Institutional Factors Influencing the Success of Drug Abuse Education And Prevention Programs

Philip Salem and M. Lee Williams
Southwest Texas State University

Introduction

Since 1986, the Fund for the Improvement of Postsecondary Education has had the responsibility of funding numerous programs under provisions of the Drug-Free Schools and Communities Act. By 1990, it had sponsored over one hundred drug abuse education and prevention programs in institutions of higher education at a cost of over $10 million annually.

Because these programs are diverse, they are difficult to evaluate without a clear model of success. Such a model for the testing and institutionalizing of drug programs must guide academic administrators in both evaluating their past efforts and developing criteria for future proposals. It should also help eliminate piecemeal measures and unnecessary redundancy. Therefore, the theory developed in this paper tries to answer the following question: *How can organizations and their communication best contribute to the success of drug abuse education and prevention programs?*

The theory outlined here is an applied theory, its primary use being for practitioners. But it can also augment organizational and communication theory. In the end, our theory outlines an organization's development, and we hope our work may lead to a more general model of how organizations process new units, invent new units, and make these new units routine.

Our presentation necessarily involves formal scientific terms. However, for the person more interested in the practical rather than the theoretical implications of our work, we suggest the "Applying Theoretical Constructs" section and the "Recommendations" section. Both sections are less formal and index the earlier more formal sections.

Theory building strategy

Because theories and theory building have been described diversely, words such as *axiom, proposition, theorem,* and *hypothesis* have taken on wide and diverse use. What one theorist labels a proposition, another labels an hypothesis. Labeling, therefore, can be neither correct nor incorrect but only consistent or inconsistent.

Our approach emerges from three types of literature: a) respected texts on theory building in the behavioral sciences, one focused on quantitative

deductive approaches (Dubin, 1978) and one detailing qualitative approaches (Strauss & Corbin, 1990), b) the only recent volume to describe the building of communication theories (Hawes, 1975), and c) an early systematic presentation of a behavioral theory related to communication (Schutz, 1966). All three sources offer logical approaches to building theories. Taken together, they provide a powerful framework for our research. Nevertheless, in their terminology minor inconsistencies arise even here. We will begin our research by resolving some of these inconsistencies.

A theory is a set of interrelated terms and statements systematically presented with the purposes of explaining and predicting a phenomenon (Kerlinger, 1986, p. 9). It may be either formal or substantive (Hawes, 1975). A formal theory relies on logic as its primary validation. A substantive theory also employs logic, but its validity is established by its potential for empirical validation. *Our report presents a substantive theory rather than a formal theory.* It includes hypotheses which may be tested.

Theoretical statements claim two forms of empirical validity (Reichenbach, 1949; Schutz, 1966): antecedent probability is claimed when hypotheses are supported by current and past data; evidential probability is claimed when hypotheses are tested and when data are generated to demonstrate the predicted relationship. *Our theory generates hypotheses claiming antecedent probability, that is, hypotheses that reflect (a) the existing body of theory, (b) empirical data demonstrating that theory, and (c) information already reported to the Fund for the Improvement of Postsecondary Education about drug programs.* Because our own qualitative data support some of our final hypotheses, the hypotheses show modest evidential probability. Furthermore, hypotheses in our theory can form the framework for further quantitative testing or research under Fund grants, but these efforts go beyond the scope of this study.

Developing our theory begins with a review of other theories related to new subsystems in an information organization. See Table 1 for major areas of thought. Our review serves two purposes: first, it selects only applicable theories (Dubin, 1978); second, it produces primary statements assumed true in light of past research (Hawes, 1975).

For simplicity, we identify primary statements as either axioms or propositions. An axiom sets boundaries or states a general principle. The Theoretical Foundations section of this report identifies those axioms which apply to our theory. We will employ many primary statements, but we will distinguish as axioms only those needed to generate secondary statements. Because theorists' taxonomies range from the complex and specific (Hawes, 1975; Gibbs, 1967) to the simple and general (Dubin, 1978), our labeling is a compromise. For us, axioms set boundaries and explain processes and propositions specify outcomes.

Two types of secondary statements emerge from primary statements: theorems and hypotheses (Hawes, 1975). Theorems are deduced, inferred, or derived from primary statements (Gibbs, 1967; Hawes, 1975). They resolve theoretical issues between primary statements and suggest theoretical con-

cepts. Theorems take the propositional form "when A, then B." Our goal was to create few theorems since they are an intermediary form between primary statements and hypotheses. We will note our own inferences as theorems, but we will make no separate presentation of them. They will be found within our explanations of axioms and propositions.

Research Area	Representative Sources
Decision-making	Cyert & March (1963), Leblebici & Salancik (1981)
Diffusion of Innovation	Katz (1988), Rogers (1983), Rogers & Agarwala-Rogers (1976)
Information	Ashby (1954), Berger & Bradac (1982), Daft & Lengel (1986), Downey, Hellreigel, & Slocum (1975), Huber & Daft (1987)
Interpersonal Communication	Fisher (1978), Pearce (1989), Searle (1969), Watzlawick, Beavin & Jackson (1967)
Leadership	Bennis & Nanus (1985), Hitt (1988), Kotter (1990), Yukl (1989)
Living Systems	Ashby (1956), von Bertalanffy (1968), Buckley (1967), Corning (1983), Miller (1978)
Organizational Climate	Falcione, Sussman & Herden (1987), Muchinsky (1977), Salancik & Pfeffer (1978)
Organizational Communication	Daniels & Spiker (1983), Goldhaber (1986), Gratz & Salem (1981), Greenbaum, Hellweg & Falcione, (1988), Penely (1982), Roberts & O'Reilly (1974), Stohl & Redding (1987)
Organizational Politics	Frost (1987)
Organizational Structure	Jablin (1987a)
Organizational Theory	Galbraith (1977), Hage (1980), Likert (1967), Meyer (1975), Weick (1979)
Persuasion	Campbell & Pritchard (1976), Roloff (1981), Smith (1982)
Resource Dependency	Emerson (1962), Pfeffer (1981)
Role Theory	Katz & Kahn (1978)
Social Networks	Rogers & Kincaid (1981)

Table 1. Primary research areas

Hypotheses are statements of conditional probability that predict how changes in one or more variables relate to changes in one or more other vari-

ables (Dubin, 1978). Hypotheses take the form "if X, then Y." They are derived directly from propositions or from theorems. That is, since propositions take the form "when A, then B," hypotheses are logically connected because the X and Y in the hypothesis are instances of A and B in the proposition. Derivation is the appropriate form of generating hypotheses because the proposed theory is an applied one. Our hypotheses appear in a later section.

Qualitative data has been used to ground our hypotheses. After reviewing relevant documents on grants and collecting final drug-program reports, we interviewed twelve grantees individually and conducted one focus group to lend some evidential probability to our claims. Five coordinators of exemplary programs and another coordinator of a discontinued program were half of our interviews. Then we coded our data using grounded theory procedures (Strauss & Corbin, 1990). The results appear in the section applying formal terms and the section with hypotheses.

We do not claim to have developed a grounded theory, but our procedures do insure a practical application of our hypotheses. Developing a grounded theory will require more data. Indeed, the focus-group interview, our last data-gathering activity, although it generated no new ideas, did confirm our hypotheses.
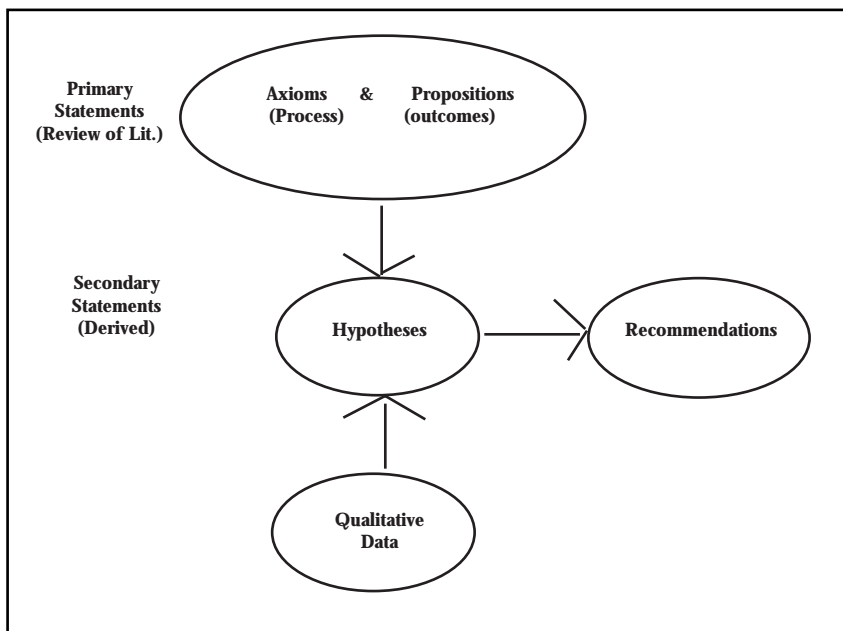

Figure 1. The process of building theory

Figure 1 represents the process we employed. To summarize, the first step in our research was a review of scholarly literature to identify relevant concepts and constructs. Second, we identified axioms and propositions from that literature. Third, we constructed an interview guide and began

data gathering. Fourth, we generated hypotheses derived from the primary statements and suggested by the interviews. Fifth, we conducted one focus group to see what had been missed and to "test" our hypotheses. Finally, we coded the limited data as one last check on our hypotheses and offered recommendations for implementing drug education programs.

Theoretical foundations: axioms

Axioms are the foundations of our theory. Some define its basic units, concepts and constructs, while others characterize the units that will be important later. Still others exclude concepts from the phenomena we seek to explain. While one type of axiom serves to limit our theory to a specific domain, a second type relates units to each other, focusing on their interactions and strengthening the theory (Dubin, 1978).

Axioms are statements we assume to be true. They already exist in the literature. In some cases, axioms are generally accepted boundaries for phenomena we explain. In other cases, we have borrowed and used as our own axioms from already established theories and their data.

