-time employment involved in teaching, research, or similar activities determined by the institution to be in support of the student's progress towards a degree.

(20 U.S.C. 1134p) Enacted October 3, 1980, P.L. 96-374, sec. 905, 94 Stat. 1488; renumbered and amended October 17, 1986, P.L. 99-498, sec. 901(a), 100 Stat. 1557; amended July 23, 1992, P.L. 102-325, sec. 901, 106 Stat. 770; amended December 20, 1993, P.L. 103-208, sec. 2(j)(39), 107 Stat. 2484.

SEC. 946. ADDITIONAL ASSISTANCE FOR COST OF EDUCATION.

(a) INSTITUTIONAL PAYMENTS.—(1) The Secretary shall (in addition to stipends paid to individuals under this part) pay to the institution of higher education, for each individual awarded a fellowship under this part at such institution, an institutional allowance. Except as provided in paragraph (2), such allowance shall be—

(A) \$6,000 annually with respect to individuals who first received fellowships under this part prior to academic year 1993-1994; and

(B) with respect to individuals who first receive fellowships during or after academic year 1993-1994—

(i) \$9,000 for the academic year 1993-1994; and

(ii) for succeeding academic years, \$9,000 adjusted annually thereafter in accordance with inflation as determined by the Department of Labor's Consumer Price Index for the previous calendar year.

(2) The institutional allowance paid under paragraph (1) shall be reduced by the amount the institution charges and collects from a fellowship recipient for tuition and other expenses as part of the recipient's instructional program.

(b) USE FOR OVERHEAD PROHIBITED.—Funds made available pursuant to this part may not be used for the general operational overhead of the academic department or program.

(20 U.S.C. 1134q) Enacted October 17, 1986, P.L. 99-498, sec. 901(a), 100 Stat. 1558; amended July 23, 1992, P.L. 102-325, sec. 901, 106 Stat. 771; amended December 20, 1993, P.L. 103-208, sec. 2(j)(40), 107 Stat. 2484.

SEC. 947. AUTHORIZATION OF APPROPRIATIONS.

There are authorized to be appropriated \$40,000,000 for fiscal year 1993 and such sums as may be necessary for each of the 4 succeeding fiscal years to carry out this part.

(20 U.S.C. 1134q-1) Enacted July 23, 1992, P.L. 102-325, sec. 901, 106 Stat. 771.

any other agency or authority of the United States.

List of Subjects in 34 CFR Part 648

College and universities. Grant program—education, Reporting and recordkeeping requirements, Fellowships.

Dated: December 7, 1993.

Richard W. Riley,

Secretary of Education.

(Catalog of Federal Domestic Assistance Number 84.200—Graduate Assistance in Areas of National Need program)

The Secretary amends title 34 of the Code of Federal Regulations by adding a new part 648 to read as follows:

PART 648—GRADUATE ASSISTANCE IN AREAS OF NATIONAL NEED

Subpart A—General

Sec.

648.1 What is the Graduate Assistance in Areas of National Need program?

648.2 Who is eligible for a grant?

648.3 What activities may the Secretary fund?

648.4 What is included in the grant?

648.5 What is the amount of a grant?

648.6 What is the duration of a grant?

648.7 What is the institutional matching contribution?

648.8 What regulations apply?

648.9 What definitions apply?

Subpart B—How Does an Institution of Higher Education Apply for a Grant?

648.20 How does an institution of higher education apply for a grant?

Subpart C—How Does the Secretary Make an Award?

648.30 How does the Secretary evaluate an application?

648.31 What selection criteria does the Secretary use?

648.32 What additional factors does the Secretary consider?

648.33 What priorities and absolute preferences does the Secretary establish?

Subpart D—How Are Fellows Selected?

648.40 How does an academic department select fellows?

648.41 How does an individual apply for a fellowship?

Subpart E—How Does the Secretary Distribute Funds?

648.50 What are the Secretary's payment procedures?

648.51 What is the amount of a stipend?

648.52 What is the amount of the institutional payment?

Subpart F—What Are the Administrative Responsibilities of the Institution?

648.60 When does an academic department make a commitment to a fellow to provide stipend support?

648.61 How must the academic department supervise the training of fellows?

648.62 How can the institutional payment be used?

648.63 How can the institutional matching contribution be used?

648.64 What are unallowable costs?

648.65 How does an institution of higher education disburse and return funds?

648.66 What records and reports are required from the institution?

Subpart G—What Conditions Must Be Met by a Fellow After an Award?

648.70 What conditions must be met by a fellow?

Appendix to Part 648—Academic Areas

Authority: 20 U.S.C. 1134, 1134i–1134q-1, unless otherwise noted.

Subpart A—General

§ 648.1 What is the Graduate Assistance in Areas of National Need program?

The Graduate Assistance in Areas of National Need program provides fellowships through academic departments of institutions of higher education to assist graduate students of superior ability who demonstrate financial need. The purpose of the program is to sustain and enhance the capacity for teaching and research in areas of national need.

(Authority: 20 U.S.C. 1134i–1134n)

§ 648.2 Who is eligible for a grant?

(a) The Secretary awards grants to the following:

(1) Any academic department of an institution of higher education that provides a course of study that—

(i) Leads to a graduate degree in an area of national need; and

(ii) Has been in existence for at least four years at the time of an application for a grant under this part.

(2) An academic department of an institution of higher education that—

(i) Satisfies the requirements of paragraph (a)(1) of this section; and

(ii) Submits a joint application with one or more eligible nondegree-granting institutions that have formal arrangements for the support of doctoral dissertation research with one or more degree-granting institutions.

(b) A formal arrangement under paragraph (a)(2)(ii) of this section is a written agreement between a degree-granting institution and an eligible nondegree-granting institution whereby the degree-granting institution accepts students from the eligible nondegree-granting institution as doctoral degree candidates with the intention of awarding these students doctorates in an area of national need.

(c) The Secretary does not award a grant under this part for study at a school or department of divinity.

(Authority: 20 U.S.C. 1134, 1134m, 1134n)

§ 648.3 What activities may the Secretary fund?

(a) The Secretary awards grants to institutions of higher education to fund fellowships in one or more areas of national need.

(b)(1) For the purposes of this part, the Secretary designates areas of national need from the academic areas listed in the appendix to this part or from the resulting inter-disciplines.

(2) The Secretary announces these areas of national need in a notice published in the Federal Register.

(Authority: 20 U.S.C. 1134i–1134n)

§ 648.4 What is included in the grant?

Each grant awarded by the Secretary consists of the following:

(a) The stipends paid by the Secretary through the institution of higher education to fellows. The stipend provides an allowance to a fellow for the fellow's (and his or her dependents') subsistence and other expenses.

(b) The institutional payments paid by the Secretary to the institution of higher education to be applied against each fellow's tuition, fees, and the costs listed in § 648.62(b).

(Authority: 20 U.S.C. 1134p, 1134q)

§ 648.5 What is the amount of a grant?

(a) The amount of a grant to an academic department may not be less than \$100,000 and may not be more than \$750,000 in a fiscal year.

(b) In any fiscal year, no academic department may receive more than \$750,000 as an aggregate total of new and continuing grants.

(Authority: 20 U.S.C. 1134m)

§ 648.6 What is the duration of a grant?

The duration of a grant awarded under this part is a maximum of three annual budget periods during a three-year (36-month) project period.

(Authority: 20 U.S.C. 1134m)

§ 648.7 What is the institutional matching contribution?

An institution shall provide, from non-Federal funds, an institutional matching contribution equal to at least 25 percent of the amount of the grant received under this part, for the uses indicated in § 648.63.

(Authority: 20 U.S.C. 1134c, 1134p)

§ 648.8 What regulations apply?

The following regulations apply to this program:

(a) The Education Department General Administrative Regulations (EDGAR) as follows:

(1) 34 CFR Part 74 (Administration of Grants to Institutions of Higher

Education, Hospitals, and Nonprofit Organizations).

(2) 34 CFR Part 75 (Direct Grant Programs).

(3) 34 CFR Part 77 (Definitions that Apply to Department Regulations).

(4) 34 CFR Part 79 (Intergovernmental Review of Department of Education Programs and Activities).

(5) 34 CFR Part 82 (New Restrictions on Lobbying).

(6) 34 CFR Part 85 (Governmentwide Debarment and Suspension (Nonprocurement) and Governmentwide Requirements for Drug-Free Workplace (Grants)).

(7) 34 CFR Part 88 (Drug-Free Schools and Campuses).

(b) The regulations in this part.

(Authority: 20 U.S.C. 1134i, 1134m)

§ 643.9 What definitions apply?

(a) *Definitions in EDGAR.* The following terms used in this part are defined in 34 CFR 77.1:

Applicant
Application
Award
Budget
Budget period
Department
EDGAR
Equipment
Grant
Nonprofit
Project period
Secretary
Supplies

(b) *Other definitions.* The following definitions also apply to this part:

Academic department means any department, program, unit, or any other administrative subdivision of an institution of higher education that—

(i) Directly administers or supervises post-baccalaureate instruction in a specific discipline; and

(ii) Has the authority to award academic course credit acceptable to meet degree requirements at an institution of higher education.

Academic field means an area of study in an academic department within an institution of higher education other than a school or department of divinity.

Academic year means the 12-month period commencing with the fall instructional term of the institution.

Application period means the period in which the Secretary solicits applications for this program.

Discipline means a branch of instruction or learning.

Eligible non-degree granting institution means any institution that—

(i) Conducts post-baccalaureate academic programs of study but does not award doctoral degrees in an area of national need;

(ii) Is described in section 501(c)(3) of the Internal Revenue Code of 1986 and is exempt from tax under section 501(a) of the Code;

(iii) Is organized and operated substantially to conduct scientific and cultural research and graduate training programs;

(iv) Is not a private foundation;

(v) Has academic personnel for instruction and counseling who meet the standards of the institution of higher education in which the students are enrolled; and

(vi) Has necessary research resources not otherwise readily available in the institutions in which students are enrolled.

Fees mean non-refundable charges paid by a graduate student for services, materials, and supplies that are not included within the tuition charged by the institution in which the student is enrolled.

Fellow means a recipient of a fellowship under this part.

Fellowship means an award made by an institution of higher education to an individual for graduate study under this part at the institution of higher education.

Financial need means the fellow's financial need as determined under title IV, part F, of the HEA for the period of the fellow's enrollment in the approved academic field of study for which the fellowship was awarded.

General operational overhead means non-instructional expenses incurred by an academic department in the normal administration and conduct of its academic program, including the costs of supervision, recruitment, capital outlay, debt service, indirect costs, or any other costs not included in the determination of tuition and non-refundable fee charges.

Graduate student means an individual enrolled in a program of post-baccalaureate study at an institution of higher education.

Graduate study means any program of postbaccalaureate study at an institution of higher education.

HEA means the Higher Education Act of 1965, as amended.

Highest possible degree available means a doctorate in an academic field or a master's degree, professional degree, or other post-baccalaureate degree if a doctorate is not available in that academic field.

Institution of higher education (Institution) means an institution of higher education, other than a school or department of divinity, as defined in section 1201(a) of the HEA.

Inter-discipline means a course of study that involves academic fields in two or more disciplines.

Minority means Alaskan Native, American Indian, Asian-American, Black (African-American), Hispanic American, Native Hawaiian, or Pacific Islander.

Multidisciplinary application means an application that requests fellowships for more than a single academic department in areas of national need designated as priorities by the Secretary under this part.

Project means the activities necessary to assist, whether from grant funds or institutional resources, fellows in the successful completion of their designated educational programs.

Satisfactory progress means that a fellow meets or exceeds the institution's criteria and standards established for a graduate student's continued status as an applicant for the graduate degree in the academic field for which the fellowship was awarded.

School or department of divinity means an institution, or an academic department of an institution, whose program is specifically for the education of students to prepare them to become ministers of religion or to enter into some other religious vocation or to prepare them to teach theological subjects.

Students from traditionally underrepresented backgrounds mean women and minorities who traditionally are underrepresented in areas of national need as designated by the Secretary.

Supervised training means training provided to fellows under the guidance and direction of faculty in the academic department.

Tuition means the charge for instruction by the institution of higher education in which the fellow is enrolled.

Underrepresented in areas of national need means proportionate representation as measured by degree recipients, that is less than the proportionate representation in the general population, as indicated by—

- (i) The most current edition of the Department's *Digest of Educational Statistics*;
- (ii) The National Research Council's *Doctorate Recipients from United States Universities*;
- (iii) Other standard statistical references, as announced annually in the Federal Register notice inviting applications for new awards under this program; or
- (iv) As documented by national survey data submitted to and accepted by the Secretary on a case-by-case basis.

(Authority: 20 U.S.C. 1134-1134q)

Subpart B—How Does an Institution of Higher Education Apply for a Grant?

§ 648.20 How does an institution of higher education apply for a grant?

(a) To apply for a grant under this part, an institution of higher education shall submit an application that responds to the appropriate selection criteria in § 648.31.

