

CONFLICT OF INTEREST IN THE RESEARCH UNIVERSITY: WHAT ARE THE
RELATIONSHIPS BETWEEN INDIVIDUAL BEHAVIORS AND ORGANIZATIONAL
RISK?

by

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ABSTRACT: Conflict of Interest (COI) and its correlate, conflict of commitment (COC) are situational dilemmas borne of the relationships between individual employee activities and the ostensible boundaries for proper activity as defined by governmental and institutional guidelines. The study framework derives from a new area of scholarship defined as research on research. The literature review demonstrates that a considerable work has been established in correlate fields of conflict management and the sociology of behavior, especially the sociology of behavior in the sciences. The problem statement focuses on the individual's perception of a conflict situation and whether it may be related to the type and amount of federal funding that the institution receives. Field study involved electronic dissemination of a survey instrument comprised of Likert-scaled story problems. The survey was directed at a population of administrative staff identified as research administrators housed at selected research intensive and extensive universities as defined by the Carnegie classification system. The target population was confined to six states comprising the Mid-Atlantic region of a professional research organization. Findings obtained from individual respondents at twenty-three (23) institutions were compiled and analyzed for significance. In the analysis, respondents' averaged Likert values were compared to the total amount of federal sponsored funding received at each

respective institution, and the respective amounts of funding received by each from the Department of Health and Human Services (DHHS), the National Science Foundation (NSF), the Department of Defense (DOD) funding entities, and all other federal funding sources not specifically delineated, defined as “other.” Findings support a significant relationship between conflict of commitment values and total amount of funding as well as compared to the amount of DHHS funding. Other comparisons did not support significant findings, either when Likert values for COC items and other sources of funding were compared, or when COI data were compared against any funding source.

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I. INTRODUCTION

A. STUDY RATIONALE AND KNOWLEDGE NEED

Conflict of interest (COI) is an intrinsic notion encountered in many organizational contexts, where the individual's extent of involvement in particular activities may run counter to the known interests of the organization as employer, or conflict with the interests of other third party concerns. The overall framework, consequently, places the individual as the central actor in various *situational dilemmas*. The individual, whether a faculty member or staff employee, must make choices rooted in ethical decision-making, and simultaneously influenced by his/her organizational policies governing conduct. The individual's professional culture gives further shape to the nature of the decision and the choices. Although considerable work has been established in the correlate fields of conflict management and the sociology of behavior, a knowledge need exists to delineate the role of individuals' responses to conflicted situations in their organizational setting. The goal is to discern, and hopefully identify some predictors of the normative business behavior of the individual facing conflicted choices.

Initially, some of the underlying theories of social behavior are presented and followed with a presentation of various operational realities encountered in the organizational setting. The specific context that serves as a focus of this study involves the performance of research within the college or university. Academic scholars within a wide range of higher education institutions perform research. In the most intensive where research predominates, "Research extensive university" is defined by the Carnegie classification scheme as a university granting 50 or more doctorates in at least 15 fields, and receiving in excess of \$40M in annual sponsored funding Carnegie, (2000). This study has been restricted to institutional sectors of the university market where the size of the funding portfolio ranges to impressive size, and where the commensurate complexity and interplay of research management issues correspond in intensity. Following the

presentation of underlying concepts, key organizational contexts that frame conflict of interest situations are delineated. Explanation of relevant theory and related sub-topical discussion focuses on dilemmas particular to the performance of research in the college or university environment. "Real world" illustration of the consequences of involvement in conflicted activities is explored. A theoretical framework suggesting new paradigms for dealing with conflict will be presented. Study findings are analyzed and compared to research questions to ascertain whether actual survey results have correlated with postulated relationships.

B. FRAMEWORK

To arrive at an understanding of the complex dynamics of individuals in their larger organizational and societal setting, we look to ideas from sociology, ethics, and decision sciences for some conceptual understanding. In the increasingly fragmented modern society, explanations for observed behaviors transcend mere economic rationale. Hence, Christie (1999) offers a return to sociology for insights to "a deeper social intelligence." The intent is not to advocate a 'pop sociology,' but to explain behaviors and relationships in a meaningful way. Ouchi and Wilkins (1985) contend that the basis for an understanding of organizational culture is indeed sociological:

The study of organizational culture is rooted more deeply in sociology than in any other intellectual tradition. Critical both to sociology and to the study of organizational culture is the idea of an organization as a social phenomenon that has its own feature which distinguish it from an environment on the one hand and from the individual desires and predispositions of its members on the other. (p 469)

Framed by the above conceptual understanding from sociology and related fields, the challenge is to delineate some specific issues embedded in the complex arena of research conduct found in the modern research-intensive university. The particular emphasis of this study will focus on defining the domains of conflict of interest within this complex environment.

Conflict of interest (COI) defies a single unifying explanation. Some presuppose an inherent understanding of the subject, without actually offering an explicit definition. Some contrasting explanations are offered below. First, however, an explanation of the larger context of research integrity is useful.

“Research integrity” encompasses both individual and institutional components. At its most basic level, it involves adherence to honesty in all aspects of performance. It entails such aspects as disclosure of known relationships, truth in the presentation of study data and purported relationships, and adherence to a wide array of legal strictures concerning the conduct and performance of individuals receiving predominately federal taxpayer money in support of scholarly projects.

As the complexity of COI issues is revealed in this study, further delineation will be drawn between conflict of interest issues facing research administrators. Perceptions of various conflict issues will be surveyed. Delineation will be explored between conflict of interest and conflict of commitment (COC) situations. Relationships between the measured perception of the conflict situation, the total amount of research funding, largest single funding source, and related aspects will be explored. Statistical analyses will assess whether any significant correlation exists between COI and COC items as predictors and the funding parameters as dependent variables.

II. PROBLEM STATEMENT

This study focused on whether the individual's perception of a conflict situation may be related to the type and amount of overall sponsored funding that the institution receives. By extension can a link be conjectured between the behaviors of college or university employees when faced with a conflict in a higher education institution, and the risk that such questionable activities pose for that institution in light of its legal and financial obligations?

A. RESEARCH QUESTIONS

Delineation of specific issues may offer insight to this problem. For example, what types of individual behaviors produce greater or more egregious conflict of interest consequences? By extension, do such behaviors serve as an indicator of the overall risk that the institution bears in receiving sponsored funds? The challenge for research study is to delineate between the sociological "noises" embedded in the institutional-individual interface, and identify specific factors that may impact the aggregate conflict management in a research-intensive funding environment. Specific issues targeted for survey research included the following:

-How are COI behaviors perceived by research administration staff at major research universities?

-How are conflict of commitment situations perceived by research administrators at major research universities?

-Are perceptions of conflict issues correlated with each source of sponsored funding?

-Are perceptions of conflict issues correlated with the total amount of sponsored funding?

B. LIMITATIONS AND DELIMITATIONS OF THE STUDY

This study does not attempt to explain all of the complex interplay of factors found in the academic milieu pertaining to conflict. This paper focuses on aspects intrinsic to the performance of or in support of the conduct of research in the college and university setting. Some organizational dilemmas and the resulting conflict management confronting the contemporary college and university community will be broadly identified. The specific characteristics to be delineated include classes of conflict issues, broadly grouped as conflict of interest or conflict of commitment, but including other aspects such as financial involvement and professional society relationships.

This study represents a new area of scholarly activity broadly associated with the idea of research on the practices of research. Heretofore, most of this domain was presumably covered within the guild traditions of each academic discipline, or ostensibly acquired by osmosis through the individual's association with his/her institution. The ramifications of taxpayer oversight and institutional pursuit of safeguards against liability have made these same issues more acute and emphasized the gap in knowledge. Improved understanding of the dynamics of such related topics as research integrity, compliance, and conflict of interest should help to address that knowledge need.

As a new area of scholarship, many limitations will undoubtedly mark this study. Exploration may raise more questions than answers. Application of findings will be primarily focused on the perception of conflict situations in the performance of research within the specific domain of research-intensive college and university settings. It is not expected that findings will be

generally applicable to human resource management or legal codification. Rather, the focus is to discern behavioral and attitudinal factors that may serve to broadly underscore the relationships of individual employees to their institution.

III. REVIEW OF THE LITERATURE

A. PREFACE

As stated earlier, this study explores an emerging new field of scholarship pertaining to *research on research integrity*, with particular emphasis devoted to the subject of conflict of interest. To date, a paucity of literature is devoted directly to the subject. Relevant material primarily involves regulatory and procedural literature that is addressed in this review. In order to establish a broader conceptual grasp of underlying issues, this section begins with a review of relevant definitions, followed by delineation of some related concepts that provide an understanding of social behaviors in both organizational and professional contexts. These perspectives offer some insight to the current extent of understanding about behavior in conflicted situations and conflict management in the workplace.

B. DEFINITIONS

A variety of definitional approaches to the subject have been taken. Some presuppose an inherent understanding of the subject, without actually offering an explicit definition. Some contrasting explanations are offered below.

From a scholarly perspective, “a person has a conflict of interest if a) he is in a relationship with another requiring him to exercise judgment in that other’s service and b) he has an interest tending to interfere with the proper exercise of judgment in that relationship Davis (1982), p 21.

From an institutional perspective, management of conflicts emerges as the dominant driver so as to minimize the consequences of risk for the organization. No one definition of conflict of interest may suffice, but the following definitional example is found in the preface to the University of Pittsburgh policy statement (2003).

A potential or actual conflict of interest exists when commitments and obligations to the University or to widely recognized professional norms are likely to be compromised by a person's other interests or commitments, especially economic, particularly if those interests or commitments are not disclosed. Federal Regulations provide that a conflict of interest exists if the reviewer(s) of disclosures determines that a significant financial interest could "directly and significantly affect the design, conduct, or reporting" of federally funded activities. (p 4)

Bowie (1994) offers definitional distinctions between the perception, appearance, and reality of conflict of interest (pp. 68-71). A relative determination of the potential for a real COI occurrence may help frame issues of whether a perceived COI situation is out-of-bounds: Citing Beauchamp (1992), the author quotes "some influences clearly distort judgment, others have some reasonable probability of doing so, and others have some distant possibility of doing so." (p 69)

Two other terms underscore the related issues of individual conduct in the organizational setting, "morality" and "ethics." Definitional examples are posed below:

Webster's dictionary (1997) defines *morality* as "a doctrine or system of moral conduct" or as "particular moral principles or rules of conduct." The imposition of various regulations pertaining to research introduces another dimension to a scheme of good conduct. This scheme clearly refers to systemic rules of conduct. If left to the individual, however, one person's morality is another's venality.

The related term *ethics* is broadly defined as "the discipline dealing with what is good and bad and with moral duty and obligations." (1997). Taylor (1975) defines ethics as "inquiry into the

nature and grounds of morality where the term morality is taken to mean judgment, standards, and rules of conduct.” In the field of research administration, governmental regulations have imposed both implicit and explicit responsibility on the institution to reinforce ethical notions of conduct on its individual employees. Writ large, this idea incorporates institutional burdens of stewardship. Hence, the interrelationship presents between the concepts of ethics and conflict of interest.

For purposes of this study, the surveyed personnel at each target institution were identified as research administrators. “Research administrator” is a professional, non-faculty staff individual, typically employed in the department or center, whose major responsibilities encompass the support of, or management of faculty research activities.

C. UNDERLYING CONSTRUCTS

1. Perspectives from the Sociology of Science

Traditional theory of normative behavior and behavioral reinforcement in academe originates from the notion of the peer effects of disciplinary standards. Landmark work in the area of the sociology of science by Merton (1938, 1942, and 1973) helped establish many of the concepts extant today. One key aspect involves the notion of social control in science. Zuckerman (1977) elaborates the concept as follows:

Social control in science depends partly on scientists’ internalizing moral and cognitive norms in the course of their professional socialization and partly on social mechanisms for the detection of deviant behavior and the exercise of sanctions when it is detected. (p 90).

In order for the system of social control to be complete, however, there must be some recognized set of sanctions that can be applied when deviant or unacceptable behaviors are encountered.

Defining the boundaries where sanctions are applicable becomes very elusive, however

That part of the system [sanctions] in science is far less organized and less formal than in the exacting institutional arrangements found in other professions. There are no institutionalized parallels to the malpractice review panels of bar associations or county and state medical societies and no formal system for meting out penalties for malpractice in science. (Zuckerman, p 97)

Chubin and Chu (1989) contend that competing pressures inherent in the modern academic environment have frayed the ideological fabric of scientific endeavor. They summarize the potential negative effects as follows:

The convergence of the dysfunction of professionalism and bureaucratization tends to increase specialization and overspecialization in a division of labor full of conflict. Occupational and organizational closure increases under these conditions, and creative, critical intelligence, along with the more enlightened motives, are eroded. Ultimately, the ability of people socialized under such conditions to distinguish illusion and reality, hallucinations and material events, is threatened. (p 66)

In a related article, Zuckerman (1988) delineates the sociology of science from the perspective of a sociologist. Within this framework, she discusses the normative behaviors of science, deviant behaviors in science, and social control of deviant behaviors. She further elaborates this analysis in the context of the reward systems of science, stratification in the sciences, and cognitive theory. The implications of these aspects may be applied to management of COI issues on campus, furthering the support of behaviors that minimize conflict and hence decrease organizational risk. Moreover, this line of reasoning poses practical ramifications for campus policies and procedures as they apply to sanctions for misbehavior. Namely, the threshold for applying sanctions for nonconformance may differ from discipline to discipline and be dependent on the severity of the perceived conflict.

2. Social Theories of Behavior

To arrive at an understanding of the complex dynamics of individuals in their larger organizational and societal setting, we look to ideas from sociology, ethics, and decision sciences for some conceptual understanding. In the increasingly fragmented modern society, explanations for observed behaviors transcend mere economic rationale. Hence, a return to sociology is offered for insights to "a deeper social intelligence" Christie (1999). This is not to advocate a 'pop sociology,' but one that explains behaviors and relationships in a meaningful way. Ouchi and Wilkins (1985) contend that the basis for an understanding of organizational culture is indeed sociological:

The study of organizational culture is rooted more deeply in sociology than in any other intellectual tradition. Critical both to sociology and to the study of organizational culture is the idea of an organization as a social phenomenon that has its own feature which distinguish it from an environment on the one hand and from the individual desires and predispositions of its members on the other. (p 469)

Organizational culture provides some explanation for the dimensions of individual behavior. Next, the contribution of ethical theory to behavioral attitude and conduct is explored.

3. Ethical Theories and Paradigms

DeMarco and Fox (1986) provide a broad perspective on ethical theories and contemporary applied ethics. Their compendium offers, per the authors, "an authoritative, comprehensive up-to-date account of recent trends and developments in ethical theory as they bear upon current issues in applied ethics."(p.ix). Current ethical dilemmas are due in part to the rapid technological advances in medicine, information technology, and biotechnology. These technical developments have, in turn, provoked some moral controversies, that have challenged traditional suppositions about "good choices." The sweep of early 20th Century ethical thought, encompassing the works of Russell, Moore, Sartre, J. C. Smart, and R.M. Hare, had evolved to the point in the later half of the 20th Century that ethics has been greatly influenced by views of

and about science. This comes partly out of a science-directed view that reduces belief systems or ethical constraints to a logical, analytic framework. Under such supposed scrutiny, just about any ethical theory was questioned for its lack of “objective validity” (p 13). John Rawls' work in the last third of the 20th Century has contributed greatly to a contemporary understanding of the evolutionary nature of applied ethics. In such works as *A Theory of Justice* (1971), Rawls’ offers 1) a new confidence in substantive theory, 2) reworked conceptions of objectivity and data in ethics, and 3) a view of ethical theory as a way of ordering basic convictions. Simply distilled, this way of viewing ethics places a proportional perspective on the individual’s exercise of judgment in the workplace.

In “Business Ethics” the author, Norman Bowie, asserts that the field by the same name was officially launched in 1974, even though its historical and intellectual antecedents may be credited to Plato and Aristotle, and subsequently to Catholic theologians of the middle Ages. Most recently, the advent of related interdisciplinary research includes the emergence of such scholarly publications as the *Journal of Business Ethics* and *Business and Professional Ethics Journal* (p 166). This body of material offers a comparative perspective on the exercise of ethics in a variety of administrative fields, and also serves as an indicator of “best practices” for administrative integrity.

Worsfold (1984) espouses a code of ethics for university administrators. He establishes the need for such a code vis-à-vis the imperative for a morally acceptable administration. Universities cannot be administered nor operate in a value-neutral vacuum. Universities as organic structures of people and resources should be held to a higher standard, one that reflects impartiality, equity, and objectivity in their organizational demeanor. Further, Worsfold argues that universities should be held morally accountable in the following passage:

The point of arguing for a morally acceptable administration together with a conception of educational worth as the hallmarks of a responsible university leadership is that just such attributes are by their very natures susceptible to justification and, therefore, to the general debate which the idea of accountability demands. (p 97)

It is certainly arguable whether an institution can personify *moral behavior*. The intent, here, burdens key decision-makers as leading individuals within the organization to practice high standards of *ethical behavior*. Subsequently, Worsfold distills his framework concerning ethical administrative conduct in *Principles for a Code of Ethics*. The key components include:

- (i) a principle of balance with respect to the kinds of knowledge which recognizes the natural interaction between knowledge pursued for its own sake and knowledge pursued for the sake of some instrumental end;
- (ii) a principle of concern for others, allowing for impartiality of treatment and impersonality of outlook, and leading to the prudent co-ordination of interests;
- (iii) a principle of impartiality with respect to societal issues, but partiality with respect to the standards of intellectual life. (p 99)

In corollary fashion, Counelis (1989) identifies the concept of ethical management of universities. He states “ethical management refers to the pursuit of the university’s mission and goals through the right-behavior of the university’s corporate body and its agents.” In the use of the term “right behavior,” Counelis is asserting that senior leaders in the organization should personify ethical business practices in their conduct of university affairs. Overall, these authors suggest that high-ranking institutional officials can exercise significant cultural impact on the lowest level staffs. In order to make a positive influence, their own conduct must espouse resolute ethical behaviors and equitable decision-making.

Bruhn et.al (2002) describe a typology of ethics failures in academe. This is illustrated by the graphic, below, that describes the extent or severity of ethical failure, whether committed by the individual or the organization.



Figure 1. Quadrant Map of Ethics Failures (*Bruhn, p 478*)

To illustrate each quadrant of the above map, the authors provided ethics vignettes that characterize minor or major failures committed by the individual or the organization, respectively. These vignettes suggest that a subtle continuum exists between a major commission of an ethical breach and another action that may be deemed less egregious and more the result of dubious judgment in the workplace.

Dill (1982) creates a framework of ethical issues as it pertains to the academy. In this effort, Dill describes “the academic profession” as the intersection of faculty and scholarly spheres. Within this scheme, he talks of potential value conflict between the inculcated values of the academic profession and activities expected by corporate sponsors. Other scholars questioned whether there should be some sort of universal academic code of ethics. Callahan (1982) reviewed the trends within academe that tend to exacerbate the moral dilemmas faced by faculty. However, he argued that a generalizable ethics code would not be tenable; it is enough for each institution to apply its appropriate policies to the more egregious cases of misbehavior. Scriven (1982) argues for the delineation of professorial ethics, too long “part of the invisible environment of the academy.” (p307). He proceeds to bemoan the relegation of ethics to the ‘back room’ of curricular development, with the consequence that 90% of college undergraduates fail to receive an ethics education. Conversely, the very rationale for ethical dimensions in academe come

about because of the conflicting roles imposed on faculty: teaching, research, and public service. Schurr (1982) argues that an acceptable academic code of ethics exhibits the following characteristics:

- (1) auditable,
- (2) serves society at large
- (3) avoids conflicts of interest
- (4) offers effective instruction
- (5) evaluatively responsible
- (6) differentiates according to discrete specializations
- (7) includes certifiable competencies
- (8) indicates specified relationships

All of the above aspects must be incorporated in a code of ethics that is both specific and enforceable.

Specific illustration of these concepts is gained from public sector assessment of organizational ethos. In one study, Bowman (1990) surveyed public sector administrators who were members of the American Society for Public Administration. When asked questions pertaining to the ethics of organizational concerns, results were mixed. About one-quarter of respondents indicated that organizations utilize reactive and legalistic approaches to unethical behaviors. Another 7% felt that organizations actually demonstrated proactive problem-solving approaches to ethical dilemmas of their employees. However, an overwhelming two-thirds of surveyed respondents felt that their own organizations simply have no consistent, coordinated approach to such issues. In another study, Gilman and Lewis (1996) expanded the dialogue on public service ethics to a global level. Assessment of normative and structural perspectives included such errant conduct as bribery and conflict of interest. Countries where the cultural norm included deeply embedded attitudes concerning acceptable conduct tended to overwhelmingly condemn such misbehaviors as bribery or conflict of interest. However, there's a dynamic interplay in "the moral exercise of discretion [among public administrators] and the formal system and legal compliance." (p 520). In responding to the ambiguity of this interaction, more and more public bodies have

implemented ombudsman roles to oversight proper conduct and safeguard against egregious behaviors.

4. Organization Theory and Decision Sciences

Related work draws on paradigms from organizational theory and decision process for motivational explanations of conflict aversion. Smithson (1999) studied the relationships in preferences and judgments under ambiguous vs. conflicting information. Data supported two hypotheses; 1) that conflicting messages from two equally believable sources are less preferable than two ambiguous agreeing messages; and 2) that conflicting sources are perceived as less credible than ambiguous sources. Smithson further asserts support for the cognitive theory “that conflict raises suspicions about whether the sources are trustworthy or creditable.” (p 179) Motivational explanations may give clues to mechanisms for either employee incentive or sanction respective to acceptable conduct. Ideally, such mechanisms could serve to reinforce conflict aversion, if not avoidance.

Van Wart (1996) posits five (5) domains as the basis for ethical decision making in the public sector. These include public interest, legal interest, personal interest, organizational interest, and professional interest. Reconciling the intersection of these five interests themselves may constitute conflict management. Compliance education in the research community attempts to constructively relate these classes of interests.

Other investigators have examined socio-legal aspects of behavior based on the dynamics of individual and group response to external sanctions. Heckathorn (1990) analyzed the relationship of external sanctions and individual vs. intragroup control mechanisms. His model supports the assertion that social control that appears to emanate from individual sanctions results instead from group-mediated control; a process termed *compliance norms*. This line of argumentation reflects the intuitive notion that acceptable peer conduct serves to curb the potential excess behavior of individual misfits.

More recent work by Bozeman & Kingsley (1998) has examined the distinction in risk culture between public and private organizations. Employing questionnaire methodology, the authors compiled a wide disparity of perceived variances in organizations' risk culture where that business sector was unfamiliar to the respondents' own business arena. However, there was a correlation with *less risky culture* when the organization exhibits characteristics of red tape, poor links between pay and performance, and high interface with elected officials.

Other authors have studied the role of discretion and decision-making by public authorities in democratic society. Applbaum (1992) offers the following conceptualized matrix of the "orders of reasons."

	The Good	The Just	The Legitimate
Judgment	Judgment of good	Judgment of just	Judgment of legitimate
Conflict	Conflicting conceptions of good	Conflicting conceptions of just	Conflicting conceptions of legitimate
Deliberation	Deliberation about good	Deliberation about just	Deliberation about legitimate
Residual Conflict	Residual conflict about good	Residual conflict about just	Residual conflict about legitimate

Figure 2. Orders of Reason (Applbaum, p.252)

When faced with choices involving judgment or authority, Applbaum contends that each decision engages one or more levels of the above orders of reason. Sometimes these decision processes entail first and second order reason, depending on the subtle interplay of authority, discretion, and mandate. Underlying the nature of discretion among public authorities are discretionary strategies. Persuasive strategies embody the concept of *good faith* in representing the interests of multiple parties. Incentive strategies variously employ offers or threats in carrying out some decision process, weighing costs and benefits of each tactic. Finally, where the least integrity is found, deceptive strategies are employed, utilizing lies, secrets, and other manipulative techniques to accomplish a public decision (pp.265-266). Some of the same

deliberative factors would be expected to shape views of conflict of interest. For example, if a senior administrator has seen the application of good faith reinforced in previous conflict assessments, then they would likely apply the same constructive view to the disposition of a new conflict situation.

5. Application of Corporate Business Practices to Higher Education: Opportunities and Challenges

In recent years, management efforts within higher education have included adoption of a variety of corporate-style business improvement techniques. These include organizational restructuring based on client models, rather than accepting the traditional “silo” model of separate unit functionality. Business practices have emphasized zero-based budgeting and careful management of revenue streams. All of this effort has stressed the traditional isolation of academic units from financial exigencies, and especially driven units with applied research expertise to grow or enhance relationships with business. These situations have afforded growth in sponsored funding activity and related business practices. However, it has also caused some within higher education to consider whether such arrangements have prostituted the traditional mission of the university. As a by-product of such partnerships, entrepreneurial oriented faculties have been thrust into a variety of perceived conflicts. Institutions have invented a variety of oversight mechanisms to assure themselves and interested publics of the propriety of such dealings. The discussion that follows shifts the emphasis to COI issues that are encountered in the contemporary higher education setting.

D. COI AS CONTEMPORARY ORGANIZATIONAL CONSTRUCT

1. COI in Organizational Context

The employment relationship between faculty and their academic institution is complex and easily misunderstood. Each faculty member fiercely views their academic autonomy, and

considers the institutional imposition of limits on conduct and sanctions for defined misbehaviors as over-reaching and intrusive. This view arguably holds due to the overwhelming prevalence of the collegial culture in the university environment. William Berquist, in his book *The Four Cultures of the Academy* (1992), contrasts the collegial culture with the managerial culture. The latter has its aspirants today, typically among central office administrators. Nonetheless, organizational power and dynamics tends to default to the collegial atmosphere, where faculty feels the most comfort.