We begin this section by explaining organizations as social systems, particularly institutions of higher education and their unique characteristics. Then we devote separate sections to organizational success, a central feature of our theory, and to organizational communication. This last section offers two models showing how innovations are adopted.

Organizations as Social Systems

Systems theory is not so much a theory as a way of looking at phenomena (von Bertalanffy, 1968). It is a common and popular perspective for modeling organizations and organizational communication (Krone, Jablin & Putnam, 1987) and for building theories in the behavioral sciences (Dubin, 1978). Through its perspective we have integrated diverse literatures into our theory.

Axiom 1: Organizations are living systems.

A system is a set of interacting or interrelated components (Kuhn, 1975), components being the smallest identifiable units within a system (Miller, 1978). Although anything may be identified as a component—an object, a person, a role, even an idea—a set of components can be a system only if components interact (Hall & Fagen, 1956). Furthermore, the interaction must produce a result greater than the sum of the components, a holistic product like that of a winning football team striving to produce a victory significantly greater than the sum of its members' individual feats.

Organizations are living systems, sharing traits similar to those of other organisms (Miller, 1978). They work to reach certain goals. They process mat-

ter, energy, and information. They divide their units into subunits to accomplish critical functions. But because they involve human beings, organizations differ from other living systems in that they choose their goals and methods of accomplishing them (Ackoff & Emery, 1972).

Axiom 2: Organizations convert resources into products or services.

Living systems convert input into output. Organizational inputs include social and psychological resources such as the skill and knowledge of its members, in addition to the more obvious concrete materials needed to perform tasks (Katz & Kahn, 1978). The behaviors inside the system convert these resources into goods and services. Fees and other income are the input that comes when customers purchase goods and services. Salaries, profits and expenses are outputs to the humans or other systems that contributed resources to the process.

Axiom 3: Organizations are systems of interlocking role behaviors.

A role is a selected set of recurring perceptions and behaviors intended to interlock with the activities of another (Katz & Kahn, 1978). In an organization, employees bring their perceptions to their tasks. These tasks require specific knowledge and specific attitudes and not the entire range of what employees feel and know. Nevertheless, these perceptions should be linked, each employee's behavior with the behavior of others, in the system to produce joint efforts. The interaction of these linked behaviors produces the holistic output.

Axiom 4: Individuals include themselves only partially in their roles.

When people join an organization, they select from their repertoire of perceptions and behaviors those they think appropriate to their organizational roles. No one, of course, can include all perceptions and behaviors in any one role or in any one relationship. They include only a part of themselves because they choose what to bring to one role and to exclude from another (Allport, 1924).

Newcomers must learn what veterans expect of them as they play their roles (Jablin, 1987b). Later, if they are effective in their role-performance, they will be rewarded materially or socially for meeting expectations and performing well. As they continue to perform, they may choose to include additional perceptions and behaviors that will maintain and expand their roles. Their behaviors become part of the social system.

At the same time, organizational members put their own stamp on their roles, and their roles reflect their personalities (Bakke, 1950). Of course, some roles require more than others. Some jobs ask more of the worker than others. Furthermore, becoming part of a social system means that employees

must accomplish more than the obvious formal tasks. They must also include behaviors that allow them to contribute and influence the system.

Axiom 5: Social relationships consist of roles and rules.

Role behaviors are linked by social rules. A rule indicates what behaviors are required, preferred, or prohibited in certain contexts (Shiminoff, 1980). Therefore, all relationships require rules. To what extent rules affect relationships depends on the extent to which all the participants recognize and agree to those rules. One way to see socialization is that individuals are rewarded for following the rules and that they become socialized as they learn the rules.

Rules may be explicit and formal, stated procedures or organizational policies, or they may be implicit and informal, unstated but understood organizational norms and values. Although some jobs are more formalized than others, no one can formulate all the rules for a role. Members of organizations acquire implicit rules from observations of and communications with other members.

Rules may be constitutive or regulative. Constitutive rules indicate what various behaviors mean; regulative rules indicate what behaviors should follow or not follow other behaviors (Searle, 1969). In an organization, constitutive rules are about content, regulative rules about procedures (Farace, Monge & Russell, 1977). For example, a newcomer must learn organizational jargon and symbols. But to learn the rituals and what others expect of you is to learn regulative rules.

Axiom 6: Rules increase predictability and coordination as they influence the distribution of resources inside an organization.

Rules and the expectations they reflect mean that the members of a social system can predict, to an extent, what everyone will do. Workers can rely on each other because they learn that behaviors will be repeated. This predictability insures that one member can anticipate what another member will do and, consequently, link behaviors (Katz & Kahn, 1978). Continual patterns of coordination require prediction.

Rules also distinguish separate roles that differ because their behaviors are different. Some roles may be given responsibility for the performance of other role behaviors. Some roles require that the supervisor and directors be responsible for other role behaviors. Such authority often stems from the formal structure of an organization.

Furthermore, some behaviors are preferred over others, and there are rewards for preferred behavior. The preferences are reflected in salaries, promotions, bonuses, and other material rewards. But informal rules also point the way to these as well as social rewards such as respect and consideration, rewards that may increase a member's influence and authority. The rules,

therefore, define positions in a hierarchy based on status and power.

Organizational life may be seen as a political game in which members continually engage in a struggle for resources (Frost, 1987). The struggle may be a direct and surface struggle to control resources, or it may be a deeper struggle to control the rules for increasing power. Games are easier to win if everyone must follow your rules.

> Axiom 7: Ten factors characterize every organization: its goals, tasks, technology, personnel, social structure, social climate, management, leadership, development, and communication.

Organizational goals outline the state of an organization's desires (Etzioni, 1964). They also declare the organization's best intentions. They include both abstract goals as part of a mission statement and concrete goals, the objectives of particular tasks or role behaviors. Goals may be precise about outcomes related to goods and services, or they may be general about desirable social or psychological outcomes. In whatever form, goals are chosen and resources are committed to their realization.

Tasks are jobs that must be done if workers are to reach a goal. They will vary to the extent that they require diverse behaviors (Thompson, 1967). Technologies are means by which workers accomplish tasks (Perrow, 1970). They vary from the craft technologies used by performing artists, tradesmen to the routines of tellers, and clerks, to the engineering technologies used by lawyers and accountants, to the extremely nonroutine technologies of planning and research.

Various tasks are ordered in predictable patterns and structures. Structural characteristics include an organization's size, differentiation, centralization, and integration (Jablin, 1987a). The intended structure, depicted in an organizational chart reinforced by policies delineating the roles in the chart, may either contradict or compliment the actual pattern of social behavior, or it may reveal a clash between the formal structure and the informal structure.

Organizations differ in the extent to which experience and formal training are required of employees for effective performance (Daft & Macintosh, 1981). Typically, industrial organization reduce as many tasks as possible to simple routines. Minimal training prepares most workers for initial and continued employment. Experience may be unnecessary. But appointments to management normally require experience and, in contemporary organizations, training and formal credentials.

The climate of an organization is the shared social perceptions of its members about the organization (Falcione, Sussman, & Herden, 1987). These include feelings about working conditions, the work itself, their relationships with coworkers and supervisors, the autonomy they have in their work, the fairness of the reward system, and the overall warmth of the organization. The term also includes perceptions and meanings important to

organizational politics. Thus climate is a feature of an organization, not of an individual; it determines in part a worker's productivity and satisfaction.

Management refers to the decision-making in organizations. Decisions revolve around the five functions of management: planning, commanding, organizing, controlling and coordinating (Fayol, 1949). Organizations differ according to the number who participate in decision-making. At one extreme, the few make decisions that affect the many; at the other, all who will implement a decision or be affected by it are involved in the decision.

Leadership is that quality of management needed to bring about effective change in an organization. Leaders create shared visions of what organizations can become and use their power and resources to implement that vision (Hitt, 1988; Yukl, 1989). While managers coordinate and control programs, leaders are distinguished by their insight and innovativeness and by their efforts to transform the organization (Bennis & Naus, 1985; Kotter, 1990). Leaders challenge the status quo and think of possibilities instead of probabilities (Kouzes & Pozner, 1987), while managers focus on implementation. But as leaders communicate their visions, they also enable their visions' implementation.

Development refers to the life history of an organization. As organizations mature there is a change in the areas of concern. They move from creative concerns, to directed and controlling concerns, to delegation concerns, to coordination and collaboration concerns (Greiner, 1972). Naturally, all the other nine factors change as the system matures.

Finally, communication refers to the information exchange process common to all living systems. It nourishes all other organizational elements, tying them together; if it withers and dies, so does the system. Table 2 summarizes the ten organizational factors.

> Axiom 8: Like other systems, organizations exist in an ecosystem of other systems.

The boundary of a system is a division that identifies the system (Kuhn, 1975). Boundaries can be physical (walls, fences), abstract (property lines), social, economic, or political (a list of members). The analyst of a system arbitrarily sets its boundary, believing that most component activity is within that boundary.

Explaining a system by examining separate components is slow and generally counter-productive. Seldom do all components interact with all other components. More often, clusters of components form subsystems which have the properties of a system (Farace, Monge, & Russell, 1977). All systems are subsystems to a larger system. Thus a suprasystem is that larger, more complex system that incorporates a system. Systems at the same hierarchical level are called parallel systems.

Factors	Definition	How They Vary
1. Goals	intended outcomes	quality, innovation, efficiency, quantity, morale, continuation of an innovation
2. Tasks	the job or behaviors needed to accomplish a goal	diverse to uniform
3. Technology	a method of doing a task	routine to nonroutine
4. Structure	ordering, configuring of tasks	simple to complex, centralized to decentralized, formal to informal
5. Personnel	employees, their experience and formal training required	experienced to inexperienced, limited training to highly trained
6. Climate	shared social perceptions of the members of the organization	highly supportive to minimally supportive, perceptions about relationships, working conditions, etc.
7. Management	decision-making in organizations	centralized to participative
8. Leadership	management's persuasive attempts to bring about change	generates vision, advocates vision, uses vision
9. Development	maturation of the system	developmental stages from initiation to maturation
10. Communication	information exchange process	see Table 3

Table 2. Organizational factors and how they vary

In organizations, components are roles, often organized into work groups that may form a subsystem called a department. On the other hand, separate work groups may form departmental subsystems. The department is then said to be the suprasystem of the work group. Similarly, a department may be a subsystem to a larger organizational unit called a division. Divisions in turn may be subsystems of the organization.