(b) In addition, an application for a grant must—

(1) Describe the current academic program for which the grant is sought;

(2) Request a specific number of fellowships to be awarded on a full-time basis for the academic year covered under the grant in each academic field included in the application;

(3) Set forth policies and procedures to ensure that in making fellowship awards under this part the institution will seek talented students from traditionally underrepresented backgrounds;

(4) Set forth policies and procedures to assure that in making fellowship awards under this part the institution will make awards to individuals who satisfy the requirements of § 648.40;

(5) Set forth policies and procedures to ensure that Federal funds made available under this part for any fiscal year will be used to supplement and, to the extent practical, increase the funds that otherwise would be made available for the purposes of this part and, in no case, to supplant those funds;

(6) Provide assurances that the institution will provide the institutional matching contribution described in § 648.7;

(7) Provide assurances that, in the event that funds made available to the academic department under this part are insufficient to provide the assistance due a student under the commitment entered into between the academic department and the student, the academic department will endeavor, from any funds available to it, to fulfill the commitment to the student;

(8) Provide that the institution will comply with the requirements in subpart F; and

(9) Provide assurances that the academic department will provide at least one year of supervised training in instruction to students receiving fellowships under this program.

(c) In any application period, an academic department may not submit more than one application for new awards.

(Approved by the Office of Management and Budget under control number 1840-0604)

(Authority: 20 U.S.C. 1134c)

Subpart C—How Does the Secretary Make an Award?

§ 648.30 How does the Secretary evaluate an application?

(a) The Secretary evaluates an application on the basis of the criteria in § 648.31.

(b) The Secretary awards up to 100 points for these criteria.

(c) The maximum possible score for each criterion is indicated in parentheses.

(Authority: 20 U.S.C. 1134m, 1134c)

§ 648.31 What selection criteria does the Secretary use?

The Secretary uses the following criteria to evaluate an application:

(a) *Meeting the purposes of the program.* (7 points) The Secretary reviews each application to determine how well the project will meet the purposes of the program, including the extent to which—

(1) The applicant's general and specific objectives for the project are realistic and measurable;

(2) The applicant's objectives for the project seek to sustain and enhance the capacity for teaching and research at the institution and at State, regional, or national levels;

(3) The applicant's objectives seek to institute policies and procedures to ensure the enrollment of talented graduate students from traditionally underrepresented backgrounds; and

(4) The applicant's objectives seek to institute policies and procedures to ensure that it will award fellowships to individuals who satisfy the requirements of § 648.40.

(b) *Extent of need for the project.* (5 points) The Secretary considers the extent to which a grant under the program is needed by the academic department by considering—

(1) How the applicant identified the problems that form the specific needs of the project;

(2) The specific problems to be resolved by successful realization of the goals and objectives of the project; and

(3) How increasing the number of fellowships will meet the specific and general objectives of the project.

(c) *Quality of the graduate academic program.* (25 points) The Secretary reviews each application to determine the quality of the current graduate academic program for which project funding is sought, including—

(1) The course offerings and academic requirements for the graduate program;

(2) The qualifications of the faculty, including education, research interest, publications, teaching ability, and accessibility to graduate students;

(3) The focus and capacity for research; and

(4) Any other evidence the applicant deems appropriate to demonstrate the quality of its academic program.

(d) *Quality of the supervised teaching experience.* (5 points) The Secretary reviews each application to determine the quality of the teaching experience the applicant plans to provide fellows under this program, including the extent to which the project—

(1) Provides each fellow with the required supervised training in instruction;

(2) Provides adequate instruction on effective teaching techniques;

(3) Provides extensive supervision of each fellow's teaching performance; and

(4) Provides adequate and appropriate evaluation of the fellow's teaching performance.

(e) *Recruitment plan.* (10 points) The Secretary reviews each application to determine the quality of the applicant's recruitment plan, including—

(1) How the applicant plans to identify, recruit, and retain students from traditionally underrepresented backgrounds in the academic program for which fellowships are sought;

(2) How the applicant plans to identify eligible students for fellowships;

(3) The past success of the academic department in enrolling talented graduate students from traditionally underrepresented backgrounds; and

(4) The past success of the academic department in enrolling talented graduate students for its academic program.

(f) *Project administration.* (7 points) The Secretary reviews the quality of the proposed project administration, including—

(1) How the applicant will select fellows, including how the applicant will ensure that project participants who are otherwise eligible to participate are selected without regard to race, color, national origin, religion, gender, age, or disabling condition;

(2) How the applicant proposes to monitor whether a fellow is making satisfactory progress toward the degree for which the fellowship has been awarded;

(3) How the applicant proposes to identify and meet the academic needs of fellows;

(4) How the applicant proposes to maintain enrollment of graduate students from traditionally underrepresented backgrounds; and

(5) The extent to which the policies and procedures the applicant proposes to institute for administering the project are likely to ensure efficient and

effective project implementation, including assistance to and oversight of the project director.

(g) *Institutional commitment.* (16 points) The Secretary reviews each application for evidence that—

(1) The applicant will provide, from any funds available to it, sufficient funds to support the financial needs of the fellows if the funds made available under the program are insufficient;

(2) The institution's social and academic environment is supportive of the academic success of students from traditionally underrepresented backgrounds on the applicant's campus;

(3) Students receiving fellowships under this program will receive stipend support for the time necessary to complete their courses of study, but in no case longer than 5 years; and

(4) The applicant demonstrates a financial commitment, including the nature and amount of the institutional matching contribution, and other institutional commitments that are likely to ensure the continuation of project activities for a significant period of time following the period in which the project receives Federal financial assistance.

(h) *Quality of key personnel.* (5 points) The Secretary reviews each application to determine the quality of key personnel the applicant plans to use on the project, including—

(1) The qualifications of the project director;

(2) The qualifications of other key personnel to be used in the project;

(3) The time commitment of key personnel, including the project director, to the project; and

(4) How the applicant, as part of its nondiscriminatory employment practices, will ensure that its personnel are selected without regard to race, color, national origin, religion, gender, age, or disabling condition, except pursuant to a lawful affirmative action plan.

(i) *Budget.* (5 points) The Secretary reviews each application to determine the extent to which—

(1) The applicant shows a clear understanding of the acceptable uses of program funds; and

(2) The costs of the project are reasonable in relation to the objectives of the project.

(j) *Evaluation plan.* (10 points) The Secretary reviews each application to determine the quality of the evaluation plan for the project, including the extent to which the applicant's methods of evaluation—

(1) Relate to the specific goals and measurable objectives of the project;

(2) Assess the effect of the project on the students receiving fellowships

under this program, including the effect on persons of different racial and ethnic backgrounds, genders, and ages, and on persons with disabilities who are served by the project;

(3) List both process and product evaluation questions for each project activity and outcome, including those of the management plan;

(4) Describe both the process and product evaluation measures for each project activity and outcome;

(5) Describe the data collection procedures, instruments, and schedules for effective data collection;

(6) Describe how the applicant will analyze and report the data so that it can make adjustments and improvements on a regular basis; and

(7) Include a time-line chart that relates key evaluation processes and benchmarks to other project component processes and benchmarks.

(k) *Adequacy of resources.* (5 points) The Secretary reviews each application to determine the adequacy of the resources that the applicant makes available to graduate students receiving fellowships under this program, including facilities, equipment, and supplies.

(Approved by the Office of Management and Budget under control number 1640-0604) (Authority: 20 U.S.C. 1134m-1134p)

§ 648.32 What additional factors does the Secretary consider?

(a) *Continuation awards.* (1) Before funding new applications, the Secretary gives preference to grantees requesting their second or third year of funding.

(2) If appropriations for this program are insufficient to fund all continuation grantees for the second and third years at the approved funding level, the Secretary prorates the available funds, if any, among the continuation grantees and, if necessary, awards continuation grants of less than \$100,000.

(b) *Equitable distribution.* In awarding grants, the Secretary will, consistent with an allocation of awards based on the quality of competing applications, ensure the following:

(1) An equitable geographic distribution of grants to eligible applicant institutions of higher education.

(2) An equitable distribution of grants to eligible applicant public and eligible applicant private institutions of higher education.

(Authority: 20 U.S.C. 1134m-1134p)

§ 648.33 What priorities and absolute preferences does the Secretary establish?

(a) For each application period, the Secretary establishes as an area of national need and gives absolute

preference to one or more of the general disciplines and sub-disciplines listed as priorities in the appendix to this part or the resulting interdisciplines.

(b) The Secretary announces the absolute preferences in a notice published in the Federal Register.

(Authority: 20 U.S.C. 1134i-1134n)

Subpart D—How Are Fellows Selected?

§ 648.40 How does an academic department select fellows?

(a) In selecting individuals to receive fellowships, an academic department shall consider only individuals who—

(1) Are currently enrolled as graduate students, have been accepted at the grantee institution, or are enrolled or accepted as graduate students at an eligible nondegree-granting institution;

(2) Are of superior ability;

(3) Have an excellent academic record;

(4) Have financial need;

(5) Are planning to pursue the highest possible degree available in their course of study;

(6) Are planning a career in teaching or research;

(7) Are not ineligible to receive assistance under 34 CFR 75.60; and

(8)(i) Are United States citizens or nationals;

(ii) Are permanent residents of the United States;

(iii) Are in the United States for other than a temporary purpose and intend to become permanent residents; or

(iv) Are permanent residents of the Trust Territory of the Pacific Islands.

(b) An individual who satisfies the eligibility criteria in paragraph (a) of this section, but who attends an institution that does not offer the highest possible degree available in the individual's course of study, is eligible for a fellowship if the individual plans to attend subsequently an institution that offers this degree.

(Authority: 20 U.S.C. 1134l, 1134m, 1134o)

§ 648.41 How does an individual apply for a fellowship?

An individual shall apply directly to an academic department of an institution of higher education that has received a grant.

(Authority: 20 U.S.C. 1134l, 1134p)

Subpart E—How Does the Secretary Distribute Funds?

§ 648.50 What are the Secretary's payment procedures?

(a) The Secretary awards to the institution of higher education a stipend and an institutional payment for each

individual awarded a fellowship under this part.

(b) If an academic department of an institution of higher education is unable to use all of the amounts available to it under this part, the Secretary reallocates the amounts not used to academic departments of other institutions of higher education for use in the academic year following the date of the reallocation.

(Authority: 20 U.S.C. 1134a, 1134p, 1134q)

§ 648.51 What is the amount of a stipend?

(a) For a fellowship initially awarded for an academic year prior to the academic year 1993-94, the institution shall pay the fellow a stipend in an amount that equals the fellow's financial need or \$10,000, whichever is less.

(b) For a fellowship initially awarded for the academic year 1993-94, or any succeeding academic year, the institution shall pay the fellow a stipend at a level of support equal to that provided by the National Science Foundation graduate fellowships, except that this amount must be adjusted as necessary so as not to exceed the fellow's demonstrated level of financial need. The Secretary announces the amount of the stipend in a notice published in the Federal Register.

(Authority: 20 U.S.C. 1134p)

§ 648.52 What is the amount of the institutional payment?

For academic year 1993-1994, the amount of the institutional payment received by an institution of higher education for each student awarded a fellowship at the institution is \$9,000. Thereafter, the Secretary adjusts the amount of the institutional payment annually in accordance with inflation as determined by the United States Department of Labor's Consumer Price Index for the previous calendar year. The Secretary announces the amount of the institutional payment in a notice published in the Federal Register.

(Authority: 20 U.S.C. 1134q)

Subpart F—What Are the Administrative Responsibilities of the Institution?

§ 648.60 When does an academic department make a commitment to a fellow to provide stipend support?

(a) An academic department makes a commitment to a fellow at any point in his or her graduate study for the length of time necessary for the fellow to complete the course of graduate study, but in no case longer than five years.

(b) An academic department shall not make a commitment under paragraph (a) of this section to provide stipend support unless the academic department has determined that adequate funds are available to fulfill the commitment either from funds received or anticipated under this part or from institutional funds.

(Authority: U.S.C. 1134p)

§ 648.61 How must the academic department supervise the training of fellows?

The institution shall provide to fellows at least one academic year of supervised training in instruction at the graduate or undergraduate level at the schedule of at least one-half-time teaching assistant.

(Authority: 20 U.S.C. 1134o)

§ 648.62 How can the institutional payment be used?

(a) The institutional payment must be first applied against a fellow's tuition and fees.

(b) After payment of a fellow's tuition and fees, the institutional payment may be applied against educational expenses of the fellow that are not covered by tuition and fees and are related to the academic program in which the fellow is enrolled. These expenses include the following:

(1) Costs for rental or purchase of any books, materials, or supplies required of students in the same course of study.

(2) Costs of computer hardware, project specific software, and other equipment prorated by the length of the student's fellowship over the reasonable life of the equipment.

(3) Membership fees of professional associations.

(4) Travel and per diem to professional association meetings and registration fees.

(5) International travel, per diem, and registration fees to participate in educational activities.

(6) Expenses incurred in research.

(7) Costs of reproducing and binding of educational products.

(c) The institutional payment must supplement and, to the extent practical, increase the funds that would otherwise be made available for the purpose of the program and, in no case, to supplant institutional funds currently available for fellowships.

(Authority: 20 U.S.C. 1134o-1134q)

§ 648.63 How can the institutional matching contribution be used?

(a) The institutional matching contribution may be used to—

(1) Provide additional fellowships to graduate students who are not already

receiving fellowships under this part and who satisfy the requirements of § 648.40;

(2) Pay for tuition, fees, and the costs listed in § 648.62(b);

(3) Pay for costs of providing a fellow's instruction that are not included in the tuition or fees paid to the institution in which the fellow is enrolled; and

(4) Supplement the stipend received by a fellow under § 648.51 in an amount not to exceed a fellow's financial need.