Swenk (1999) describes a dualism that exists in the academic organizational structure. Namely,

...The professional world of higher education maintains a blurred staff-line structure. The professionals (the faculty) maintain superior authority to decide the major goals, while the authority of the administrators is limited to deciding the means to achieve these goals and to setting performance standards. (p 6)

However, the institution has certain legal and organizational obligations to meet in honoring the employment contract. A wide array of regulatory obligations hold university administrators to a plethora of external standards for good conduct Crouch (1998), Norris et al (1996) Consequently, administrators view their jurisdiction as involving occasional correction or leverage of sanctions against individual employees for misbehavior. The Public Health Service (PHS) (2000) has introduced concerns about *institutional* conflict of interest. This broaches an additional dimension to the established regulations and practices that has focused almost exclusively on the practices of the *individual*.

The previous discussion has addressed some of the underlying concepts behind COI issues. Now, a more definitive discussion follows concerning specific social environments where COI situations are encountered. The interplay of public trust and outside perceptions of appropriate conduct permeates this discussion. The university community has a dual role to play in the understanding of these issues. As a performer, other sectors of society might expect the

university to serve as a role model for conducting business practices that are beyond reproach. As a center of knowledge, the university and its professorate might be counted on to define and explain the intricate issues embedded in conflicts, conflict management, and satisfactory conflict resolution.

2. COI in the Higher Education Community

Measuring the extent of “ethicalness” that resides in the university setting has posed challenges to scholars. Counelis (1993) espoused the development of empirical studies to address the scarcity of reliable information. Information from these studies was to be applied and implemented by institutional research offices. Overall, Counelis argued for “a systemic place for morals in society’s cultural institutions.” (p77) In a contemporary literature review, he found that 83% of search results on ethics revealed non-empirical work. Counelis in turn cited Mathews’ (1988) work on the corporate model of ethical behavior as an illustrative analogy for the university community. In Mathews’ scheme, two key propositions emerged; 1) that trust must be fostered by the organization to reinforce appropriate ethical and legal behavior and 2) that public discontent with business behaviors brings pressure for public deterrence. Mathews’ empirical data failed to demonstrate a relationship between corporate codes of “good conduct” and corporate violations of the same. Frankel (1996) enlarges this discussion in the political context of perception and interpretation of academic-business relationships by third parties. Guy (1991) describes the “individual-organizational interface as an ethical frontier.” In order to inculcate a set of normative behaviors in the organizational setting, organizational norms need to be sensitive to the ethical acceptability of the individual employee’s actions. When this sensitivity is not addressed, situational compromises result in a process termed by Guy as “ethical satisficing.” The end product in this circumstance is a compromise, in which ethical dimensions are only met on a minimally acceptable level.

Anderson, Louis, and Earle (1994) studied the effects of formal and informal socialization of graduate students and its relationship to the incidence of observed misconduct. Their results showed that departmental climate (i.e., perceptions of the important aspects of the work environment) served as the strongest predictor of overall conduct. Namely, the competitive

pressures within the academic environment increase the likelihood that a graduate student will observe misconduct (p 338). This emphasizes the importance of a clear system of guidelines, controls, and sanctions to assure reinforcement of proper conduct.

McDowell (1991) offers a perspective on the history of professional codes of ethics. The first code of ethics for lawyers dated from 1887, the American Bar Association (ABA) followed suit in 1908, but in contrast the American Association of University Professors (AAUP) didn't implement a policy until 1966. In specific chapters McDowell deals with the professional and ethical expectations, financial pressures for success, whistle-blowers, redefining the ethical obligation, and informed consent facing faculty researchers. The author suggests a "right balance" is needed between pursuing professional obligations and adhering to professional standards of conduct. The promulgation of a code probably indicates, however, that there have been complaints inside and outside the professional group about unacceptable practices, and that the members of the profession are beginning to think seriously about what their ethical obligations are and should be (p 154). Inherent conflicts between roles as teacher and roles as scholar/researcher are discussed. Some of this tension is a "trilemma" (p 155)- i.e., the tripartite responsibilities of teaching/scholarship/practice. McDowell suggests that scholar/teachers should be the "conscience" of the profession.

Johnstone (2000) critiques recent scholarship pertaining to the ethical obligations of the academic establishment. In evaluating works by Kennedy (1997) Rosenzweig (1998) and O'Brien (1998) respectively, he attempts to find unifying threads. These threads are rooted in two essential claims. The first is that "the mission of the college or university is about purposes that are deemed 'higher' in virtually any system of cultural values." (p229). The second claim, "the idea that these principled purposes [of higher education] need to be carried out by persons- mainly the faculty-who, like many other professionals, need to operate under internalized ethical codes that are mainly self-policed." (p230).

Kerr (1994) bemoans the apparent erosion of an "inner ethic" of personal conduct traditionally understood to be inherent in the academic profession. Kerr characterized a 'new academic' or post-modern paradigm of professional conduct:

It involves less commitment to the local academic community and to citizenship obligations within it. Faculty members have more attachments to economic opportunities off campus or to off-campus political concerns on campus. The campus is more of a means to non-academic ends. In this new situation, implicit contracts governing behavior and informal means of enforcement are less effective. They may need, increasingly, to be reinforced by more formal codes of behavior and, particularly, by independent judicial tribunals-as has already happened in many other segments of society, with the result of less reliance on norms and more on laws and courts. (p10)

Grinnell (2000) takes the sense of postmodern estrangement farther with a discussion of the “science wars.” At root, his argument involves a challenge to the historically accepted premise of scientific objectivity. He states that “establishing credibility in science means trying to extract from experience just those aspects of the world that are common to other people...” (p29) Consequently, the importance of institutional honesty in the disclosure and management of conflict of interest bears emphasis.

It follows from this sobering assessment that with increasing frequency legally mandated strictures have been imposed, prescribing boundaries for acceptable behavior. It is in this context that most of the governmentally driven rules concerning conflict of interest have been promulgated. In the United States the history of conflict of interest statutes is fairly recent. Less than forty years ago, President John F. Kennedy outlined the pros and cons of ethics codes in a 1961 congressional address:

The ultimate answer to ethical problems in government is honest people in a good ethical environment. No web of statute or regulation, however intricately conceived, can hope to deal with the myriad possible challenges to a man’s integrity or his devotion to the public interest.

Nevertheless formal regulation is required-regulation, which can lay down clear guidelines of policy, punish venality and double-dealing, and set a general ethical tone

for the conduct of public business. Lewis (1993)

Fast-forward thirty years, and “the ethics business is booming.” Frederickson, (p 141). Most units of government have implemented ethics codes that prohibit self-gain and other financial self-dealing. These codes attempt to inculcate a proactive view of such matters, adhering to the tenant that “the central function of an ethics code is to prevent-rather than punish-unethical conduct.” Frederickson, (p 143). Professional associations, as well, have promulgated ‘rules of good conduct’ in the long view that such policies have a salutary effect on public trust. The American Chemical Society, for example, states the rationale for its guidelines concerning ethical publications practices:

An essential feature of a profession is the acceptance by its members of a code that outlines desirable behavior and specifies obligations of members to each other and to the public. Such a code derives from a desire to maximize perceived benefits to society and to the profession as a whole and to limit actions that might serve the narrow self-interests of individuals. The advancement of science requires the sharing of knowledge between individuals, even though doing so may sometimes entail foregoing some immediate personal advantage ACS (1996).

Indeed, initial organizational codification of proper conduct was pursued vigorously by non-profits throughout the 1970s and 1980s. Chapman (1993) reviewed the 'codification option' concerning ethical behavior in public service. He contended that the notion of ethics in public service was integrally related to values and value choices. Chapman summarized two major arguments that pertain to the delineation of ethical rules or guidelines:

The first is that written ethical rules in general and codes of ethics in particular are an important but insufficient means of promoting public service ethics. The second argument is that certain ethical issues are more amenable than others to management by ethical rules. (p15)

Governmental authorities have weighed in with similar recommendations. For example, *The*

Commission on Research Integrity (1995) was empowered by the U.S. Congress to review matters pertaining to integrity and research misconduct. Commentary within its report on the role of professional societies and codes of ethics stated, "Codes of ethics should provide clear statements of norms of practice." (p 20)

Hence, two extremes characterize the spectrum of organizational approaches to the reinforcement of good behavior, including the treatment of conflict of interest issues. One view advocates a "high road" model, emphasizing an organizational ethos that rewards and reinforces good behaviors, such that organizational expediency and efficiency do not compromise ethically based actions. "High road" here refers to a system or set of positive, pro-active acceptable business practices that are espoused and taught by the institution to its employees. At the other end of the spectrum (viz., the "low-road"), one presupposes the prevalence of human tendencies towards self-interest and venality when faced with difficult choices. In such situations, a system of penalties or sanctions is imposed to counter improper behaviors. Here, punishment needs to fit the nature or degree of misconduct committed by the employee.

Prior studies have attempted to delineate the dimensions of ethical behavior that underlie decision-making in the organizational setting. Deshpande (1997) analyzed the effects of gender, age, and level of education on the perceptions of the ethical propriety of business practices by managers in large non-profits. The data indicated little distinction in the perception of ethical practices based on sex, but managers over age 40 tended to view the boundaries of acceptable business practices more acutely. In contrast, managers with graduate level education tended to view excess expense reporting as the most flagrant practice. Hsee (1996) analyzed the relationship between justifiable factors and unjustifiable factors in decision making, contrasting this scheme against behaviors suggested by normative decision theory and social psychological research. The data suggest that the influence of "should have" factors, though unjustifiable, increase with the degree of ambiguity (i.e., multiple interpretation) in justifiable factors.

3. COI in the Research Intensive University

Wenger, et al (1999) studied the characteristics of reporting on unethical behaviors by scientists, as a window on the integrity of "whistle-blowing" and self-regulation in academe. A survey was administered to National Science Foundation funded principal investigators and institutional (university) officials. The methodology involved administration of test items composed of ethical scenarios that were categorized by level or dimension of misbehavior. Data indicated that scientists are more inclined to limit the response to the scientific level, while administrative officials are more likely to pursue the response through the chain of command or to outside interests. This suggests that collegiality in the academic professions tends to dilute the severity of reporting or response to inappropriate behaviors. This further suggests the need for balance between self-administered oversight processes and the imposition of external rules and procedures governing conduct.

Braxton (1991) examined the relationship between graduate department quality and the ability to self-sanction scientific misconduct. Revisiting the principles of normative socialization in science, Braxton cites the seminal work of Merton (1973) that identified a variety of social control mechanisms that limit or inhibit social deviance in the science disciplines. He recapitulates the four norms of science as follows:

1. "Universalism" prescribes that the findings of research must be assessed on the basis of scientific merit rather than on the basis of such particularistic criteria as sex, nationality, class, and personal qualities.
2. "Communitas" prescribes that the findings of research must be made public.
3. "Disinterestedness" prohibits the individual from doing research for the primary purpose of receiving recognition from one's colleagues as well as gaining prestige and financial reward from the lay community.

4. "Organized skepticism," prescribes that no knowledge claim or research finding should be accepted without an assessment based on empirical and logical criteria. (p 88)

Admitting that "lately, the efficacy of self-regulation in the academic profession has been called into question," (p 88-89), Braxton proceeds to recount some infamous cases of alleged misconduct or conflict of interest, which, in turn, has led to general public belief in a high incidence of scientific misconduct. However, the results of Braxton's own empirical studies allow some ambiguity:

[He] suggests the inference that attitudes, values, and beliefs concerning professional self-regulation in general and the sanctioning of scientific misconduct in particular tend to be shaped to some degree during the doctoral socialization process. Moreover, the attitudes, values, and beliefs being inculcated may differ among graduate departments with varying degrees of quality. (p 103)

The above appears to support the need for externalized codes of conduct. At the University of Pittsburgh, renewed efforts have focused on providing informational resources that reinforce notions of "good practice." This is best illustrated by the relevant policy document, *"Guidelines for Ethical Practices in Research,"* (1997, revised 2003) that summarizes applicable policies and offers practical pointers for trainees and trainers alike. At the University of Rochester *sponsored research compliance* is addressed through a series of on-line tutorials that test the research administrators view of acceptable practices and relevant regulatory guidelines. At the University of North Carolina *"Guidelines for Sponsored Research"* outline the responsibilities entailed for faculty and research staff in the conduct of sponsored programs.

Tuckman (1988) discusses the reconciliation of university goals and the mitigation of conflict to assure that goal attainment is reached on the institutional level. This notion presents another aspect of conflict management. As an illustration, he parallels the goals of faculty (e.g. cognitive self-learning, moral development, student learning) with administrators' goals (perpetuation and

growth of institution, efficient management, economic success) and with government funding interests (promote research, assure efficient use of federal funds). He draws general distinction between the goals of private institutions with lesser degrees of public scrutiny contrasted to public institutions that are more susceptible to both legislative influences and taxpayer oversight.

On purely pragmatic terms, most universities have taken the position that disclosure or recognition of conflict is in and of itself a value neutral. Simply stated, all possible activities related to research conduct may be placed on a continuum between clearly acceptable and unacceptable behaviors. As an example, the first point of "General Principles" of the University of Pittsburgh Policy and Procedures on Conflict of Interest (1996) declares the following, "Recognition that not all conflicting interests are necessarily impermissible." (p3) Consequently, each activity being evaluated must be assessed in its appropriate context, and not summarily labeled "good" or "bad." At the University of Rochester its *Sponsored Research Compliance* program outlines in Chapter 4 (Conflict of Interest) the reporting and decision-making responsibilities for continuing intervention. At the University of North Carolina its *Policy on Conflicts of Interest and Commitment* outlines the care that must be addressed to eliminate, minimize, or manage a variety of conflict situations that arise in the research environment, with special emphasis on protection of human subjects in clinical or pre-clinical research protocols.

Grant, Guyton, and Forrester (1999) provide a model compliance framework for academic institutions and academic medical centers. Their practitioner-based assessment examines several elements to be included in the totality of an institutional system for the risk management of research compliance issues. This includes the following elements: institutional-wide scope, policies, standards and procedures, program oversight, program authority delegation, employee training, monitoring and auditing, enforcement and discipline, and response/corrective action plan (p 962).

4. COI Linked to Industry Partnership

The intensification of industrial support for biomedical research has brought parallel concerns for the objectivity of scientific performance. A growing body of literature in the biomedical field has

focused on the characterization of conflict of interest issues in pre-clinical research as well as drug studies. Leading journals such as the *New England Journal of Medicine* (e.g., Emmanuel 1995, Thompson 1993) have offered case studies as well as literature surveys on the subject. More recently, public uproar was instigated over the dismissal of prominent journal editors who apparently were ousted over disagreements about the objectivity of published articles and their respective authors' involvement with same-sector companies (e.g. *NEJM* 1999, *JAMA* 1999).

Another consequence of industrial liaison involves secrecy. Industrial partners are concerned for the proprietary interests of their market, and consequently typically attempt to impose restrictions on publication and other means of dissemination. Indeed, in these circumstances, faculty must be educated not to sign prohibitive agreements in order to protect the integrity of the academic research process Crumpton, (1999). An example would be the case of a faculty member executing an exclusive confidentiality agreement with an industrial sponsor. This situation, coupled with financial incentives for the academic researchers, may itself result in conflicts.

Campbell (1997) has studied the nature of evolving university-industry relationships, and the shifts in values encountered as these relationships build. She utilizes DiMaggio and Powell's (1983) theory of institutional isomorphism to explain some of the organizational behaviors found in collaborative activities. The relationship to conflict of interest situations is explained as follows:

Institutional isomorphism suggests that those involved in collaborative activity will share similar perspectives about potential conflicts of interest because they are influenced by similar federal and state regulations, they model their activities after their successful counterparts, and they interact with each other sufficiently to form a unique professional peer group. (p 361)

The novelty of Campbell's synthesis is to employ an organizational theory previously expounded to operate within the corporate sector, to explain the convergence of behaviors by academic and corporate entities alike as they mutually build relationships.

Another study (Dana & Lowenstein, 2003) poses an opposite view that disclosure does not necessarily serve as an antidote to participant bias. The study utilized social science theory to explore the influence of industry (namely pharmaceutical) gift-giving to physicians and whether such activities imposing biasing in subsequent protocol evaluation. The authors contend that even widely-implemented disclosure routines may have negligible affect because a) social science research suggests that bias is recognizable in others, but not by self, and that b) the preservation of bias by an individual physician due to even moderate financial gift-giving by sponsors is subtle and unintentional.

Richard Atkinson, President of the University of California system, recently reviewed the opportunities and drawbacks of industry-university partnerships (1999). He generally supports the positive benefits of industry support, arguing, however, that it must be “faculty centered” and be commensurate with the research interests of the faculty, and address the training needs of the students. Additionally, Atkinson also acknowledges that

industry-university partnerships tend to create a conflict of commitment between faculty members’ responsibilities to those sponsoring research and their responsibilities to the university...Human nature is such that we cannot dismiss these concerns...With respect to ensuring the *integrity* (it. added) of university research, it is clear that we have a responsibility to create a climate that promotes open discussion within the academic community in order to protect the quality and independence of our missions of research and education (p 4)

A related concern encountered in university-industry alliances, especially in the biomedical sector involves possible intimidation by special interest groups. A series of letters to the editor in the New England Journal of Medicine (1997) pertained to purported attacks on scientists by industry who publishes “hot button” policy articles or articles on topics associated with large liability claims. Examples included articles pertaining to studies of asbestos abatement or retrospective health study on the use of lead paint in public housing projects. In such environments, political and financial pressure may attempt to squelch the dissemination of disinterested scientific findings. Another recent and widely cited article by Krinsky and

Rothenberg (1998) summarized the extent that leading medical journals require authors to disclose their sources of funding. Results of a 1995 survey of North American medical journal editors revealed that 26% required authors to disclose their sources of funding, 28% required disclosure of all institutional affiliations, and 13% and 10% respectively required disclosure of consultant positions and of stock ownership in companies that may pose a conflict of interest. Obviously, a majority of leading medical journals still does not require explicit disclosure of financial relationships of their authors. Clearly, such widespread lack of disclosure does not help to deter mounting public distrust concerning the integrity of scientific reporting.

Huth (1996) dissects the potential and real conflicts encountered in industry-funded clinical research. He provides the following typology of the interested parties to clinical research activity:

Party	Interest
The Investigator	Gain in reputation, valid answers to scientific questions, fair compensation for effort
The Patient	Effective treatment, low risk/harm, assume patient's interests ahead of others
The Public	Effective & safe diagnostic or interventional treatments
The Commercial Sponsor	Research relevant to marketing, prompt findings, minimal cost, protection of financial interests
The Host Institution	Academic reputation, industrial subsidy of research, protection of investment in plan, marketing advantage
The Scientific Community	Good reputation in science, access to products of specific research interests

Figure 3. Parties with Interests in Clinical Research (Adapted from Huth, p. 392)

The increasing prevalence of industry support to biomedical research at universities has prompted greater disclosure and scrutiny of related financial conflicts in the last few years. Bekelman, Li, and Gross (2003) conducted a review of studies that contained original, quantitative data pertaining to the financial relationships among industry, investigators, and universities. They researched the Medline, Web of Science, and similar databases from January 1980 through October 2002 with free text terms pertaining to “conflict of interest.” A synthesis of the data found that approximately 25% of investigators have industry affiliations, and roughly 65% of academic institutions hold equity interests in start-ups. Further regression analysis of articles showed a significant correlation of industry sponsorship with pro-industry study outcomes.

Hence, a framework of interests presents itself whenever clinical trials are considered. The affected parties must weigh value judgment and relative priority. For example, a new research partnership between a university and a drug discovery firm may do much to advance the science of combinatorial chemistry. With initial equity interest, the university may stand to realize tremendous appreciation if the start-up partnership yields a profitable array of new drugs. However, existing independent drug laboratories in the same vicinity may view such a consortium as wielding an unfair market advantage. Obviously, the extensive and overlapping array of interests found today in these university-industry arrangements demands explicit codes of conduct assuring proper disclosure and patient protections.

Scholars are divided on the issue of whether entrepreneurship among faculty *per se* creates tension and conflicts in the university. In one study, now somewhat dated, Bird and Allen (1989) assessed the proportion of faculty at North Carolina institutions inclined to pursue business opportunities. The results suggested that only 5% of faculty were definitely inclined towards entrepreneurship, although another 25% were uncertain about the prospects of commercial involvement. Based on these results, the authors tentatively concluded that the modest proportion of commercially oriented faculty posed a synergistic opportunity for future partnerships between the university community and businesses. Potential consequences of business conflict did not figure in this assessment. In a later work, Davis (1999) addresses industry relationships under the

chapter title "University Research and the Wages of Commerce." He argues for even more scrutiny of these relationships in the following passage

While lawyers have long been sensitive to conflict of interest, academics are only now beginning to think in such terms. Universities need to provide policies for identifying potential conflicts, for avoiding those that can be avoided, and for disclosing to interested parties those that cannot (or need not) be avoided. Though the government has begun to force universities to have policies on certain conflicts of interest relevant to government-supported research, universities probably should go well beyond what they are now required by law to do. (p 89)

Bowie (1994) discusses how COI issues impact the modes and presumed norms of faculty evaluation, as well. The implied changes to the historic paradigm of scholarly research are reviewed (p 83-86) and expanded to the inherent philosophical issue of science vs. business values, and whether the two are truly antithetical (p 86). The "erosion" of the academic ethos is contended to be more acute in some disciplines than others. For example, biotechnology's impact on the heretofore pure domains of biology and molecular biology is one theme (pp. 143-174). Milestone events included the provisions of the Pajaro Dunes conference and the Chakrabarty intellectual property case that served as a groundbreaking legal precedent for patenting biological materials. Wofsy (1986) also examined the opposing interests involved as biotechnology alliances were being forged with universities. He reviewed the need for a separation of the university's mission from the commercial interests of society. He also voiced concern for the subtle pressures exerted on faculty by prospects of such lucrative partnerships, and how this might displace the disciplinary talents of a new generation of faculty lured to "hot areas."

Weingartner (1999) discusses the paradox of performing commercially based work, excerpting a Derek Bok quote, as follows:

"Universities attract that loyalty of faculty and alumni and, to a degree, the respect of the public precisely because they act for reasons other than money and will not compromise certain values simply to gain immediate monetary rewards. As universities grow more

aggressive to turn their activities into cash, their image subtly changes. They appear less and less as a charitable institution seeking truth and serving students and more and more as a huge commercial operation the differs from corporations only because there are no shareholders and no dividends." (Bok, 1991, p 120, in Weingartner, p 97)

In another recent review article alleging the prostitution of the traditional university's role in responding to the lure of corporate alliances, Harvey (1998) bemoans the "curiosity driven" mission statements that have become ubiquitous in higher education. Efforts to sell university output in market-equivalent "product" terms have diluted the original purposes of the academy. He summarizes the role of the modern university as proletarianized due to its efforts to respond to global market exigencies. In sum the modern research university has become "an autonomous bureaucratic corporation." (p 3)

As an example, at the University of Pittsburgh review of potential conflicts due to emerging commercial involvement is the purview of the Entrepreneurial Oversight Committee (EOC). It applies limits and standards for the acceptable involvement of faculty in emerging enterprises that are affiliated with the University. For example, the extent of equity interest for continuing faculty members is limited to 20%, post-dilution of shares. A faculty member is also restricted from concurrently serving as a principal operating officer of a company. They may serve in an advisory capacity as Scientific Consultant, or similar. In the case where a faculty member does not want to relinquish business management, then a choice must be made; either to take a leave from one's professorial appointment, or agree to a limited operating role.

E. CLASSES OF COI ISSUES

1. Faculty Codes of Conduct

Drawing distinctions between the various facets of conflict of interest is admittedly arbitrary. In this section taxonomy follows in which, overall, conflict issues are segregated first for faculty

and then for staff. The boundaries between the various aspects are certainly not well delineated. For example financial influences permeate all types of COI relationships.

Historically, faculty conduct was self-regulated and shaped primarily by the peer community. Explicit codes of conduct were rare, if existent at all. The social complexity of contemporary society has changed such informality. Faculties are presented a variety of “good conduct” prescriptions for the various aspects of their professional lives. Nonetheless, temptation abounds. To avoid tough decision-making involved in academic evaluation of students, grades are inflated Wright (1997), Astin (1996). To avoid the potential for sexual harassment or to eliminate social entrapment, faculties shirk from their assigned counseling.

Others have characterized the nature of “wrongful behaviors” in terms of the related phenomenon of scientific misconduct. Hackett (1994) offers three explanations for misbehavior; psychopathology, anomie, and alienation. The psychopathological explanation, perhaps the most intuitive, offers less satisfying reasons for errant behavior. It generally ascribes some form of behavioral flaw as explaining either amateur or professional fraud in the conduct of research. However, satisfactory linkage of such personality defects to observed behavior is lacking. Anomie, as first described by Durkheim (1951), relates to Merton’s (1938) theory of anomie and social structure. It concerns a state of moral deregulation, typically found during periods of quick social change. Hackett (1994) argues that this environment characterizes contemporary US science, with all of its attendant specialization and innovation found in a setting of constantly changing organizational structure. Finally, there’s the theory of alienation, also a somewhat intuitive notion. Like the differentiation of work found elsewhere in society, the partitioning of scientific work through specialized or segmented roles tends to disconnect individuals from one another and from a sense of shared goals or purpose.