All conditions surrounding the system's boundary, including the suprasystem and any parallel systems that affect the system, are called the environment (Sommerhoff, 1969). The entire complex of systems, subsystems, and suprasystems is often called an ecosystem.

Axiom 9: Organizational environments include competing and higher-level systems that constrain social behavior.

Linked systems constrain each other (Ashby, 1956). A business that pro-

vides marketable goods and services, for example, limits its production according to demand. On the other hand, customers are limited by what the organization is willing to supply. Likewise, organizations act as customers to their suppliers, and here again, there is constraint. Competitors limit the behaviors of a rival, using up all resources the rival needs and influencing suppliers as well as customers. A corporation can limit what one of its subsidiaries can produce, or an international labor union's policies can restrict what its local chapters do.

Constraint is also part of what goes on inside a system. Marketing cannot sell products and services that production will not create. When subsystems limit their activities, they do so for the benefit of the entire system (Katz & Kahn, 1978). It follows then that systems in an ecosystem are symbiotic. Marketing needs production. An organization needs customers. The political system needs an economic system, and an economic system needs a political system.

Axiom 10: Environments and ecosystems vary in complexity.

The number of units in an environment and the tempo of their change determine complexity. Thus an organization of twenty departments is more complex than one of ten, and one that rapidly varies its product line is more complex than an organization that produces the same product year after year. Similarly, an organization that frequently changes goals is more complex than one that seldom does.

Like systems, environments also show distinguishing characteristics (Emery & Trist, 1965). For example, they may be stable or unstable. In a stable environment, variations are relatively small and constant. In an unstable environment, the number and variety of environmental entities is relatively large and often changing. Consequently, unstable environments are more complex than stable ones. Thus an organization dealing with five suppliers is in a more complex environment than an organization that deals with only one.

The stability or complexity of an environment or a system is relative to its preceding state of development. Environments and systems change and evolve. The terms "stable" and "unstable" imply movements toward stability or instability. Thus "stable" means "stabilizing," and "unstable" means "destabilizing."

Axiom 11: Organizations, in part, create their own environments.

Systems can control the environment in two ways. First, they can reduce the extent to which their boundary is open (Katz & Kahn, 1978). A system with a relatively open boundary will be more sensitive to its environment since the open boundary lets more information into the system. But a system with too open a boundary will lose its autonomy, merely reacting to environ-

mental change. Ideally, a system's boundary is open enough to maintain system sovereignty. That is, most organizations have some choice of markets and suppliers. Organizations can also choose to interact in ways that meet their own organization's requirements. These choices at the boundary are part of the mutual constraint noted earlier.

Second, a system can control the influence of its environment by being proactive. That is, instead of just adjusting to its environment, the system can seek to change it. A system naturally does this by insuring its own resources and looking for customers. In this way, systems create their own environment (Weick, 1979). Research and development, marketing, advertising, public relations, and sales are their most obvious means.

> Axiom 12: For a system to control its environment, the complexity of the system must be at least as great as the complexity of its environment.

For a system to survive, it must adjust its own complexity to the complexity of the environment. If the system is too complex, it wastes resources. If it is too simple and transforms too few resources into products, it will be overwhelmed by its environment. Matching system complexity to environmental complexity is called the law of requisite variety (Ashby, 1956).

When the environment is more complex than the system, the environment can overload the system. A small, family-run grocery will have trouble in a neighborhood of diverse clients and multiple competitors. On a larger scale, the emergence of parallel systems of greater complexity may drive out simpler systems, as, for example, in the downfall of the A&P grocery chain that insisted on its traditionally single product line.

> Axiom 13: Social behaviors and the factors related to them naturally move to comparable levels of complexity.

When linked systems are closed to other environmental factors, they continually adjust to each other. Eventually, these systems find a level of behavior and output that is comfortable for both. Maintaining their link, the more complex system reduces the complexity of its output and the simpler maximizes its internal complexity to match these outputs.

Social behavior works in much the same way. For example, complex social patterns are better suited to more complex problems. When human beings form groups, they tend to compete within their groups and to simplify social patterns. However, when they confront complex tasks, particularly the more complex competitive tasks, they move toward greater and greater cooperation (Axelrod, 1984). The complexity of the social behavior adjusts to the complexity of the task.

The physical capacity of a system limits its ability to adjust. Limited psychological capacities, say, in informational processing, can limit human

adjustment, and social rules can also affect it. Naturally emergent social behavior is flexible and tends to adjust to circumstances, even though it is initially limited physically, and then psychologically, and then socially as individuals establish roles and rules.

> Axiom 14: Social behavior is more likely to accomplish its intended goals when the complexity of behavior matches the complexity of the factors related to that behavior.

Complex technology is unsuited to simple problems. When the goals are simple, tasks should be simple. Thus an "overqualified" applicant for a job is more complex than the task. The ten factors previously noted in Axiom 7 are effective only at comparable levels of complexity. Contingency theories support this claim (Burns & Stalker, 1961; Lawrence & Lorsch, 1967; Woodward, 1965). While these theories recognize no single, superior leadership style, some theorists suggest that leadership depends on the task, the social climate, and the leader's authority (Fiedler, 1967). The maturity of the group is also important (Hershey & Blanchard, 1977). Complex styles are more effective in complex circumstances; simpler styles work better in simpler circumstances.

The Nature of Institutions of Higher Education

> Axiom 15: Colleges and universities are information processing systems.

Early theories explained organizations that processed materials, such as the auto manufacturing plant, or that performed services, such as the auto repair shop. Today, most workers process few materials, and most of those in service industries service few products. Since 1954, a majority of Americans have earned their livings from information: creating, transforming, transporting, translating, storing, retrieving, or sorting it (Porat, 1977). Indeed, the defining functions of most organizations, including universities, are derivations of information processing.

Education requires several informational activities: thinking, speaking, reading, writing, organizing, interpreting, transforming, as well as duplicating transporting, receiving, storing, and retrieving. Although education includes other features, most activities begin with information. Scholarship, governance, service in professional associations, consultation—all center on information. Colleges and universities are information processing systems.

> Axiom 16: The social structure of colleges and universities is primarily a loosely coupled one.

University professionals perform most of their academic duties individually, and most rely less on others than on themselves. Interdependence, even within most academic departments, is mostly found in the administration of

policy. But this limited interdependence within departments looms large when compared to that between departments or across campus. Few administrations specify expected academic results. Nor do policies relate departments or larger units to each other in the execution of any joint functions. In this respect, universities are like most medical institutions (Salem & Williams, 1981). As hospitals refuse to tell physicians how to practice medicine, so do universities refrain from ordering teachers how to teach.

This type of structure is called a loosely coupled structure (Weick, 1979). A system tends to loosen its structure as it grows. Subsystems naturally develop and interdependence is greater within the subsystems than between them. Information processing systems begin with looser structures than organizations that process material or provide services. Therefore, integration and control become the university's greatest problems.

Axiom 17: Administrators exert direct control over the ancillary services which create the conditions for education.

Administrators control ancillary services directly. They keep accounting, maintenance, the bookstore, the computer center, and other offices under a typically tight structure. Budgets for academic departments more often determine materials and services than academic duties. By controlling the conditions directly, administrators control academic performance indirectly (Gratz & Salem, 1981).

Axiom 18: Administrators control education indirectly by managing definitions.

Administrators control academics by defining academic terms (Gratz & Salem, 1981). Moreover, they choose the terminology. Furthermore, they allow behavioral change so long as labels do not change. For example, a teacher may alter the substance of a course, but as long as it retains the approved course title, all is well. Thus, administrators attend more to pragmatic definitions than to behavioral changes themselves (Meyer, 1975).

A course exists in an "assigned" classroom, at a "scheduled" time, with an "instructor," "students," and "educational material." Administration decides which classroom is "assigned," which time is "scheduled," which person is the "instructor," which persons are "students," or which materials are "educational." Without appropriate credentials, procedure, or approval, nothing is sanctioned or authorized by the appropriate institutional term. But if all the things that meet the definitions are in the same place at the same time, "education" happens. Scholarship and service happen in much the same way.

Administrators manage some constitutive rules for the system, some of the meaning of college and university life. Some terms and definitions they manage were imposed from the society or other external sources such as trustees or regents. The distribution of resources to various institutions and

to departments depends, in large measure, on demonstrating that the activities within the institutions meet socially accepted definitions and the expectations of influential constituents, including the parents of the students and the students themselves.

The Nature of Success

> Axiom 19: Organizational effectiveness means comparing performance to five types of goals: quantity, efficiency, quality, innovation and morale.

One meaning of success is an organization's effectiveness at reaching five goals (Hage, 1980). If the goal is quantity, the organization intends to produce as much goods or services as it can. If its goal is efficiency, it strives to produce what is does for the least cost. If its goal is quality, it works to produce that which will meet the highest standards of performance or reliability. Criteria for quality may be specified either by the organization or by potential customers. Customer satisfaction is often used as a measure of quality, especially when the product or service is new (Daft, 1983). If the organization's goal is morale, it will try to produce outputs to encourage and satisfy all who play a role in the organization. If its goal is innovation, it will continually change its product.

Particular goals in every organization derive from a mix of some or all of these five goals. Over time, an organization or its units may emphasize different goals, at one point quality, at another time efficiency. But its effectiveness is the extent to which it achieves its intended mix of goals.

> Axiom 20: Changes that improve quantity and efficiency diminish quality, innovation, and morale; changes that improve quality, innovation, and morale diminish quantity and efficiency.

Some goals automatically exclude or limit the potential to achieve other goals (Hage, 1980). Every effort at moving toward quantity and efficiency will limit the other outcomes and vice versa. Insuring quality, for example, requires resources to check products for quality, and this means that some resources are not being spent to increase quantity. In fact some products may be rejected, some quantity reduced, because of poor quality. Quality, morale and innovation cost resources that might be spent to improve quantity and efficiency. Each organization decides its own mix.