(b) An institution may not use its institutional matching contribution to fund fellowships that were funded by the institution prior to the award of the grant.

(Authority: 20 U.S.C. 1134l, 1134o, 1134p)

§ 648.64 What are unallowable costs?

Neither grant funds nor the institutional matching funds may be used to pay for general operational overhead costs of the academic department.

(Authority: 20 U.S.C. 1134m, 1134q)

§ 648.65 How does the institution of higher education disburse and return funds?

(a) An institution that receives a grant shall disburse a stipend to a fellow in accordance with its regular payment schedule, but shall not make less than one payment per academic term.

(b) If a fellow withdraws from an institution before completion of an academic term, the institution may award the fellowship to another individual who satisfies the requirements in § 648.40.

(c) If a fellowship is vacated or discontinued for any period of time, the institution shall return a prorated portion of the institutional payment and unexpended stipend funds to the Secretary, unless the Secretary authorizes the use of those funds for a subsequent project period. The institution shall return the prorated portion of the institutional payment and unexpended stipend funds at a time and in a manner determined by the Secretary.

(d) If a fellow withdraws from an institution before the completion of the academic term for which he or she received a stipend installment, the fellow shall return a prorated portion of the stipend installment to the institution at a time and in a manner determined by the Secretary.

(Authority: 20 U.S.C. 1134p, 1134q)

§ 648.66 What records and reports are required from the institution?

(a) An institution of higher education that receives a grant shall provide to the Secretary, prior to the receipt of grant

funds for disbursement to a fellow, a certification that the fellow is enrolled in, is making satisfactory progress in, and is devoting essentially full time to study in the academic field for which the grant was made.

(b) An institution of higher education that receives a grant shall keep records necessary to establish—

(1) That each student receiving a fellowship satisfies the eligibility requirements in § 648.40;

(2) The time and amount of all disbursements and return of stipend payments;

(3) The appropriate use of the institutional payment; and

(4) That assurances, policies, and procedures provided in its application have been satisfied.

(Approved by the Office of Management and Budget under control number 1840-0604)

(Authority: 20 U.S.C. 1134m-1134q)

Subpart G—What Conditions Must Be Met by a Fellow After an Award?

§ 648.70 What conditions must be met by a fellow?

To continue to be eligible for a fellowship, a fellow must—

(a) Maintain satisfactory progress in the program for which the fellowship was awarded;

(b) Devote essentially full time to study or research in the academic field in which the fellowship was awarded; and

(c) Not engage in gainful employment, except on a part-time basis in teaching, research, or similar activities determined by the academic department to be in support of the fellow's progress toward a degree.

(Authority: 20 U.S.C. 1134p)

Appendix to Part 648—Academic Areas

The Secretary may give an absolute preference to any of the academic areas listed as disciplines or subdisciplines below, or the resulting inter-disciplines. The list was derived from the Classification of Instructional Programs (CIP) developed by the Office of Educational Research and Improvement of the U.S. Department of Education and includes the instructional programs that may constitute courses of studies toward graduate degrees. The code number to the left of each discipline and subdiscipline is the Department's identification code for that particular type of instructional program.

05. Area, Ethnic, and Cultural Studies

05.01 Area Studies

05.02 Ethnic and Cultural Studies

11. Computer and Information Sciences

11.01 Computer and Information Sciences, General

11.02 Computer Programming

11.04 Information Sciences and Systems

11.05 Computer Systems Analysis

11.07 Computer Science

13. Education

13.01 Education, General

13.02 Bilingual/Bicultural Education

13.03 Curriculum and Instruction

13.04 Education Administration and Supervision

13.05 Educational/Instructional Media Design

13.06 Educational Evaluation, Research, and Statistics

13.07 International and Comparative Education

13.08 Educational Psychology

13.09 Social and Philosophical Foundations of Education

13.10 Special Education

13.11 Student Counseling and Personnel Services

13.12 General Teacher Education

13.13 Teacher Education, Specific Academic, and Vocational Programs

13.14 Teaching English as a Second Language/Foreign Language

14. Engineering

14.01 Engineering, General

14.02 Aerospace, Aeronautical, and Astronautical Engineering

14.03 Agricultural Engineering

14.04 Architectural Engineering

14.05 Bioengineering and Biomedical Engineering

14.06 Ceramic Sciences and Engineering

14.07 Chemical Engineering

14.08 Civil Engineering

14.09 Computer Engineering

14.10 Electrical, Electronic, and Communications Engineering

14.11 Engineering Mechanics

14.12 Engineering Physics

14.13 Engineering Science

14.14 Environmental/Environmental Health Engineering

14.15 Geological Engineering

14.16 Geophysical Engineering

14.17 Industrial/Manufacturing Engineering

14.18 Materials Engineering

14.19 Mechanical Engineering

14.20 Metallurgical Engineering

14.21 Mining and Mineral Engineering

14.22 Naval Architecture and Marine Engineering

14.23 Nuclear Engineering

14.24 Ocean Engineering

14.25 Petroleum Engineering

14.27 Systems Engineering

14.28 Textile Sciences and Engineering

14.29 Engineering Design

14.30 Engineering/Industrial Management

14.31 Materials Science

14.32 Polymer/Plastics Engineering

16. Foreign Languages

16.01 Foreign Languages and Literatures

16.03 East and Southeast Asian Languages and Literatures

16.04 East European Languages and Literatures

16.05 Germanic Languages and Literatures

16.06 Greek Languages and Literatures

16.07 South Asian Languages and Literatures

16.09 Romance Languages and Literatures

16.11 Middle Eastern Languages and Literatures

16.12 Classical and Ancient Near Eastern Languages and Literatures

22. Law and Legal Studies

22.01 Law and Legal Studies

25. Library Science

25.01 Library Science/Librarianship

25.03 Library Assistant

26. Biological Sciences/Life Sciences

26.01 Biology, General

26.02 Biochemistry and Biophysics

26.03 Botany

26.04 Cell and Molecular Biology

26.05 Microbiology/Bacteriology

26.06 Miscellaneous Biological Specializations

26.07 Zoology

27. Mathematics

27.01 Mathematics

27.03 Applied Mathematics

27.05 Mathematic Statistics

40. Physical Sciences

40.01 Physical Sciences, General

40.02 Astronomy

40.03 Astrophysics

40.04 Atmospheric Sciences and Meteorology

40.05 Chemistry

40.06 Geological and Related Sciences

40.07 Miscellaneous Physical Sciences

40.08 Physics

42. Psychology

42.01 Psychology

42.02 Clinical Psychology

42.03 Cognitive Psychology and Psycholinguistics

42.04 Community Psychology

42.06 Counseling Psychology

42.07 Developmental and Child Psychology

42.08 Experimental Psychology

42.09 Industrial and Organizational Psychology

42.11 Physiological Psychology/Psychobiology

42.16 Social Psychology

42.17 School Psychology

50. Visual and Performing Arts

50.01 Visual and Performing Arts

50.02 Crafts, Folk Art, and Artisanry

50.03 Dance

50.04 Design and Applied Arts

50.05 Dramatic/Theater Arts and Stagecraft

50.06 Film/Video and Photographic Arts

50.07 Fine Arts and Art Studies

50.09 Music

51. Health Professions and Related Sciences

51.01 Chiropractic (D.C., D.C.M.)

51.02 Communication Disorders Sciences and Services

51.03 Community Health Services

51.04 Dentistry (D.D.S., D.M.D.)

51.05 Dental Clinical Sciences/Graduate Dentistry (M.S., Ph.D.)

51.06 Dental Services

51.07 Health and Medical Administrative Services

51.08 Health and Medical Assistants

51.09 Health and Medical Diagnostic and Treatment Services

51.10 Health and Medical Laboratory Technologies/Technicians

51.11 Health and Medical Preparatory Programs

51.12 Medicine (M.D.)

51.13 Medical Basic Science

51.14 Medical Clinical Services (M.S., Ph.D.)

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51.15 Mental Health Services	51.20 Pharmacy	51.25 Veterinary Clinical Services
51.16 Nursing	51.21 Podiatry (D.P.M., D.P., Pod.D.)	51.27 Miscellaneous Health Professions
51.17 Optometry (O.D.)	51.22 Public Health	[FR Doc. 93-30615 Filed 12-15-93; 8:45 am]
51.18 Ophthalmic/Optometric Services	51.23 Rehabilitation/Therapeutic Services	SELLING CODE 4000-01-P
51.19 Osteopathic Medicine (D.O.)	51.24 Veterinary Medicine (D.V.M.)	

Appendix B.

GAANN Survey

Survey of 1997 Cohort GAANN Grantees

David Shafer, Ph.D. Candidate, Public Administration, North Carolina State University

Ph.D. Committee
Dr. James Svara, Chair
Dr. Elizabethann O'Sullivan
Dr. Debra Stewart
Dr. Ellen Vasu

Thank you for taking approximately ten minutes to complete this survey to assist in the completion of my dissertation! The survey primarily consists of short multiple-choice questions. Your responses, based on your experience in managing GAANN, are absolutely critical to my dissertation research.

You were chosen to receive this survey because you managed a 1997 GAANN grant. In general, the goal of my research is use the example of the GAANN program to learn more about variation in the management of the same federal program by different grantees. The survey asks that you provide information based on your experiences with GAANN. Many of you may not recall all of the activities of your 1997 GAANN grant. The survey questions which you are asked to answer are fairly general and estimates are acceptable.

All responses will be kept strictly confidential and will be reported in aggregate form without reference to individual grantees.

If you have any questions (or if you would like to have access to a copy of the completed dissertation), please do not hesitate to contact me at (919) 515-4462 or via e-mail at david_shafer@ncsu.edu.

Thank you for your time!

Institution

Departments or Programs Supported By Your Grant

Person Completing this form PI Other, please specify

Did your department/unit receive a GAANN grant prior to 1997? YES NO

1) How many PI's and Co-PI's of record were associated with your 1997 GAANN grant?

2) The PI (s) for the 1997 grant worked in _____? Please check all that apply.

Departmental unit(s) College-level unit(s) University-level unit(s) (e.g., The Graduate School)

3) Indicate the type of staff who directly assisted the PI (s) in the administrative details of GAANN implementation. (This may include staff in other units who directly assisted the PI (s) in implementing GAANN.)

Number of Administrative Assistants/Secretaries

Number of Professional Program Manager (s)

Number of other type of staff, if applicable

Other, please specify

4) Estimate how much time each type of staff cumulatively spent annually in helping to implement GAANN? (This question does not refer to "cost sharing." I am just trying to get a general sense of university involvement with GAANN.)

Administrative Assistants/Secretaries 70-100% 40-69% 10-39% Less than 10% N/A

Professional Program Manager(s) 70-100% 40-69% 10-39% Less than 10% N/A

Others: 70-100% 40-69% 10-39% Less than 10% N/A

5) To the best of your knowledge, did any of the staff above assist in managing GAANN grants prior to 1997?

YES NO Don't Know

For items 6-9, please indicate whether you agree or disagree with the statement.

6) The regulatory requirement to use the FAFSA interfered with our ability to implement the GAANN program.

Strongly agree Agree Disagree Strongly disagree Don't know

7) The regulatory requirement for a one-year supervised teaching experience interfered with our ability to implement the GAANN program.

Strongly agree Agree Disagree Strongly disagree Don't know

8) Regulatory restrictions that disallow use of GAANN funds for overhead interfered with our ability to implement the GAANN program.

Strongly agree Agree Disagree Strongly disagree Don't know

9) Late award notification interfered with our ability to implement the GAANN program.

Strongly agree Agree Disagree Strongly disagree Don't know

10) Check all programs or activities that were developed specifically for GAANN Fellows. (Please do not check normal university activities where GAANN Fellows were simply required or encouraged to participate.)

- GAANN professional development seminars/workshops (e.g., How to Write Proposals, How to Make Oral Presentations, etc.)
- GAANN research-related seminars at which faculty discuss their research
- GAANN group meetings where Fellows share their research with each other
- GAANN social activities (lunches, "pizza dinners," etc.)
- Mentoring for GAANN Fellows, not provided to others in your institution
- Teaching effectiveness seminars and workshops for GAANN Fellows
- Other, please specify _____
- None of the above

11) What types of methods did you use to recruit students from underrepresented groups to GAANN Fellowships? Please check all that apply.

- No special methods used to recruit students from underrepresented groups
- Advertising in publications (flyers, magazines, school newspapers, etc.)
- Cooperation with "pipeline schools" (e.g., HBCU's, etc.)
- Attendance at minority-focused recruiting fairs
- Letters to minority applicants
- Phone calls to minority applicants
- Pre-designating a specific number of GAANN Fellowships for women and minorities
- Campus visitation programs (e.g., "Recruitment Weekends")
- Recruitment from Summer Research Programs at your institution
- Other (s), Please specify _____

For items 12-14, please indicate whether you agree or disagree with the statement.

12) State laws or policies limited the ways we could recruit students from underrepresented groups.

Strongly agree Agree Disagree Strongly disagree Don't know

13) University policies limited the ways we could recruit students from underrepresented groups.