In the introduction to another Durkheim work (1957), Turner characterizes Durkheim's treatise on morals as follows:

Civic Morals is dominated by a political and social analysis of the malaise of modern society, which is the failure of intermediary institutions to provide a linkage between the

state and the individual. Professional ethics and professional associations, along with the development of a system of civic morals, are seen to be an antidote to this problem. (p xxxviii)

Durkheim's view of individual isolation in the workplace and amoral drift resulting from specialization of tasks still resonates today in the administrative environment. The contemporary dissolution of old models of networking and mentoring oftentimes leaves the worker to confront conflicted choices without peer reinforcement of good choices. Hence, explicit boundaries for acceptable conduct in the form of stated professional organizations and institutions alike have developed policies and procedures.

Explicit codes of conduct have been enacted by a variety of institutions. The college or university as employer has obligations to see that its employees, including the faculty, adheres to acceptable boundaries of behavior. Peer institutional examples are briefly summarized below.

Ohio State University, *Financial Conflict of Interest Policy for Faculty* (1998). Defines a conflict to exist "if financial interests or other opportunities for tangible personal benefit may exert a substantial and improper influence upon a faculty member or administrator's professional judgment..." The Conflict of Interest Policy Advisory Committee bases operational conformance on faculty self-reporting, oversight. Failure to comply (with self-reporting) carries the threat of a complaint filing under a separate university policy.

Pennsylvania State University, *Significant Financial Interest Disclosure for Sponsored Project's Investigators* (1998). A general section provides a definitive history of the statutory background (e.g., Bayh-Dole, Stevenson-Wydler, etc). Conflict is defined succinctly as "a divergence between an individual's private interests and his or her professional obligations to the University..." Companion policies include RA12-Technology Transfer and Entrepreneurial Activity (Faculty Research) and HR91-Conflict of Interest, the latter dealing with the general case of potential conflict for all University employees.

University of California-Los Angeles, *Disclosing Financial Interests and Managing Conflicts of Interest Related to Sponsored Projects* (1998). Implementation is based upon three related policies and procedures, *Conflict of Interest (Policy 660)*, *Disclosing Financial Interest in Private Sponsors of Research (Procedure 921.1)*, and *University of California (system) "Policy on Disclosure of Financial Interests and Management of Conflicts of Interest Related to Sponsored Projects," October 15, 1997*. This is obviously a two-tier policy implementation. Procedural history includes related State of California disclosure mandates. Definitional application is rooted in the term "financial interest." A multi-level review/oversight matrix is provided in the procedural document. Sanctions for non-compliance are referenced to the related *Policy of Faculty Conduct and the Administration of Discipline*.

University of North Carolina-Chapel Hill, *Policy on Conflicts of Interest and Commitment* (1999). The policy covers both faculty and non-faculty employees. It includes a prominent statement concerning the need for protection from adverse influences on students and other trainees. Disclosures must be submitted annually. A companion statement on *Conflicts of Commitment* attempts to delineate this related issue as follows:

It is the policy of the University that faculty and EPA non faculty employees are expected to devote their primary professional loyalty, time, and energy to their teaching, research, service, and, where applicable, patient care at the University. Accordingly, outside activities and financial interests must be arranged so as not to interfere with the primacy of these commitments. (p 2)

Moreover, conflicts at UNC are categorized as follows:

- Conflict of interest situations presumed to be acceptable.
- Conflict of interest situations presumably acceptable, but requiring one or more restrictions or oversight mechanisms.

-Conflict of interest situations presumed to be unacceptable, unless sufficient safeguards can be applied consistent with University policy limits. (Lowman, 2001)

University of Pittsburgh, *Conflict of Interest-Research/Teaching: Policy and Procedures for the University of Pittsburgh* (1996, revised 1997). The policy clearly indicates under "General Principles" that the existence of a conflict is not necessarily prohibited, but that conflicts must be properly disclosed, managed, or mitigated to alleviate any potential conflict of interest.

All of the above policy examples point out a paradox of considerable scale. In the collegial culture, where autonomy is highly valued, institutions of higher learning play reluctant overseer of the conduct of their respective faculty and staff. Nonetheless, where standard practices conform to stated policy, then institutional compliance results. The institutional environment in which corresponding policies *are* routinely practiced reflects successful efforts to engender a culture of uniform adherence to standards of practice.

2. COI in Financial Context

The adoption of corporate-style business practices in many facets of academic life has resulted in the increased appeal of financial incentives for faculty. These take the form of salary enhancement...equity relationships.... contributions to laboratories or programs...deferred income schemes; all because the modern university is viewed as an “economic engine” for the region it serves. Accordingly, institutions have become acutely concerned about the boundaries between personal business options of the faculty and faculty core responsibilities in teaching, advising, and learning. Oversight bodies engage in case-by-case review of the subtleties of business arrangements involving faculty. Seemingly, the boundary between acceptable and non-acceptable business activities fluctuates with the situation, constituency, and extent of individual involvement. Anderson (2001) reviews the literature pertaining to the evolving relationship between academic institutions and industrial sponsors. She describes academic industry relations “AIRs” in a variety of contexts that range from discrete, basic research projects to expansive

commercial and marketing partnerships that may include a gamut of business mechanisms. As reported, the perspective on these relationships ranges from one that is historically consistent with the academic mission to one that is radically new. Anderson and others focus on the emerging notion of “capitalized knowledge” to describe this arena of complex interactions.

A considerable body of literature has been devoted to the complexities of conflict of interest issues in the academic medical arena. In one review, Emanuel and Steiner (1995) consider the broad array of possible financial involvement, and how it may negatively impinge on objective patient care and unbiased teaching and research. Among their strongest recommendations is full disclosure of physicians’ involvement with firms concurrent with the conduct of clinical trials involving the same parties. This disclosure should be made an explicit provision of the patient’s informed consent document. These practices should be safeguarded by a system of internal and external data monitoring, to assure the most objective scientific assessment of results. In another review essay, Angell (2000) discussed the ubiquitous nature of academic medical center-industry relationships. So endemic, in fact, are these relationships that the author was hard-pressed to find colleagues with total impartiality, due to their own industrial ties. These relationships were enumerated as follows:

The ties between clinical researchers and industry include not only grant support, but also a host of other financial arrangements. Researchers serve as consultants to companies whose products they are studying, join advisory boards and speakers’ bureaus, enter into patent and royalty arrangements, agree to be the listed authors of articles ghostwritten by interested companies, promote drugs and devices at company-sponsored symposiums, and allow themselves to be plied with expensive gifts and trips to luxurious settings. Many also have equity interest in the companies. (p xxx)

Clearly, historical standards of objectivity and academic disinterestedness are compromised in these situations. The following section contrasts how two universities treat a particular facet of industry-university relationships, entrepreneurship, among faculty.

3. COI and Entrepreneurs

Managing the potential conflicts involves compromise between encouragement of faculty entrepreneurship, on the one hand, and insuring sufficient separation between academic and business interests on the other. As previously discussed, at the University of Pittsburgh its related policy on entrepreneurship prescribes certain limits of acceptable involvement by its faculty-entrepreneurs (1998). Flexibility is offered, so long as full disclosure is maintained. For example, as a transitional step, the Office of Technology Management provides a faculty member in the role of company founder business-planning expertise. However, once independent corporate status is achieved and operations begin, faculty members are strongly advised to step back to a consulting role based on a continuing contribution of their disciplinary expertise. This allows the business affairs to be conducted by capable third parties, but enables the faculty member as creator to retain a certain degree of intellectual ownership. At Pennsylvania State University, potential conflict pertaining to investment and/or equity interest is addressed in two ways. An institutional COI policy frames the issues and limits of acceptable involvement for the *university* as an organizational entity (2003). The individual COI policy addresses limits on the faculty or staff member's personal entrepreneurial involvement beyond which the activity is either oversighted if acceptable, or banned or restricted if excessive.

In a procedural review anthology Spece, Shimm, and Buchanan (1996) compile an array of essays on the conflicts encountered in clinical practice and research. Their clinical definition of the term is expressed as follows:

CIIs [**C**onflicts of **I**nterest] are either motives that caregivers have *and/or* situations in which we could reasonably think caregivers' responsibilities to observe, judge, and act according to the moral requirements of their role are or will be compromised to an unacceptable degree (p 33).

In an article within this volume entitled "An Introduction to Conflicts of Interest in Clinical Research" Spece and Shimm provide an overview of the particularly vexsome problems found in clinical research. In these circumstances, doctors are inherently conflicted between classic

Hippocratic oath obligations to the patient, and the economic interests of the drug or biotechnology firm providing the drug or device. Hence, doctors are simultaneously posing as caregiver and as business partner, in some cases realizing direct economic gain. These general conflict scenarios are made all the more poignant by the prospects that the medical interventions involved in the trial are the “last, best hope” of the critically ill patients involved in such studies. (pp. 361-376)

4. Administrative Roles

A clear distinction in authority and prestige distinguishes faculty from research administration staff in the research environment at research- intensive universities. Simply put, administrative staff purposes in this context revolve around providing a variety of customer services directly to or on behalf of the faculty member in their conduct of research and scholarship. Research administrators, whether housed in the program, department, school or other unit, provide an ‘institutional voice’ in their oversight of administrative and financial affairs, regardless of their relative position in the administrative reporting chain. Consequently, they are sometimes at odds with the interests of faculty, who autonomously view their discretion in matters of scholarship. Johnsrud and Rosser (1999) have studied related issues of staff *morale* for midlevel university administrators. Morale is defined as “a state of mind regarding one’s job, including satisfaction, commitment, loyalty, and sense of common purpose with respect to one’s work.” (p 124). When arrayed against the structural variables of opportunity, power, and majority/minority status, high morale status produces more job satisfaction. It follows that where institutions address such morale factors of their employees, adherence to good business practices is ubiquitous and institutional integrity benefits as a positive consequence.

A variety of laws and guidelines address both administrative limits in COI discretion, as well as forecasting the extent of exposure an institution may have in not being compliant with a particular regulatory provision. Organizational bodies that have implemented guidelines or statutes range from local units of government, to municipalities, states, the federal government, and a multitude of professional and civic organizations. A wide cross section of professional organizations have shown the initiative in promulgating ethics codes regarding "good practices"

in their respective areas of practice. Related educational efforts have gone forward to attune both the affected memberships and various stakeholders of the importance of incorporating these guidelines in actual practice. These efforts also demonstrate a proactive stance to the broader community and help to minimize potential liability. Representative organizations with ethics codes include the following list:

American Chemical Society, *The Chemist's Code of Conduct* (1994).

American Physical Society, *Guidelines for Professional Conduct* (1996).

American Society of Civil Engineers, *Code of Ethics* (1977).

International Committee of Medical Journal Editors, *Uniform Requirements for Manuscripts Submitted to Biomedical Journals* (1997).

National Science Foundation, *Conflict of Interest Policies* (1995).

Public Health Service, *Objectivity in Research* (1995).

(The emergence of the regulations for the above two federal agencies mandated organizational response by the affected universities, and formalized policy and practice documentation that had previously been informal and unevenly applied. See discussion elsewhere in this section).

University of Pittsburgh, *Conflict of Interest-Research/Teaching: Policy and Procedures for the University of Pittsburgh* (1996, revised 2003).

However, as explained below, the principal directive concerning conflict of interest precautions for participants in the academic research environment emanates from the U.S. government. This involves a long history of executive authority exercised by federal governmental units that have traditionally supported academic research. A complex array of law and regulatory guidelines that underwrites the agencies' authority has subsequently been implemented to assure proper conduct by the performers in higher education who use federal taxpayer funds. This history is explained in the following section.

5. COI in Legal Context

The federal statutory authority pertaining to conflict of interests has two components. The U. S. Public Health Service regulations, issued in July 1995, are entitled Responsibility of Applicants for Promoting Objectivity in Research. Essentially, they require institutional compliance in three (3) areas:

- Establishing and maintaining an enforced policy on financial COI
- Informing research investigator's and other related parties of the policy, their respective obligations, and federal regulations
- Reporting to the appropriate PHS office any known violations, including disposition as to conflicts managed, reduced, or eliminated

The corresponding National Science Foundation regulations, "Investigator Financial Disclosure Policy," reference *Federal Register* July 11, 1995. Key features include

- Disclosure of significant financial interests that "would reasonably appear to be affected" by the activities funded or proposed for funding by the NSF
- Dollar threshold for reporting of significant outside income at \$10,000
- Concept that institutions must indicate reported conflicts of interest "will be managed, reduced or eliminated prior to the institution's expenditure of any funds under the award."

A survey conducted during 2003-2004 of 125 accredited medical schools reports 95% of respondent institutions had definitive COI policies in place (Ehringhaus & Korn, 2004). The survey reported by the Association of American Medical Colleges (AAMC) compiled responses from 82% of the 125 medical schools targeted. Further, 95% of responding schools utilized the federal threshold of \$10,000 or lower to define "a significant financial interest." Interestingly, 64% of the respondents reported tougher financial thresholds than the federal guidelines, including in their assessment such financial components as corporate equity or nonroyalty payments (Mangan, 2004).

Increasing stringency with regard to human subject protection has also forced the additional burden of financial interest review on local Institutional Review Boards (IRBs) in their oversight of clinical protocols. From the standpoint of historical administrative jurisdiction, some experts term this trend in expanded oversight “mission creep.” Some of the very latest developments include attention to “independent” IRB mechanisms not tied to the parent organization, and the emerging trend to seek accreditation for IRBs (Roehr, 2005). Understanding the boundary conditions that apply to such circumstances poses extreme difficulties, given the array of overlapping if not contradictory guidelines issued by the cognizant agencies charged with various aspects of human subject oversight. In addition to the traditional NIH purview, other federal agencies principally involved include the Food and Drug Administration (FDA) and the Office for Human Research Protections (OHRP).

More recently, the Department of Health and Human Services (DHHS), NIH’s “parent” organization, has been promulgating intramural COI rules concerning ethical conduct and financial disclosure. These guidelines would impose stricter requirements for NIH staff regarding outside interests than the 1995 rules that were imposed on the external grantee community. As of this writing, it is unclear in what shape the final rules will be implemented (Rosenberg, 2005).

Keen public interest in the balance between traditional academic mission and industry partnerships continues apace. A very recent editorial appearing in the *Baltimore Sun* explores once again the competing interests of public trust and commercial entrepreneurship that exemplify biomedical research relations (Baer, 2005). The story details the vexing challenges of oversight required under conflict of interest statutes, as administered at several Baltimore area academic-medical centers. Numerous challenges loom in an environment of evolving relationships that defy set boundary conditions. Research institutions are obligated to maintain responsible conflict management systems while not deterring the original goal of promoting research and clinical practice advancement.

F. NEW PARADIGMS OF CONDUCT

1. Faculty and individual autonomy

Certain explicit rights or implied authority, versus certain obligations and responsibilities balances the individual faculty member's professional discretion. The University of Pittsburgh codifies these distinctions in policy 11-01-02, *Rights, Roles and Responsibilities of Principal Investigators (1992)*. Some key features include a) the concept that the existence of a conflict is not necessarily prohibited; b) that all relationships with potential for conflict of interest need to be disclosed; and, c) that sanctions must be imposed commensurate with the wrong-doing, to reinforce proper behaviors.

Once misbehavior has been detected and the actors identified, the institution must impose a penalty or sanction for the misdeed. Sanctions are inherently one of two types. In the first, *collective sanctions* are utilized. They are defined as "systems where rewards or punishments extend not only to the actor but to the actor's group." Heckathorn, (1990)

In the second, deemed *exogenous compliance norms* a form of peer group monitoring characterizes the behavior (p.366). This term is used to explain the reaction of a peer group to compliance or punishment through its exercise of a secondary set of sanctions against its members. Sometimes this secondary sanctioning has positive effect, to limit or mitigate excessive or egregious behavior. At other times, the group struggles with the source of external control, resulting in ambiguous responses.

2. Institutional Stewardship

Corresponding to the professional latitude that may be exercised by its faculty and staff are the obligations of institutional stewardship imposed on the university as the employer and legally responsible entity. Stewardship as broadly defined includes the concepts of institutional accountability for fiscal affairs as well as for technical project performance NIH, (1998). Laney (1990) issued a rallying cry for stewardship in higher education practice:

We can begin by recalling that we are heirs of a tradition that found in higher education a high moral calling. And we can remind ourselves that part of what we are called to is *stewardship* (italics added) of our institutions as a dwelling place for the human spirit—a habitation where faculty members, administrators, and students alike can become habituated to a vision of the good society by inhabiting a good community of scholars. (p 59)

Certainly, the context of stewardship for research management entails responsibility on behalf of public and private sponsors alike. In the current climate, stewardship must be articulated equally well both to the institutional employees and to the organization's external stakeholders.

While the bulk of compliance efforts have focused on disclosure of financial interests by authors of peer-reviewed journals, some attention has also been paid to increasing the disclosure of financial interests by book authors as well (Guterman, 2002). *Management* of individual conflicts of interest is the watchword. Each institution takes various approaches, but some aspects are generalized. *Disclosure* is the first principal. Simply declaring the existence and nature of a relationship with the potential for personal gain exposes the issues. Management of the conflict may engage specific policy requirement limiting the extent of financial involvement of university faculty or staff as principals, setting ceilings on the extent of equity retained as a faculty member, or placing other explicit dollar limits on persona remuneration. As a behavioral solution, Counelis describes such tactics as “prosocial,” (p 81) in that they encourage individual conformance to stated policies and guidelines pertaining to COI. *Institutional interventions* may include the individual's mandated withdrawal from the activity, appointment of outside business

managers, faculty leave, and the appointment of oversight panel to monitor reporting and business developments vis-à-vis university interests. Sanctions for excessive or improper behaviors may include cessation of involvement in the activity, leave without pay, faculty suspension, the levy of fines, and related. In addition, if taxpayer funds are involved in conflict of interest misbehavior, other civil and criminal penalties may apply.

3. Taxpayer/public Sector Interests; Public Trust

Perceptions of various segments of the general public contribute to the overall dynamic of conflict of interest issues. Taxpayers certainly feel a vested interest in the conduct of both public and quasi-public institutions. Overall organizational conduct shapes that public perception. Maintaining a positive public persona is a difficult challenge for the modern university. Institutions that have been proactive in this regard feature include Stanford University (2000) and the University of Rochester (2000).

4. Boundaries between Acceptable Conduct and Institutional Liability

A continuum describes the wide array of individual vs. institutional choices and consequences. The faculty member, imbued with a sense of self-authority and disciplinary specialization, views it within his or her province to pursue "truth." This demonstration of scholarship should not ideally be interrupted or controlled by external administrative conditions. Conversely, however, the institution as legal employer is charged with upholding certain business practices.

Olswang and Lee (1984) explored the dynamics between faculty freedom and institutional accountability. Their text was part of an American Society for the Advancement of Higher Education (ASHE) series framing the contexts and operating difficulties under "academic freedom." Chapters dealt with the following topics:

- Academic freedom & tenure
- Institutional responsibilities and accountabilities
- Institutional regulation of faculty freedom

-Faculty performance, accountability, and periodic review

The section most relevant to conflict of interest issues treated institutional regulation and faculty freedom. It concerned the limits of institutional tolerance of individual freedom vis-à-vis certain behaviors. Case law was cited involving instances of faculty insubordination. The authors reflected, "It is the institution that defines what is in conformance with the education process." (p 37).

The discretion of faculty to pursue consulting opportunities is another area where potential conflict needs to be managed. Boyer and Lewis (1984) examined the dynamics of faculty consulting over twenty years ago, as the phenomenon of industry-university partnerships was just beginning to flourish. Based on a quantitative survey, they found, overall, "that faculty consulting has been overestimated and underappreciated." (p 656). At the time of the survey only about 20% of science and engineering faculty and only 12% of humanities faculty at four-year institutions regularly devoted time to consulting. These proportions have no doubt increased in the intervening years. Still, it suggests that institutional risks due to faculty consulting engagements may be less acute than in other areas. In a more recent study, Blumenthal et al (1996) reported on the extent of life sciences faculty involved with industry. Their survey of the top 50 university NIH recipient institutions disclosed that 28% of faculties from these disciplines receive support from industry. The other 72% are ostensibly not receiving industrial support, or did not respond. However, the surveyed faculty reported greater incidence of trade secrecy issues in publication, and subtle commercial influences in the choice of research publication (60%); prohibited passing the gift to a third party, and that the gift only be used for designated purposes (59%); 32% required donor's prepublication review; another 30% reported that companies expected testing of their products; and, 19% reported that donors expected to retain all intellectual property ownership of any inventions or discoveries resulting from the funded studies.

Professional staffs at most institutions of higher education are governed by explicit conflict of interest policies, as already illustrated. Such policies, however, cannot serve as a bulletproof antidote to the temptations of financial gain. Good mentoring is key to the establishment of a

culture of honesty and integrity in the workplace. Consequently, human resources tools and orientations need to explicitly address these aspects of behavior. Workshops, panel discussions, and other forums can serve to reinforce a culture of “good practices” among employees:

Reinforcement of “right” conduct among university faculty and staff, then, is an ongoing process that must be continually inculcated in each employee. Hackett (1990) summarizes positive attributes of appropriate conduct to include the following “value clusters:” (1) competence, skill, excellence; (2) justice, fairness, equity, equality; (3) liberty, freedom, self-determination; and (4) loyalty, fealty, service to the state. (p 269)

Of all the issues portrayed, time commitments arguably pose conflicted choice dilemmas that are at once most subtle and ubiquitous. The “24/7” academic lifestyles that are a reality of professional activity in contemporary higher education dilute the individual’s fealty to any one organization. From the traditional workplace perspective, then, mechanisms that reinforce appropriate behaviors in the peer environment offer some encouragement. The challenge for university leadership is to find the right balance between positive reinforcement of values conferring high social integrity, versus a dependence upon rule-based sanctions for misbehavior.

An attitudinal/perceptual map is hypothesized to explain the relationships among the various *college and university* "actors." This may be portrayed as follows:

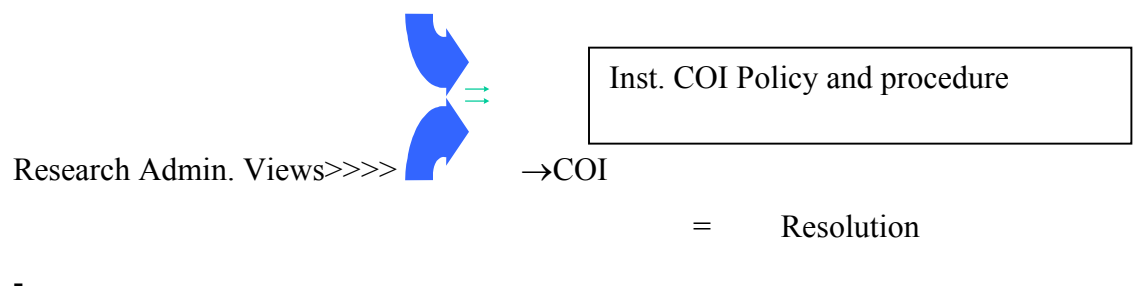


Figure 4. Individual-↔-Institutional Interface

Dependent upon the various factors that have been discussed, the research administrator’s view of specific COI situations is shaped in turn by a personal sense of ethics, reinforced by both

institutional and governmental guidelines and policies concerning acceptable practices. Hopefully, this intersection of practice, ethics, and documented standards results in positive institutional resolution of the COI scenario.

Based on the complexities of the underlying concepts of social behavior that have been reviewed, this study limits its focus to an exploration of attitudes and perceptions among college and university based faculty and staff directly involved in the conduct or support of research. Gender issues, student performance issues, instructional commitments, and myriad other possible components of the university social environment will not be the focus of empirical study.

G. SUMMARY

In the ensuing section, the methodology employed poses scenarios involving real or perceived conflict of interest. It is postulated that these scenarios engage the individual's choices based on the cultural, professional and ethical factors discussed. The individual's choice(s) are then conformed by the institution's organizational processes that safeguard its obligations to assure proper conduct. This dynamic may be simply outlined by the following simplistic scheme.

Types of COI Activity:

- I Does the scenario involve acceptable employee COI?
- II If an acceptable employee COI situation exists, what controls or limits are imposed?
- III Is the activity of the employee not acceptable COI?

In the first case, activities that may place the employee in conflict are nevertheless presumed to be acceptable. An example might include a staff member who earns an additional 20% salary moonlighting for a faculty member's research project on his/her weekends. In the second case, the conflict situation involves a situation that needs controls to be imposed. An example might be the faculty member receiving substantial book royalties from textbook sales of mandated course

texts. As a solution, such royalties may need to be placed in escrow for the duration of the course, or devoted to the dean's general fund. The third scenario would involve an obvious conflict where the outcome, if left unremedied, exploits or disadvantages others. An example might be the faculty member utilizing unit staff and resources to conduct a private consulting operation.

This review has encompassed a range of divergent concepts that provide context and a framework for understanding the nexus of real or potential conflict between the individual and the higher education institution as employer. Underlying constructs from sociology and ethical theory help explain the conduct of individuals in the academic workplace. Modern organizational contexts were next explored, that were delineated by a description of sector relationships that explain the genesis of contemporary conflict of interest issues. A scheme for categorizing the array of specific COI issues (e.g., financial, administrative, and legal) was presented, as a means, albeit somewhat arbitrary, of segregating the myriad factors that contribute to conflict development in the academic setting.

This literature review was concluded with the endorsement of hybrid approaches that accommodate the culture of traditional academic autonomy, while enabling the means for institutional oversight of real or potential conflict dilemmas. The suggestions include the need to determine explicit boundaries that clearly define egregious behaviors, and the consequential application of sanctions for misconduct that must follow. Over-reliance on rule-based systems is not recommended, however. Rather, the continuous inculcation of peer-based, culturally reinforced adherence to integrity and full disclosure of relationships will help to insure responsibility for COI management at every level of the organizational reporting chain.