Institutions of higher education have two distinct subsystems with two distinct mixes of goals. On the one hand are the academic and research units aiming at quality, morale and innovation. On the other hand are the ancillary and staff units (e. g., maintenance, accounting, purchasing, etc.) aiming at quantity and efficiency. There may even be units that alternately skew in one

direction and then another. Managing the paradox is the key to effectiveness (Quinn, 1988).

> Axiom 21: Organizational innovation moves from initiation and adoption to implementation.

Innovations in organizations involve two distinct decisions (Rogers, 1983; Rogers & Agarwala-Rogers, 1976). First is the decision to adopt an innovation, second, the decision to make it part of the system. When an organization perceives a need to change, it will consider different alternatives to meet that need. If conditions are right, it will match its resources with its need and design an innovation. This is the initiation part of the process. Then the organization moves to make the innovation part of the system. Again, it will take distinctive steps to include the innovation as part of the older structure. This is the implementation stage. As long as implementation fulfills need, the innovation stays.

> Axiom 22: An innovation succeeds when the organization decides to retain it.

When analyzing the success of an innovation, the organization's next decision becomes crucial. Deciding to continue means that the organization considers the innovation now part of its routine. Success for an innovation means that it has lost its novelty (Rogers, 1983). *For a newly adopted subsystem, continuation becomes an additional goal.*

> Axiom 23: A decision to continue an innovation is likely when both initiation and implementation are effective.

The decision to continue cannot happen if the organization has rejected the novelty when it considers its needs. If initiation fails, there will be no decision to adopt. If implementation is poor, several outcomes may prevent continuance. The innovation may not solve the intended problems. Organizational members may use the innovation only in a limited manner, failing to apply it to a variety of related tasks. The organizational members may continue to regard the innovation in a special manner, believing that only select organizational members can or should use the new product, service or idea. Members may never incorporate the innovation into organizational life. Eventually, the innovation will be rejected (Rogers, 1986).

The Nature of Organizational Communication

> Axiom 24: Communication is the information exchange process.

Uncertainty is doubt, an inability to describe, predict, or explain (Berger & Calabrese, 1975), and information is anything that reduces uncertainty

(Salem & Williams, 1984). When a person recognizes or builds a pattern from stimuli, the result is information (Farace, Monge, & Russell, 1977). For the sender, a memo or a speaker's turn in a conversation may be intended as information, but it is not information until a receiver has perceived and interpreted it. To one, a message may be information, to another, redundancy or noise. The challenge is to provide messages which reduce uncertainty. The goal is mutual understanding.

Communication is more than information. Messages may reflect or stimulate information, but they also have some value. Communicators do more than understand each other's messages; they like or dislike the information the messages convey. Because messages are intended to influence or change attitudes or behaviors, when two or more people meet, the information exchanged takes on additional value.

A single message exists in a stream of other messages, reflecting the messages that came before and stimulating those that come after. A message is part of an ongoing process, encouraging or discouraging the behavior in that process. A message is feedback. Communication means clarity of intent, it means persuasion, it means control of change. Communication is the information exchange process (Salem & Gratz, 1983).

> Axiom 25: Effective dissemination means a) providing the amount and type of needed information, b) the amount of information that can be processed efficiently, and c) information free of distortion.

Most research in organizational communication deals with information (Greenbaum, Clampitt, & Willihnganz, 1988; Greenbaum, Hellweg & Falcione, 1988). In information adequacy studies the objective was to discover how to get organizational members the information they needed. In another series of studies, overload studies, the concern was to provide members with just enough information to meet their processing capacity.

Finally, researchers investigated the ways to provide information of the highest quality, distortion studies. These studies evaluate both hard methods of dissemination, such as memos, computers, or phone systems, and softer methods, such as interviews and group meetings, and identify means of more effective dissemination. Table 3 shows dissemination factors and their important characteristics.

> Axiom 26: Effective persuasion means identifying content and delivering messages that change the attitudes, beliefs, or behaviors of a specified audience in an intended way.

Anyone who tries to discover the causes of confusion investigates an information problem. When anyone looks at this confusion and the reasons behind an employee's satisfaction, persuasion now becomes the focus. The concern has shifted from what the employee knows to what the employee's

Factors Definition		Important Characteristics
a. Who/ the Sender	the source of a message	internal or external, formal or informal, amount of credibility, processing capacity, type of relationship with the receiver
b. Says What/ Message	the actual symbolic behavior	
1) Message Content	what the message is about	about the job, organizational matters, or personal things
2) Message Style	the organization and language of the message	key words, the pattern of ideas, the personal style of the communicator
c. To Whom/ the Receiver	those processing the sender's message	internal or external, formal or informal, amount of credibility, processing capacity, type of relationship with the sender
d. In Which Channel	how the message is packaged and delivered	
1) Diffusion Methods	context in which message was sent or received	the coordination format from improvised to documents to planned to group meetings, the richness of the channel, mass media to interpersonal channels
2) Networks	configuration of social relations	formal network, grapevine, cliques, network roles such as opinion leaders, distance between members
e. When	the chronological context	time of day, time in a planing cycle, in time to act
f. With What Effects	outcomes of information exchange process	changes or reinforcement of information/knowledge, attitudes or behavior

Table 3. Communication and dissemination factors related to success

attitudes are. Most research in persuasion deals with the results of persuasive messages, actual and intended (Smith, 1982). It looks for tactics and strategies most likely to determine effectiveness. Another approach deals with process. How do organizational members maintain power? What events alter the distribution of resources? What are the rules for the games being played? (Frost, 1987).

> Axiom 27: Effective communication development means providing feedback that encourages desirable changes and discourages undesirable ones.

Communication is about change and feedback (Fisher, 1982), a part of the decision-making that produces change. It is also about management and negotiation, adaptation and innovation. These concerns are secondary to a larger concern for the development of the organization.

The Nature of the Adoption of Innovations

A comprehensive and authoritative theory of innovations that summarizes research in the twentieth century is Everett Rogers' *Diffusion of Innovations* (Rogers, 1983). Rogers holds that an innovation is anything that is perceived as new by an individual or other unit of adoption, whether it be an idea, a service, a procedure, or an object. Early research concentrated on rural sociology and the introduction of agricultural innovations such as hybrid seed, weed sprays, and fertilizers. It identified individuals as innovators, early adopters, late adopters, and laggards depending on when they accepted an innovation. More recently, however, emphasis has moved from the rate of adoption by individuals to innovations in technology, education, marketing, and public health.

Rogers defines the diffusion of an innovation as a process which occurs when channels carry messages, over time, about an innovation to members of a social system. The use and impact of mass media channels as well as interpersonal channels are both central to Rogers' theory. The theory also accounts for the influence of change agents and opinion leaders producing change in an interpersonal network.

> Axiom 28: Adoption occurs in five stages: knowledge, persuasion, decision, implementation, and confirmation.

When adopting innovations, individuals or groups pass through five stages: knowledge, persuasion, decision, implementation, and confirmation (Rogers, 1983). Figure 2 presents Rogers' model of this process. At the *knowledge* stage, individuals become aware of the innovation, and their awareness of the new may cause problems. They may expose themselves more readily to information and its sources which are consistent with what they already believe or do. This selective exposure and selective perception are means by which they avoid conflicting information. If they become aware of the innovation, however, that awareness itself may create a need to change.

If people feel a need for change, their need may stimulate an interest in seeking out an innovation. Rogers identifies three factors that affect the information gathering process: socio-economic characteristics (education, age, and income), personality variables (innovativeness, self-confidence, and dogmatism), and communication behavior (exposure to mass-media channels, network size, and frequency of communication). All may influence the gathering and quality of information.

The second stage, *persuasion,* occurs when adopters form favorable or unfavorable attitudes toward the innovation. While their knowledge is focused on the cognitive level, their persuasion depends on the affective. At this stage they seek information in an effort to reduce uncertainty about the consequences of an innovation. Their attitudes become more favorable when they see the new as more effective than the old. Those who try the new will consider adoption only if the innovation offers advantages over the

more familiar.

At the third stage, *decision*, they agree to adopt or reject the innovation. If they reject the new, they may later adopt. Whenever they adopt the innovation, their intent is to implement it. But many will refuse adoption until
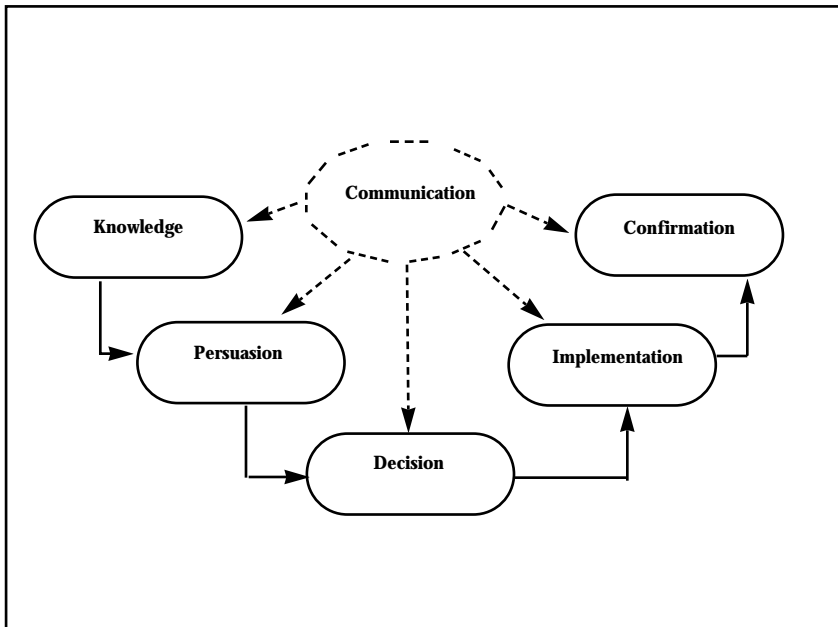

Figure 2. The innovation decision process

they have first tried the innovation. Their refusal may be overcome by pre-adoption trials that give them information and reduce their uncertainty. They may try free samples of a new product or observe others using it.