Strongly agree Agree Disagree Strongly disagree Don't know

14) The financial aid officer used his or her discretion to ensure that fellows received the full GAANN stipend.

Strongly agree Agree Disagree Strongly disagree Don't know

15) Which of the following methods provided GAANN Fellows with a teaching experience? Please check ALL that apply.

- No Methods Used
- 1/4 Time Teaching Assistantship
- 1/2 Time Teaching Assistantship
- 3/4 Time Teaching Assistantship
- Full Time Teaching Assistantship
- Faculty supervision of TA
- Faculty evaluation of TA performance
- Teaching effectiveness seminars and workshops
- Other, please specify _____

16) Estimate the percentage of Fellows appointed on your 1997 GAANN grant who have had one year of teaching experience.

100% 80%-99% 50%-79% Less than 50% Unknown

17) Estimate the percentage of Fellows appointed on your 1997 GAANN grant who plan to have their one year of teaching experience later.

100% 80%-99% 50%-79% Less than 50% Unknown

Items 18 to 30 assess how often you use discretion in implementing certain program components. Please think back to your 1997 GAANN grant and give your best estimates.

- 18) GAANN Fellows were selected on the basis of academic excellence.
 Always Almost always Sometimes Almost never Never Don't know
- 19) Students selected for GAANN Fellowships were either U.S. citizens or permanent residents.
 Always Almost always Sometimes Almost never Never Don't know
- 20) Students selected for GAANN Fellowships were planning to pursue the highest degree possible in their field of study.
 Always Almost always Sometimes Almost never Never Don't know
- 21) Students selected for GAANN fellowships indicated that they planned to pursue a career in teaching or research.
 Always Almost always Sometimes Almost never Never Don't know
- 22) Fellows were monitored to ensure that they were making satisfactory progress towards the degree for which the fellowship was awarded.
 Always Almost always Sometimes Almost never Never Don't know
- 23) There were special circumstances under which Fellows' stipends were not determined according to their financial need.
 Always Almost always Sometimes Almost never Never Don't know
- 24) There were special circumstances under which a methodology other than the "federal methodology" (i.e., FAFSA) was used to determine financial need.
 Always Almost always Sometimes Almost never Never Don't know
- 25) There were special circumstances under which GAANN Fellows were not required to be enrolled as full-time graduate students while receiving GAANN support.
 Always Almost always Sometimes Almost never Never Don't know
- 26) Academically eligible GAANN Fellows received other funding after the termination of their GAANN Fellowships to enable them to continue to pursue their degrees.
 Always Almost always Sometimes Almost never Never Don't know
- 27) There were special situations in which Fellows received GAANN Funds for more than five years (e.g., some

institutions may have appointed a GAANN Fellow using a 1994 GAANN grant and then continued that student using 1997 GAANN funds).

Always Almost always Sometimes Almost never Never Don't know

28) There were situations in which GAANN Fellows were permitted to engage in employment during the tenure of their fellowship that was not related to their degree program due to their financial or other circumstances.

Always Almost always Sometimes Almost never Never Don't know

29) For what expenses did you use the program enhancement funds associated with your GAANN grant? Please check all that apply:

- Tuition and fees
- Research/course-related books
- Research/course-related supplies
- Research/course-related travel for Fellows
- Staff salaries
- GAANN publicity
- Other, please specify _____
- Don't know

30) How did you evaluate your 1997 GAANN grant. Please check all that apply.

- We did not use any formal means to evaluate GAANN
- The PI's and staff evaluated the GAANN program
- External evaluators evaluated the GAANN program
- The GAANN Fellows evaluated the GAANN program
- Other, please specify _____
- Don't know

OPEN-ENDED QUESTIONS:

31) Are there any other special features of your GAANN program that you would like to share?

32) Do you have any suggestions to improve the GAANN regulations?

33) Do you have any other comments explaining/clarifying your answers to any of the above questions?

Name and title of person completing this survey (optional)

Phone number of person completing this survey

E-Mail of the person completing this survey

Appendix C.
Sample GAANN
Performance Reports

U.S. DEPARTMENT OF EDUCATION
Washington, D.C. 20202

GRADUATE ASSISTANCE IN AREAS OF NATIONAL NEED
(Title IX, Part D, H.E.A., as amended)

INSTRUCTIONS FOR COMPLETING THE PERFORMANCE REPORT

DISCLOSURE OF BURDEN STATEMENT

According to the Paperwork Reduction Act of 1995, no persons are required to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 1840-0671. The time required to complete this information collection is estimated to average of 17 hours per response, including the time to review instructions search existing data resources, gather data needed and complete and review the information collection. If you have any comments concerning the accuracy of the time estimate(s) or suggestions for improving this form, please write to: U.S. Department of Education, Washington, DC 20202-4651. If you have any comments or concerns regarding the status of your individual submission of this form, write directly to: The Graduate Assistance in Areas of National Need Fellowship Program, U.S. Department of Education, 600 Independence Avenue, S.W., Washington D.C. 20202-4651.

U.S. Department of Education,
Division of Higher Education
Incentive Programs
600 Independence Ave., S.W.,
Washington, DC 20202-5329

GENERAL INFORMATION

Reporting Requirements - GAANN requires an annual Performance Report at the end of each budget period of your approved project period (see definitions below). Submission of these reports is required under 34 CFR 74.51, 75.590, 75.720, and 75.730-732.

Number of Copies Required - An original and one copy of each report.

Due Dates - Final performance reports for expired projects are due in the program office 90 days after the end of the final budget period.

Mail Reports as Follows:

U.S. Department of Education
GAANN
Division of Higher Education
Incentive Programs
600 Independence Avenue, S.W.
Portals Building, Suite 600
Washington, DC 20202-5247

DEFINITIONS

Budget Period A one-year interval of time into which a project period is divided for budget purposes.

Project Period The three-year period of time for which the appropriate official of the Department of Education approves the GAANN project.

NOTE: Further funding or other benefits may be withheld under this program unless this report is completed and filed as required by the U.S. Code of Federal Regulations.

GRADUATE ASSISTANCE IN AREAS OF NATIONAL NEED
PERFORMANCE REPORT - PROGRAM YEAR 199_ - 199_

BASIC DATA: COMPLETED BY GAANN PROGRAM STAFF. GRANTEES SHOULD
VERIFY OR CORRECT ALL BASIC DATA.

1. Grant Number: P200A_0__-9_
2. Institution:
3. Department/program:
4. City:
5. State:
6. Region:
7. Contact Person:
8. Telephone Number:
9. Fax Number:
10. Internet Address:
11. Budget Period Covered by Report: (Month, Day, 199X) to
(Month, Day, 199Y)

PERFORMANCE DATA: TO BE COMPLETED BY GRANTEES

12. Enter the number of ED-approved GAANN fellowships awarded to
the recipient department/program from Federal funds this
budget period (1996-97). _____
13. Enter the total unduplicated number of GAANN fellowships
awarded to students using Federal and institutional matching
funds:

This budget period (1996-97). _____

Cumulative (since the first budget period of this project)

14. Enter the total number of full-time graduate students,
seeking the terminal degree, in the recipient
department/program this budget period (1996-97).

FISCAL DATA: ENTER DATA FOR 1) THIS BUDGET PERIOD AND 2) FOR
THIS PROJECT PERIOD TO DATE.

	Budget Period	Project Period
--	------------------	-------------------

FELLOWS DATA A: PREPARE A CHART CONTAINING DATA FOR EACH CURRENT FELLOW FOR THIS BUDGET PERIOD ONLY, RESPONDING TO ITEMS #19 TO #31 BELOW. PLEASE INCLUDE TOTALS WHERE APPROPRIATE:

19. Fellow name (last, first, M.I.).
20. Social security number.
21. Gender.
22. Status code: Enter a code number from 1 to 9 for the racial/ethnic status of each fellow.
 - 1 - Alaskan Native/American Indian
 - 2 - Asian/Pacific Islander
 - 3 - Black (non-Hispanic)
 - 4 - White (non-Hispanic)
 - 5 - Hispanic
 - 6 - Other
23. Degree status: Enter the degree sought and current status of the fellow. Example: 1/4 = Ph.D candidate.
 - 1) Ph.D. 2) other: specify 3) pre-candidate 4) candidate
24. CIP code: Indicate the academic field of study pursued by the fellow using the appropriate Classification of Instructional Program (CIP) code. See attached list.
25. Date of academic program entry: Date the fellow entered your graduate program.
26. Date of initial GAANN support: Date the GAANN fellow began receiving support from GAANN.
27. Months of GAANN support: Enter the number of months the fellow has received continuous GAANN support.
28. Date of expected/actual program completion.
29. Date of program exit (before program completion, if applicable).
30. Annual stipend amount: Enter the stipend amount received during this budget period.
31. Supervised teaching experience: Enter the time fellow taught/will teach. Cite: (a) start date - month/year and (b) number of months actual/expected teaching experience.

FELLOWS DATA B: PREPARE A CHART CONTAINING DATA FOR FORMER FELLOWS RESPONDING TO ITEM #32 BELOW:

32. Post-doctoral situations of GAANN fellows one year after completion of department/program requirements: Provide names of former GAANN fellows and their dates of completion of degree requirements, and employment. (Example: 2/7 = teaching employment in the U.S. or its territories.) Also indicate the specific field or discipline of the former fellows' employment.

- | | |
|------------------------------|----------------------------------|
| 1 - post-doctoral fellowship | 5 - other |
| 2 - teaching employment | 6 - unknown |
| 3 - research employment | 7 - in the U.S., its territories |
| 4 - other employment | 8 - not in the U.S. |

NARRATIVE STATEMENT: Attach a brief narrative statement comparing your project's objectives and activities, as proposed in your approved grant application, with the level of accomplishment attained for each objective and activity. If a planned objective or activity was not attained or conducted, explain why and what, if any, corrective measures were taken.

If this report is for the final budget period of an approved project, the narrative statement should also summarize the overall accomplishments, strengths, and weaknesses of your project over the entire approved project period. Describe how your graduate program will continue to be sustained and enhanced in the absence of Federal support.

CERTIFICATION BY AUTHORIZED OFFICIAL:

I certify that the information in this report is accurate and complete and that all terms and conditions of the grant have been satisfactorily completed to the best of my knowledge and belief.

33. Name:
34. Title:
35. Signature:
36. Date:
37. Telephone number (if different from contact person):
38. Fax number (if different from contact person):
39. Internet E-mail address (if different from contact person):



UNITED STATES DEPARTMENT OF EDUCATION

WASHINGTON, D.C. 20202- _____

GRADUATE ASSISTANCE IN AREAS OF NATIONAL NEED
(Title VII, Part A, Subpart 2 H.E.A., as amended)

INSTRUCTIONS FOR COMPLETING THE PERFORMANCE REPORT

DISCLOSURE OF BURDEN STATEMENT

According to the Paperwork Reduction Act of 1995, no persons are required to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 1840-0748. The time required to complete this information collection is estimated to average 17 hours per response, including the time to review instructions search existing data resources, gather data needed and complete and review the information collection. **If you have any comments concerning the accuracy of the time estimate (s) or suggestions for improving this form, please write to: U.S. Department of Education, Washington, DC 20202-4551. If you have comments or concerns regarding the status of your individual submission of this form, write directly to: The Graduate Assistance in Areas of National Need Fellowship Program, U.S. Department of Education, 1990 K Street, N.W. Washington, DC 20202-8521.**

GENERAL INFORMATION

Reporting Requirements - GAANN requires an annual interim Performance Report. A final Performance Report and a financial report are due at the end of your approved project period (see definitions below). Submission of these reports is required under 34 CFR 74.51, 75.590, 75.720, and 75.730-732.

Number of Copies Required - An original and one copy of each report.

Due Dates - Final performance and Financial (SF 269) reports for expired projects are due in the program office 90 days after the end of the final budget period.

Mail Reports as Follows:

U.S. Department of Education
GAANN
International Education and Graduate
Programs Service
1990 K Street N.W., Suite 6000
Washington, DC 20006-8521

DEFINITIONS

Budget Period - A one-year interval of time into which a project period is divide for budget purposes.

Project Period - The three-year period of time for which the appropriate official of the Department of Education approves the GAANN project.

Cumulative - From the first budget period to date.

Note: Further funding or other benefits may be withheld under this program unless this report is completed and filed as required by the U.S. Code of Federal Regulations.

GRADUATE ASSISTANCE IN AREAS OF NATIONAL NEED (GAANN)
FINAL REPORT - PROGRAM YEAR 2000-2001

Basic Data

- 1 = Grant Number P200A97 _____ 2000
2 = Institution:
3 = Department/Program.
4 = City:
5 = State:
6 = Contact Person.
7 = Telephone Number:
8 = Fax Number:
9 = Internet Address:
10 = Budget Period Covered September 1997 - August 2000

PERFORMANCE DATA:

- 11 = Enter the number of ED-approved GAANN Fellowships awarded to the recipient department from Federal funds this budget period
- 12 = Enter the number of fellowships awarded to students using institutional matching funds this budget period.
- 13 = Enter the total number of full-time graduate students, seeking the terminal degree, in the recipient department/program this budget period.

FISCAL DATA: ENTER DATA FOR 1) THIS BUDGET PERIOD AND 2) FOR THIS PROJECT PERIOD TO DATE (Cumulative).