This literature review then sets the stage for the empirical focus of this study, which examines the behavioral perceptions of research administrators who are employed by a representative spectrum of research-intensive universities and colleges. Measurement of research administrators' attitudes toward conflicted situations in the research environment will serve as a sample environment in which to gage the impact of the theories and social constructs that have been reviewed.

IV. METHODS AND INSTITUTIONAL PROFILES

A. METHODOLOGICAL PARADIGM

The plan of research followed the empirical or positivist research paradigm. Survey research methods were employed. The survey instrument consisted of query items that addressed the following questions:

-How are Conflict of Interest (COI) behaviors perceived by research administrators at major research universities?

- How are conflict of commitment (COC) situations perceived by research administrators at major research universities?

-How are perceptions of conflict issues correlated with each source of sponsored funding?

-How are perceptions of conflict issues correlated with the total amount of sponsored funding?

B. TARGET POPULATION

The response group involved research administrators at research extensive and intensive universities located within Region II of the National Council of Research Administrators (NCURA). This geographic area, centered in the Mid-Atlantic region of the United States, comprises the states of New York, Pennsylvania, New Jersey, Maryland, Delaware, West Virginia and the District of Columbia. NCURA was founded in 1959 to address common interests pertaining to research administration shared primarily by administrative staffs in colleges and universities where funded research was beginning to receive substantial support. Approximately 1200 individuals comprise the regional membership, out of a total organizational membership currently exceeding 4000. An electronic copy of the regional membership list was obtained from the executive offices of the organization (see *Survey Methodology*). Eligibility for survey participation was ascertained by screening all members of Region II cross-referenced by home institution to confirm that the member's college or university meets the definition of "research extensive/intensive," as defined by the Carnegie classification scheme. Several different characteristics were to be explored:

- Distinction by Carnegie classification as either "research extensive" or "research intensive" as previously defined.
- Differentiation of member status by selection of top 5 individuals per eligible institution based on title.
- Differentiation by distribution of sponsored funding received at each research extensive/intensive institution.

C. POPULATION

The sampling frame consisted of the entire NCURA membership drawn from institutions located in Region II that are termed as either “research extensive” or “research intensive” as defined by the Carnegie classification scheme. As discussed, members must belong to either a “research extensive” or “research intensive” university or college as defined by the Carnegie classification scheme. Further, to control survey size, only the senior five titled eligible individual members from each qualified institution were surveyed. All of these criteria were verified with an analysis of the mailing list.

D. PILOT STUDY

To explore the premises of the theoretical model of conflict and specific classes of conflict of interest relationships embedded within, a pilot study was developed, evaluated and subsequently conducted in the spring of 1999. See Appendix. The pilot survey instrument comprised a self-administered questionnaire composed of fifteen (15) story problems or vignettes dealing with hypothetical conflict of interest situations. It was mailed to a representative but non-randomly selected cross-section of university administrative staff directly involved in support of research activities.

From a total pilot mailing $n=40$, 28 questionnaires were returned within an approximate 3-week period, representing a 70% overall response rate. Each of the COI question items was structured in a closed-ended format. Participants responded to items based on a 5-point Likert scale, as follows: definitely not=1; probably not=2; undecided/not sure=3; probably =4; definitely = 5. Individual questionnaires were coded to assure anonymity. Arithmetic means and standard

deviation scores were calculated. No further tests of statistical reliability or validity were performed, owing to the relatively small number of returns for this pilot study.

The preliminary results obtained were grouped for those question scenarios most closely aligned to one of the following situations: describing prohibitive conduct or activities; involving management intervention; posing the perception of conflict situations; and, describing conflict of commitment scenarios. The results obtained reflected uniform reaction to prohibited scenarios, with strong ($x > 4$) Likert values; for management scenarios, generally strong Likert values were also obtained. For perceptual scenarios and conflict of commitment scenarios, however, values obtained were less homogeneous and far less conclusive. Nonetheless, the pilot study supported the premise and applicable methodology for development into full-scale study.

E. SURVEY METHODOLOGY

A web-based self-administered questionnaire was utilized as the primary survey tool. Utilization of survey software, OS III, was gained through the cooperation of the University Of Pittsburgh School Of Engineering. A computerized mail list of all Region II members was obtained from the executive offices of NCURA. As discussed, the membership was sorted by institutional affiliation per the criteria of either “research extensive” or “research intensive.” The OS III software enabled anonymous follow-up to non-respondents using e-mail reminders. All responses were coded anonymously, and all communications and follow-up was conducted by survey staff in the School of Engineering

The revised questionnaire and instructions to respondents comprising the protocol was submitted to the appropriate Institutional Review Board for social science exempt-class human subject approval. (This approval had been obtained in December 2003). Individual responses were voluntary and treated anonymously. The instructions for respondents included a necessary disclosure of the author's role and position at the University of Pittsburgh.

Each battery of questions included closed-ended questions that pose ethical scenarios to the respondent depicting actual or potential conflict of interest or conflict of commitment. Substantiation for this distinction in conflict scenarios was delineated by Campbell and Slaughter (1999) who denoted commitment issues as “*that point of tension on [conflict issues] over loyalty to the institution rather than over financial gain.*” Pre-existing survey items from third party sources were not utilized. Consequently, copyright permission was not entailed. Question items designed by the author have been reviewed and their validity explored through the use of a peer focus group, to assure clarity and lessen the chance of respondent misinterpretation. Focus group members included a senior research administrator and social psychologist from the University of North Carolina, the Research Integrity Officer (and former dean) from the University of Pittsburgh, and a senior departmental staff member who also functioned as assistant chairperson of a science department. Refinements offered by the focus group included clarification of ambiguous scenarios, improvements in word usage, and suggestion of scenarios describing more mundane conflict situations.

By definition, conflict situations entail ambiguity. For example, no survey is completely immune to the order effect of the sequence of questions or story vignettes, or from the possible “carry-over effect” (Sniderman & Grob, 1996) based on the impression of a previous vignette impacting the respondent’s view of a succeeding question. Nevertheless, sentence construction of individual test items was scrutinized so as to avoid construct bias and minimize skewed responses. Hoinville and Jowell (1978), Moser (1958) The respondent will be asked to categorize his/her reaction to the conflicted situation described in each test item. Each test item will be based on a Likert scale, represented by a 1 to 5 rating, with scaling as follows: 1=Definitively Not; 2=Probably not; 3=Undecided/Not Sure; 4=Probably; 5=Definitively

Hence, on this five-point continuum scale, a score of 3 is presumed to be undecided or value neutral. Employee classification, institutional culture, and faculty preference question sections were intended to enable some delineation of respondent characteristics and disposition towards conflict issues. Unfortunately, too few responses were obtained from these sections of the questionnaire to support subsequent statistical analysis.

Follow-up techniques were employed to assure satisfactory response rates. This consisted of follow-up e-mail messages sent two (2) weeks after electronic mailing to the entire target population. Final reminder e-mail with a link to another copy of the survey were disseminated to remaining non-respondents approximately four (4) weeks from the initial electronic solicitation.

F. TARGET PROFILES

Research intensive and research extensive universities and colleges as previously defined by the Carnegie classification scheme were selected from the contiguous states of the Mid- Atlantic region of the National Council of University Research Administrators (NCURA). As described earlier, this region includes the states of Pennsylvania, New York, New Jersey, Delaware, Maryland, West Virginia, and the District of Columbia. Research- intensive institutions confer at least 10 doctorates per year in least three (3) or more fields, while research extensive institutions confer at least fifty (50) doctorates annually in ten (10) or more disciplines. Table 1 depicts the targeted research- intensive institutions, per the coded institutions listed. (See Appendix 3 for identification of respondent institutions).

Table 1. Targeted Research Intensive Institutions.

INSTITUTION CODE	#Targeted members	NCURA	# Respondents
Institution A	1		0
Institution B	2		2
Institution C	4		0
Institution D	1		0
Institution E	1		0
Institution F	2		2
Institution G	0		0
Institution H	2		0
Institution I	1		0
Institution J	1		0
Institution K	1		0
Institution L	5		5
Institution M	3		0
Institution N	0		0
Institution O	3		3
Institution P	3		0
Institution Q	5		5
Institution R	0		0
Institution S	0		0
Totals (15 institutions)	35		17

From the list of 19 targeted research- intensive institutions, 15 had NCURA representatives. Hence, a total of thirty-five (35) individuals received e-mailings, as indicated in the second column. However, responses were only received from twelve (12) individuals at five (5) institutions (third column), representing response rates of 26% for institutions and 49% for individuals, respectively.

The table of targeted research extensive organizations is depicted in Table 2.

Table 2. Targeted Research Extensive Institutions.

INSTITUTION CODE	# Targeted NCURA members	# Overall responses	# Responses Conflict Q Items
Institution AA	5	NR	NR
Institution BB	5	1	1
Institution CC	3	3	3
Institution DD	5	5	4
Institution EE	0	-	-
Institution FF	5	5	2
Institution GG	1	1	-
Institution HH	2	2	2
Institution II	3	NR	NR
Institution JJ	5	5	2
Institution KK	1	1	1
Institution LL	5	5	2
Institution MM	5	5	2
Institution NN	5	5	2
Institution OO	5	5	2
Institution PP	5	1	1
Institution QQ	4	4	1
Institution RR	3	NR	NR
Institution SS	5	5	1
Institution TT	5	1	1
Institution UU	3	NR	NR
Institution VV	5	2	2
Institution WW	5	5	3
Institution XX	5	4	1
Institution YY	5		
Institution ZZ	5	4	1
Institution AB	5	NR	NR
Institution AC	5	5	3
Institution AD	5	4	1
Institution AE	5	NR	NR
Institution AF	0	-	-
Totals (31)	125	78	38

From the ranks of the Research Extensive group, two institutions, Columbia Teachers College and Yeshiva University did not have NCURA representation. Therefore, this left 29 of 31 targeted institutions in this group, with a total of 125 targeted individuals, as shown in the second column. Additionally, the no response “NR” designation for American, GWU, SUNY-Albany, SUNY Stony Brook, U. Pennsylvania, and West Virginia U, respectively, denote the fact that no respondents from these institutions answered Section IV of the survey.

From each of the institutions a maximum of five (5) respondents in research administration positions were selected to receive the e-survey. From 29 eligible institutions, twenty-two (22) organizations responded, for an *organizational* response rate of 76%. As shown in column three, a total of 78 of 125 targeted individuals returned surveys, for an overall *individual* response rate of 62%. Discounting partial returns, column four shows that 38 of 125 targeted individuals completed all question items from the conflict vignette section (Section IV), for a question item response rate of 30%.

G. INSTITUTIONAL FUNDING PROFILES

In order to address the research questions, extramural funding information was compiled for the surveyed institutions. This secondary data was obtained from the National Science Foundation, Division of Science Resources Statistics (SRS) website (NSF, 2001). Data corresponds to the federal funding *obligations* for the latest year available as of calendar 2003, Federal Fiscal Year 2001. All values shown in Tables 3 and 4 are listed in millions (M) of dollars.

Table 3. Federal FY 2001 Funding Obligations for Surveyed Doctoral/Research Universities-Intensive.*

INSTITUTION	Dept. Health & Human Services DHHS (\$M)	National Science Foundation (NSF)	Dept. of Defense (DOD)	Other Federal Agencies**
<i>U. Maryland-Baltimore</i>	99.6	1.0	1.7	8.0
NJ Inst. Technology	0.2	2.7	1.2	3.0
SUNY-College Env.Sci. & Forestry	0	0.9	0	1.3
<i>IUP</i>	<i>0</i>	<i>1.2</i>	<i>0</i>	<i>0.6</i>
Wilmington College	0.1	0	0	0
Seton Hall U	1.4	0.3	0	1.3
Stevens Inst. Tech	0	1.0	8.4	0.7
Adelphi U	0	0.1	0	0.9
<i>Clarkson U</i>	<i>0.1</i>	<i>4.0</i>	<i>0.2</i>	<i>1.2</i>
Hofstra U	0	0.6	0.1	0.2
New School U	0.2	0.2	0	0
Pace U-NY campus	0.4	0.4	0	0.5
Polytechnic U	0	3.4	1.5	0.2
<i>Rockefeller U</i>	<i>64.1</i>	<i>0.7</i>	<i>0.7</i>	<i>1.2</i>
<i>St. John's U</i>	<i>1.3</i>	<i>0.1</i>	<i>0</i>	<i>0</i>
Drexel U	2.9	6.2	7.8	2.9
Duquesne U	1.5	0.8	0	0.1
MCP Hahnemann U.	0.6	0.2	0	0.1
Widener U	0.1	0.1	0	0

*\$ Figures, in millions, as independently reported by federal agencies for Federal FY 2001.

** "Other" includes USDA, Dept. Commerce, Dept. Education, EPA, and NASA. See text p. 73

Institutions indicated in **BOLD italics** comprised the limited number of respondents from this group.

**Table 4. Federal FY 2001 Funding Obligations for Surveyed
Doctoral/Research Universities-Extensive.***

Public INSTITUTION	DHHS (\$M)	NSF	DOD	Other Fed
U. Delaware	14.9	14.5	6.9	18.8
U. Maryland- Baltimore County	6.3	7.1	2.3	13.8
U. Maryland- College Park	18.0	40.7	18.3	72.2
Rutgers	39.7	26.5	7.3	22.5
CUNY-Grad. Center	0.7	0.6	0	0
SUNY-Albany	7.1	2.9	0.3	3.1
SUNY- Binghamton	2.5	1.9	0.1	1.4
SUNY-Buffalo	43.5	12.7	0.8	1.5
SUNY-Stony Brook	61.7	24.2	8.0	11.6
Penn State	80.9	35.4	102.5	23.3
Temple	40.1	2.9	0.8	1.8
U. Pittsburgh	274.1	13.8	15.7	8.1
West Virginia U.	12.7	0.0	3.3	22.0
Private INSTITUTION				
American U.	0.3	0.9	0	0.4
Catholic U.	2.1	1.0	0.8	3.4
George Washington U.	58.6	2.8	5.4	9.4
Georgetown U.	66.1	1.8	25.4	1.4
Howard U.	24.1	3.4	4.3	4.1
Johns Hopkins U.	472.9	24.8	341.2	153.6#
Princeton U.	33.3	28.7	16.8	15.1
Columbia U.	249.8	59.6	6.3	32.6
Cornell U.	151.2	84.7	20.4	58.8
Fordham U	2.0	0.1	0	0.1
NYU	119.3	15.1	6.1	10.4
Syracuse U.	6.9	7.4	1.8	7.4
Columbia Teachers College	2.7	0.8	0	1.0
U. Rochester	118.2	6.9		46.1
Yeshiva U.	115.7	0.4		1.6
Carnegie Mellon U.	11.9	39.5		45.3
Lehigh U.	1.9	6.5		7.7
U. Pennsylvania	359.7	23.0		29.3

* \$ Figures, in millions, as independently reported by federal agencies for Federal FY 2001.

#JHU operates government-owned facilities that are included in totals.

Institutions in **BOLD** (n=23) provided responses from the targeted research extensive group.

V. FINDINGS

A. UNIVERSITY/LIKERT SCORE MATRICES

This chapter includes presentation of the raw data returns from respondents at their respective institutions pertaining to the twenty question items within the survey that posed conflicted research scenarios. Next, statistical analyses are presented concerning relationships between dependent and independent variables measured. Finally, results are grouped corresponding to each of the four research questions posed in the study.

Per the survey document described elsewhere, the twenty (20) question items posing research scenarios were sub-grouped as either representing conflict of commitment (COC) or conflict of interest (COI) situations. COC items numbered eight (8) and were arbitrarily assigned the designation “S1” for statistical analysis purposes. Tabulated scores pertaining to the conflict of commitment group appears in Table 5, with question items for each group designated by the “Q” column headings.

In order to preserve the anonymity of individual respondents, raw data scores are presented in the tables that follow arrayed corresponding to coded institutional entities. The index to the coded institutions is presented as Appendix 3.

Table 5. Average Likert values for Conflict of Commitment (COC) questions.

University Code	Q27	Q30	Q36	Q37	Q40	Q41	Q43	Q44	Total	Average
Institution BB	N/R	NR	NR	NR	NR	NR	NR	NR	0	0
Institution CC	3.0	3.0	1.0	5.0	2.0	5.0	3.0	4.0	26.0	3.2
Institution B	2.0	NR	NR	NR	NR	NR	NR	NR	2.0	2.0
Institution DD	2.7	4.0	3.0	4.7	2.5	4.5	2.5	2.2	26.1	3.3
Institution FF	2.0	2.0	1.0	5.0	2.0	4.0	2.0	4.0	22.0	2.7
Institution HH	1.0	2.0	2.0	5.0	4.0	1.0	2.0	3.0	20.0	2.5
Institution JJ	4.0	5.0	2.0	5.0	2.0	5.0	2.0	2.0	27.0	3.4
Institution KK	4.0	3.0	3.0	3.0	4.0	5.0	3.0	2.0	27.0	3.4
Institution F	3.0	4.0	1.0	5.0	4.0	5.0	2.0	4.0	28.0	3.5
Institution LL	3.5	4.5	1.0	5.0	3.0	5.0	3.0	4.5	29.5	3.7
InstitutionMM	3.5	3.0	1.5	4.5	4.0	4.0	1.5	4.5	26.5	3.3
Institution NN	3.0	4.0	2.0	5.0	3.0	5.0	2.0	3.0	27.0	3.4
Institution OO	1.5	4.5	1.0	4.0	3.5	4.0	3.0	2.5	24.0	3.0
Institution L	3.0	3.5	2.0	4.5	2.0	4.0	3.0	2.0	24.0	3.0
Institution QQ	3.0	3.0	1.0	5.0	NR	NR	NR	NR	12.0	3.0
Institution O	2.0	2.5	1.0	5.0	1.0	5.0	2.0	2.0	20.5	2.6
Institution SS	3.0	2.0	3.0	5.0	4.0	3.0	3.0	3.0	26.0	3.2
Institution TT	5.0	5.0	2.0	5.0	4.0	5.0	5.0	5.0	36.0	4.5
Institution VV	1.0	3.0	1.0	5.0	3.0	4.0	3.0	3.0	23.0	2.9
Institution WW	3.0	4.0	3.0	4.0	3.0	3.0	2.0	4.0	26.0	3.2
Institution XX	N/R	NR	NR	NR	NR	NR	NR	NR	0	0
Institution Q	N/R	4.7	2.0	5.0	3.0	4.0	2.7	3.7	25.1	3.2
Institution ZZ	2.0	5.0	NR	NR	NR	NR	NR	NR	7.0	3.5
Institution AC	3.3	3.3	2.3	4.7	3.3	3.7	2.7	3.5	26.8	3.3
Institution AD	2.0	5.0	3.0	3.0	4.0	5.0	2.0	4.0	28.0	3.5

Conflict of Interest (COI) response items pertain to the twelve (12) numbered question items identified and tabulated in Table 6.

Table 6. Average Likert values and funding obligations for Conflict of Interest (COI) questions.

University Code	Q25	Q26	Q28	Q29	Q31	Q32	Q33	Q34	Q35	Q38	Q39	Q42	Total	Avg.
Institution BB	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0	0
Institution CC	5.0	5.0	5.0	4.0	5.0	5.0	4.0	3.0	5.0	1.0	4.0	3.0	49.0	4.1
Institution B	5.0	4.0	4.0	NR	NR	NR	NR	5.0	NR	NR	NR	NR	18.0	4.5
Institution DD	5.0	4.7	4.7	3.2	4.2	5.0	5.0	4.7	5.0	2.7	3.7	3.2	51.1	4.2
Institution FF	5.0	5.0	4.0	2.0	4.0	5.0	5.0	2.0	4.0	4.0	4.0	4.0	48.0	4.0
Institution HH	5.0	5.0	5.0	2.0	5.0	5.0	5.0	5.0	5.0	1.0	4.0	5.0	52.0	4.3
Institution JJ	5.0	5.0	5.0	3.0	4.0	5.0	5.0	3.0	4.0	4.0	4.0	3.0	50.0	4.2
Institution KK	5.0	5.0	4.0	2.0	4.0	5.0	5.0	5.0	5.0	4.0	2.0	3.0	49.0	4.1
Institution F	5.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	1.0	5.0	3.0	53.0	4.2
Institution LL	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.5	3.5	3.5	4.5	3.5	52.5	4.4
InstitutionMM	5.0	4.5	5.0	3.0	3.5	5.0	4.0	2.5	4.0	1.5	2.0	4.5	44.5	3.7
Institution NN	5.0	4.0	4.0	4.0	3.0	5.0	5.0	4.0	4.0	4.0	3.0	3.0	48.0	4.0
Institution OO	5.0	5.0	4.5	3.0	4.5	5.0	4.0	4.0	5.0	2.0	3.0	4.0	49.0	4.1
Institution PP	5.0	5.0	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	4.0	4.7
Institution L	NR	NR	4.5	3.0	5.0	5.0	5.0	4.5	5.0	2.0	3.0	4.0	41.0	4.1
Institution QQ	5.0	5.0	5.0	5.0	3.0	5.0	5.0	3.0	4.0	2.0	2.0	NR	44.0	4.0
Institution O	5.0	3.5	4.5	3.0	3.5	5.0	5.0	3.0	5.0	4.0	3.0	4.0	48.5	4.0
Institution SS	5.0	4.0	4.0	3.0	2.0	4.0	3.0	2.0	2.0	2.0	3.0	4.0	38.0	3.2
Institution TT	5.0	5.0	5.0	4.0	4.0	5.0	5.0	3.0	5.0	4.0	2.0	3.0	50.0	4.2
Institution VV	5.0	3.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	35.0	3.5
Institution WW	5.0	4.0	3.0	3.0	3.0	5.0	4.0	4.0	4.0	1.0	4.0	4.0	44.0	3.7
Institution XX	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0	0
Institution Q	NR	NR	5.0	3.0	4.3	5.0	5.0	2.7	5.0	3.3	4.0	4.3	41.6	4.2
Institution ZZ	5.0	5.0	3.0	4.0	5.0	5.0	5.0	2.7	4.0	NR	NR	NR	38.7	4.3
Institution AC	5.0	4.0	4.0	2.7	3.7	3.7	4.3	4.0	3.7	2.5	3.7	2.3	43.6	3.6
Institution AD	5.0	5.0	4.0	2.0	1.0	5.0	4.0	1.0	2.0	2.0	2.0	3.0	36.0	3.0

B. STATISTICAL ANALYSIS

Data were compiled with the assistance of graduate student staff at the Statistical Consulting Center, Department of Statistics University of Pittsburgh [see Acknowledgements]. *Minitab* software was utilized, as well as *SAS* for the various statistical tests. Several statistical models were employed to ascertain the extent of relationships between average value of respondents' scores for either conflict of commitment or conflict of interest question items, and the respective universities' funding portfolios. As a placeholder for the regression model, the level of

significance tested was $p < .15$. This value clearly exceeds the common statistical threshold of $p < 0.05$. However, this higher threshold was selected due to the relatively small number of data returns, and due to the imprecision of the study parameters discussed elsewhere-

Nonetheless, as discussed in the following sections, regression analysis did support certain findings at the .05 level of significance. These results are discussed and contrasted with other analyses that did not yield significance.

As a primary model to explore the research hypotheses, aggregate responses to S1 and S2 question items were successively mapped against total funding obligations and incremental funding obligations received by the survey institutions from the Department of Health and Human Services (DHHS), the National Science Foundation (NSF), the Department of Defense (DOD) or “Other” federal funding agencies, respectively.

Summary descriptive information for the original raw data returns is tabulated in Table 7. Agency values represent millions of dollars (\$M), while “S” values correspond to the averaged response score to the Likert question items. Mean, median, minimum and maximum (i.e., “min-max”) funding values and differentials per quartile are displayed. Items with no response are denoted “NA.”

The Department of Health and Human Services (as chiefly represented by the National Institutes of Health) characteristically serves as the largest federal funding source. This comes as no surprise, as a majority of the institutions surveyed include extensive biomedical enterprises that focus on pre-clinical and clinical research endeavors including a broad spectrum of basic biological sciences. The range of funding received by the institutions in this survey is enormous, spanning from no funds to hundreds of millions of dollars. The National Science Foundation (NSF) usually comprises the second largest funding source for research universities. Its disciplinary divisions supply the bulk of funding to predominantly non-medical academic fields such as physics, chemistry, economic and social sciences. However, the largest funding amount from NSF for any surveyed institution is only 15% of the maximum received from the DHHS. For some of the universities surveyed, the Department of Defense (DOD) funding agencies comprise the next largest source. This may include a mix of funding from the individual service

entities (e.g., Air Force Office of Scientific Research, Army Research Office, Army Medical Research and Development Command, Defense Advanced Research Projects Agency, and the Office of Naval Research). Note that the amount of funding received by the survey group from DOD ranges intermediate in magnitude between the DHHS and NSF. Finally, “Other (federal) funding represents a subtotal of remaining funding from an array of agencies supporting basic and applied research.

Table 7. Raw Data for Dependent and Independent Variables.