The fourth stage, *implementation*, occurs when adopters use the innovation. In most cases it directly follows the decision to adopt. Indeed, implementation requires overt behavior. Adopters actively seek more information as they try to answer questions and solve problems about the innovation in its particular setting. Additional organizational problems arise if many of the people involved in implementation were not part of the decision to adopt.

The fifth and final stage is *confirmation*, when individuals seek reinforcement for the decision to innovate. When individuals make any decision, they experience post-decisional cognitive dissonance, a state of disequilibrium. There is a motivation to reduce or eliminate their discomfort, typically by changing their knowledge, attitudes, or actions. After making a decision, there are continued efforts to gather information and reevaluate. Selective exposure and perception occur as the individuals seek confirmation by discussing the decision with agreeing groups. Cognitive dissonance affects both adopters and rejecters.

As long as information supports its continuance, the innovation is likely

to be retained, but after an innovation has been adopted, discontinuance is always possible. Types of discontinuance include replacement—the adopter rejects the original innovation for a better one, and disenchantment—the adopter, dissatisfied with performance, abandons the innovation. If, as some have argued, all innovations must mature to the point of either replacement or disenchantment, certainly every innovation will fall into disuse and the adoption cycle reverts to the knowledge stage.

Implicitly, the stages of the diffusion process follow a linear sequence from knowledge to persuasion to decision. Sometimes, however, the sequence may move otherwise: from knowledge to decision to persuasion. Thus the decision to adopt may itself encourage a favorable attitude. Perhaps a small-scale trial will influence either the decision stage or the persuasion stage or even both stages.

Researchers have also questioned whether the five stages in the process are distinguishable. Studies of different innovations provide evidence that supports strongly the knowledge and decision stages, less so the persuasion stage. Still less evidence distinguishes implementation from confirmation. To separate different stages in a "process," especially when transitions blur their distinctive classifications, is often difficult. While their order, importance, or discreteness may vary from situation to situation, they still provide a useful framework for describing and analyzing the innovation process (Rogers, 1983).

> Axiom 29: Mass communication informs more often than it persuades, while interpersonal communication persuades more often than it informs.

Mass media transmit both printed and electronic information to large, often heterogeneous audiences. Their messages often contain general or common perceptions. Mass communication is most effective in reaching large audiences quickly, transmitting new knowledge, reinforcing established attitudes, or changing weak ones (Rogers, 1983), but it is less persuasive than interpersonal channels (see Lazerfeld, Berelson, & Gaudet, 1944, and Chaffee & Hochheimer, 1985, for reviews of this literature). Interpersonal communication includes two-way, face-to-face exchanges between persons, each able to offer direct feedback (Smith, 1982). Any formation or reformation of strongly held attitudes is best accomplished interpersonally. The immediate exchange of information in this setting allows an advocate to adapt a message to its recipient, to overcome selective exposure, to provide social pressure, and to reinforce or encourage compliance.

> Axiom 30: An innovation's persuasive characteristics include its observability, its relative advantages, its trialability, its simplicity, and its compatibility.

During the persuasion phase of the process, prospective adopters form

favorable or unfavorable attitudes toward innovations. After they compare the newly proposed with other options, they determine the relative advantage of the new over the old. Then they consider its compatibility and consistency with their values, experience, and needs. They examine its complexity, asking whether an innovation will be difficult to understand or implement. They also ask of the innovation that it be tested on a limited basis to assess its suitability for use. Finally, they consider its observability, the degree to which people can see its results. If an innovation is advantageous, compatible, simple, and easily tested and observed, it is more likely to create a favorable attitude (Rogers, 1983).

These characteristics of an innovation do not "leap" from the innovation to the perceiver. The characteristics are part of messages and campaigns about the innovation. Rogers (1983) identifies the content most likely to persuade as well as features of an innovation. This axiom also points to the content of effective persuasive messages about an innovation.

> Axiom 31: Two important members of interpersonal networks are change agents and opinion leaders.

Change agents represent external agencies that would influence adopters of innovations. Held accountable for the success of their agencies' programs, they plan and coordinate diffusion campaigns. These professionals' socio-economic characteristics differ from those of their clients, and there can be problems because of those differences (Rogers, 1983).

Opinion leaders are individuals in the client population, and their leadership is usually more informally based and not a function of formal positions or status. Opinion leaders earn and maintain their influence by being competent, accessible, and conforming to system norms, but they are better informed than their followers, they have greater exposure to mass media, are more cosmopolitan, and have greater contact with change agents. They are at the center of interpersonal communication networks and sought by other members of the social system. As a rule, they are more innovative than their followers, but their innovativeness falls within the system norms of acceptance.

> Axiom 32: Change agents influence the process by managing informative and persuasive messages, and opinion leaders facilitate and stimulate the innovation process.

The change agent seeks to manage the diffusion process by initiating and orchestrating persuasive activities. Primary activities include developing a need for change, establishing relationships and rapport with clients, diagnosing problems, creating intent to change in the clients, translating intent into action, stabilizing adoption, and preventing discontinuance. The change agent analyzes the system and generates informative as well as persuasive mes-

sages throughout the process. The change agent also maintains contact with the opinion leaders.

The influence of opinion leaders is more indirect but no less dramatic. Since opinion leaders are similar to the other members of the system, clients trust them, and the trust increases credibility. Others ask them for information and evaluations, and the rate of adoption escalates dramatically when opinion leaders accept the innovation (Rogers, 1983).

Axiom 33: Certain factors important at one stage of an innovation will be much less important at other stages.

Throughout the five stages of the innovation process different factors assume greater or lesser importance. Initially, for example, change agents analyze their clients' needs and create a need for change. Then during stages of persuasion and decision, they identify and work through opinion leaders. Later during implementation and confirmation, change agents coordinate and support innovations. Opinion leaders also change their roles at different stages of innovation. They influence adoption during persuasion and decision, but later their encouragement reinforces decisions to innovate.

In addition, the part communication plays changes as the process moves from stage to stage. Channels of mass media are crucial sources of knowledge and information about innovations and the need for change; however, face-to-face interaction is more important at the persuasion stage. Those who adopt innovations early depend mostly on mass media. Those who adopt at a later point rely mostly on the interpersonal (Rogers, 1983).

Axiom 34: Factors which influence decisions to innovate also influence adopters to confirm and continue.

Most research on diffusion has centered on adoption; little has been devoted to continuance (Rogers, 1983). At the confirmation stage, individuals seek reinforcement, but they may reverse decisions if they receive conflicting messages. Discontinuance may occur if better innovations are adopted or if individuals become dissatisfied or disenchanted with them.

Communication channels and networks, change agents, and opinion leaders greatly influence decisions, and each plays a critical role in an innovation's continuance. While mass media can reinforce an innovation, interpersonal networks are the primary means for constructing the reality of the innovation. Change agents have a special role to play. Many change agents focus primarily on gaining adoption and overlook the need to provide supporting messages after adoption. If they too readily assume adoptions are secure, then rejections of innovations are more likely to occur.

Likewise, opinion leaders will influence continuance if they support those who innovate. If they send positive messages about these innovations, then the probability of continuance increases. But if groups fragment, if they

do not meet, or if opinion leaders send negative messages, discontinuance is more likely.

A large portion of Rogers' Diffusion of Innovations Theory focuses on individuals and the adoption process they follow (Rogers, 1983). Rogers and Agarwala-Rogers (1976) have created a model of the innovation process in organizations. They provide some important refinements to the theory as it is applied in an organizational setting where there is a formal and informal structure as well as prescribed roles, rules, and regulations. Table 4 summarizes the model.

Elements	Innovation Stages	Descriptions
A. Environment		Boundary spanners scan the environment for information about accountability, innovations, and resource constraints.
B. Initiation	1. Agenda Setting	The organization becomes aware of a performance gap and considers how to close the gap.
	2. Matching	The organization compares its felt need to its knowledge of innovations and its slack resources. If the match is good, it decides to innovate and moves to the next stage.
C. Implementation	3. Testing or Redefining	The innovation is tested and modified. Re-invention occurs. Organizational structure may be modified to accommodate the innovation.
	4. Installing	The innovation is put into full and regular use.
	5. Institutionalization or Routinization	The innovation loses its separate identity and becomes part of normal functioning.

Table 4. The innovation process in organization

There are three key elements in the model: 1) the environment, 2) the initiation stage, and 3) the implementation stage. The environment consists of all external factors outside the boundaries of the organization, and the environment provides a variety of different input, including energy, materials and information. Environmental information of considerable importance to an organization includes knowledge about various innovations, knowledge about markets, customer needs and interests, economic conditions, technological advances, and governmental regulations. In the initiation stage an organization must first detect a problem and gather information from the

external environment about various innovations. That information must then be disseminated to individuals inside the organization, and the organization must facilitate interaction about innovations and make a decision of adoption or rejection. In the implementation stage the innovation is put into practice and eventually becomes routinized into daily organizational activity.

> Axiom 35: Organizational adoption begins with the awareness of a performance gap.

Innovations are more likely to be adopted if individuals perceive organizational problems and, finding them, search the environment for innovative solutions. A performance gap is created when there is an awareness of a discrepancy between an organization's expectations and its actual performance. The discovery of any gap between expectations and performance can be a strong impetus to discover and adopt an innovation (Rogers & Agarwala-Rogers, 1976). Without this reality, an organization will lack motivation to go outside itself for new ideas.

An organization competing in a rapidly changing environment and measuring its performance against that of its best competitors is more likely to search for innovations. Nevertheless, some highly formal, centralized organizations may expose themselves only to changes that are compatible with their own limited interests and attitudes. Such selectivity allows an organization to avoid certain realities and to create an artificially comfortable psychological climate. Change agents change these perceptions. They present information about problems, or they acknowledge innovations and their positive characteristics. In either case, they point out performance gaps (Rogers, 1983).

> Axiom 36: External accountability, knowledge of innovations, and slack resources uncover performance gaps and encourage innovation.

Interaction between an organization and the external environment is crucial if an organization hopes to survive. An organization with external accountability is more dependent on, and responsive to, the environment since it requires innovations, funds, personnel, or clients to operate effectively. The greater the number of boundary spanners, involvement in interorganizational relationships, and responsiveness to external groups, the greater is the external accountability. It is not surprising to discover that an organization with a high degree of external accountability is more likely to discover and initiate innovations (Rogers & Agarwala-Rogers, 1976).