	Budget Period	Cumulative to date
15 = Federal funds expended	\$ _____	\$ _____
16 = Institutional funds expended	\$ _____	\$ _____
17 = Federal funds remaining	\$ _____	\$ _____
18 = Institutional matching funds expended	\$ _____	\$ _____

**PARTICIPANT DATA CONTENT INSTRUCTIONS
GRADUATE ASSISTANCE IN AREAS OF NATIONAL NEED
(GAANN)**

Instructions:

Enter and submit data separately for each individual GAANN fellow.

1. Student's Last Name
2. Student's First Name
3. Social Security #
4. Gender
5. Institution:
6. Department:
7. Grant Award #:

8. Race (Choose one)
<input type="checkbox"/> American Indian/Alaska Native <input type="checkbox"/> Asian <input type="checkbox"/> Black or African American <input type="checkbox"/> Native Hawaiian or Other Pacific Islander <input type="checkbox"/> White <input type="checkbox"/> Other <input type="checkbox"/> Unknown

Ethnicity (Choose one)
<input type="checkbox"/> Hispanic or Latino <input type="checkbox"/> Not Hispanic or Latino <input type="checkbox"/> Other <input type="checkbox"/> Unknown

9a. Field of Study
<input type="checkbox"/> Biology <input type="checkbox"/> Chemistry <input type="checkbox"/> Computer and Information Sciences <input type="checkbox"/> Engineering <input type="checkbox"/> Geological and Related Sciences <input type="checkbox"/> Mathematics <input type="checkbox"/> Physics <input type="checkbox"/> Interdisciplinary <input type="checkbox"/> Multidisciplinary

9b. Sub-discipline instructions: enter most commonly used name describing student's sub-discipline (for example: Biochemistry, Civil Engineering, Optics, Statistics.)

10. Source of this student's fellowship (Choose one).

- Entirely from federal GAANN funds
- Entirely from institutional matching funds
- Combination of GAANN and matching funds
- Unknown

11. The amount of the stipend per year of student's GAANN fellowship.

a 1989-90 <input type="text"/>	b 1990-91 <input type="text"/>	c 1991-92 <input type="text"/>
d 1992-93 <input type="text"/>	e 1993-94 <input type="text"/>	f 1994-95 <input type="text"/>
g 1995-96 <input type="text"/>	h 1996-97 <input type="text"/>	i 1997-98 <input type="text"/>
j 1998-99 <input type="text"/>		

Enter exact amount of stipend for each year student received GAANN funding. Leave other years blank. If none, leave blank.

12. The amount of institutional contribution to tuition and stipend (for any portion not covered by GAANN funds), per year of student's GAANN fellowship.

a 1989-90 <input type="text"/>	b 1990-91 <input type="text"/>	c 1991-92 <input type="text"/>
d 1992-93 <input type="text"/>	e 1993-94 <input type="text"/>	f 1994-95 <input type="text"/>
g 1995-96 <input type="text"/>	h 1996-97 <input type="text"/>	i 1997-98 <input type="text"/>
j 1998-99 <input type="text"/>		

13. The amount of support the student received after the GAANN fellowship.

a 1989-90 <input type="text"/>	b 1990-91 <input type="text"/>	c 1991-92 <input type="text"/>
d 1992-93 <input type="text"/>	e 1993-94 <input type="text"/>	f 1994-95 <input type="text"/>
g 1995-96 <input type="text"/>	h 1996-97 <input type="text"/>	i 1997-98 <input type="text"/>
j 1998-99 <input type="text"/>		

Enter the total amount of support for each year the student received funding after the 1-3 years of GAANN.

14. Year and term the student entered institution's graduate program.
Term: Year: (Enter four digit number for year)

15. Current education status

- Is enrolled but not yet advanced to Ph.D. candidacy
- Left graduate school after completing Master's
- Has advanced to Ph.D. candidacy and passed prelims
- Has received the Ph.D.
- Left for personal reasons
- Left for academic reasons
- Status unknown

16. Current employment status

- Still a student-not employed full-time
- Tenure-track teaching job
- Visiting teaching job
- Post-doctoral fellowship
- Working in government agency
- Working in corporation
- Working in other setting
- Unemployed
- Status unknown

17. How the fellow's financial need was determined (choose one)

- Title IV method (go to number 18)
- Other method (only prior to 1993)
- Unknown

18. If the Title IV financial needs analysis was used, is the amount of student's initial financial need known?

- Known (go to number 19)
- Unknown

19. Cost of education and financial need

Enter amounts as of the time of the student's initial need determination. Round to nearest dollar. Do not use dollar signs or commas. If unknown, leave blank. Item A minus item B should equal item C.

a. Total cost of the graduate program at time of need determination \$

b. Student's contribution \$

c. Student's financial need \$

Please make comments if the condition of $a-b=c$ is not met. (Please limit comments to 80 words)

Appendix D.

GAANN Data

GAANN Data

ID	Q	A	F	Type	Prior Experience Y=1; N=0	Number of Personnel	Graduate Program Size	Organizational Level	Ability To Cope	Regulatory Conformity	Innovativeness	Diversity	Retention	Candidacy
34	x	x	x	HCP	0	2.55	7	1	2.25	4.53	4	86%	86%	75%
3	x	x	x	HCP	1	2.05	25	1	2	4.53	4	44%	88%	100%
14	x	x	x	HCP	1	2.50	90	1	2.5	4.67	4	26%	94%	91%
17	x	x	x	HCP	1	3.25	150	4	3.5	5.00	3	38%	87%	75%
18	x	x	x	HCP	1	3.25	95	4	3.5	5.00	4	67%	100%	25%
31	x	x		HCP	1	2.05	54	1	1.75	4.53	3			
51	x	x		HCP	0	1.25	204	1	4	4.60	3			
6	x	x	x	HCP	0	3.25	52	1	2	4.87	2	22%	88%	0%
36	x	x	x	HCP	1	1.05	44	1	2.25	4.67	2	63%	87%	83%
19	x	x	x	HCP	1	3.25	270	4	3.5	5.00	2	35%	82%	33%
49	x	x		HCP	1	2.25	64	1	3	5.00	2			
45	x	x	x	HCPR	0	1.50	274	1	2	4.93	0	55%	82%	86%
26	x	x	x	HCPR	0	3.05	40	1	2	4.53	1	67%	73%	50%
20	x	x	x	HCPR	1	2.05	48	1	3.25	5.00	1	21%	100%	0%
59	x	x	x	HCPR	1	1.30	95	1	2	4.93	1	15%	62%	43%
35	x	x	x	HCPR	1	2.25	46	1	3	4.60	0	23%	85%	33%
43	x	x		HCPR	0	1.05	128	1	3	4.53	0			
44	x	x		HCPR	1	2.10	74	1	2.75	4.87	0			
54	x	x		HCPR	0	1.05	17	3	1.33	4.67	0			
13	x	x	x	MCPR	0	3.35	36	1	3.25	4.47	1	60%	100%	0%
63	x		x	MCPR	1	1.05	150	1	2.5	4.13	0	60%	84%	50%
29	x	x	x	MCPR	1	1.35	466.5	1	3	4.07	0	52%	78%	20%
23	x	x	x	MCPR	1	1.05	6	1	3	4.36	0	20%	80%	0%
16	x	x	x	MCPR	1	1.30	119	2	3	4.33	0	38%	100%	67%
25	x	x	x	MCPR	1	1.10	55	1	2.67	4.40	0	29%	71%	60%
15	x	x	x	MCPR	1	7.30	49	1	2.75	3.53	0	67%	83%	0%
30	x	x		MCPR	1	2.10	86	1	2.75	3.47	0			
57	x	x	x	MCP	1	1.50	294	3	2.5	4.47	3	61%	88%	67%
7	x	x	x	MCP	0	3.25	30	1	2.5	3.73	2	43%	71%	11%
52	x	x	x	MCP	1	3.00	11	1	2.67	4.13	5	43%	71%	50%
2	x	x	x	MCP	1	4.30	659	3	2.5	4.33	3	40%	100%	0%
28	x	x	x	MCP	0	1.00	74	2	2.5	4.20	3	50%	75%	60%

Q=GAANN Survey Completed; A=Annual Report Completed; F=Final Report Completed

Type: HCP=High Conforming Partner; HCPR=High Conforming Proxy; MCPR=Moderate Conforming Proxy; MCP=Moderate Conforming Partner

**Appendix E.
List of 1997
Cohort Grantees**

List of 1997 Cohort GAANN Grantees

Institution	Grant Number	Area of Study
Dartmouth College	P200A70107	Biology
Georgia Institute of Technology	P200A70111	Biology
Georgia State University	P200A70113	Biology
Indiana University-Indianapolis	P200A70109	Biology
Meharry Medical College	P200A70110	Biology
University of Alabama at Birmingham	P200A70120	Biology
University of California at San Diego	P200A70103	Biology
University of Missouri-Columbia	P200A70119	Biology
Washington University	P200A70106	Biology
Brown University	P200A70232	Chemistry
Georgia Institute of Technology	P200A70214	Chemistry
Indiana University-Bloomington	P200A70215	Chemistry
Northwestern University	P200A70521	Chemistry
Rutgers University	P200A70205	Chemistry
San Francisco State University	P200A70233	Chemistry
University of Akron	P200A70211	Chemistry
University of California-Los Angeles	P200A70203	Chemistry
University of California-San Diego	P200A70218	Chemistry
University of Illinois at Urbana	P200A70228	Chemistry
University of Puerto Rico at Rio Piedras	P200A70219	Chemistry
New Mexico State University	P200A70303	Computer Sci
SUNY at Stony Brook	P200A70301	Computer Sci
University of California at Irvine	P200A70306	Computer Sci
University of Chicago	P200A70300	Computer Sci
University of Pennsylvania	P200A70304	Computer Sci
Boston University	P200A70412	Engineering
Colorado State University	P200A70433	Engineering
Cornell University	P200A70422	Engineering
Howard University	P200A70444	Engineering
Marquette University	P200A70409	Engineering
Michigan Technological University	P200A70416	Engineering
Oregon State University	P200A70447	Engineering
Texas A&M University	P200A70418	Engineering
University of California at Berkeley	P200A70423	Engineering
University of California at Davis	P200A70402	Engineering
University of California at Davis	P200A70443	Engineering
University of California at Davis	P200A70417	Engineering
University of Massachusetts at Amherst	P200A70426	Engineering
University of Michigan-Ann Arbor	P200A70415	Engineering

Institution	Grant Number	Area of Study
University of Michigan-Ann Arbor	P200A70437	Engineering
University of Missouri at Columbia	P200A70411	Engineering
University of Missouri at Rolla	P200A70424	Engineering
University of Virginia	P200A70421	Engineering
Worcester Polytechnic Institute	P200A70414	Engineering
Indiana University-Bloomington	P200A70717	Multidisciplinary
North Carolina State University	P200A70705	Multidisciplinary
North Carolina State University	P200A70707	Multidisciplinary
North Carolina State University	P200A70708	Multidisciplinary
University of Alabama at Birmingham	P200A70718	Multidisciplinary
University of Dayton	P200A70704	Multidisciplinary
University of Wisconsin at Madison	P200A70715	Multidisciplinary
University of California at Davis	P200A70500	Mathematics
University of California at San Diego	P200A70516	Mathematics
University of Chicago	P200A70512	Mathematics (Statistics)
University of Chicago	P200A70518	Mathematics
University of North Carolina at Chapel Hill	P200A70515	Mathematics
University of Wisconsin at Milwaukee	P200A70522	Mathematics
Cornell University	P200A70615	Physics
Ohio State University	P200A70604	Physics
Rutgers University	P200A70602	Physics
University of Arizona	P200A70604	Physics
University of California at Berkeley	P200A70619	Physics
University of California at Irvine	P200A70607	Physics
University of Chicago	P200A70616	Physics
University of Michigan-Ann Arbor	P200A70612	Physics
University of Rochester	P200A70608	Physics
Washington University	P200A70626	Physics

Appendix F.