Summary							
DHHS		NSF	DOD	OTHER			
Min.	: 0.00	Min.	: 0.10	Min.	: 0.00	Min.	: 0.00
1st Qu.:	3.60	1st Qu.:	1.50	1st Qu.:	0.70	1st Qu.:	1.05
Median :	34.80	Median :	6.75	Median :	5.90	Median :	6.55
Mean :	70.41	Mean :	15.10	Mean :	20.28	Mean :	18.32
3rd Qu.:	89.63	3rd Qu.:	26.77	3rd Qu.:	16.50	3rd Qu.:	22.30
Max.	:435.80	Max.	:74.50	Max.	:237.60	Max.	:143.60
				NA's	: 1.00		
Total		s	s1	s2			
Min.	: 1.40	Min.	:2.900	Min.	:2.000	Min.	:2.917
1st Qu.:	17.25	1st Qu.:	3.515	1st Qu.:	3.000	1st Qu.:	3.927
Median :	77.45	Median :	3.742	Median :	3.263	Median :	4.083
Mean :	123.33	Mean :	3.734	Mean :	3.207	Mean :	3.993
3rd Qu.:	134.35	3rd Qu.:	3.943	3rd Qu.:	3.438	3rd Qu.:	4.269
Max.	:838.00	Max.	:4.667	Max.	:4.500	Max.	:4.667
		NA's	:2.000	NA's	:3.000	NA's	:2.000

In the following set of analyses, the original linear data is depicted, with the dependent variables S1 and S2 plotted against the respective agencies' values as independent or predictor variables. The average Likert values were plotted on the ordinal or “y” axis, while the amount of funding (total or incremental agency, respectively) was plotted on the abscissa or “x” axis. Results are depicted in the following graphs and tables. Owing to the skewed nature of the distribution of funding that is evident for the respondent institutions, it was decided to perform a logarithmic transformation of the data to attempt better delineation of possible predictive relationships. Overall, the clustered nature of the data returns is evidenced by different pictorial representations of the data. As an illustration, a histogram of the funding distribution for DHHS at respondent institutions shows clear groupings, with minimum and maximum organization examples evident. Note that eighteen (18) of the twenty-six (26) institutions tabulated each had DHHS funding of

less than \$100M. This reflects the stratification of absolute funding portfolios even among defined research- intensive universities.

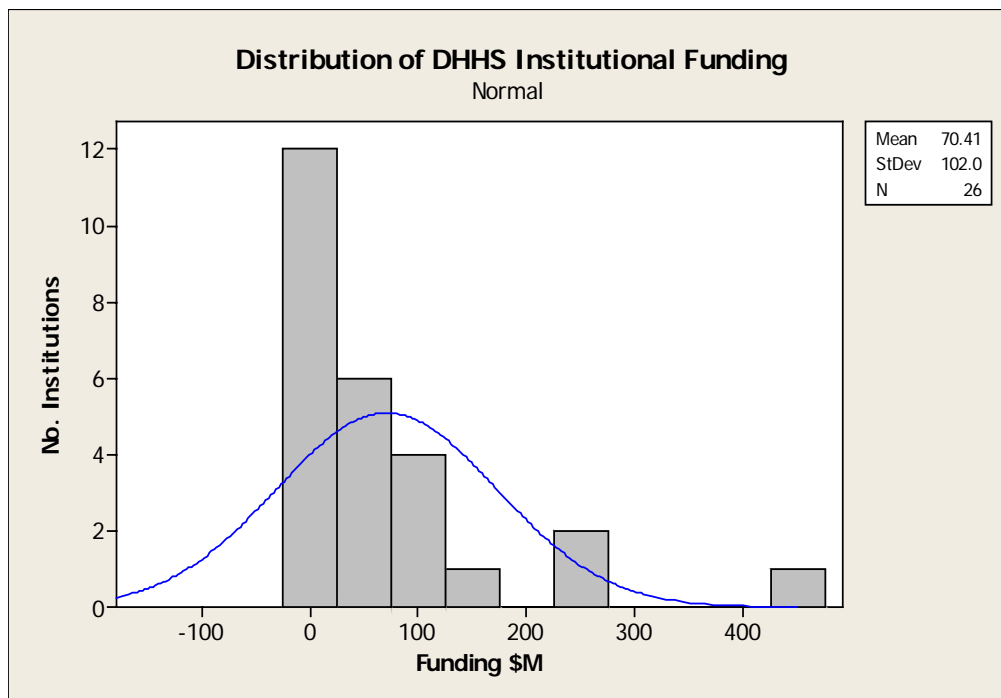


Figure 5. Distribution of Institutional DHHS Funding.

A few outliers are notable. For example, the data point representing the amount of funding for Johns Hopkins University (JHU) is easily identified at the extreme right in both histogram and scatter plot examples, reflecting the surveyed organization with the largest amount of funding.

The histogram of NSF funding shown in Figure 6 offers a similarly skewed distribution. Most institutions received agency funding < \$20M annually. The maximum outlier in this case pertains to Cornell University.

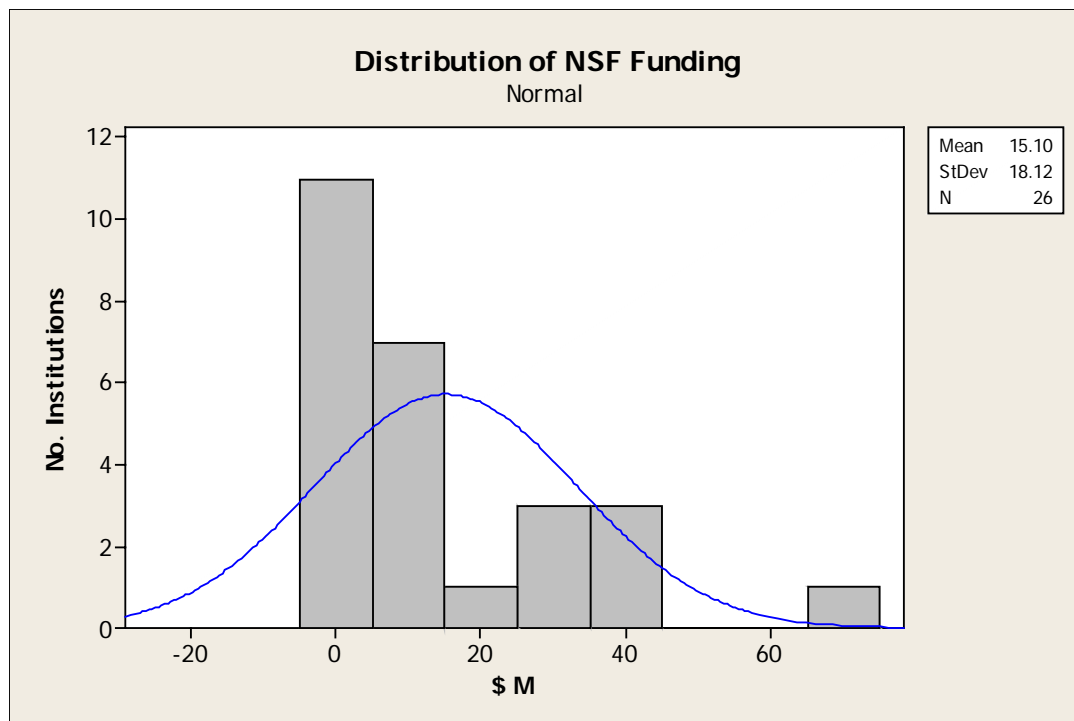


Figure 6. Distribution of Institutional Funding from the National Science Foundation.

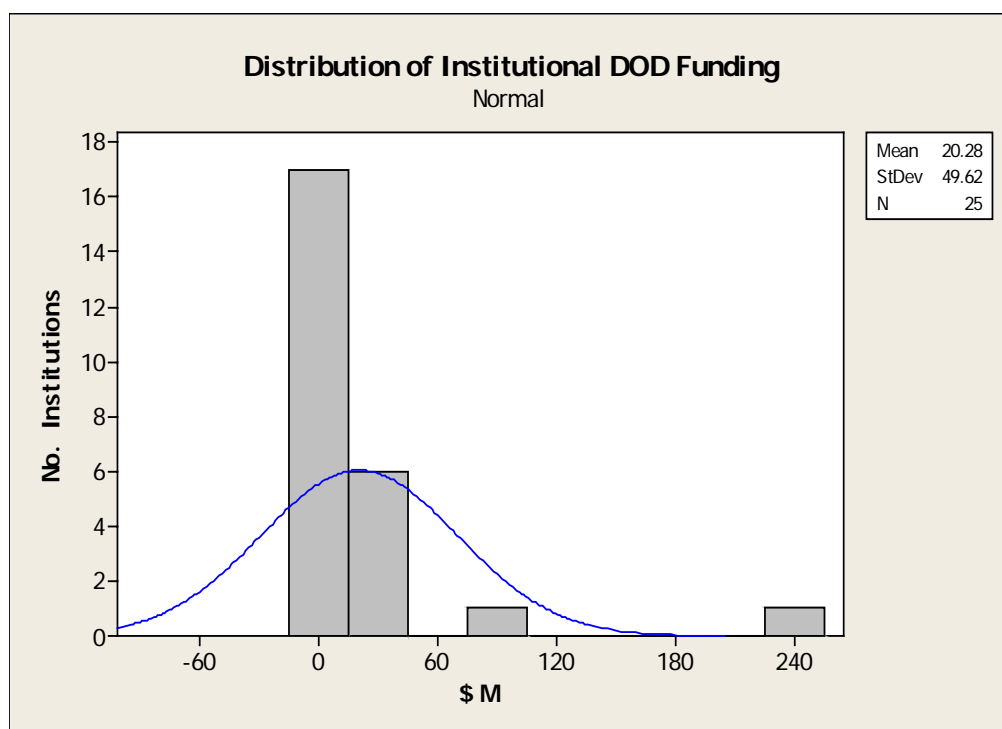


Figure 7. Distribution of Institutional Funding from DOD Agencies.

The skewed distribution of institutional funding from DOD sources is even more pronounced. Twenty-three (23) of 25 institutions receive funding of < \$50M annually, with only two outliers exceeding this cluster.

Next, the graph showing distribution of “Other” federal funding sources appears as Figure 8. The composition of funding from “Other” federal agencies depends upon the diversity of disciplinary strengths represented by each grantee institution that was surveyed. This array of agencies primarily includes the U.S. Department of Agriculture (USDA), the Department of Commerce (Com), the Department of Education (Ed), the Environmental Protection Agency (EPA) and the National Aeronautics and Space Agency (NASA). Smaller funding entities may make up small fractions of this overall grouping. Note that a preponderance of respondent institutions received very modest funding from these other federal sources, combined.

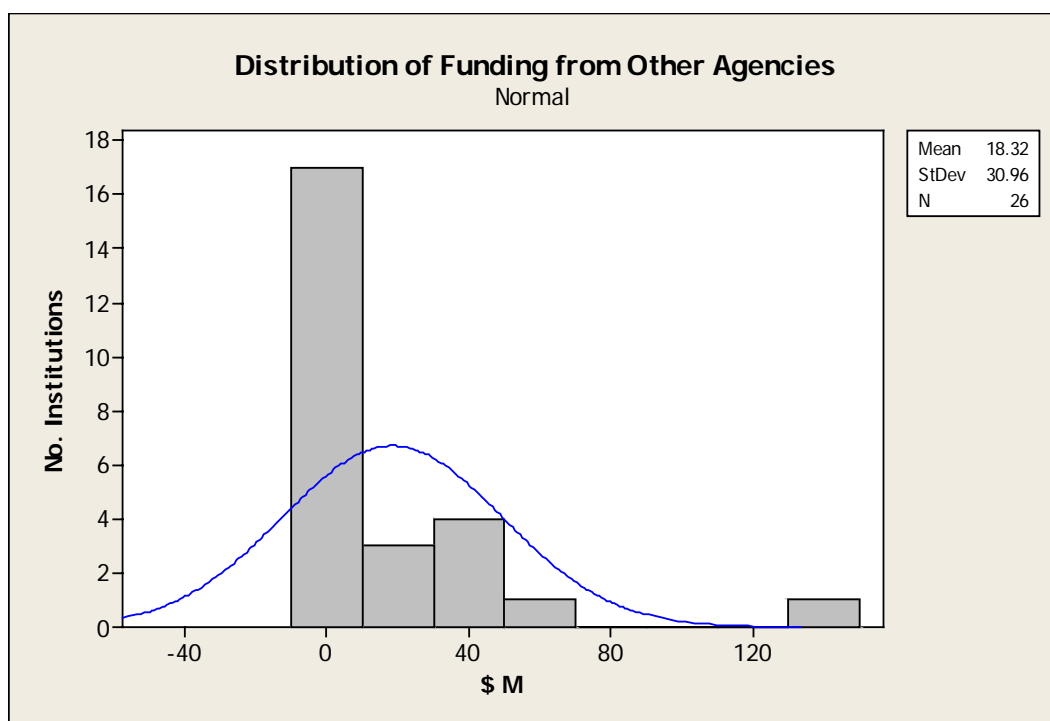


Figure 8. Distribution of Institutional Funding from all “Other” Federal Agencies.

C. RESULTS GROUPED BY RESEARCH QUESTION

-How are Conflict of Interest (COI) behaviors perceived by research administrators at major research universities?

-How are Conflict of Commitment (COC) behaviors perceived by research administrators at major research universities?

The distribution of the average Likert scores for the “S1” (conflict of commitment) and “S2” (conflict of interest) question items is illustrated in the following graphs (Figure 9 and Figure 10).

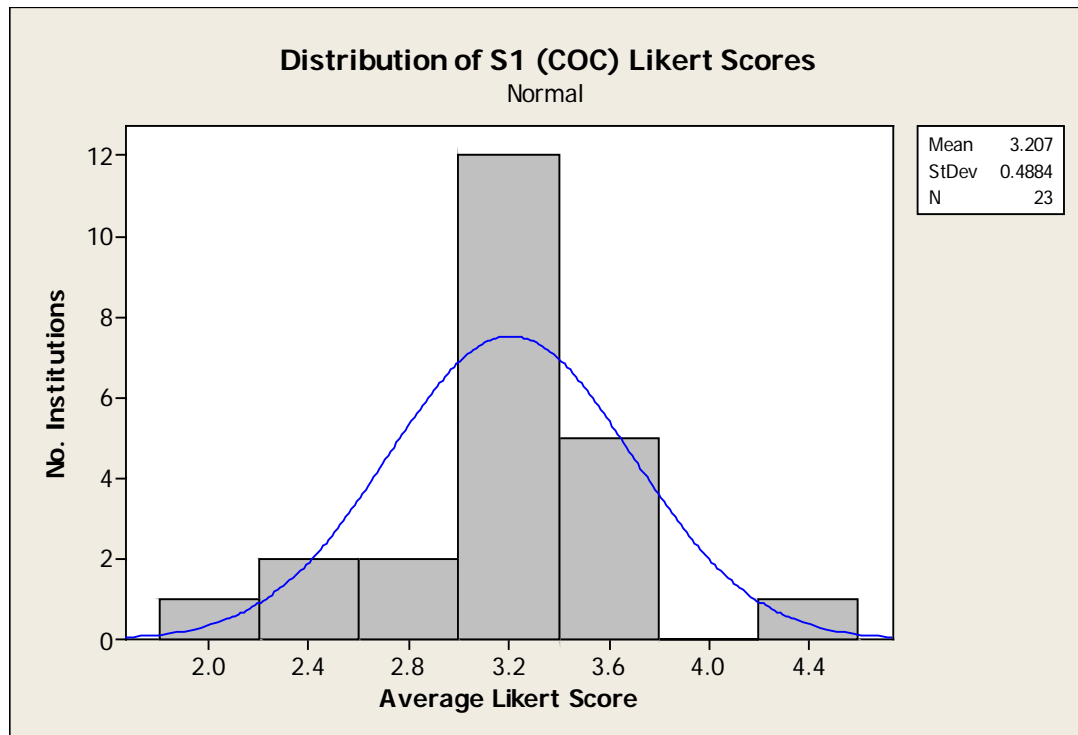


Figure 9. Distribution of Conflict of Commitment (S1) Scores.

Note the mean value of S1 scores is 3.21 with a standard deviation value of 0.488. Interesting, also to note that nearly half of the returns are grouped at a value of 3.2 that considerably exceeds the midpoint of 2.5 on the Likert scale continuum for this study. See Chapter 6 for a discussion of the implications of these and other findings.

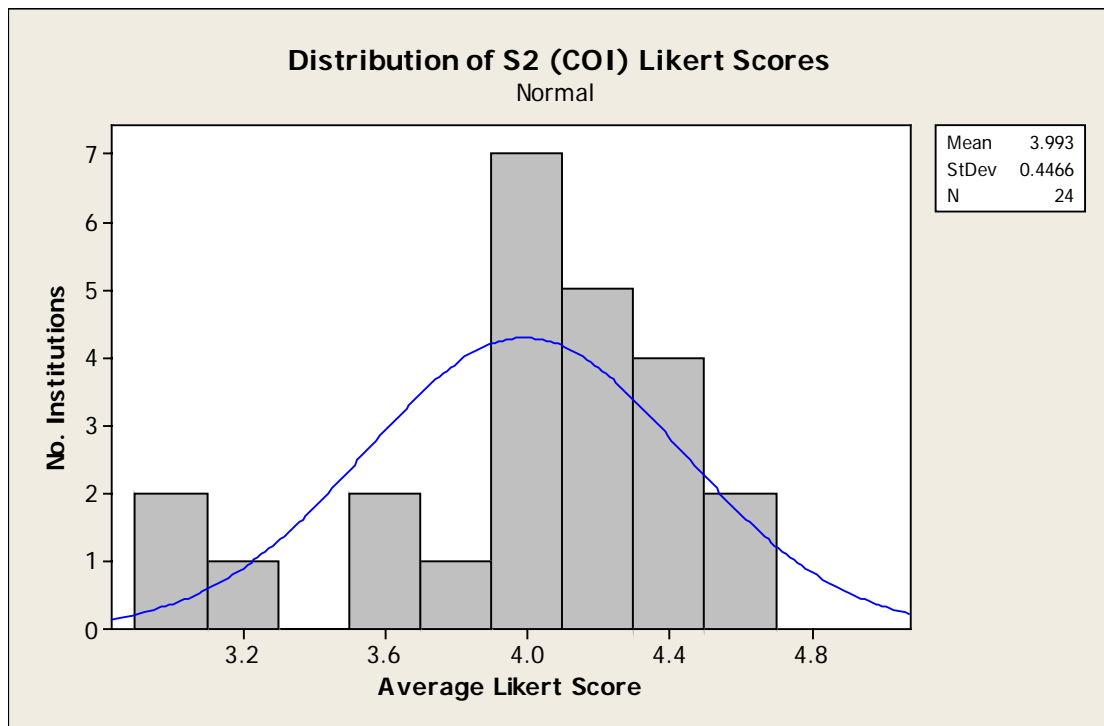


Figure 10. Distribution of Conflict of Interest (S2) Scores.

In corresponding fashion, the mean value of S2 scores is larger at 3.98 with a standard deviation of 0.447. The largest grouping of S2 returns centers on a value of 4.0, considerably above the midpoint of 2.5 on the Likert continuum for this study. As discussed later, the arithmetic difference of average Likert scores observed for the two groups (viz., S1 vs. S2) was not found to be statistically significant.

-Are perceptions of conflict issues correlated with the total amount of sponsored funding?

1. *Conflict of commitment items compared to total amount of funding.*

The data plot for COC items against total funding amount is shown in Figure 11. Note the positive slope of the trend line, with data returns grouped at the lower end of the scale corresponding to the clustering of institutional funding portfolios valued at or below \$200M. Note for the log-transformed data, Figure 12, that the positive slope of the trend line becomes even more pronounced.

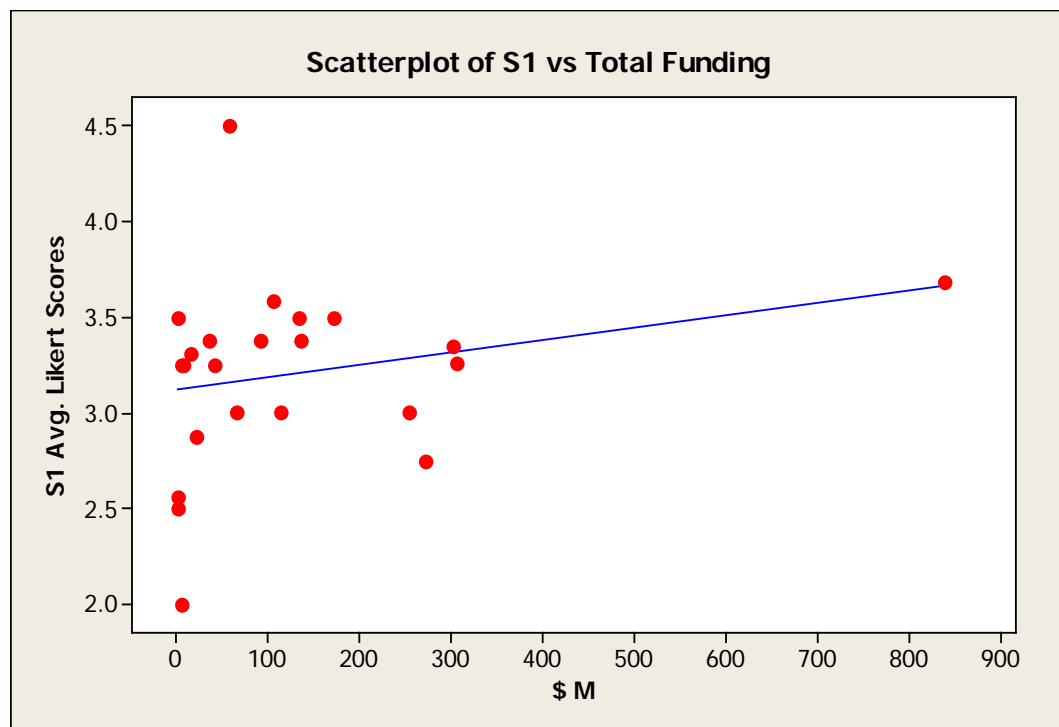


Figure 11. Plot of COC Items vs. Total Funding.

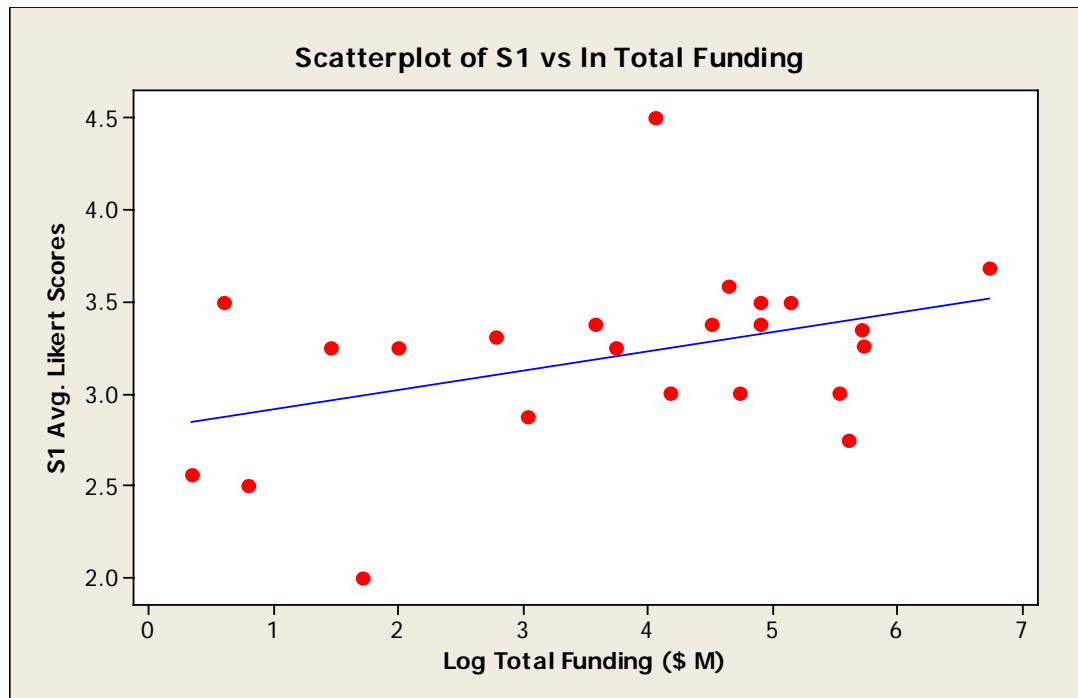


Figure 12. Plot of COC Items vs. Ln (natural log) of Total Funding (P=0.06)

Figure 12 depicts a moderately significant finding, with the p value indicated. Expressed as a statistical formula this relationship can be expressed as follows: Expected value $S1 = 2.81 + .11 \log (\text{Total})$. For example, if Total Funding increases from \$200M to \$500M, that increase corresponds to an increase in ln COC value of .11 [$L_{500} - L_{200}$]. This significance and its possible implications are discussed further in Chapter VI.

2. Conflict of Commitment Items Compared to the Each Funding Source.

Findings for DHHS are shown in Figure 13 and Figure 14 respectively for DHHS funding and $\ln(\text{DHHS funding})$. Note the slope of the graph in Figure 13 indicating a positively correlated relationship. In Figure 15, however, depicting average Likert scores vs. NSF funding level, the trend line is flat, indicating the absence of a positive correlation. Once again the data returns for both of these funding agencies are clustered in the left-hand quadrant, reflecting the fact that most institutional portfolios are valued at or below \$150M.