In addition, an organization which seeks out information about innovations and which possesses slack resources is more likely to initiate change. Slack resources may include financial reserves, personnel slack (such as workload availability, number of part- or full-time employees), and physical slack (such as unoccupied office space, accumulated office supplies or equipment). These slack resources not only make the availability of innovations

more likely but they may even create a need for innovation (Rogers & Agarwala-Rogers, 1976).

> Axiom 37: When organizations deal with performance gaps, they compare proposed innovations to other alternatives.

Once organizations detect performance gaps and look for remedies, they may decide to innovate. However, their decision to innovate may only be one of several options. Frequently, they consider different available innovations, anticipating new problems that each innovation might create. If decision-makers see a mismatch between an innovation and a problem, they may reject one innovation and consider another. After further analysis, the organization may decide to make no changes or to make minor revisions. Instead of innovating, some existing organizational activities may be expanded, reduced, or rearranged (Rogers & Agarwala-Rogers, 1976).

> Axiom 38: Implementation proceeds in three stages: testing, installation, and institutionalization.

Following the decision to innovate, implementation begins by testing the innovation during limited use. If a mismatch between problem and innovation is discovered, the innovation can be modified and redesigned before its full-scale implementation. Often components of the organization are altered to accommodate the innovation and special units created to manage it (Rogers, 1983).

At the installation phase, the organization continues to connect the new to the old as it gives the innovation wider recognition. Its members understand the innovation better. Misunderstandings can be identified and corrections made as the innovation begins to find a home in the structure (Rogers, 1983).

The final phase of implementation is institutionalization. At this point the innovation loses its newness, its suspect identity, and is incorporated into the daily life of the organization as an integral part of the system (Rogers, 1983). This movement is stabilizing. Almost any innovation begins as a process more complex and unstable than the organization. As an innovation is integrated into the system, it becomes as stable as the organization itself and moves to the same level of complexity and stability as the system's.

It is difficult to determine when implementation ends. Depending on the innovation, implementation may continue for a long time. Eventually, however, when the new becomes routine, institutionalization is completed.

Discontinuance sometimes follows, as other innovations find advocates or as the organization becomes disenchanted with the change. If continuance is to occur, decision-makers must confirm and reinforce the innovation, supplying supporting documents to counteract any uncertainty and doubt.

Axiom 39: Innovations are subject to re-invention.

As indicated in Axiom 38, innovations may be introduced with modifications. When organizations test innovations during implementation, they may alter innovations further. Re-invention is a transitory period when adaptations and fine tuning occur (Rogers, 1983). It is also endemic, no longer requiring the hand of the change agent to provide some copy or imitation of some innovation discovered in a different reality.

These circumstances suggest that managers who decide to adopt an innovation may find that its implementation demands many modifications and adaptations before it can be usable. Some see re-invention as undesirable since it is a distortion of the original model and represents a loss of control. Others, however, see it as inevitable and necessary if an innovation is to find acceptance. Flexibility in implementation encourages customization of the innovation to local conditions.

Axiom 40: Within organizations, structural factors which positively influence initiation may negatively influence implementation.

There are three major aspects of organizational structure affecting innovation. Centralization is the degree to which power and control in a system are concentrated in the hands of relatively few individuals. Complexity is the degree to which organizational members possess a relatively high level of specialized knowledge and expertise, usually measured by the number of occupational specialties and professionalism. Formalization is the degree to which an organization emphasizes following rules and procedures in the role performance of its members. Research in these structural factors has produced puzzling results and low correlations with innovativeness (Rogers, 1983). Analysts once believed "organizational innovativeness" to be a composite of many different innovations, thus obscuring the process. But now, as investigators divide innovation into initiation and implementation, this confusion has been eliminated (Rogers, 1983).

Research now indicates that while decentralization, increasing complexity, and less formalization propels initiation, high centralization, low complexity, and high formalization enhance implementation (Sapolsky, 1967; Zaltman, Ducan, & Holbek, 1973). Paradoxically, any organization easily able to adopt an innovation may find itself less able to implement it. Accordingly, the most innovative organizations have either two structures or a single flexible structure capable of transforming itself.

Axiom 41: During implementation, factors which positively influence re-invention and testing of an innovation may negatively influence its institutionalization.

Different organizational factors lead to different results during re-

invention and installation. Some factors appropriate to unstable environments are useful during initiation; others appropriate to initiation may be even more useful during re-invention. Organizational re-invention of an innovation is enhanced by a set of general goals, plus a diversity of tasks and a decentralized structure. These goals allow more flexibility, freer experimentation. During re-invention, goals include innovation, organizational morale, and customer satisfaction. Time to adapt innovations to the needs of the organization and to create cooperative organizational units must be allowed. However, during installation, general goals are replaced by more specific ones that target ineffectiveness and gaps in performance. When an organization's overriding goals are quantity and efficiency, its centralized decision-making, specific job descriptions, and formalized procedures will expedite installation. When what works best is understood, the organization can streamline its procedures for specific results.

Improving the chances for success: propositions

Theories provide explanations of phenomena, but they also predict. Thus far we have offered some axioms that explain the process by which concepts interact. But a theory must also predict outcomes, given a set of conditions. The propositions that follow appropriately predict these outcomes. Propositions contain only those concepts that can be measured. They take the conditional form "when X, then Y." They show how changes in one factor produce changes in another. Because propositions are primary statements, they can never take the form "if X, then Y." Based on past research and theory, they specify outcomes from known relationships. They are no more abstract than axioms. Nor do they derive from axioms, which describe boundaries and processes. Propositions are precise statements of outcomes (Dubin, 1978). Here we discuss propositions as they relate to effectiveness, regardless of environmental conditions or specific goals. Most address leadership, climate, and communication.

Organizational Factors Related to Effectiveness

> Proposition 1: When a subsystem's objectives are more integrated into the organization's mission statement, then a subsystem's effectiveness is more likely.

Mission statements broadly express organizational goals. When an organization links its subsystems' objectives to its mission statement, the success of that subsystem becomes a goal of the organization. If managers or program directors of subsystems can frame their objectives in the language of the mis-

sion, then their objectives can be more fully integrated as organizational goals. Thus any university that links a subsystem's objectives to the mission statement defines the subsystem in powerful language.

When top management can create missions from which managers can operationalize their own program objectives, the entire system will be more effective. Linking the university mission to its subsystems' objectives integrates those subsystems. The mission statement serves additionally as a reminder of higher goals, linking directors of subsystems to those higher goals and encouraging teamwork (Larson & LaFasto, 1989).

> Proposition 2: When a subsystem's advocate is situated higher in the organization's hierarchy, the subsystem is more likely to be successful.

In a hierarchy, either the organization's formal structure of responsibility and authority or its informal social structure and status, those in positions closer to the top are more likely to accumulate influence, rewards, and resources than are those in lower positions (Hage, 1980). A subsystem's advocate may be either its director or another administrator. But whoever speaks for the subsystem must be higher in the hierarchy. In social networks of any sort, the greater the social distance from the top, the less the power (Farace, Monge & Russell, 1977).

> Proposition 3: When a subsystem uses a variety of resources and has multiple sources for those resources, then it is more likely to succeed.

When one system depends on a second system exclusively controlling a valued resource, the second system assumes power over the first (Emerson, 1962; Pfeffer, 1981). Resource dependency may be reduced in two ways: the first system may either devalue the resource, thereby reducing the second system's power, or find other systems with the resource.

When a department within an organization can call on a variety of resources from multiple suppliers, it can perform its tasks more freely than can the department that is limited. Costs that increase with multiple resources or suppliers may be offset by an increase in influence and the promise of success.

> Proposition 4: When an organizational unit can be labeled with more powerful language, it is more likely to be effective.

Some units in an organization may tower above others, and language can influence this power and status (Frost, 1987). If a new unit's label is associated with a lower status unit, that unit will find little status. But if its label associates it with other high-status units, it will share their status. In the university, where administrators control through symbols, the language used to label

a subsystem may decrease or increase its power.

> Proposition 5: When information meets the needs of organizational
> units, the organization is more likely to be effective.

A common complaint is that managers fail to grasp employee needs, a problem that surfaces often in the university (Gratz & Salem, 1981). What information is needed to complete a task, to coordinate one task with others, to satisfy expectations, and to encourage others in their tasks? How do needs for information about new programs change for new members? By comparing its goals with its performance reaching those goals, an organization can evaluate its effectiveness. So too can it judge the quality of its communication by comparing the information received by its workers to their needs.

> Proposition 6: When dissemination activities are adapted to the capacities
> of the organizational units, the organization is more likely
> to succeed.

Before an organization can make communication plans, it must first learn the capacities of its departments and employees. It must know the jobs of others and the information that they generally process. It must also know the best times for processing this information and the easiest methods of spreading and learning it. Particularly in the university, not knowing what others know and can do is a common problem (Gratz & Salem, 1981).

> Proposition 7: When communicators use a variety of communication
> methods, they are more likely to be effective.

Richness is the term used to describe the capacity of a communication method to provide information effectively (Daft & Lengel, 1986). Some methods are richer than others. For example, face-to-face methods are richer than documents. Combining methods generally increases overall richness. Using several different methods limits distortion. For example, after a meeting, a follow-up memo reminds everyone what was done. There is redundancy of content. Using several different methods also enhances the interest of the message. Hearing the same topics presented in the same way is boring. Variety helps.

> Proposition 8: When a subsystem's messages are expressed in language
> appropriate to the workers within the system, the subsystem is more likely to be effective.

Communicators will be more effective if they use the same language. But the politics of a system will mean that different levels of an organization will communicate differently. The deep structure is the set of rules that explains

how to acquire resources and what counts as resources or rewards (Frost, 1987).