Regression Output and Correlation Matrix

Regression Output and Correlation Matrix

Dependent Variable: Diversity

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	0.11635	0.05818	1.79	0.1912
Error	22	0.71694	0.03259		
Corrected Total	24	0.83330			

Root MSE	0.18052	R-Square	0.1396
Dependent Mean	0.45040	Adj R-Sq	0.0614
Coeff Var	40.08040		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Type I SS	Type II SS
Intercept	Intercept	1	1.09153	0.42209	2.59	0.0169	5.07150	0.21794
CONFORM	CONFORM	1	-0.15390	0.09469	-1.63	0.1184	0.06684	0.08608
INNOV	INNOV	1	0.02825	0.02292	1.23	0.2307	0.04951	0.04951

Parameter Estimates

Variable	Label	DF	Standardized Estimate	Squared Semi-partial Corr Type I	Squared Partial Corr Type I	Squared Semi-partial Corr Type II	Squared Partial Corr Type II
Intercept	Intercept	1	0	.	.	.	.
CONFORM	CONFORM	1	-0.32641	0.08021	0.08021	0.10330	0.10719
INNOV	INNOV	1	0.24755	0.05942	0.06460	0.05942	0.06460

Dependent Variable: Retention

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	0.02191	0.01096	0.97	0.3936
Error	22	0.24769	0.01126		
Corrected Total	24	0.26960			

Root MSE	0.10611	R-Square	0.0813
Dependent Mean	0.84600	Adj R-Sq	-0.0022
Coeff Var	12.54211		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Type I SS	Type II SS
Intercept	Intercept	1	0.53465	0.24809	2.16	0.0424	17.89290	0.05229
CONFORM	CONFORM	1	0.06655	0.05566	1.20	0.2445	0.01911	0.01610
INNOV	INNOV	1	0.00672	0.01347	0.50	0.6227	0.00280	0.00280

Parameter Estimates

Variable	Label	DF	Standardized Estimate	Squared Semi-partial Corr Type I	Squared Partial Corr Type I	Squared Semi-partial Corr Type II	Squared Partial Corr Type II
Intercept	Intercept	1	0	.	.	.	.
CONFORM	CONFORM	1	0.24816	0.07088	0.07088	0.05971	0.06103
INNOV	INNOV	1	0.10356	0.01040	0.01119	0.01040	0.01119

Dependent Variable: Candidacy

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	0.36849	0.18425	1.81	0.1874
Error	22	2.24124	0.10187		
Corrected Total	24	2.60974			

Root MSE	0.31918	R-Square	0.1412
Dependent Mean	0.43160	Adj R-Sq	0.0631
Coeff Var	73.95233		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Type I SS
Intercept	Intercept	1	-0.36994	0.74628	-0.50	0.6250	4.65696
CONFORM	CONFORM	1	0.15430	0.16742	0.92	0.3667	0.14614
INNOV	INNOV	1	0.05986	0.04052	1.48	0.1538	0.22235

Parameter Estimates

Variable	Label	DF	Type II SS	Standardized Estimate	Squared Semi-partial Corr Type I	Squared Partial Corr Type I	Squared Semi-partial Corr Type II
Intercept	Intercept	1	0.02503	0	.	.	.
CONFORM	CONFORM	1	0.08653	0.18493	0.05600	0.05600	0.03316
INNOV	INNOV	1	0.22235	0.29644	0.08520	0.09026	0.08520

Dependent Variable: Regulatory Conformity

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	0.55399	0.11080	0.62	0.6893
Error	26	4.68321	0.18012		
Corrected Total	31	5.23720			

Root MSE	0.42441	R-Square	0.1058
Dependent Mean	4.50250	Adj R-Sq	-0.0662
Coeff Var	9.42609		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate
Intercept	Intercept	1	4.50087	0.36842	12.22	<.0001	0
Prior_Experience	Prior Experience	1	-0.00691	0.16710	-0.04	0.9673	-0.00792
Personnel	Personnel	1	-0.08092	0.05928	-1.36	0.1840	-0.25557
Pgm_Size	Pgm Size	1	-0.00025925	0.00059087	-0.44	0.6645	-0.08921
Org_Level	Org Level	1	0.19379	0.18749	1.03	0.3108	0.20742
Cope	Cope	1	0.06487	0.13574	0.48	0.6367	0.09225

Dependent Variable: Innovativeness

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	6.88310	1.37662	0.49	0.7771
Error	26	72.33565	2.78214		
Corrected Total	31	79.21875			

Root MSE	1.66797	R-Square	0.0869
Dependent Mean	1.65625	Adj R-Sq	-0.0887
Coeff Var	100.70792		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate
Intercept	Intercept	1	1.18657	1.44793	0.82	0.4200	0
Prior_Experience	Prior Experience	1	0.03721	0.65673	0.06	0.9553	0.01096
Personnel	Personnel	1	0.22453	0.23297	0.96	0.3441	0.18234
Pgm_Size	Pgm Size	1	-0.00107	0.00232	-0.46	0.6486	-0.09472
Org_Level	Org Level	1	0.90141	0.73685	1.22	0.2322	0.24808
Cope	Cope	1	-0.06154	0.53346	-0.12	0.9090	-0.02250

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Dependent Variable: Diversity

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	0.14207	0.02841	0.78	0.5745
Error	19	0.68967	0.03630		
Corrected Total	24	0.83174			

Root MSE	0.19052	R-Square	0.1708
Dependent Mean	0.44952	Adj R-Sq	-0.0474
Coeff Var	42.38321		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate
Intercept	Intercept	1	0.54866	0.23387	2.35	0.0300	0
Prior_Experience	Prior Experience	1	-0.12803	0.09570	-1.34	0.1968	-0.31516
Personnel	Personnel	1	0.02729	0.02845	0.96	0.3495	0.20616
Pgm_Size	Pgm Size	1	0.00003602	0.00028791	0.13	0.9018	0.03034
Org_Level	Org Level	1	0.05850	0.10629	0.55	0.5885	0.14400
Cope	Cope	1	-0.03543	0.09674	-0.37	0.7183	-0.09476

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Dependent Variable: Retention

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	0.05796	0.01159	1.04	0.4227
Error	19	0.21164	0.01114		
Corrected Total	24	0.26960			

Root MSE	0.10554	R-Square	0.2150
Dependent Mean	0.84600	Adj R-Sq	0.0084
Coeff Var	12.47538		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate
Intercept	Intercept	1	0.63709	0.12956	4.92	<.0001	0
Prior_Experience	Prior Experience	1	-0.00362	0.05302	-0.07	0.9462	-0.01566
Personnel	Personnel	1	0.00944	0.01576	0.60	0.5565	0.12517
Pgm_Size	Pgm Size	1	0.00006939	0.00015949	0.44	0.6684	0.10268
Org_Level	Org Level	1	0.03789	0.05888	0.64	0.5276	0.16381
Cope	Cope	1	0.06349	0.05359	1.18	0.2508	0.29828

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Dependent Variable: Candidacy

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	1.13609	0.22722	2.93	0.0399
Error	19	1.47365	0.07756		
Corrected Total	24	2.60974			

Root MSE	0.27850	R-Square	0.4353
Dependent Mean	0.43160	Adj R-Sq	0.2867
Coeff Var	64.52655		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate
Intercept	Intercept	1	1.48223	0.34187	4.34	0.0004	0
Prior_Experience	Prior Experience	1	0.17401	0.13989	1.24	0.2287	0.24182
Personnel	Personnel	1	-0.07985	0.04159	-1.92	0.0700	-0.34048
Pgm_Size	Pgm Size	1	-0.00064636	0.00042086	-1.54	0.1411	-0.30741
Org_Level	Org Level	1	0.30019	0.15537	1.93	0.0684	0.41716
Cope	Cope	1	-0.36915	0.14141	-2.61	0.0172	-0.55744

Correlation Matrix

The CORR Procedure

Pearson Correlation Coefficients
 Prob > |r| under H0: Rho=0
 Number of Observations

	Prior_Experience	Personnel	Pgm_Size	Org_Level	Cope	Conormity
Prior_Experience	1.00000	0.07486	0.15953	0.07785	0.20926	-0.00583
Prior Experience		0.6839	0.3831	0.6719	0.2504	0.9747
	32	32	32	32	32	32
Personnel	0.07486	1.00000	0.06046	0.04095	0.12266	-0.24174
Personnel	0.6839		0.7424	0.8239	0.5036	0.1825
	32	32	32	32	32	32
Pgm_Size	0.15953	0.06046	1.00000	0.37578	0.16783	-0.01250
Pgm Size	0.3831	0.7424		0.0340	0.3585	0.9459
	32	32	32	32	32	32
Org_Level	0.07785	0.04095	0.37578	1.00000	0.13015	0.17482
Org Level	0.6719	0.8239	0.0340		0.4777	0.3386
	32	32	32	32	32	32
Cope	0.20926	0.12266	0.16783	0.13015	1.00000	0.07127
Cope	0.2504	0.5036	0.3585	0.4777		0.6983
	32	32	32	32	32	32
Conormity	-0.00583	-0.24174	-0.01250	0.17482	0.07127	1.00000
Conormity	0.9747	0.1825	0.9459	0.3386	0.6983	
	32	32	32	32	32	32
Innovativeness	0.02410	0.18483	0.00750	0.21787	0.01855	0.18644
Innovativeness	0.8958	0.3112	0.9675	0.2310	0.9198	0.3069
	32	32	32	32	32	32
		Innovativeness	Diversity	Retention	Candidacy	
Prior_Experience		0.02410	-0.33035	0.14755	0.05548	
Prior Experience		0.8958	0.1068	0.4815	0.7923	
		32	25	25	25	
Personnel		0.18483	0.21760	0.19052	-0.44271	
Personnel		0.3112	0.2961	0.3617	0.0267	
		32	25	25	25	
Pgm_Size		0.00750	0.02796	0.20110	-0.12727	
Pgm Size		0.9675	0.8944	0.3351	0.5444	
		32	25	25	25	
Org_Level		0.21787	0.06758	0.34143	0.06860	
Org Level		0.2310	0.7482	0.0948	0.7446	
		32	25	25	25	
Cope		0.01855	-0.11880	0.39179	-0.36495	
Cope		0.9198	0.5717	0.0528	0.0728	
		32	25	25	25	
Conormity		0.18644	-0.28012	0.26623	0.23664	
Conormity		0.3069	0.1750	0.1983	0.2548	
		32	25	25	25	
Innovativeness		1.00000	0.18649	0.14685	0.32870	
Innovativeness			0.3721	0.4836	0.1087	
		32	25	25	25	

	Prior_Experience	Personnel	Pgm_Size	Org_Level	Cope	Conormity
Diversity	-0.33035	0.21760	0.02796	0.06758	-0.11880	-0.28012
Diversity	0.1068	0.2961	0.8944	0.7482	0.5717	0.1750
	25	25	25	25	25	25
Retention	0.14755	0.19052	0.20110	0.34143	0.39179	0.26623
Retention	0.4815	0.3617	0.3351	0.0948	0.0528	0.1983
	25	25	25	25	25	25
Candidacy	0.05548	-0.44271	-0.12727	0.06860	-0.36495	0.23664
Candidacy	0.7923	0.0267	0.5444	0.7446	0.0728	0.2548
	25	25	25	25	25	25

	Innovativness	Diversity	Retention	Candidacy
Diversity	0.18649	1.00000	0.11890	0.21186
Diversity	0.3721		0.5714	0.3093
	25	25	25	25
Retention	0.14685	0.11890	1.00000	-0.10818
Retention	0.4836	0.5714		0.6068
	25	25	25	25
	Innovativness	Diversity	Retention	Candidacy
Candidacy	0.32870	0.21186	-0.10818	1.00000
Candidacy	0.1087	0.3093	0.6068	
	25	25	25	25

Regression Output: Doctoral Extensive Institutions

Dependent Variable: Diversity

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	0.20548	0.10274	3.13	0.0671
Error	19	0.62452	0.03287		
Corrected Total	21	0.83000			

Root MSE	0.18130	R-Square	0.2476
Dependent Mean	0.45000	Adj R-Sq	0.1684
Coeff Var	40.28884		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate
Intercept	Intercept	1	1.56793	0.51780	3.03	0.0069	0
INNOV	INNOV	1	0.05127	0.02745	1.87	0.0773	0.40318
CONFORM	CONFORM	1	-0.26297	0.11657	-2.26	0.0361	-0.48697

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Dependent Variable: Retention

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	0.03237	0.01619	1.66	0.2159
Error	19	0.18486	0.00973		
Corrected Total	21	0.21724			

Root MSE	0.09864	R-Square	0.1490
Dependent Mean	0.86273	Adj R-Sq	0.0594
Coeff Var	11.43341		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate
Intercept	Intercept	1	0.92240	0.28172	3.27	0.0040	0
INNOV	INNOV	1	0.02668	0.01494	1.79	0.0900	0.41013
CONFORM	CONFORM	1	-0.02239	0.06342	-0.35	0.7280	-0.08104

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Dependent Variable: Candidacy

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	0.31539	0.15770	1.39	0.2736
Error	19	2.15755	0.11356		
Corrected Total	21	2.47295			

Root MSE	0.33698	R-Square	0.1275
Dependent Mean	0.43545	Adj R-Sq	0.0357
Coeff Var	77.38577		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate
Intercept	Intercept	1	-0.06266	0.96243	-0.07	0.9488	0
INNOV	INNOV	1	0.06839	0.05103	1.34	0.1960	0.31153
CONFORM	CONFORM	1	0.08535	0.21666	0.39	0.6980	0.09157

Dependent Variable: Conformity

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	0.61009	0.12202	1.02	0.4307
Error	21	2.51051	0.11955		
Corrected Total	26	3.12060			

Root MSE	0.34576	R-Square	0.1955
Dependent Mean	4.59333	Adj R-Sq	0.0040
Coeff Var	7.52737		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate
Intercept	Intercept	1	4.64653	0.31911	14.56	<.0001	0
Prior_Experience	Prior Experience	1	-0.09172	0.15305	-0.60	0.5554	-0.12320
Personnel	Personnel	1	-0.07844	0.05007	-1.57	0.1322	-0.31102
Pgm_Size	Pgm Size	1	-0.00056635	0.00049333	-1.15	0.2639	-0.24602
Org_Level	Org Level	1	0.23545	0.16766	1.40	0.1749	0.30350
Cope	Cope	1	0.07509	0.11611	0.65	0.5248	0.13206

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Dependent Variable: Innovativeness