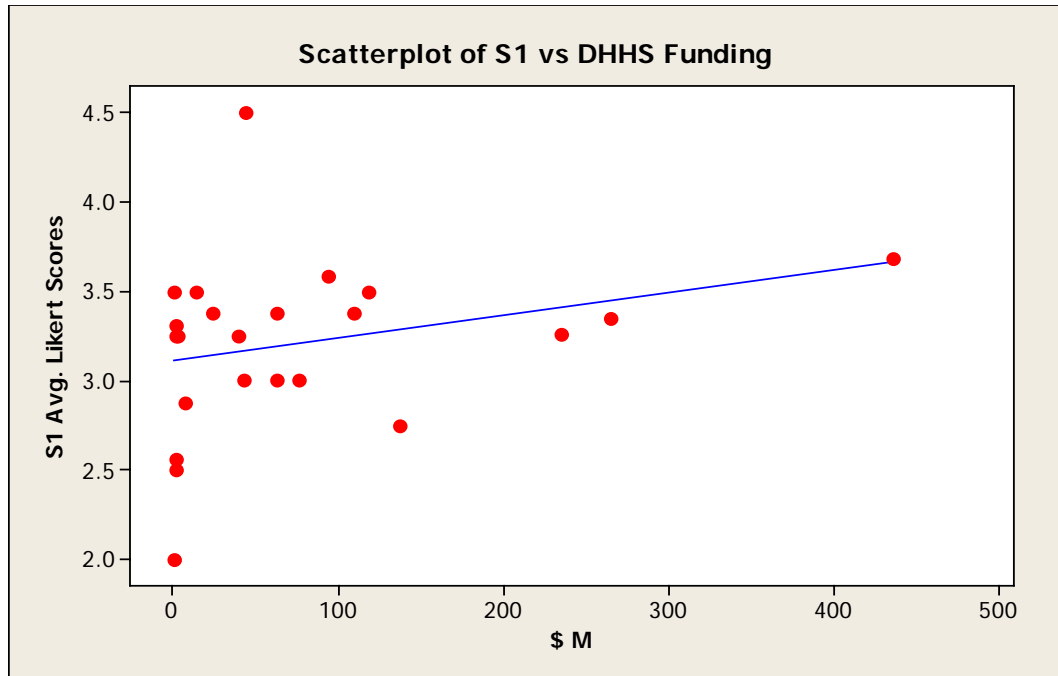


Figure 13. Plot of COC Items vs. DHHS Funding.

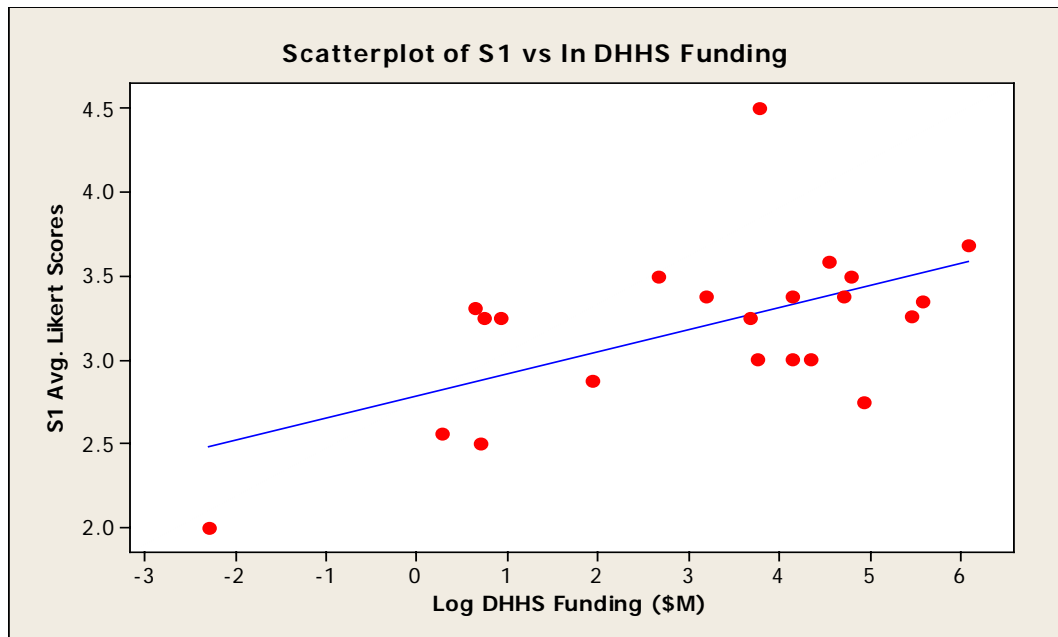


Figure 14. Plot of COC Items vs. ln of DHHS funding (p=0.03).

Regression analysis was performed for the S1 returns simultaneously on all four (4) funding sources delineated in this study. The specific regression against the Natural log (ln) of the DHHS values yielded the most significant statistical relationship, $p = 0.03$.

The relationship of S1 vs. DHHS funding was also found to be significant for the purposes of this study. See also discussion in Chapter VI.

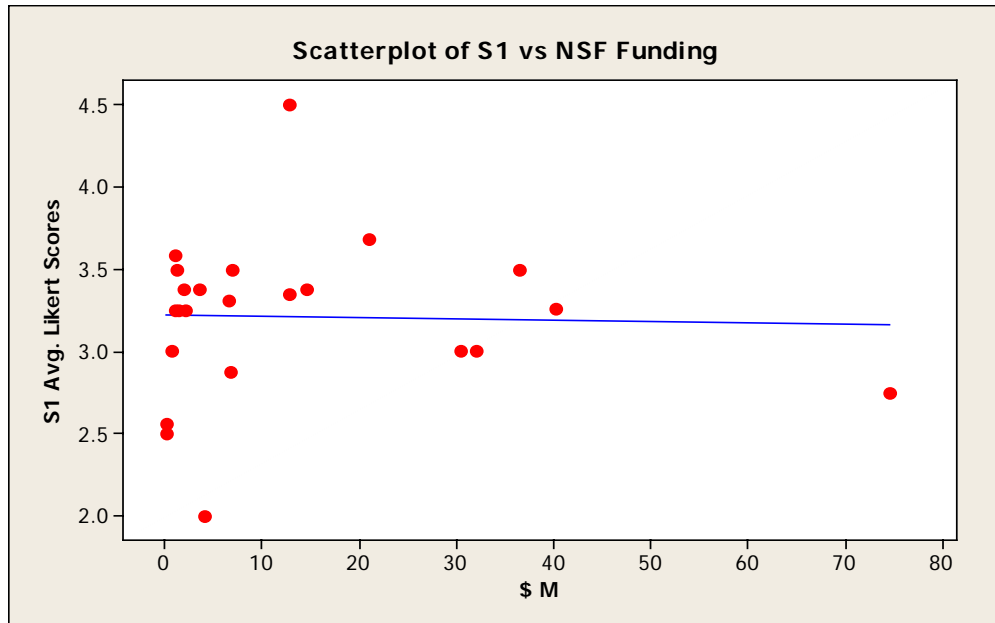


Figure 15. Plot of COC Items vs. NSF Funding.

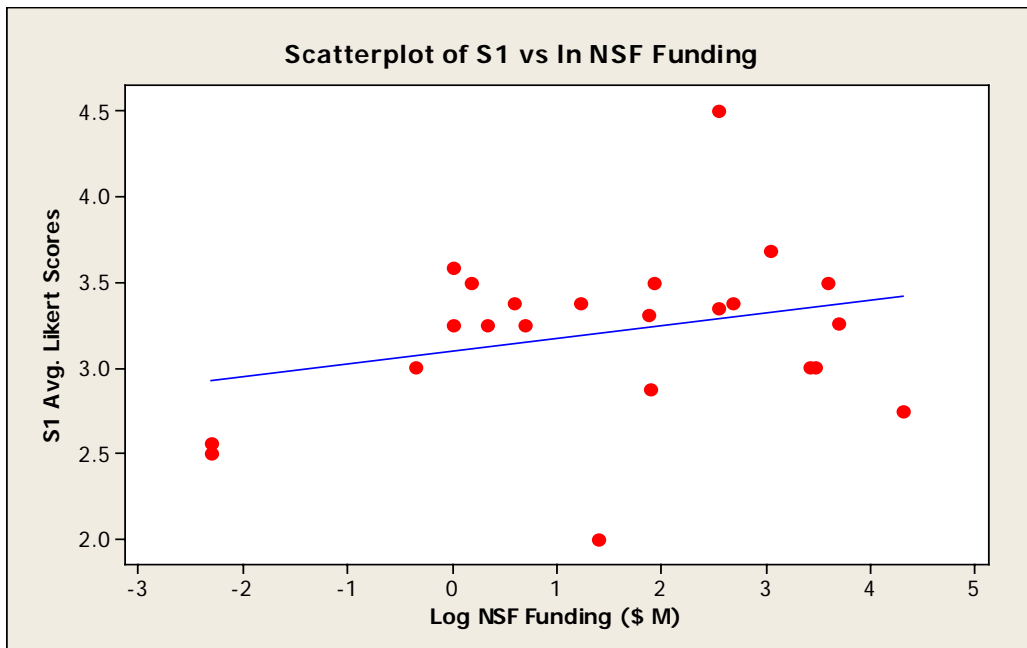


Figure 16. Plot of COC Items vs. ln of NSF Funding.

The depiction of S1 vs. ln of NSF is shown in Figure 16. Even though the trend line suggests a slightly positive correlation between these variables, no significant relationship was found.

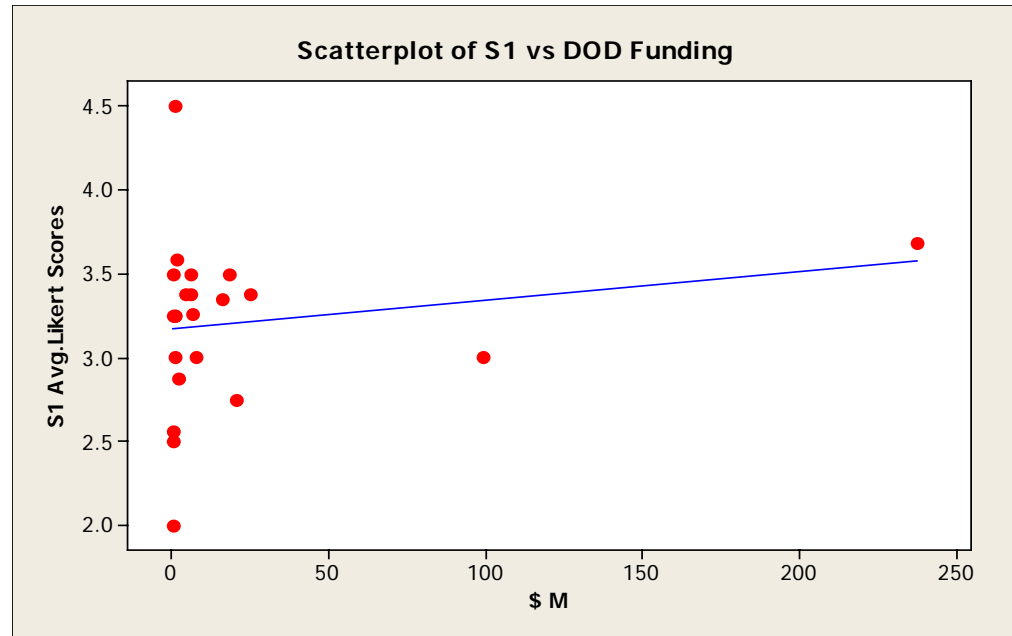


Figure 17. Plot of COC Items vs. DOD Funding.

The plot of COC items vs. DOD funding failed to yield a significant relationship.

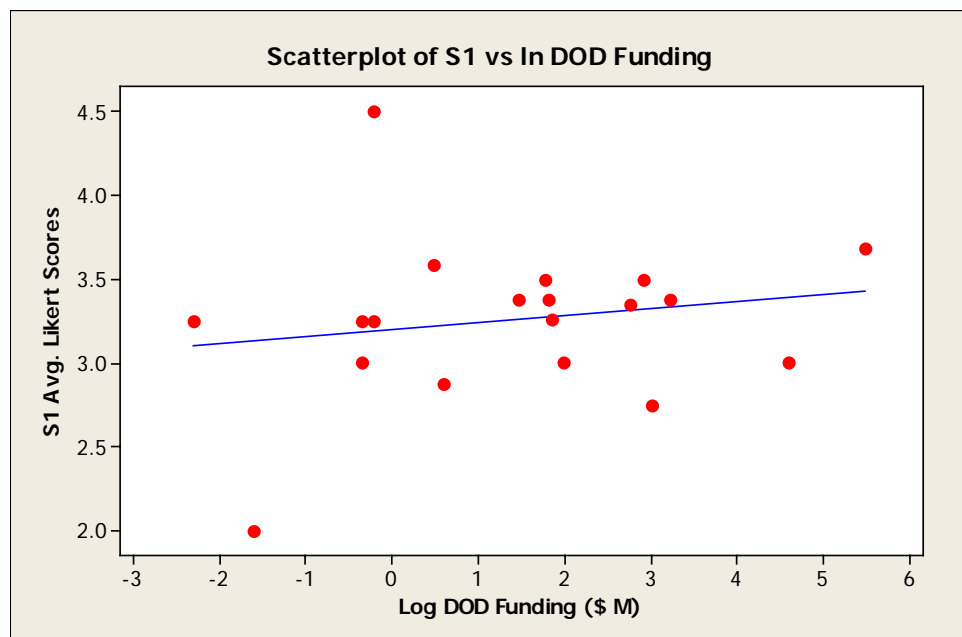


Figure 18. Plot of COC Items vs. Ln of DOD Funding.

Similarly, the plot of S1 vs. ln of DOD funding did not yield any significance. Note the nearly flat-line trend of the graph depicted in Figure 18.

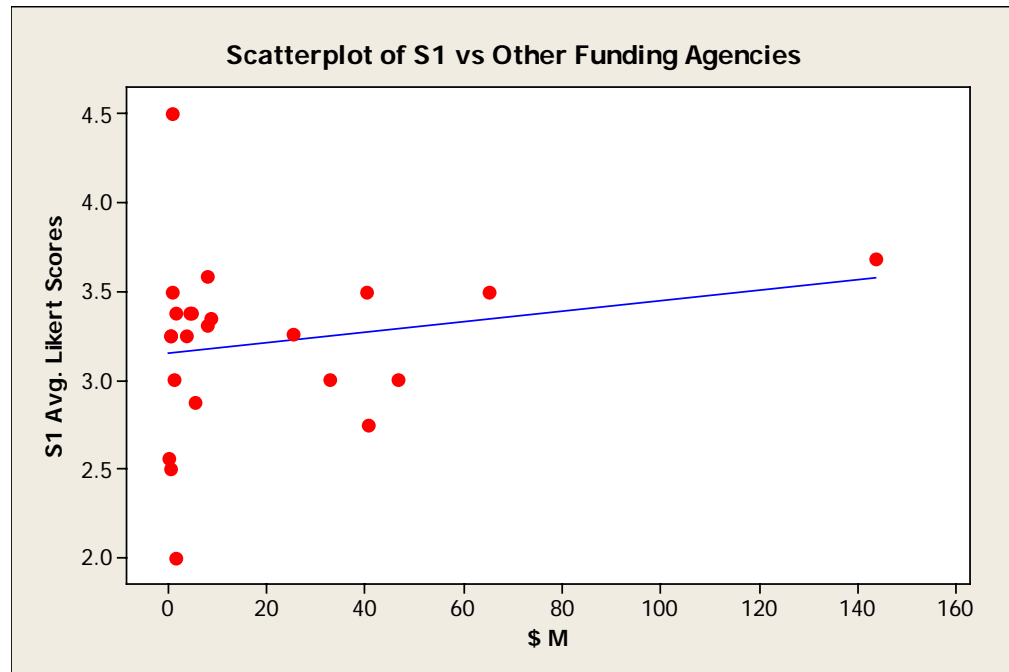


Figure 19. Plot of COC Items vs. Combined “Other” Agencies.

The scatter plots for S1 vs. “Other” funding agencies not specifically delineated are also arrayed in Figures 19 and 20. (A description of the components of “Other” funding agencies is provided on p.71). Although the slope of the trend lines plotted in the two graphs suggest a slight positive relationship, as discussed later a statistically significant relationship was not supported.

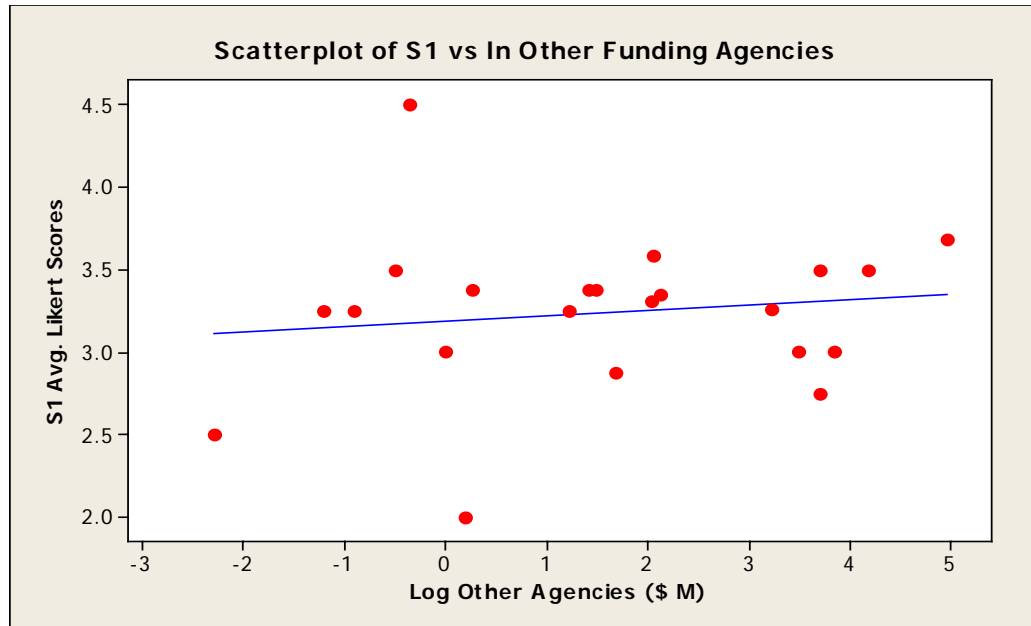


Figure 20. Plot of COC values vs. ln of Other funding agencies.

As depicted in the flat-line trend for COC vs. ln of Other funding (Figure 20), no significance was found.

Table 8. Statistics for S1 (Conflict of Commitment) Values

Dependent Variable: s1

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	1.42135	0.35534	1.80	0.1854
Error	14	2.76695	0.19764		
Corrected Total	18	4.18830			
Root MSE	0.44457	R-Square	0.3394		
Dependent Mean	3.25714	Adj R-Sq	0.1506	Coeff Var	13.64896
Parameter Estimates					
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t
Intercept	1	2.82299	0.26346	10.72	<.0001
ldhhs	1	0.16815	0.07130	2.36	0.0334
lnsf	1	-0.00852	0.10507	-0.08	0.9366
ldod	1	-0.02728	0.10599	-0.26	0.8006
lother	1	-0.05606	0.10679	-0.52	0.6078

Data analysis showing the regression of the conflict of commitment (COC) returns against log funding agency values is depicted in Table 8. These regression statistics include the most significant study finding, the regression of log of DHHS funding on COC data, yielding a value of $p = 0.03$. Notably, the corresponding logarithmic values from the other agencies in this study

(viz., NSF, DOD and Other) do not predict significance, as also revealed in this Table. See further discussion later in this chapter and Chapter VI.

3. Conflict of Interest Items Compared to Total Amount of Funding

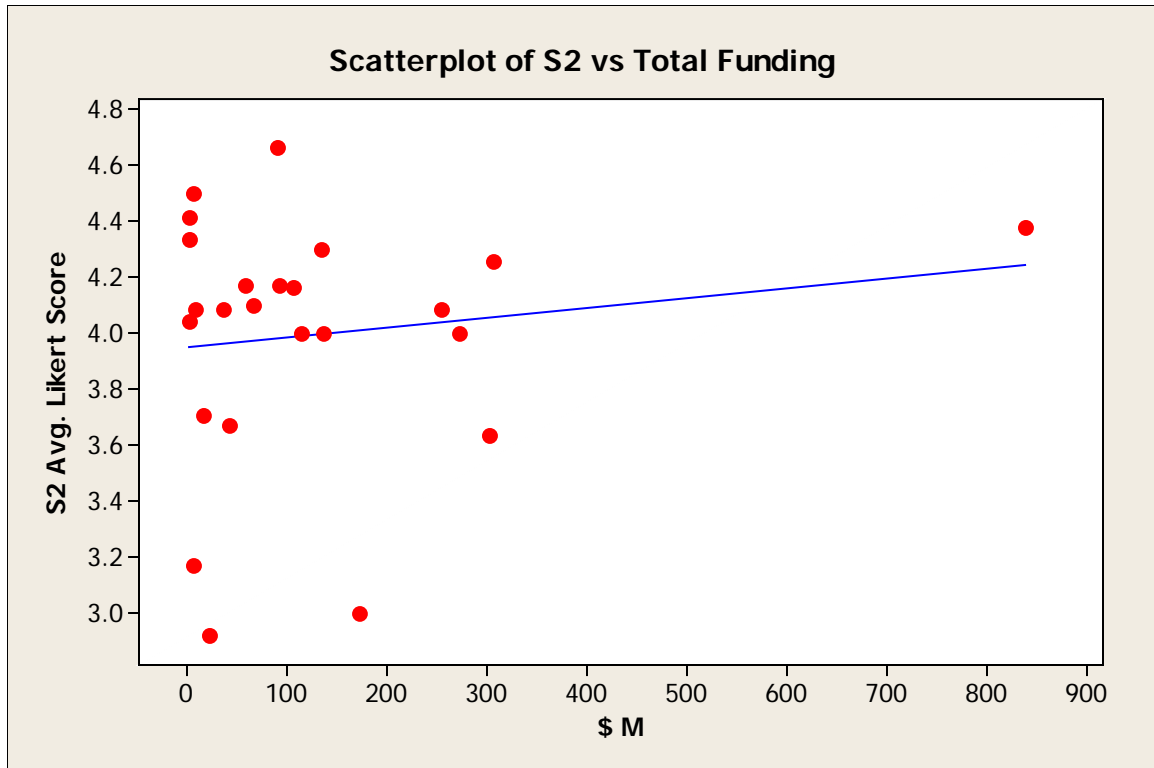
The descriptive data pertaining to S2 (COI) relationships is displayed in Table 9-

Table 9. Statistics for S2 (Conflict of Interest) Values

Dependent Variable: s2					
Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	0.67939	0.16985	0.72	0.5886
Error	15	3.51534	0.23436		
Corrected Total	19	4.19474			
Root MSE	0.48410	R-Square	0.1620		
Dependent Mean	3.96633	Adj R-Sq	-0.0615		
Coeff Var	12.20532				
Parameter Estimates					
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t
Intercept	1	4.07411	0.28540	14.28	<.0001
ldhhs	1	-0.08107	0.07664	-1.06	0.3069
lnsf	1	0.04058	0.11232	0.36	0.7229
ldod	1	0.15375	0.11372	1.35	0.1964
lother	1	-0.07003	0.11501	-0.61	0.5517

Values in Table 9 depict the results of the S2 variable regressed against each of the ln (funding) sources. Note all “p” values fail to show any significance, for S2 vs. ln dhhs (p=0.31), S2 vs. ln nsf (p=0.73), S2 vs. ln dod (p=0.20) or S2 vs. ln other (p=0.55). See discussion in the following chapter.

Graphical depictions of the plot of S2 vs. major funding sources follow.



**Figure 21. Plot of COI Items vs. Total Amount of Funding.
P= 0.50**

Figure 21 depicts the plot of S2 items vs. total federal funding. Although the trend line suggests a slightly positive correlation, no significance was found in the relationship.

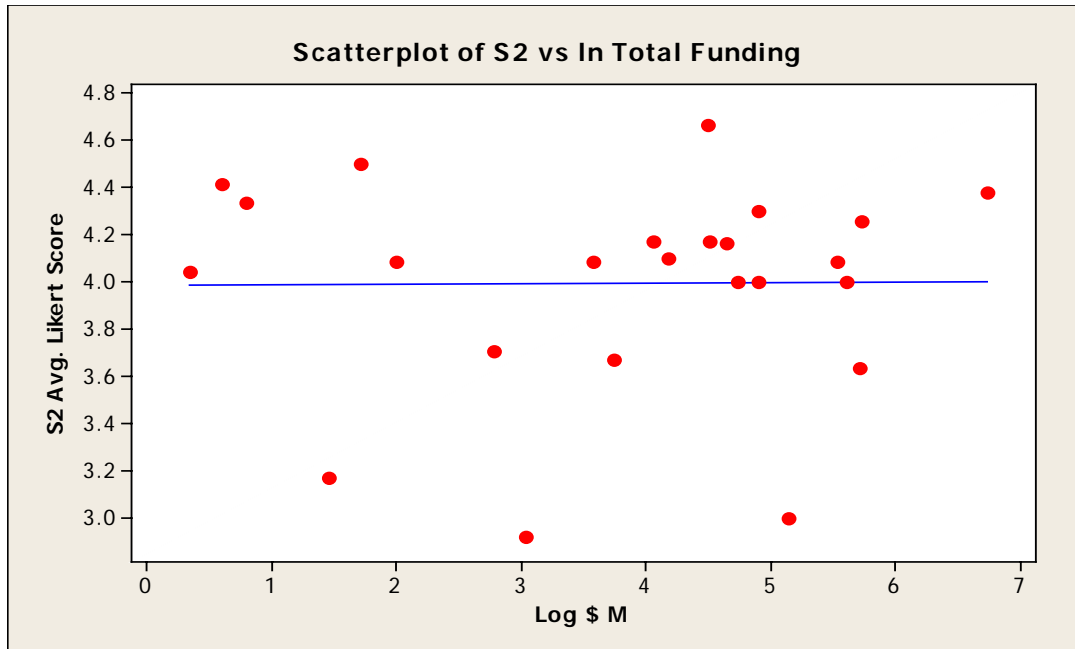


Figure 22. Plot of COI Items vs. ln of Total Funding.
P = 0.95

Figure 22 depicts the plot of S2 returns vs. the logarithmic transformation for total federal funding. The flat trend line betrays the absence of a statistically significant relationship between these variables.