We can illustrate the importance of the deep structure by considering newcomers in an organization (Jablin, 1987b). Almost everyone new to an organization will have been informed about job procedures and indoctrinated into the system during orientation programs. This information reflects the surface structure of the system. But the deeper structure is revealed by a newcomer's co-workers (Salancik & Pfeffer, 1978). When events occur which pertain neither to the surface structure nor to the formal rules, the conversation between new and veteran workers provides meaning for the events. This dialogue enables newcomers to interpret messages inherent in the behavior of others. This deeper structure of rules allows newcomers to find their own identity and path to success in the organization. When communication is conducted in language already heard in the deep structure, messages are more readily understood and immediately influential.

Organizational systems and subsystems have been the topics of the first eight propositions presented above. Propositions 9-17 delineate those systems in stable environments, namely, those systems with fewer, less varied, and more predictable factors to consider than systems in unstable environments.. These propositions describe organizations, but they also apply to departments or lesser units within organizations. In universities, for example, the environment of an established department is more stable than a new department or a newly reorganized department; in another setting, support and service units are more stable than academic units. Because of their complementary relationship, some propositions are assembled together and discussed as groups.

> Proposition 9: When an organization in a stable environment employs specific objectives, it is more likely to be successful.

In stable environments, variables are few and these factors seldom change. The emphasis here is on quantity and efficiency (Daft, 1983). That is, an organization under stable conditions produces as much as it may, and at less cost. To achieve its goals, the organization must monitor its service and its resources. To do so, it must specify its objectives in measurable terms so that its performance can be compared precisely to its goals.

> Proposition 10: When an organization in a stable environment quantitatively evaluates itself, it is more likely to be successful.

Objectives can be described numerically in a stable environment, and quantitative evaluations are highly appropriate (Daft, 1983; Perrow, 1970). Production can be compared precisely to quantitative goals. Effort and expense can be compared to product to judge efficiency.

Proposition 11: When a system in a stable environment reduces the diversity of its tasks, it is more likely to be successful.

Proposition 12: When an organization specializes and routinizes tasks, it is more likely to be successful in a stable environment.

Proposition 13: When an organization formalizes and centralizes its structure, it is more likely to be successful in a stable environment.

Until about 1940, scholars who developed these propositions believed them true regardless of contingencies (see Etzioni, 1964). Their ideas fit the Industrial Revolution, its assembly line mentality, and even the growth of government bureaucracy after the Great Depression. *Today, we understand that these notions, although still valid, apply to specific circumstances.*

Earlier in the century, the idea was to simplify. Observers could analyze a complex task such as making a pair of shoes and discover the shoemaker's simple motions and movements. There was a division of labor and specialization. Instead of ten people each making one pair of shoes, each employee could make only a single, simple part, while one or two others assembled the parts. It may seem impossible to write instructions for making shoes, but writing procedures for individual parts is much simpler. By formalizing the process, each task and the whole product could be duplicated; workers needed merely to follow their own specific procedures. The entire process could become routine. In time, centralized decision-making added to the efficiency of manufacture. Each employee needed to please only one boss. There was unity of command.

Proposition 14: When an organization in a stable environment employs workers with minimal qualifications, it is more likely to be successful.

Simplification and specialization mean that anyone can perform the task as long as they follow procedures. There is no need for an extensive background or credentials (Daft, 1983). Labor costs would be low, and efficiency would increase.

Proposition 15: When an organization in a stable environment a) disseminates minimal amounts of information and b) disseminates information in documented and planned formats, it is more likely to succeed.

The information that is important in a stable environment is task information (Farace, et al., 1977). Information about personal matters or organizational policies are of secondary importance because these matters ought to

be straight forward and direct. Organizational members generally express a need for greater amounts of information about personal matters (e.g., topics such as opportunities for advancement, how they are being evaluated, etc.) and organizational matters (e.g., how organizational decisions are made that affect their job, how the pay and benefits of one job compares with other jobs, etc.), but the need is less in stable environments because there is less complexity.

Information should be communicated through documents or planned formats (Johnson, 1977). Forms, memos, policies and procedures allow for storage and retrieval. Formats such as interviews, staff meetings and presentations require planning. The focus should be on clarity, responsiveness, and minimizing overload by reducing the flow of information.

Although we may be able to identify the appropriate dissemination methods, this does not mean they are always executed well. Most organizational members do not have the rudimentary skills needed to conduct an interview, deliver a presentation, conduct a staff meeting or compose a coherent memo. There is an increasing emphasis on communication skills as an area of emphasis in contemporary management training.

> Proposition 16: When messages emphasize the size, cost, and effectiveness of programs, they are more likely to be persuasive in a stable environment.

This proposition derives from earlier statements about persuasion and adapting to an audience. In a stable environment, goals are more likely to emphasize quantity and efficiency (Daft, 1983). When messages are about these goals, they are likely to be persuasive.

> Proposition 17: When systems adapt to their environments and implement decisions efficiently, they are more likely to be successful in a stable environment.

This proposition emphasizes the passivity of the system to environmental change. In a stable environment actions which disrupt the regular flow of behavior are counterproductive. An organization must alter its behavior only to maintain efficiency and stability.

Theorists disagree over the direction of change in organizations (Buckley, 1968). One side analyzes systems with respect to their adaptability, while the other side contends that a systems ability to revitalize and to alter its environment are more important. Our resolution of this controversy is to employ requisite variety as part of our explanation. In a stable environment, innovation may be carried to excess and disrupt the symbiosis in the ecosystem, but in unstable environments, a system must be part of change and not just react to it.

Systems in unstable environments show more variety and less pre-

dictability than do systems in stable environments. *The following nine propositions are about organizations, their departments, and smaller units loosely coupled in unstable environments.* In the university, academic units are less stable than those of units providing ancillary services. A new unit begins operation in an environment less stable than already established units.

> Proposition 18: When organizations employ general and flexible objectives, they are more likely to be successful in an unstable environment.

In an unstable environment, conditions change frequently. Changes in production, supply, and the market minimizes efficient operations. Organizations must try new approaches when environments are unstable. If their emphasis is on quality, innovation, and morale, and if they wish to encourage individual invention, they must keep objectives general (Daft, 1983).

> Proposition 19: When organizations employ qualitative evaluation methods, they are more likely to be successful in an unstable environment.

Even in an unstable environment, organizations should still evaluate themselves systematically, but the emphasis should shift to interviews and focus groups and away from structured cost-accounting (Daft, 1983). Because objectives are not easily quantified, organizations should adopt qualitative evaluation. Instead of comparing data to fixed objectives, they should compare data taken at one point in a process or from one subsystem, to data taken at another point in the same process or from another subsystem. Reliable evaluation must be sensitive to an unstable environment.

> Proposition 20: When a system increases the diversity of its tasks, it is more likely to be successful in an unstable environment.

> Proposition 21: When organizations reduce their specialization routinization, they are more likely to be successful in unstable environments.

> Proposition 22: When organizations reduce formalization and centralization, they are more likely to be successful in unstable environments.

Between the 1930s and the 1960s, scholars who developed these propositions believed them to be true regardless of contingencies (see Etzioni, 1964). Their understanding had grown out of a concern for informal social structures and the problems of integrating workers into a post-war work force.

Although these propositions are still valid, they depend on specific circumstances.

The idea was to make things interesting and challenging. If individuals could vary their tasks and experience the system at different points, the system was more likely to earn the commitment of individuals. The system took on the characteristics of a "skunk works" or craft shop. There was an attitude that the satisfaction of workers was ethically correct, but there was also the belief that a satisfied and motivated worker improved productivity.

In this context, specialization referred to the continual division of labor into smaller and simpler tasks. In a stable environment, this type of division enabled any employee to quickly master any task, and efficiency can be improved. In an unstable environment, this type of specialization was boring and unproductive.

Decentralized decision-making increased involvement and improved intrinsic motivation. Designs could include complex matrix structures with multiple reporting lines. The system demanded more of workers than just consistent performance. In order to get work beyond the minimum, in order to get creative involvement, the formal system must change to provide work which, by its very nature, is rewarding.

> Proposition 23: When organizations employ workers with maximal qualifications, they are more likely to be successful in unstable environments.

Because instability produces complexities, organizations in unstable environments need highly qualified personnel (Daft, 1983). In some cases, they may need workers with experience, in other cases workers with advanced training. In the most complex situations, they need workers with experience and advanced training. As systems grow even more complex, their workers will be asked to invent and decide, not merely to implement the innovations of others.

> Proposition 24: When an organization a) disseminates large amounts of information b) disseminates it in improvised formats or through group decision-making formats, it is more likely to be successful in an unstable environment.

All information is important in an unstable environment (Farace, Monge, & Russell, 1977). It grows more important when workers, as well as policies, change with each new task. The need for greater amounts of information increases in the greater complexity of the unstable environment.

Here information can best be communicated improvisationally (Johnson, 1977). In a craft, standards and rules of communication are borrowed from craft members. Research engineers, for example, operate on the expectations they bring from their communication with other engineers (Katz, 1988). A mix of professionals will reveal a variety of expectations. In

any event, the members improvise around each others' expectations until a set of rules emerges, rules that reflect their uniqueness. In the unstable environment, group decision-making demands a greater sharing of information and its sources. When conflicts arise—the normal course in unstable environments—they must be managed if the system is to survive. The system will not survive if its members cannot deal with differences.

> Proposition 25: When messages emphasize program quality, innovation, or morale, they are more likely to be persuasive in an unstable environment.

In an unstable environment, quality, innovation, and morale are likely to be the goals. When messages reflect these goals, communication is likely to be persuasive. Formal messages about quantity and efficiency can be effective only if they are tied to quality, innovation, or morale.

> Proposition 26: When a system successfully manipulates its environment and revitalizes itself, it is more likely to be successful in an unstable environment.

This proposition emphasizes the proactive nature of social systems. In an unstable environment, an organization can alter its environment to prepare it for innovations. Although excessive innovation will disrupt any system in a stable environment, in the unstable one systems must encourage change, not just react to it. For a generation, American organizations have focused on revitalization and innovation (Bennis, 1976). Their leadership seems aimed at creating a social climate conducive to change. More recently, investigators of successful teams have found that some multiple structures can be effective depending on the objectives of each team (Larson & LaFasto, 1989).