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	6.00166	1.20033	0.46	0.8011
Error	21	54.73908	2.60662		
Corrected Total	26	60.74074			

Root MSE	1.61450	R-Square	0.0988
Dependent Mean	1.48148	Adj R-Sq	-0.1158
Coeff Var	108.97901		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate
Intercept	Intercept	1	0.55912	1.49005	0.38	0.7112	0
Prior_Experience	Prior Experience	1	-0.08018	0.71465	-0.11	0.9117	-0.02441
Personnel	Personnel	1	0.18244	0.23380	0.78	0.4439	0.16396
Pgm_Size	Pgm Size	1	-0.00011837	0.00230	-0.05	0.9595	-0.01165
Org_Level	Org Level	1	0.83087	0.78290	1.06	0.3006	0.24276
Cope	Cope	1	0.13491	0.54219	0.25	0.8059	0.05378

Dependent Variable: Diversity

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	0.16471	0.03294	0.79	0.5695
Error	16	0.66380	0.04149		
Corrected Total	21	0.82852			

Root MSE	0.20369	R-Square	0.1988
Dependent Mean	0.44950	Adj R-Sq	-0.0516
Coeff Var	45.31375		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate
Intercept	Intercept	1	0.58922	0.26421	2.23	0.0404	0
Prior_Experience	Prior Experience	1	-0.17071	0.11848	-1.44	0.1689	-0.36864
Personnel	Personnel	1	0.02525	0.03198	0.79	0.4414	0.18483
Pgm_Size	Pgm Size	1	0.00000431	0.00031950	0.01	0.9894	0.00355
Org_Level	Org Level	1	0.07985	0.13057	0.61	0.5494	0.18326
Cope	Cope	1	-0.03424	0.10435	-0.33	0.7471	-0.09131

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Dependent Variable: Retention

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	0.05813	0.01163	1.17	0.3666
Error	16	0.15911	0.00994		
Corrected Total	21	0.21724			

Root MSE	0.09972	R-Square	0.2676
Dependent Mean	0.86273	Adj R-Sq	0.0387
Coeff Var	11.55884		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate
Intercept	Intercept	1	0.70182	0.12935	5.43	<.0001	0
Prior_Experience	Prior Experience	1	-0.04296	0.05800	-0.74	0.4697	-0.18116
Personnel	Personnel	1	0.00795	0.01566	0.51	0.6183	0.11373
Pgm_Size	Pgm Size	1	-0.00001262	0.00015642	-0.08	0.9367	-0.02028
Org_Level	Org Level	1	0.06893	0.06392	1.08	0.2969	0.30894
Cope	Cope	1	0.05888	0.05109	1.15	0.2660	0.30665

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Dependent Variable: Candidacy

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	1.08037	0.21607	2.48	0.0758
Error	16	1.39257	0.08704		
Corrected Total	21	2.47295			

Root MSE	0.29502	R-Square	0.4369
Dependent Mean	0.43545	Adj R-Sq	0.2609
Coeff Var	67.74951		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate
Intercept	Intercept	1	1.57049	0.38268	4.10	0.0008	0
Prior_Experience	Prior Experience	1	0.09134	0.17160	0.53	0.6018	0.11417
Personnel	Personnel	1	-0.08712	0.04632	-1.88	0.0783	-0.36915
Pgm_Size	Pgm Size	1	-0.00070630	0.00046276	-1.53	0.1465	-0.33646
Org_Level	Org Level	1	0.35683	0.18912	1.89	0.0775	0.47401
Cope	Cope	1	-0.37044	0.15113	-2.45	0.0261	-0.57185

**Appendix G.
Regression Output:
Ordinal Measure of
Organizational Level**

Regression Output and Correlation Matrix:
Ordinal Measure of Organizational Level

Regression Output and Correlation Matrix: All Grantees

Dependent Variable: Conformity

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	1.04470	0.20894	1.30	0.2961
Error	26	4.19250	0.16125		
Corrected Total	31	5.23720			

Root MSE	0.40156	R-Square	0.1995
Dependent Mean	4.50250	Adj R-Sq	0.0455
Coeff Var	8.91859		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Type I SS	Type II SS
Intercept	Intercept	1	4.45924	0.34898	12.78	<.0001	648.72020	26.32837
EXPER_Y_N	EXPER Y/N	1	-0.02764	0.15845	-0.17	0.8629	0.00017818	0.00491
_PERS	# PERS	1	-0.09526	0.05656	-1.68	0.1041	0.30667	0.45748
PGM_SIZE	PGM SIZE	1	-0.00042212	0.00055390	-0.76	0.4529	2.264665E-7	0.09365
ORG_LEVEL	ORG LEVEL	1	0.16225	0.07883	2.06	0.0497	0.72910	0.68315
COPE	COPE	1	0.03026	0.12992	0.23	0.8177	0.00875	0.00875

Parameter Estimates

Variable	Label	DF	Standardized Estimate	Squared Semi-partial Corr Type I	Squared Partial Corr Type I	Squared Semi-partial Corr Type II	Squared Partial Corr Type II
Intercept	Intercept	1	0	.	.	.	.
EXPER_Y_N	EXPER Y/N	1	-0.03167	0.00003402	0.00003402	0.00093690	0.00117
_PERS	# PERS	1	-0.30088	0.05856	0.05856	0.08735	0.09838
PGM_SIZE	PGM SIZE	1	-0.14526	4.32419E-8	4.593317E-8	0.01788	0.02185
ORG_LEVEL	ORG LEVEL	1	0.40086	0.13922	0.14788	0.13044	0.14011
COPE	COPE	1	0.04303	0.00167	0.00208	0.00167	0.00208

Dependent Variable: Innovativeness

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	8.64122	1.72824	0.64	0.6737
Error	26	70.57753	2.71452		
Corrected Total	31	79.21875			

Root MSE	1.64758	R-Square	0.1091
Dependent Mean	1.65625	Adj R-Sq	-0.0623
Coeff Var	99.47654		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Type I SS	Type II SS
Intercept	Intercept	1	1.05414	1.43184	0.74	0.4682	87.78125	1.47128
EXPER_Y_N	EXPER Y/N	1	-0.02223	0.65013	-0.03	0.9730	0.04602	0.00317
_PERS	# PERS	1	0.18345	0.23205	0.79	0.4364	2.66862	1.69654
PGM_SIZE	PGM SIZE	1	-0.00118	0.00227	-0.52	0.6091	0.00227	0.72737
ORG_LEVEL	ORG LEVEL	1	0.47769	0.32342	1.48	0.1517	5.71846	5.92174
COPE	COPE	1	-0.14679	0.53305	-0.28	0.7852	0.20585	0.20585

Parameter Estimates

Variable	Label	DF	Standardized Estimate	Squared Semi-partial Corr Type I	Squared Partial Corr Type I	Squared Semi-partial Corr Type II	Squared Partial Corr Type II
Intercept	Intercept	1	0	.	.	.	.
EXPER_Y_N	EXPER Y/N	1	-0.00655	0.00058096	0.00058096	0.00004005	0.00004495
_PERS	# PERS	1	0.14898	0.03369	0.03371	0.02142	0.02347
PGM_SIZE	PGM SIZE	1	-0.10409	0.00002866	0.00002968	0.00918	0.01020
ORG_LEVEL	ORG LEVEL	1	0.30346	0.07219	0.07475	0.07475	0.07741
COPE	COPE	1	-0.05367	0.00260	0.00291	0.00260	0.00291

Dependent Variable: Diversity

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	0.11635	0.05818	1.79	0.1912
Error	22	0.71694	0.03259		
Corrected Total	24	0.83330			

Root MSE	0.18052	R-Square	0.1396
Dependent Mean	0.45040	Adj R-Sq	0.0614
Coeff Var	40.08040		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Type I SS	Type II SS
Intercept	Intercept	1	1.09153	0.42209	2.59	0.0169	5.07150	0.21794
CONFORM	CONFORM	1	-0.15390	0.09469	-1.63	0.1184	0.06684	0.08608
INNOV	INNOV	1	0.02825	0.02292	1.23	0.2307	0.04951	0.04951

Parameter Estimates

Variable	Label	DF	Standardized Estimate	Squared Semi-partial Corr Type I	Squared Partial Corr Type I	Squared Semi-partial Corr Type II	Squared Partial Corr Type II
Intercept	Intercept	1	0	.	.	.	.
CONFORM	CONFORM	1	-0.32641	0.08021	0.08021	0.10330	0.10719
INNOV	INNOV	1	0.24755	0.05942	0.06460	0.05942	0.06460

Dependent Variable: Retention

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	0.02191	0.01096	0.97	0.3936
Error	22	0.24769	0.01126		
Corrected Total	24	0.26960			

Root MSE	0.10611	R-Square	0.0813
Dependent Mean	0.84600	Adj R-Sq	-0.0022
Coeff Var	12.54211		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Type I SS	Type II SS
Intercept	Intercept	1	0.53465	0.24809	2.16	0.0424	17.89290	0.05229
CONFORM	CONFORM	1	0.06655	0.05566	1.20	0.2445	0.01911	0.01610
INNOV	INNOV	1	0.00672	0.01347	0.50	0.6227	0.00280	0.00280

Parameter Estimates

Variable	Label	DF	Standardized Estimate	Squared Semi-partial Corr Type I	Squared Partial Corr Type I	Squared Semi-partial Corr Type II	Squared Partial Corr Type II
Intercept	Intercept	1	0	.	.	.	.
CONFORM	CONFORM	1	0.24816	0.07088	0.07088	0.05971	0.06103
INNOV	INNOV	1	0.10356	0.01040	0.01119	0.01040	0.01119

Dependent Variable: Candidacy

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	0.36849	0.18425	1.81	0.1874
Error	22	2.24124	0.10187		
Corrected Total	24	2.60974			

Root MSE	0.31918	R-Square	0.1412
Dependent Mean	0.43160	Adj R-Sq	0.0631
Coeff Var	73.95233		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Type I SS
Intercept	Intercept	1	-0.36994	0.74628	-0.50	0.6250	4.65696
CONFORM	CONFORM	1	0.15430	0.16742	0.92	0.3667	0.14614
INNOV	INNOV	1	0.05986	0.04052	1.48	0.1538	0.22235

Parameter Estimates

Variable	Label	DF	Type II SS	Standardized Estimate	Squared Semi-partial Corr Type I	Squared Partial Corr Type I	Squared Semi-partial Corr Type II
Intercept	Intercept	1	0.02503	0	.	.	.
CONFORM	CONFORM	1	0.08653	0.18493	0.05600	0.05600	0.03316
INNOV	INNOV	1	0.22235	0.29644	0.08520	0.09026	0.08520

Dependent Variable: Diversity

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	0.14862	0.02972	0.82	0.5474
Error	19	0.68467	0.03604		
Corrected Total	24	0.83330			

Root MSE	0.18983	R-Square	0.1784
Dependent Mean	0.45040	Adj R-Sq	-0.0379
Coeff Var	42.14703		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Type I SS	Type II SS
Intercept	Intercept	1	0.55930	0.23169	2.41	0.0260	5.07150	0.20999
EXPER_Y_N	EXPER Y/N	1	-0.13214	0.09500	-1.39	0.1803	0.09099	0.06972
_PERS	# PERS	1	0.02452	0.02845	0.86	0.3994	0.03289	0.02678
PGM_SIZE	PGM SIZE	1	0.00002749	0.00028466	0.10	0.9241	0.00748	0.00033606
ORG_LEVEL	ORG LEVEL	1	0.03282	0.04849	0.68	0.5067	0.00902	0.01651
COPE	COPE	1	-0.04860	0.10165	-0.48	0.6380	0.00824	0.00824

Parameter Estimates

Variable	Label	DF	Standardized Estimate	Squared Semi-partial Corr Type I	Squared Partial Corr Type I	Squared Semi-partial Corr Type II	Squared Partial Corr Type II
Intercept	Intercept	1	0	.	.	.	.
EXPER_Y_N	EXPER Y/N	1	-0.32498	0.10920	0.10920	0.08366	0.09241
_PERS	# PERS	1	0.18505	0.03947	0.04431	0.03214	0.03764
PGM_SIZE	PGM SIZE	1	0.02314	0.00897	0.01054	0.00040329	0.00049059
ORG_LEVEL	ORG LEVEL	1	0.19022	0.01083	0.01285	0.01981	0.02354
COPE	COPE	1	-0.12988	0.00988	0.01189	0.00988	0.01189

Dependent Variable: Retention

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	0.05393	0.01079	0.95	0.4719
Error	19	0.21567	0.01135		
Corrected Total	24	0.26960			

Root MSE	0.10654	R-Square	0.2000
Dependent Mean	0.84600	Adj R-Sq	-0.0105
Coeff Var	12.59345		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Type I SS	Type II SS
Intercept	Intercept	1	0.61581	0.13003	4.74	0.0001	17.89290	0.25458
EXPER_Y_N	EXPER Y/N	1	-0.00643	0.05332	-0.12	0.9053	0.00587	0.00016504
_PERS	# PERS	1	0.00849	0.01597	0.53	0.6011	0.01074	0.00321
PGM_SIZE	PGM SIZE	1	0.00010077	0.00015976	0.63	0.5357	0.00696	0.00452
ORG_LEVEL	ORG LEVEL	1	0.00619	0.02721	0.23	0.8226	0.01235	0.00058689
COPE	COPE	1	0.07186	0.05705	1.26	0.2231	0.01801	0.01801