4. Conflict of Interest Items Compared to Largest Source of Funding

The plot of S2 returns vs. DHHS funding sources is depicted in Figures 23 and 24, respectively. In Figure 23, the trend line indicates the absence of a positive correlation. Similarly, in Figure 24 when the S2 data is plotted against the log transformation of DHHS values, the trend line is flat, and no significance is found. (This finding contrasts with the predictive nature of the relationship of *S1* data to the same variables). For the plot of S2 vs. NSF and DOD, see Figures 25 and 27 respectively. Although the trend line appears to suggest a positive correlation between Likert scores and the amount of NSF and DOD funding (Figures 25 and 27) as discussed later no significance was found in these comparisons.

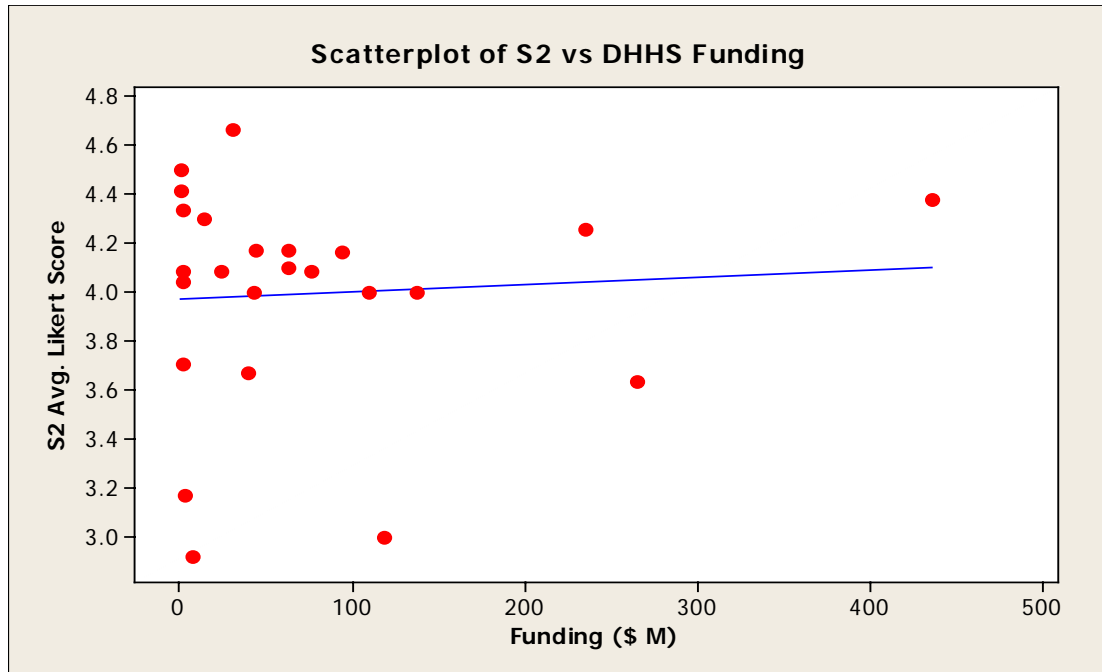


Figure 23. Plot of COI Items vs. DHHS Funding (p=0.45).

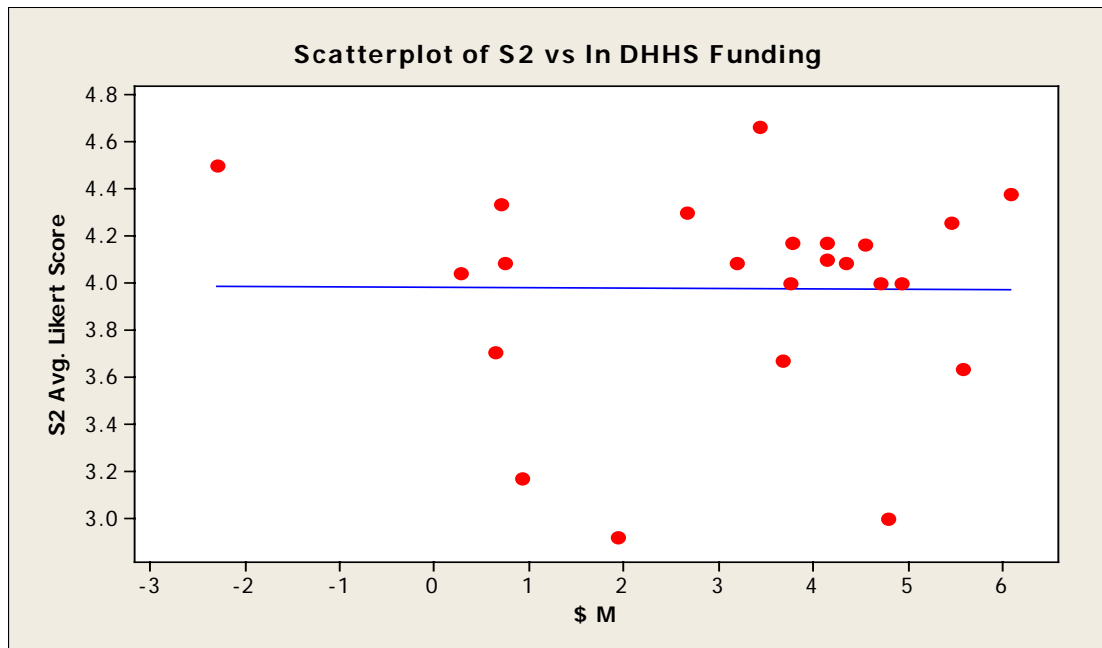
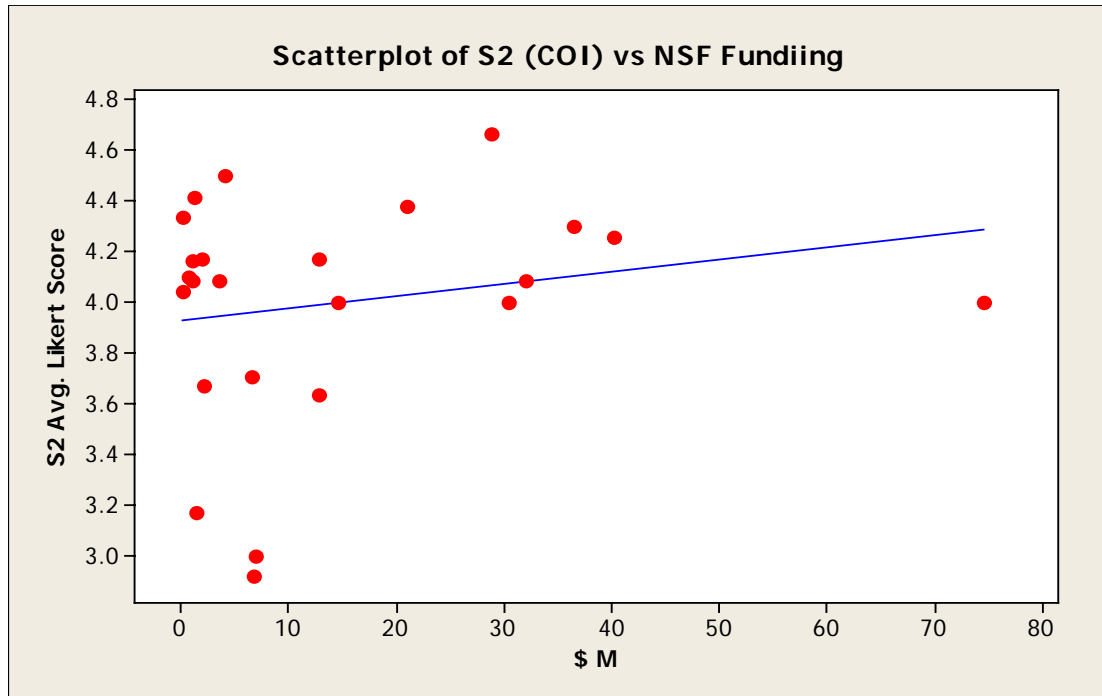


Figure 24. Plot of COI Items vs. ln of DHHS Funding (p=0.31).



Although the trend line shown in Figure 25 suggests a positive relationship between COI items and the amount of NSF funding, no significant relationship was demonstrated. Similarly, the flat line depicted in the graph of COI vs. ln of NSF (Figure 26) demonstrates no statistically significant relationship.

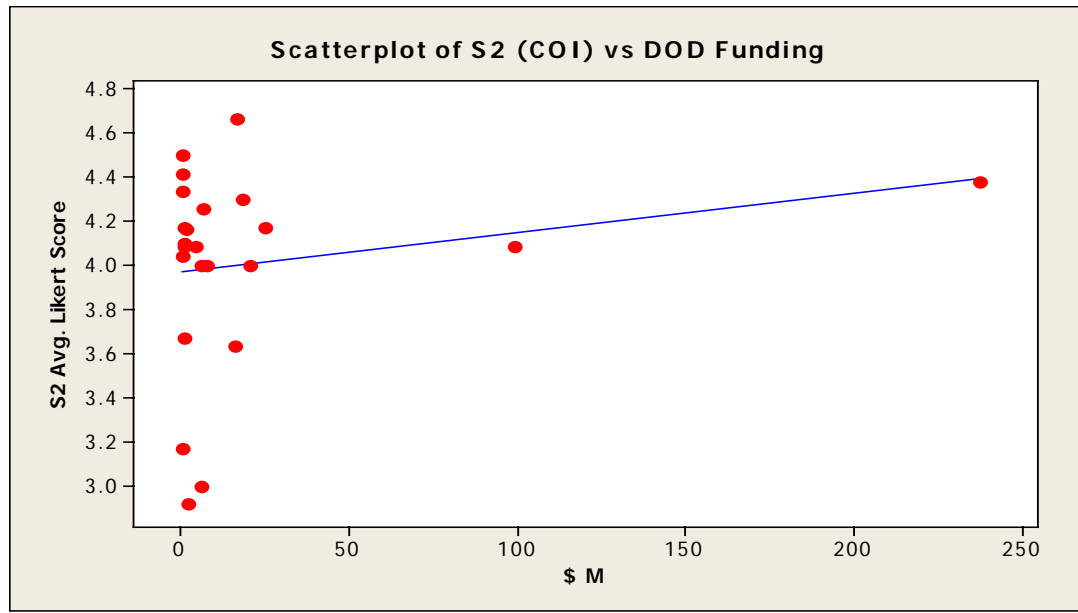


Figure 27. Plot of COI Items vs. DOD Agencies (p= 0.19).

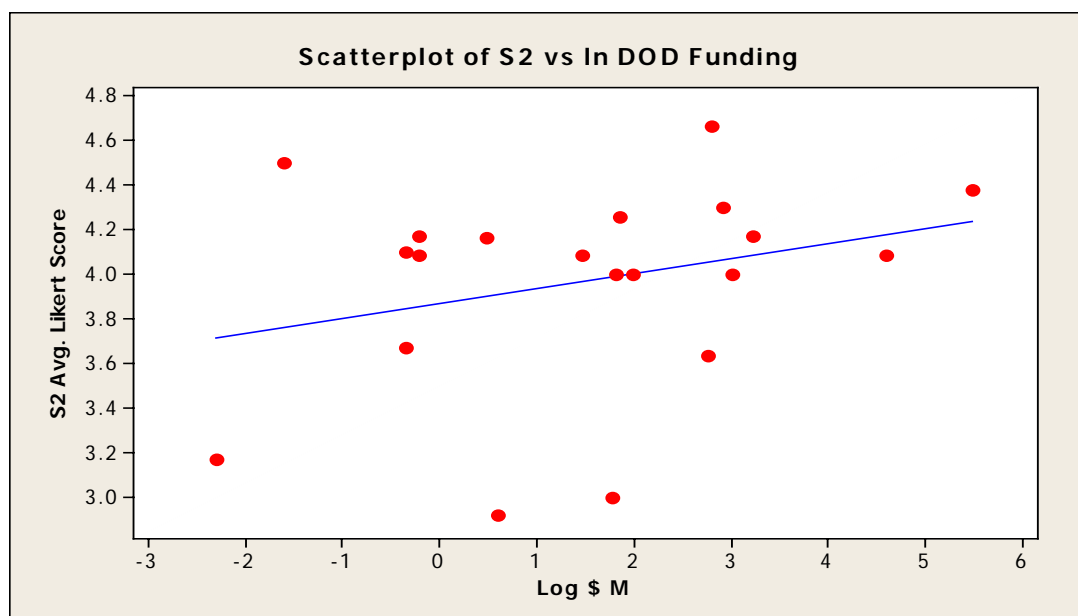


Figure 28. Plot of COI Items vs. ln of DOD Funding (p=0.20).

The plot of COI items vs. DOD funding level is shown in Figure 27. Although the trend line plotted suggests a positive relationship, no significance was found. This may in part be attributable to the relative paucity of data returns at greater funding levels, forcing a rough approximation in trend line depiction. Related issues and possible explanations are discussed in the following chapter. In corresponding fashion, the chart of COI vs. ln of DOD does not reveal any significant relationship (Figure 28).

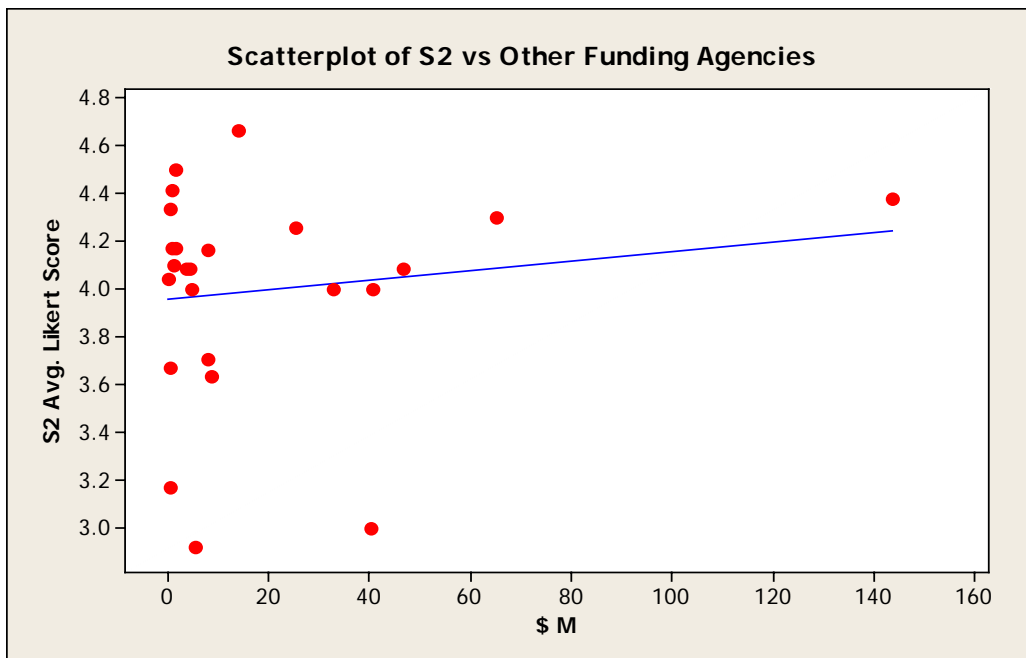


Figure 29. Plot of COI Items vs. Other funding (p= 0.39).

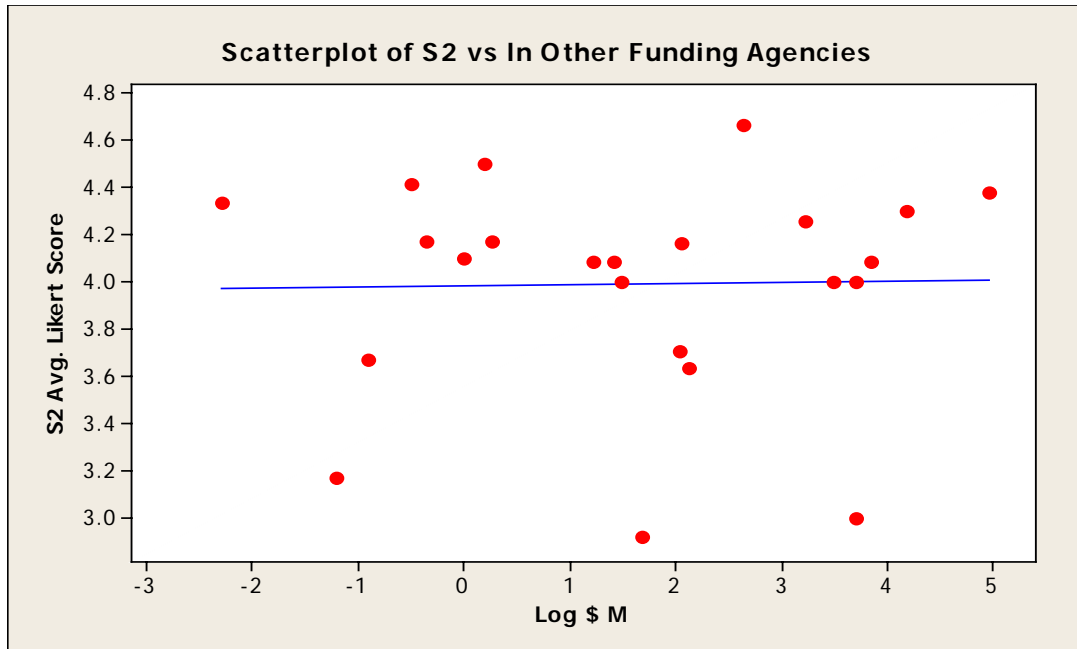


Figure 30. Plot of COI Items vs. ln of Other Funding. ($p=0.55$).

Similarly, the plots of S2 vs. Other (Figure 29) and S2 vs. ln of Other (Figure 30) failed to reveal any significance. The lack of detection of a significant relationship may be partly attributed to the confounding mix of funding agencies represented in the definition of “Other” or to other unknown factors.

VI. SUMMARY AND DISCUSSION

This study embarked on a new area of scholarly research that borrows from a number of disciplines to address research on research infrastructure. The federal regulatory environment of research compliance framed the study. The study was designed in expectation that the data obtained serve as a proxy indicator of employee conduct in the research university. Many more questions than answers have been raised by the study. This observation may be partly owing to the heterogeneous composition of the institutions surveyed, and in part attributed to the variable response of individuals to perceptual issues, whose limits are subjective and poorly defined.

Nevertheless, some relationships have received preliminary data support, and other presumed intuitive relationships have been challenged. This chapter addresses significant findings and non-significant or negative observations. Comments pertaining to “Lessons learned” provide some perspectives on the challenges of designing and conducting a study in a new area of scholarship. Directions for future research in the related areas are discussed. Finally, a summary impression of the study concludes this chapter.

A. SIGNIFICANT RELATIONSHIPS

1. Conflict of Commitment Items Compared to Total Amount of Funding

Data analysis for this relationship yielded significance at substantial levels discussed in the following paragraph. This significance may be explained by the predominant influence of funding from the DHHS on the overall research portfolios of research intensive institutions. However, this finding runs somewhat counter-intuitively to the assumption that more egregious

situations (i.e., conflict of interest scenarios) would reveal a direct causal relationship. As discussed later in this chapter, that latter assumption was not supported by this study.

Figures 11 and 12 in Chapter V illustrated the positively correlated relationship predicted by COC items (S1) and the total amount of funding. For the graph of S1 returns vs. total funding, this yielded significance at the level of $p < .05$. For the \ln (natural log) transformation of total funding, a value of $p = 0.06$ was obtained. This finding suggests a very predictive relationship. It further suggests that the perceptual estimation of commitment conflicts is rather tightly bounded by the compliance dictates that accompany the receipt of DHHS funding. It also suggests that experienced research administrators as reflected by the survey group are able to judge the relative acceptability of potential commitment conflict in university research performance, and apply management techniques to ameliorate potential problems.

2. Conflict of Commitment vs. Largest Source of Funding

Statistical manipulation was utilized to discern levels of significance, due to the skewed distribution of the original data. Consequently, logarithmic transformation of the data set was employed. This provided corresponding logarithmic values to the respective raw data returns correspondingly for each of the agency funding variables. The graph of the regression of S1 vs. \ln of DHHS (Figure 14) was significant at the level of $p = 0.03$. This finding can be explained by the predominance of the level of DHHS funding for most of the surveyed institutions. Consequently, even though no incremental significance was found in plotting S1 vs. \log transform of NSF or DOD, respectively (\ln NSF or \ln DOD) the strength of the DHHS effect prevails for the regression. Somewhat intuitively, the compliance environment driven by the predominance of biomedical funding registers strong correlation with measured perceptions for conflict of commitment issues. It is speculated that the regulatory and education environment driving compliance in the university setting has served to finely attune administrative staff associated with preclinical and clinical fields of research activity. These staffs learn to recognize the permissible limits of behaviors that may lead to conflict along a continuum of possible actions.

B. NON-SIGNIFICANT RELATIONSHIPS

1. COI Items and Total Funding

The plot of COI items (S2) vs. total funding failed to yield any significance when charted as original raw data (Figure 21) or as a log transformation of Total funding (Figure 22). This is a somewhat counter-intuitive finding, as it might be presumed that the relatively blatant nature of many conflict of interest situations would be positively correlated with the receipt of federal funding. This presumes that regulatory guidelines concerning acceptable compliance behaviors would drive a parallel association with recognizable conflict situations or the resultant sanctions for unacceptable behavior. The fact that no significant relationship was indicated may be explained by several factors. First, that a larger pool of survey responses would be required to support more robust statistical analysis. Second, that the very nature of conflicted situations elicits a wide range of perceptual scores as measured by a Likert scaling system. This environment, in turn results in a large variance of responses that yield relatively large standard deviations and poor correlations. Thirdly, it is possible that a variety of unknown or unmeasured phenomenon may be contributing to the perceptual environment of research administrators.

2. COI and Agency Specific Funding

No significance was found in plotting COI (S2) items vs. DHHS funding (Figure 23). This finding was also counter-intuitive, as it may be presumed that the largest funding source would positively correlate with COI items. The absence of this expected relationship poses many questions. Do research administrators at different institutions apply distinct “filters” to their appraisal or estimation of conflict situations? Does the very nature of potential conflict result in large variance in institutional application of federal regulatory guidelines? Recall, federal guidelines define a *potential conflict* as occurring when the individual receives > \$10,000 cash or

equivalent from a third party source. However, the manner in which the institution as employer chooses to administer control over or sanction of such activity varies. The impression created by the institution's response then indirectly influences employees' viewpoint. For example, with respect to conflict of interest management some institutions may prescribe divestment, while others may allow establishment of escrow accounts during the funding period. All of this variable institutional approach to conflict management may dilute the perceptual view of "obvious" conflict by the research administrator.

Overall, the amount of funding from any of the agencies identified in the study did not predict Conflict of Interest responses. Neither the original data nor the log transformations of the dependent variables revealed any statistically significant findings (i.e., $p < .15$) when compared to the funding sources that were studied. Discussion of each of the other funding sources measured and possible explanation of non-significant findings follow.

3. COI vs. NSF Funding

This relationship is charted in Figure 25. The slight positive slope of the trend line plotted suggests a possible correlation, but data analysis failed to prove any statistically significant relationship. Perhaps the fact that almost all of the institutions surveyed only received a relatively small fraction of their overall federal funding from the NSF eluded the determination of any significance. Johns Hopkins University serves as a notable exception to this generalization, having received the largest amount of absolute funding from the NSF among institutions surveyed. Notably, the study design did not provide sufficient data returns to allow analysis of individual institutional characteristics.

4. COI vs. DOD Funding

This relationship is illustrated by Figures 27 and 28. Again, the shape of the trend line plotted suggests that there may be a positive relationship, but none was statistically supported. DOD sources represent a mini-spectrum of discrete funding entities. Failure to find a positively correlated relationship may be embedded in the fact that each institution surveyed enjoys a

unique funding relationship from each of several sub-cabinet level agencies that make up the enormous Department of Defense. Namely, the data sources canvassed for this study were tabulated and rounded to the nearest tenths of millions of dollars. Further, these secondary sources did not break out the amounts from the discrete individual granting entities that provided the total combination of funding from the DOD for each institution. Plainly stated, the consolidation of funding sources may have been too coarse to enable detection of potentially correlated findings. Future studies may need to identify such funding streams at lower bureaucratic levels. See related discussion under *Directions for Future Research* later in this chapter.

5. COI vs. Other Funding

Recall that “other” federal funding agencies include a mix of funding entities that varies for each recipient institution. The failure to find any overall significance between COI values and “Other” funding level (Figures 29 and 30, respectively) may reflect a similar situation as found with the attempted DOD correlation. Break out of individual funding amounts by lower-level federal bureaucracy may need to be explored.

Neither were significant relationships revealed when regressions were performed differentiating the private vs. public institutions included in the survey. Note, further, that insufficient data returns from research intensives nullified exploration of any distinction between research extensive and intensive organizations. Whether other, untested factors significantly correlate with specific funding sources or the total amount of funding might be speculated, but was beyond the scope of this study

6. COC Items and Other Funding Agencies

No incremental significance was found in plotting S1 vs. ln NSF or S1 vs. ln DOD, Figures 26 and 28, respectively. What accounts for this lack of significance? Perhaps there are structural limitations owing to the relatively small size of the survey population. A larger survey

population, including respondent institutions that are more DOD-funding dependent might change the picture.

Alternatively, the smaller amount of funding from these other federal agencies may have less influence on the perceptions of conflict management. Since similar compliance guidelines are in effect for the NSF, it is difficult to attribute the lack of significant findings to some dilution of ethical standards of conduct, at least among NSF vs. NIH/DHHS grantees. Lastly, the Department of Defense funding entities have not been in the vanguard in terms of issuing compliance guidance.

C. LESSONS LEARNED

Many challenges were encountered in conducting this study. The findings reported in this study were the result of a revised field study. It had been preceded by another field study attempted in 2002 that was not successful due to several technical limitations that resulted in insufficient data returns. The hard-won experience from the earlier episode made clear that the survey population must be incisively identified, and multiple follow-up techniques must be employed to obtain a substantial response rate. When regional groupings of target institutions are utilized, care must be exercised in identifying comparable institutions, in terms of demographics, funding level, and other recognized benchmark characteristics.

As regards possible technical deficiencies, survey items must be carefully constructed and tested to approach some relative measure of objectivity. External validation of the survey instrument would be desirable, but a means to identify such a standard eluded this author. The specific wording of each test item, as a “real world” vignette must be carefully considered, to minimize possible ambiguity or question bias. Still, the likelihood of multiple interpretations by survey participants evidently lends subjectivity and imprecision to a study of this design that cannot be quantified. Undoubtedly, such subjectivity among respondents apparently contributed to the observed non-uniform responses to some question items. Hence, patterns of responses are best viewed as an indicator of reliability or as representing numerical trends.

Optimal scaling of question items bears further exploration. This author settled on a whole integer, five (5) point Likert scale. This was based on interpretation from the survey literature as to the relative validity of using numbered scales for quantifying the inherently non-quantitative values that are embodied in measuring perceptual responses. Other metrics for scaling may be equally effective that might include expanded scales, or scales that are parsed in smaller increments.

What accounts for the absence of significant findings in the majority of attempted correlations? The apparent finding of negative or non-correlated results might be attributed to errors in methodology or data compilation. As discussed elsewhere, ultimate validation of survey question items is a challenge for future scholarly exploration. The means to test the base validity of the survey approach remains unknown. Proxy validation was certainly sought through the use of beta-testers and informal appraisal by academic experts. With regard to data compilation, various types of unknown “noise” factors may have invalidated some of the computations.

Conversely, if the apparent findings of negative results are inherently valid, then the data collected in this study truly supports a valid finding of no measurable relationship for COI variables. Further speculation may be posed if one assumes inherent validity for this study. In that scenario, the findings of strong non-correlation for COI items could serve as a caution to responsible academic administrators who may need to reassess COI interventions from the standpoint of institutional risk management. Ultimately, this could signal the need for university-wide audit (s) as to the adequacy of current compliance functions and compliance reporting.

This study was ambitious in presuming that targeted individuals from institutions located throughout a multi-state region would respond in sufficiently high numbers to support incisive statistical analysis. Due to a variety of unknown factors, targeted respondents at some survey institutions simply did not reply, or only provided partial responses to questionnaire items. The time constraints on staff employees in a multi-task environment may explain some non-responses. Concern for the anonymity of results may be another factor, given the intrinsically sensitive nature of conflict scenarios, even when specific issues are posed hypothetically. This

lack of high percentage responses resulted in the subsequent need to pool survey results from both originally distinct research-intensive and research-extensive groups.

D. SUGGESTIONS FOR FUTURE RESEARCH

The results obtained raise many additional questions for future research. There appears to be a need to explore other metrics that may improve understanding of normalized workplace behaviors vis-à-vis the university research environment. Though elusive, true measures of workplace behavior, as opposed to *perceptions* of behavior await further elaboration.

The findings suggest support for the idea that compliance education and intervention processes currently in place at research institutions appear to positively influence compliant behaviors toward conflict management issues. It may be speculated that such positive influences serve to curb excessive or egregious behaviors. Extrapolating these indications to a realistic paradigm for institutional risk management would be the ultimate goal. However, before that goal could be achieved, additional measures would need to be tested. These might include indices that detect or predict the frequency of deviant behavior within organizational settings. This also may require effort to correlate perceptions of conflict with various compliance mechanisms. For example, can a correlation be ascertained between perceptions of conflict of interest or conflict of commitment and specific intervention mechanism that serve to manage, mitigate, or minimize various classes of institutional conflict?

Overall, more rigorous measures adapted from the sociology of science or drawn from decision sciences might be utilized. Such future studies might characterize behavioral disposition of respondents while more incisively measuring questionnaire outcomes. Studies characterizing deviance in science performance and science management might also shed light on institutional compliance and risk management. Another area of future study might explore the difference between externally imposed ethics standards and self-imposed standards of conduct.

Better psychosocial measures of behaviors and/or behavioral perception may need to be explored. Scaling of metrics utilized in survey instruments also needs to be carefully considered, to approach better sensitivity measures. (The whole integer scaling employed in this study may have been too coarse to detect subtler relationships). Other measures might be explored to typify additional dimensions of research related behavioral traits within and between comparable institutions. Such models or mechanisms might delineate, for example, the relative financial stake of individual respondents, or the impact of related equity involvement by each institution. As discussed elsewhere in this study, while the current body of regulatory guidelines and related literature speaks mainly to *individual* activity, focus has been subsequently directed to establishing comparable *institutional* limits for acceptable conflict management. In a future study, institutional compliance policies might be cross-correlated with a variety of refined questionnaire batteries designed to identify predictors of compliant behaviors.

Characterization of entrepreneurial activities emanating from the research university and how those developments correspond to risk exposure might be another avenue to explore. Correlation with the extent and nature of faculty consulting might be another activity to document. Other comparisons might seek to distinguish the difference in conflict perception due to disciplinary background or the varied nature of personal collaborative relationships.

E. SUMMARY

The findings suggest that policies or mechanisms in place in higher education institutions to inform and educate research staff about compliance issues have apparently encouraged normalized behaviors toward research management. This finding has been statistically supported in the case of overall sponsored funding level and DHHS funding as predicted by *conflict of commitment* scores. However, this relationship was not detected within the limitations of this study to be significant across the board. Specifically, significance was not found to be predicted by *conflict of interest* perceptions, or in relation to other federal funding sources (i.e., NSF, DOD, Other) for *either* commitment or conflict issues. Whether the sensitivity to conflict

compliance is diluted in relation to other funding agencies that are not concentrated in biomedical areas of research is unknown, and bears more study.

Consequently, it may be inferred that existing processes and mechanisms in place at research universities reinforce compliant research behaviors when the predominant funding relationship is driven by funding from the DHHS. More problematically (and less persuasively), it may be argued that such intervention and control procedures may be driving the performing research community toward a common research ethos. Specifically it was observed that despite the disparity in size of the total or DHHS funding portfolios represented by the spectrum of respondent institutions, most Likert values clustered about the trend-line, with few outliers. This suggests conformity to compliance-compatible behavior, particularly for the case of universities with large medical centers where research activities predominate.

While many aspects beg further elucidation, it is clear that the burdens of conflict management in higher education research environments pose multi-dimensional challenges. Keen governmental interest continues from both executive and legislative quarters concerning the effectiveness of federal funding for research. This may result in the imposition of more rigorous standards for implementation of research management in the future. Consequently, better measures of exercising internal control pertinent for risk management are obviously in the collective interest of the academic sector. More profoundly, seeking refinement in assessment measures may assure continuing support of institutional credibility in the public eye.

APPENDIX A

Pilot Survey Spring 1999

An Assessment of Organizational Conflict of Interest and Conflict of Commitment Issues



Instructions for Respondents: Federal government regulations mandate that Conflict of Interest (COI) situations involving university employees be minimized or otherwise managed to insure the integrity of the university research environment. A research study has been designed to identify faculty and staff attitudes and behaviors that may place the institution at greater or lesser risk for violation of COI rules.

As part of that study, in this questionnaire you are asked to respond to a series of questions dealing with organizational conflict issues. It should take no more than 30 minutes to complete. For each question, you will choose between a range of answers. Please indicate your response by *circling the term* that most agrees with your view. At the end of the survey are some demographic questions that will also provide further information for the study. When you have completed the survey, please fold and place in the self-addressed stamped envelope that is enclosed. Your prompt return of the survey by no later than two weeks from receipt will help ensure the success of this study. Please return the completed questionnaires via campus mail to:

Michael M. Crouch
Office of Research
350 Thackeray Hall.

Your individual responses will be treated confidentially. No individuals will be identified, as data will be collated and analyzed for group representation purposes only. As Director of the Office of Research, my operating responsibilities should not be confused with the academic purposes of this exercise. However, your voluntary response will be essential to the success of the study.

Thank you in advance for taking the time to complete the survey.

Michael M. Crouch
Director, Office of Research
Doctoral Student in the Higher Education Administration Program, School of Education

Section I

1. As an area administrator, you are aware that a spouse's wife, under a different name, is paid a consulting fee under the spouse's prime grant. Routine review of the professor's COI disclosure does not indicate the related family income. Should you alert the department chair to this fact?

Definitively not Probably not not sure Probably Definitively

2. As a staff member, you work a second job after hours, performing laboratory work for professors in another department in excess of 10% of your base salary. Should this fact be disclosed in your annual administrative COI filing?

Definitively not Probably not not sure Probably Definitively

3. You have noted that a number of departmental faculty with joint organizational appointments report cumulative time commitments on grants well in excess of 100%. Should you work with the chair or other supervisory personnel in the unit to correct these misstatements?

Definitively not Probably not not sure Probably Definitively

Section II

1. You are a new department chair. You are aware of accepted unit routines allowing faculty to casually exceed the amount of time on-campus devoted to consulting. In order to bring unit practices in line with policy as part of a program review, would you decide to tighten up on adherence to consulting time limits?

Definitively not Probably not not sure Probably Definitively

2. You are a senior departmental administrator, with personnel responsibility delegated by the chairperson. Several departmental personnel situations involve immediate family members in supervisory position over others. Existing COI and nepotism policies caution against such arrangements, but some of these situations predated the implementation of related policies. You are determined to uphold an objective standard; should you move to curtail these exceptions by transferal or repositioning of the affected employees?

Definitively not Probably not not sure Probably Definitively

3. You are a key aide to a department chair, charged with fiscal oversight of the unit. Several faculty engage in overlapping consulting agreements with some of the same sponsors that provide substantial annual research funding. In your review of revenue, you notice a downward trend in sponsored research performed by the same group of faculty. Should you recommend review of these underlying issues by the chair?

Definitively not Probably not not sure Probably Definitively

Section III

1. You are a unit chair. Absent any policy prohibition, several faculty from your unit serve as compensated board members on small, technology-based companies with pending research relationships with your unit. You would implement policies that require faculty or staff to deposit outside compensation into trust for the duration of any such corporate relationships.

Definitively not Probably not not sure Probably Definitively

2. You are a faculty member. For a number of years, you have required your graduate students to attend career development seminars. Unbeknownst to the students, you are a continuing business partner in for-profit education programs that include seminars that are offered on your campus. Student participants attending these sessions should be advised of this relationship.

Definitively not Probably not not sure Probably Definitively

3. As a senior staff member, you are part of a dean's task force re-examining potential conflict of interest issues. Realization of personal income from book royalties is one of the issues. Your task force recommends phase-out of several current practices. This includes elimination of faculty mandatory textbook assignment of self-authored books.

Definitively not Probably not not sure Probably Definitively

4. It is standard practice that most scholarly journals do not require faculty contributors to disclose the fact of financial interest in the subject they are reporting. As a department chairperson with responsibility for adherence to COI policy, you implement a departmental rule that faculty must disclose their extent of financial interest with the sponsor concurrent with their manuscript submission to the journal or publishing house.

Definitively not Probably not not sure Probably Definitively

Section IV

1. You are an assistant chairperson for administration. Following the result of a departmental internal review, it is discovered that a group of faculty has been operating a separate consulting entity for some time through the auspices of the department, utilizing staff support and resources. The department chair feels embarrassed at the revelation. However, stated institutional policies prescribe specific remediation and sanctions for such matters. Should the issue be pursued?

Definitively not Probably not not sure Probably Definitively

2. As an experienced departmental staff member, you sit on a review committee for technology transfer. A prospective corporate partner has tentatively offered free laboratory use and multi-million grant support, in exchange for tacit exclusivity in specific technology fields. This offer may infringe on the University's implicit obligation not to engage in anti-competitive activities. However, disapproval of the offer would run counter to your chair's own recommendation. Do you favor disapproval?

Definitively not Probably not not sure Probably Definitively

3. You hold a staff position in the Dean's office, and serve as a member of the Dean's Oversight Committee, that reviews COI issues that have been referred by the departments. Review of the current slate of referral cases indicates a trend of lax enforcement of stated procedural interventions or sanctions at the department level. The Dean, as chair of the Oversight Committee, seeks to avoid confrontation, or potential embarrassment of department chairs. Should the Oversight Committee reinforce stated interventions or sanctions?

Definitively not Probably not not sure Probably Definitively

Section V

1. Certain faculty members in your department hold joint appointments. In monitoring their stated time commitments in current research projects, you note individual effort claimed in excess of 100% of total time allocable. You insist upon immediate clarification to existing proposals and restatement of effort to not exceed 100%.

Definitively not Probably not not sure Probably Definitively

2. To ensure interdisciplinary activity, you promote faculty efforts with colleagues in other departments. Meanwhile, performance review of your unit clearly identifies deficient mentoring of new faculty. To reconcile these interests, you impose a limit of 25% individual

faculty time on interdisciplinary projects. This may involve reduction of the current level of involvement by several senior faculty.

Definitively not Probably not not sure Probably Definitively

3. You advise the unit chairperson on personnel and administrative matters. Faculty responsibilities are broadly defined to include instruction, research, and public service. The Dean imposes a new rule that 50% of faculty support be recovered from sponsored research. In addition, your current operational review indicates that half of faculty currently devotes 35% of their efforts to public service projects. These activities provide no salary recovery. You direct that new or continuing public service projects are limited to not exceed 20% of the individual faculty member's time.

Definitively not Probably not not sure Probably Definitively

Please also complete the following demographic information:



Sex

M F

Age

20-29 30-39 40-49 50-59 60+

University staff or faculty rank (e.g., For staff, Admin II, Staff Spec III; for faculty Assistant/Assoc./Full Professor)

No. Years current position held

0-5 6-10 11-15 15+

No. Years employed in current unit

0-5 6-10 11-15 15+

Number of employees supervised

None 1-5 6-15 15-25 More than 25

Your comments are welcomed! Please provide any specific ideas or reactions to this survey in the box below. Thank you for your interest.

APPENDIX B

Survey Instrument

Perceptions of Conflict of Interest in Research Performance in Higher Education

Instructions for Respondents



Federal government regulations mandate that Conflict of Interest (COI) situations involving university employees be eliminated, minimized or otherwise managed to insure the integrity of research performed in the university or college environment. A research study has been designed to assess individuals who are members of research intensive institutions located in the mid-Atlantic region of the United States and their perception of attitudes and behaviors concerning conflicted situations that arise at their institutions.

Your individual responses will be treated confidentially. No individuals will be identified, as data will be collated and analyzed for group representation purposes only. Your voluntary response will be essential to the success of the study.

In this questionnaire you are asked to respond to a series of question items. The first section helps identify your background. The second section asks for your response to questions about institutional culture. The third section asks for your response to a series of preference issues. The fourth section concerns your general familiarity with conflict of interest procedures. Finally, the fifth section asks for your response to specific conflict scenarios. It should take no more than 20 minutes to complete. For each question, you will choose between a range of answers. *Please indicate your response by clicking the term that most closely agrees with your view. Once you have completed all items of the survey, please follow the on-screen instructions to assure that your responses have been successfully transmitted.* Your prompt completion of the survey by no later than two weeks from receipt will help ensure the success of this study.

Thank you in advance for taking the time to complete the survey.

Michael M. Crouch
Director, Office of Research
Doctoral Candidate in the Higher Education Administration Program
School of Education

Section I. Respondent Background

Please complete the following information:



A.1 Please define your University employee classification by the term below that most nearly matches your actual title/role

		Indicate actual title
Researcher/faculty member		
Chief Academic Research Officer		
Research Administrator		

Section II. Perception of Institutional Culture

Please respond to this set of questions with the answer that most nearly represents your perspective (1=least, 5=most)

B.1. What is your perception of the relative importance management attaches to conflict resolution at your institution?

1 2 3 4 5

B.2. What is the perceived importance of performing scholarly research at your institution?

1 2 3 4 5

B.3. What is the perceived importance of instructional duties at your institution?

1 2 3 4 5

B.4. What is the perceived importance of public service at your institution?

1 2 3 4 5

B.5. What is the perceived quality of employee orientation at your institution?

1 2 3 4 5

Section III. Perception of Faculty Preference

P.1 What is your perception of faculty commitment to teaching?

(1=least, 5=most)

1 2 3 4 5

P.2 What is your perception of faculty commitment to research?

1 2 3 4 5

P.3 What is your perception of faculty commitment to their institution?

1 2 3 4 5

P.4 What is your perception of faculty commitment to their department?

1 2 3 4 5

P.5 What is your perception of faculty commitment to their discipline?

1 2 3 4 5

Section IV. Respondent Involvement (circle the term that most closely applies)

R.1. The College or University community must follow a number of mandated business and ethical principles in its conduct of research activities. One of these mandates involves avoiding or minimizing *Conflict of Interest (COI)* situations on the part of its faculty and staff. In your own unit, how familiar are you with the application of the applicable institutional COI procedures?

Not familiar Somewhat familiar Not Sure Familiar Very familiar

R.2. What is the extent of your direct responsibilities pertaining to research activities?

None Limited Not sure Moderate Extensive

R.3. How frequently have you been part of the administrative review or intervention or resolution process pertaining to specific COI cases in your unit?

Never Infrequently Not sure Occasionally Frequently

R.4. Have you been provided sufficient information concerning the definitions for and consequences of conflict in your institution?

None Limited Not sure Moderate Extensive

**Section V. Conflict of Interest Scenarios (Each item below describes a conflicted situation.
Please circle the term that most nearly agrees with your view).**

C.1 Following the result of a departmental internal review, it was discovered that a group of faculty have been operating a separate consulting activity utilizing departmental staff support and resources. Should the situation be explored further?

Definitely not Probably not Not sure Probably Definitely

C.2 An area administrator is aware that a spouse's wife, under a different name, is paid a consulting fee under the spouse's outside funding. Routine review of the professor's COI disclosure form does not indicate the related family income. Should the department chair be alerted to this fact?

Definitely not Probably not Not sure Probably Definitely

C.3 A staff member works a second job after hours, performing laboratory work for professors in another department in excess of 10% of your base salary. Should this fact be disclosed in the annual Conflict disclosure, Statement of outside interests or similar form?

Definitely not Probably not not sure Probably Definitely

C.4 An individual holds a staff position in the Dean's office, and serves as a member of the Dean's Oversight Committee, that reviews apparent conflict issues that have been referred by the departments. Review of the current slate of referral cases indicates a trend of lax enforcement of stated procedural interventions at the department level. The Dean, as chair of the Oversight Committee, seeks to avoid confrontation, or potential embarrassment of department chairs. Should the Oversight Committee demand enforcement of the procedures?

Definitely not Probably not Not sure Probably Definitely

C.5 A senior staff member is part of a dean's task force re-examining potential conflict/conflict of interest issues. Realization of personal income from book royalties is one of the issues. The task force recommends phase-out of several current practices. Should this include elimination of faculty mandatory textbook assignment of self-authored books.

Definitely not Probably not Not sure Probably Definitely

C.6 A number of faculty at the university are involved in local community economic development efforts. Faculty may receive substantial (>\$5,000) consulting fees based on their academic expertise. If not otherwise covered by an explicit disclosure rule, should this fact be disclosed to their academic supervisors?

Definitely not Probably not Not sure Probably Definitely

C.7 Many scholarly journals still do not require faculty contributors to disclose the fact of financial interest in the subject they are reporting. Should the department chairperson with responsibility for COI procedural compliance implement a departmental rule that faculty must disclose their extent of financial interest with the sponsor concurrent with their manuscript submission to the journal or publishing house?

Definitely not Probably not Not sure Probably Definitely

C.8 This scenario involves a key administrator in a research intensive department or center. Following the result of an internal review, it is discovered that a group of faculty has been operating a separate consulting entity for some time, utilizing departmental staff support and resources. Oversight of these practices has been lax. However, stated institutional policies prescribe specific remediation and/or sanctions for such matters. Should the issue be pursued?

Definitely not Probably not Not sure Probably Definitely

C.9 A key aide to a department chair is charged with fiscal oversight of the unit. Several faculty engage in concurrent consulting agreements with some of the same sponsors that provide substantial annual research funding. In a review of revenue, it is noticed that a downward trend in sponsored research performed by the same group of faculty. Should the chair review these underlying issues?

Definitely not Probably not Not sure Probably Definitely

C.10 This scenario involves a unit chairperson. Absent any policy prohibition, several faculty from the unit serve as compensated board members on small, technology-based companies with pending research relationships with your unit. Should there be a restrictive policy that requires faculty or staff to deposit outside compensation into trust for the duration of any such corporate relationships?

Definitely not Probably not Not sure Probably Definitely

C.11 For a number of years, a faculty member has required the graduate students in his/her course to attend university career development seminars. Unbeknownst to the students, the same faculty member is a business partner in for-profit education programs that include seminars currently offered on the campus. Should student participants attending the company sessions be advised of this relationship?

Definitely not Probably not Not sure Probably Definitively

C.12 A project team includes an array of faculty, technicians and other staff. Due to over-expenditure of available funds, the team historically “borrows” funds from other accounts to provide interim coverage of expenses, until a new phase of anticipated funding arrives. Should the business manager for the affiliated academic unit allow this practice to continue?

Definitely not Probably not Not sure Probably Definitively

C.13 Some individual faculty members with joint appointment between two different school units deliberately *understate* their overall time commitments below a total of 100% to maximize their research involvement. A new department chair in one of the schools involved insists on accurately reporting such commitments, so that actual commitments total 100%. Should this reform be maintained?

Definitely not Probably not Not sure Probably Definitively

C.14 A faculty member serves as the principal investigator (PI) on a large project grant. The large grant includes a subcontract to a small business concern in which the same faculty member holds stock interest of less than 5%. Should the faculty member sell the stock interest to continue his/her role as PI?

Definitely not Probably not Not sure Probably Definitively

C.15 Fully aware of a faculty business investment in a private testing laboratory, several of his/her graduate students voluntarily accept part-time employment in the firm to earn money. Despite the full disclosure, should the faculty member excuse him/herself from concurrent role as a member on the same students’ dissertation committees?

Definitely not Probably not Not sure Probably Definitively

C.16 A social scientist faculty member has fully disclosed his compensated consulting relationships with a variety of non-profit funding organizations. A collaborator at another institution has asked him to serve as the Co-PI on a new grant being submitted to one of his client organizations. If not otherwise restricted by one or more institutional policies, should the faculty member serve in this role?

Definitely not Probably not Not sure Probably Definitively

C.17 A dean is directly involved in the formulation of new accreditation standards for a specific engineering field. Knowing this, the dean engages in an intense consulting period with a short list of institutions faced with re-accreditation in the same field. Should his/her role in standards formulation be disclosed to his clients?

Definitely not Probably not Not sure Probably Definitively

C.18 A faculty member in the humanities is in a race with an academic competitor at another college/university to publish the next definitive text in his/her field. There is a prospect of lucrative royalties and other financial inducements for completing the successful text. The faculty member accepts a high profile media interview to preview his/her nearly completed volume. In the interview, he/she presents a highly critical view of the competitor's scholarship. Has financial conflict of interest biased the individual's behavior?

Definitely not Probably not Not sure Probably Definitively

C.19 As a part of professional and community partnership, faculty are encouraged to perform public service. Should the dean preview all public service commitments before the faculty member is able to commit to the specific workload?

Definitely not Probably not Not sure Probably Definitively

C.20. As a result of public service, faculty oftentimes engage in non-compensated activities. Should these non-remunerative activities also be routinely disclosed to academic supervisors?

Definitely not Probably not Not sure Probably Definitively

APPENDIX C

CROSS-REFERENCE OF CODED INSTITUTIONS SURVEYED

Research Intensive Institutions

INSTITUTION	CODE
Adelphi University	Institution A
Clarkson University	Institution B
Drexel University	Institution C
Duquesne University	Institution D
Hofstra University	Institution E
Indiana U. of Penn.	Institution F
MCP Hahnemann U.	Institution G
New Jersey Inst. Of Tech.	Institution H
New School University	Institution I
Pace University- NYcampus	Institution J
Polytechnic University	Institution K
Rockefeller University	Institution L
Seton Hall University	Institution M
Stevens Inst. of Tech.	Institution N
St. Johns University	Institution O
SUNY College Env.Science	Institution P
U. Maryland-Baltimore	Institution Q
Widener University	Institution R
Wilmington College	Institution S

Research Extensive Institutions

American University	Institution AA
Carnegie Mellon University	Institution BB
Catholic University	Institution CC
Columbia University	Institution DD
Columbia University, Teachers College	Institution EE
Cornell University	Institution FF
CUNY Graduate Center	Institution GG
Fordham University	Institution HH
George Washington University	Institution II
Georgetown University	Institution JJ
Howard University	Institution KK
Johns Hopkins University	Institution LL
Lehigh University	Institution MM
New York University	Institution NN
Pennsylvania State U.	Institution OO
Princeton University	Institution PP
Rutgers University	Institution QQ
SUNY-Albany	Institution RR
SUNY-Binghamton	Institution SS
SUNY-Buffalo	Institution TT
SUNY-Stony Brook	Institution UU
Syracuse University	Institution VV
Temple University	Institution WW
University of Delaware	Institution XX
U.of MD-Baltimore County	Institution YY
U.of MD-College Park	Institution ZZ
University of Pennsylvania	Institution AB
University of Pittsburgh	Institution AC
University of Rochester	Institution AD
West Virginia University	Institution AE
Yeshiva University	Institution AF

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