Parameter Estimates

Variable	Label	DF	Standardized Estimate	Squared Semi-partial Corr Type I	Squared Partial Corr Type I	Squared Semi-partial Corr Type II	Squared Partial Corr Type II
Intercept	Intercept	1	0	.	.	.	.
EXPER_Y_N	EXPER Y/N	1	-0.02780	0.02177	0.02177	0.00061218	0.00076469
_PERS	# PERS	1	0.11262	0.03983	0.04071	0.01190	0.01466
PGM_SIZE	PGM SIZE	1	0.14911	0.02583	0.02753	0.01675	0.02051
ORG_LEVEL	ORG LEVEL	1	0.06306	0.04581	0.05020	0.00218	0.00271
COPE	COPE	1	0.33764	0.06680	0.07707	0.06680	0.07707

Dependent Variable: Candidacy

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	1.22914	0.24583	3.38	0.0236
Error	19	1.38059	0.07266		
Corrected Total	24	2.60974			

Root MSE	0.26956	R-Square	0.4710
Dependent Mean	0.43160	Adj R-Sq	0.3318
Coeff Var	62.45607		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Type I SS
Intercept	Intercept	1	1.50918	0.32900	4.59	0.0002	4.65696
EXPER_Y_N	EXPER Y/N	1	0.15419	0.13491	1.14	0.2673	0.00803
_PERS	# PERS	1	-0.09375	0.04040	-2.32	0.0316	0.50571
PGM_SIZE	PGM SIZE	1	-0.00068731	0.00040422	-1.70	0.1054	0.03488
ORG_LEVEL	ORG LEVEL	1	0.15798	0.06885	2.29	0.0333	0.05774
COPE	COPE	1	-0.42258	0.14434	-2.93	0.0086	0.62278

Parameter Estimates

Variable	Label	DF	Type II SS	Standardized Estimate	Squared Semi-partial Corr Type I	Squared Partial Corr Type I	Squared Semi-partial Corr Type II
Intercept	Intercept	1	1.52899	0	.	.	.
EXPER_Y_N	EXPER Y/N	1	0.09492	0.21428	0.00308	0.00308	0.03637
_PERS	# PERS	1	0.39140	-0.39976	0.19378	0.19438	0.14998
PGM_SIZE	PGM SIZE	1	0.21008	-0.32688	0.01336	0.01664	0.08050
ORG_LEVEL	ORG LEVEL	1	0.38258	0.51748	0.02213	0.02802	0.14660
COPE	COPE	1	0.62278	-0.63814	0.23864	0.31087	0.23864

Correlation Matrix

	EXPER_Y_N	__PERS	PGM_SIZE	ORG_LEVEL	COPE
EXPER_Y_N	1.00000	0.07486	0.15953	0.15598	0.20926
EXPER Y/N	32	0.6839	0.3831	0.3939	0.2504
		32	32	32	32
__PERS	0.07486	1.00000	0.06046	0.16218	0.12266
# PERS	0.6839	32	0.7424	0.3752	0.5036
		32	32	32	32
PGM_SIZE	0.15953	0.06046	1.00000	0.37115	0.16783
PGM SIZE	0.3831	0.7424	32	0.0365	0.3585
		32	32	32	32
ORG_LEVEL	0.15598	0.16218	0.37115	1.00000	0.23985
ORG LEVEL	0.3939	0.3752	0.0365	32	0.1861
		32	32	32	32
COPE	0.20926	0.12266	0.16783	0.23985	1.00000
COPE	0.2504	0.5036	0.3585	0.1861	32
		32	32	32	32
CONFORM	-0.00583	-0.24174	-0.01250	0.30353	0.07127
CONFORM	0.9747	0.1825	0.9459	0.0913	0.6983
		32	32	32	32
INNOV	0.02410	0.18483	0.00750	0.27509	0.01855
INNOV	0.8958	0.3112	0.9675	0.1276	0.9198
		32	32	32	32
	CONFORM	INNOV	DIVERSITY	RETENTION	<u>C_DR</u> 96_97
EXPER_Y_N	-0.00583	0.02410	-0.33045	0.14755	0.05548
EXPER Y/N	0.9747	0.8958	0.1067	0.4815	0.7923
		32	25	25	25
__PERS	-0.24174	0.18483	0.21782	0.19052	-0.44271
# PERS	0.1825	0.3112	0.2956	0.3617	0.0267
		32	25	25	25
PGM_SIZE	-0.01250	0.00750	0.03177	0.20110	-0.12727
PGM SIZE	0.9459	0.9675	0.8802	0.3351	0.5444
		32	25	25	25
ORG_LEVEL	0.30353	0.27509	0.07536	0.32393	0.01474
ORG LEVEL	0.0913	0.1276	0.7203	0.1142	0.9442
		32	25	25	25
COPE	0.07127	0.01855	-0.12000	0.39179	-0.36495
COPE	0.6983	0.9198	0.5677	0.0528	0.0728
		32	25	25	25
CONFORM	1.00000	0.18644	-0.28322	0.26623	0.23664
CONFORM	32	0.3069	0.1701	0.1983	0.2548
		32	25	25	25
INNOV	0.18644	1.00000	0.19061	0.14685	0.32870
INNOV	0.3069	32	0.3614	0.4836	0.1087
		32	25	25	25
	EXPER_Y_N	__PERS	PGM_SIZE	ORG_LEVEL	COPE
DIVERSITY	-0.33045	0.21782	0.03177	0.07536	-0.12000
DIVERSITY	0.1067	0.2956	0.8802	0.7203	0.5677
		25	25	25	25
RETENTION	0.14755	0.19052	0.20110	0.32393	0.39179
RETENTION	0.4815	0.3617	0.3351	0.1142	0.0528
		25	25	25	25
<u>C_DR</u> 96_97	0.05548	-0.44271	-0.12727	0.01474	-0.36495
%C/DR 96/97	0.7923	0.0267	0.5444	0.9442	0.0728
		25	25	25	25

	CONFORM	INNOV	DIVERSITY	RETENTION	$\frac{C_DR}{96_97}$
DIVERSITY	-0.28322	0.19061	1.00000	0.11802	0.21115
DIVERSITY	0.1701	0.3614		0.5742	0.3110
	25	25	25	25	25
RETENTION	0.26623	0.14685	0.11802	1.00000	-0.10818
RETENTION	0.1983	0.4836	0.5742		0.6068
	25	25	25	25	25

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	CONFORM	INNOV	DIVERSITY	RETENTION	$\frac{C_DR}{96_97}$
$\frac{C_DR_96_97}{\%C/DR\ 96/97}$	0.23664	0.32870	0.21115	-0.10818	1.00000
	0.2548	0.1087	0.3110	0.6068	
	25	25	25	25	25

Doctoral Extensive Institutions

Dependent Variable: Conformity

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	0.92383	0.18477	1.77	0.1636
Error	21	2.19677	0.10461		
Corrected Total	26	3.12060			

Root MSE	0.32343	R-Square	0.2960
Dependent Mean	4.59333	Adj R-Sq	0.1284
Coeff Var	7.04134		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate
Intercept	Intercept	1	4.59663	0.29832	15.41	<.0001	0
EXPER_Y_N	EXPER Y/N	1	-0.10360	0.14299	-0.72	0.4768	-0.13915
_PERS	# PERS	1	-0.09038	0.04732	-1.91	0.0699	-0.35838
PGM_SIZE	PGM SIZE	1	-0.00064132	0.00045315	-1.42	0.1717	-0.27858
ORG_LEVEL	ORG LEVEL	1	0.14945	0.06521	2.29	0.0323	0.46738
COPE	COPE	1	0.04486	0.10970	0.41	0.6867	0.07890

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Dependent Variable: Innovativeness

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	8.78402	1.75680	0.71	0.6226
Error	21	51.95672	2.47413		
Corrected Total	26	60.74074			

Root MSE	1.57294	R-Square	0.1446
Dependent Mean	1.48148	Adj R-Sq	-0.0590
Coeff Var	106.17322		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate
Intercept	Intercept	1	0.39106	1.45081	0.27	0.7901	0
EXPER_Y_N	EXPER Y/N	1	-0.10984	0.69540	-0.16	0.8760	-0.03344
_PERS	# PERS	1	0.14586	0.23015	0.63	0.5331	0.13109
PGM_SIZE	PGM SIZE	1	-0.00028446	0.00220	-0.13	0.8985	-0.02801
ORG_LEVEL	ORG LEVEL	1	0.48213	0.31713	1.52	0.1434	0.34175
COPE	COPE	1	0.03928	0.53348	0.07	0.9420	0.01566

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Dependent Variable: Diversity

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	0.16648	0.03330	0.80	0.5639
Error	16	0.66352	0.04147		
Corrected Total	21	0.83000			

Root MSE	0.20364	R-Square	0.2006
Dependent Mean	0.45000	Adj R-Sq	-0.0492
Coeff Var	45.25391		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate
Intercept	Intercept	1	0.57845	0.25370	2.28	0.0367	0
EXPER_Y_N	EXPER Y/N	1	-0.16766	0.11802	-1.42	0.1746	-0.36173
_PERS	# PERS	1	0.02365	0.03231	0.73	0.4748	0.17296
PGM_SIZE	PGM SIZE	1	0.00001905	0.00030968	0.06	0.9517	0.01566
ORG_LEVEL	ORG LEVEL	1	0.03452	0.05369	0.64	0.5295	0.19719
COPE	COPE	1	-0.04318	0.10935	-0.39	0.6981	-0.11506

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Dependent Variable: Retention

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	0.04721	0.00944	0.89	0.5114
Error	16	0.17002	0.01063		
Corrected Total	21	0.21724			

Root MSE	0.10308	R-Square	0.2173
Dependent Mean	0.86273	Adj R-Sq	-0.0272
Coeff Var	11.94866		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate
Intercept	Intercept	1	0.64857	0.12842	5.05	0.0001	0
EXPER_Y_N	EXPER Y/N	1	-0.03692	0.05974	-0.62	0.5453	-0.15569
_PERS	# PERS	1	0.00889	0.01635	0.54	0.5943	0.12708
PGM_SIZE	PGM SIZE	1	0.00005300	0.00015676	0.34	0.7397	0.08518
ORG_LEVEL	ORG LEVEL	1	0.00672	0.02718	0.25	0.8078	0.07508
COPE	COPE	1	0.07566	0.05535	1.37	0.1906	0.39405

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Dependent Variable: Candidacy

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	1.14212	0.22842	2.75	0.0563
Error	16	1.33083	0.08318		
Corrected Total	21	2.47295			

Root MSE	0.28840	R-Square	0.4618
Dependent Mean	0.43545	Adj R-Sq	0.2937
Coeff Var	66.23054		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate
Intercept	Intercept	1	1.53100	0.35929	4.26	0.0006	0
EXPER_Y_N	EXPER Y/N	1	0.10135	0.16714	0.61	0.5528	0.12669
_PERS	# PERS	1	-0.09539	0.04576	-2.08	0.0535	-0.40422
PGM_SIZE	PGM SIZE	1	-0.00068395	0.00043857	-1.56	0.1384	-0.32581
ORG_LEVEL	ORG LEVEL	1	0.16073	0.07604	2.11	0.0506	0.53200
COPE	COPE	1	-0.41409	0.15487	-2.67	0.0166	-0.63923

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Dependent Variable: Diversity

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	0.20548	0.10274	3.13	0.0671
Error	19	0.62452	0.03287		
Corrected Total	21	0.83000			

Root MSE	0.18130	R-Square	0.2476
Dependent Mean	0.45000	Adj R-Sq	0.1684
Coeff Var	40.28884		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate
Intercept	Intercept	1	1.56793	0.51780	3.03	0.0069	0
INNOV	INNOV	1	0.05127	0.02745	1.87	0.0773	0.40318
CONFORM	CONFORM	1	-0.26297	0.11657	-2.26	0.0361	-0.48697

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Dependent Variable: Retention

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	0.03237	0.01619	1.66	0.2159
Error	19	0.18486	0.00973		
Corrected Total	21	0.21724			

Root MSE	0.09864	R-Square	0.1490
Dependent Mean	0.86273	Adj R-Sq	0.0594
Coeff Var	11.43341		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate
Intercept	Intercept	1	0.92240	0.28172	3.27	0.0040	0
INNOV	INNOV	1	0.02668	0.01494	1.79	0.0900	0.41013
CONFORM	CONFORM	1	-0.02239	0.06342	-0.35	0.7280	-0.08104

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Dependent Variable: Candidacy

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	0.31539	0.15770	1.39	0.2736
Error	19	2.15755	0.11356		
Corrected Total	21	2.47295			

Root MSE	0.33698	R-Square	0.1275
Dependent Mean	0.43545	Adj R-Sq	0.0357
Coeff Var	77.38577		

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate
Intercept	Intercept	1	-0.06266	0.96243	-0.07	0.9488	0
INNOV	INNOV	1	0.06839	0.05103	1.34	0.1960	0.31153
CONFORM	CONFORM	1	0.08535	0.21666	0.39	0.6980	0.09157