In summation, in the most unstable environments, when organizations are organic and leaders stimulate creative teams, they are more likely to be successful. In the most stable environments, when organizations are more mechanical and leaders direct tactical teams, they are more likely to be successful. Table 5 matches organizational factors with environmental extremes and summarizes earlier representations of success in organizations (Burns & Stalker, 1961; Lawrence & Lorsch, 1967; Woodward, 1967; Hershey & Blanchard, 1977).

Organizational Factors Related to Innovativeness

In this section, two sets of propositions are presented. Propositions 27-48 focus on the initiation and eventual adoption of an innovation. These are followed by propositions concerning the implementation and continuance of innovations. Key factors included in these propositions are the willingness of organizations to perceive problems, the nature of the innovation, the roles of

the change agent and opinion leaders, channels of communication, and social networks.

Organizational Factors	Environment	
	Unstable	Stable
1. Goals	innovation, quality & morale	efficiency, quantity
2. Task	diverse	uniform
3. Technology	craft, nonroutine	engineering, routine
4. Personnel	experience, credentials needed	few qualifications needed
5. Structure	complex, decentralized, low formality	simple, centralized, formalized
6. Social Climate	maximally supportive	minimally supportive
7. Management	participative decisions	centralized decisions
8. Leadership	generate and advocate a vision	use vision to stimulate implementation
9. Development concerns	coordination, collaboration, creativity	delegation & control
10. Communication	much information, emphasizing goals, diffused in improvised or group problem solving formats	little information, emphasizing goals, diffused in documented or pre-planned formats

Table 5. Matching organizational factors with the environment

Proposition 27: When organizations perceive significant gaps between their expectations and their performance, they are more likely to be innovative.

Proposition 28: When organizations employ large numbers of boundary spanners, they are more likely to be innovative.

Proposition 29: When organizations have been innovative in the past, have high confidence and are low in dogmatism, they more are likely to remain innovative.

Change begins with the perception of a performance gap. When we acknowledge inadequate performance, we try alternative procedures. When we scan our environment and discover successful innovations there, we are motivated to change. Those who maintain direct contact with the external

environment—boundary spanners—link the organization with information about these innovations.

In an unstable, competitive environment, organizations which ignore problems and avoid innovative solutions are less likely to survive. Only an organization which measures its performance against that of its best competitors, opening itself to discomforting information, and willingly innovates can successfully and continually adapt to its ever-changing environment.

An organization's present attitude about its past is an important factor in its willingness to innovate in the future. If progressive and experimental, it detects problems and introduces innovations early. It values and rewards those who introduce new ideas, encourages different solutions to problems, allows freedom in decision-making, and fosters self-confidence in employees. It allows trial and error without judging harshly, and it promotes openness, exploration, and change.

> Proposition 30: When their accountability is high, organizations are more likely to discover innovations and be innovative.

> Proposition 31: When an organization has large amounts of slack resources, it is more likely to be innovative.

> Proposition 32: When their accountability is low and resources limited, organizations are likely to change only in minor ways without major innovation.

Stringent external accountability forces an organization to depend on and respond to its environment and to be more innovative. Its departments, if also held accountable, are also likely to be innovative. When a department is held accountable, its performance improves, or it takes corrective action or makes changes.

To be innovative, an organization must be aware not only of its weaknesses, but also of its expendable resources. New funds are often required for innovations or workers to implement them. Office space, supplies, and equipment are also needed. The availability of unexpended or unallocated resources allows an organization to experiment, to try different solutions before a crisis develops.

Little accountability or limited resources motivate few innovations. Limited accountability limits an organization's goals and usually guarantees mediocrity. Such egocentrism precludes any need for innovations which will improve the system, just as limited resources reduce exploration, while the status quo conceals itself behind a screen of minor structural revisions.

> Proposition 33: When an organization selects from many different innovations, it will then adopt either the innovation that best fits the problems or the ones favored by top decision makers.

Once an organization needs to change, it then explores the possible changes that will satisfy that need. It will study different innovations or combinations to match its problem with the best solution. Following this rational model, managers offer their advice, study different models, and reach consensus. Often, however, reflective thought and logic do not guide the selection process (Cyert & March, 1963). Top management has more power in that it controls financial and psychological rewards. This power, as well as management's expertise, also exerts an influence. If top management favors one innovation, others feel considerable pressure to follow their lead.

> Proposition 34: When structures are decentralized, complex, and informal, organizations are more likely to initiate and adopt innovations.

Organizational structure influences the adoption of an innovation. When there is little centralization, power and control rest in more hands. This dispersal of authority encourages many workers to offer solutions to problems. As a result, they think about problem solving and they produce more innovations and more adoptions.

Likewise, a highly complex organization comes with many specialists and their specialized knowledge. The complexity encourages adoption because many seek improvement in their specializations. Moreover, the informal organization changes more easily because of its fewer rules. The absence of formal procedures allows more flexibility in innovation.

> Proposition 35: When an innovation is viewed as having high relative advantage, then an organization is more likely to adopt the innovation.

> Proposition 36: When an innovation is viewed as compatible with the values and past experiences of the organization, then an organization is more likely to adopt the innovation.

> Proposition 37: When an innovation is viewed as low in complexity, then an organization is more likely to adopt the innovation.

How individuals perceive innovations influences the adoption decision. Arguments in favor of change are more persuasive if they emphasize the advantages of the new over the old. For example, an innovation may be more convenient, more economical, or more prestigious. In addition, innovations are more desirable if they are compatible with the values, beliefs, and history of the organization. Radical innovations will be less acceptable to an organization steeped in a tradition of stability based on the assumption that what has worked well will always work well. Finally, innovations are more accept-

able if they are easy to understand and use. Low complexity allows others to conceptualize the innovation without requiring new cognitive skills.

> Proposition 38: When an innovation is viewed as allowing trialability, then an organization is more likely to adopt the innovation.

> Proposition 39: When an innovation is viewed as highly observable, then an organization is more likely to adopt the innovation.

Innovations are more palatable if they can be tested before they are adopted. A period of trial allows experimentation without a full commitment to innovate. The new threatens less, and uncertainty is reduced if a "free sample" is provided. Observations of others' innovations can also speed up adoption. "Trial by others" makes decisions easier, and an innovation is likely to be adopted if its visible results validate its claims and confirm it objectively.

> Proposition 40: When change agents are client-oriented rather than agency-oriented, innovations are more likely to be adopted.

> Proposition 41: When change agents have empathy with organizational members and understand their needs, innovations are more likely to be adopted.

> Proposition 42: When change agents adapt their messages to organizational needs, organizations are more likely to accept the messages and be innovative.

Change agents understand that the first principle of effective communication is audience analysis. Speakers who know their audiences design persuasive messages. Likewise, change agents who develop empathy with organizational members find ready acceptance of proposed innovations. Although as representatives of change they may find more comfort at some distance from their clients, change agents should become client-oriented to improve their effectiveness.

> Proposition 43: When change agents plan and coordinate diffusion campaigns, their innovations are more likely to be adopted.

> Proposition 44: When change agents are perceived as highly competent, trustworthy, and credible, their programs are more likely to be adopted.

> Proposition 45: When change agents disseminate information about

innovations via mass-media channels and seek to make interpersonal contact with opinion leaders, the likelihood of adopting an innovation increases.

Proposition 46: When change agents dissimilar to organizational members work indirectly through opinion leaders and their aides, innovations are more likely to be adopted.

A campaign of diffusion requires planning and coordination, the change agent's specialties. Change agents are also leaders with long-range vision who can coordinate all stages of a campaign. They analyze organizations and diagnose problems, set goals and objectives, compose and disseminate messages, revise strategies and activities, and evaluate their campaigns. The more competent the change agents in these areas, the greater the likelihood of their innovations' adoption. During campaigns, mass-media and interpersonal channels are change agents' means to communicate with their clients. Radio, television, brochures, notices, newsletters, posters, memos, and magazines are effective, not only early in campaigns when new information must be disseminated rapidly to large audiences, but also later when success needs publicity and reinforcement. Successful change agents also maintain interpersonal contact with leaders and decision-makers because they know that members of organizations often view them as outsiders who threaten equilibrium. Change agents who directly influence opinion leaders interpersonally influence other organizational members indirectly. Diffusion campaigns are likely to be successful when change agents communicate directly with opinion leaders and support efforts to persuade other organizational members.

Proposition 47:When opinion leaders communicate their decisions endorsing innovations interpersonally, followers are more likely to accept the innovation, and the rate of adoption accelerates.

Proposition 48: When opinion leaders endorse innovations that transcend the social values of their organizations, they will then be replaced by other leaders attuned to organizational norms, and rates of innovation will then decrease.

Within organizational groups, whether formal departments or informal clusters, opinion leaders emerge who influence the attitudes, opinions, and behaviors of group members. They are the ones who maintain interpersonal contacts and are viewed as knowledgeable and competent. Because opinion leaders may be more cosmopolitan and more exposed to mass media and change agents, they are more likely than other group members to learn about innovations and adopt them. When opinion leaders adopt innovations, they greatly influence members of their group, and the rate of adoption esca-

lates dramatically. Therefore, these leaders become the first objects of persuasion.

Campaigns for change sometimes fail even though opinion leaders may endorse innovations. Because they are more knowledgeable and innovative than other organizational members, they may also be influenced more readily by change agents to accept innovations which exceed group or social norms. If these opinion leaders approve of innovations outside the group's latitude of acceptance, they may lose credibility and trust and even be replaced by a new leader who more closely conforms to expectations. When innovative opinion leaders are replaced, campaigns falter because new opinion leaders reinforce traditions.

> Proposition 49: When change agents coordinate the re-invention of innovations early in their implementation, the likelihood of implementation is then increased.

Adopting an innovation is a cognitive act, but continued implementation involves overt behavior and action. Adopters are never passive receivers of innovation; they are active modifiers and adapters of new ideas (Roger, 1983). Indeed, their ownership of an innovation depends on their actions during this period of transition as they adapt it to the organization's and their own needs. Change agents can encourage staff personnel to adjust innovations to meet these needs. By exhibiting flexibility and encouraging adaptation early in implementation, change agents increase the likelihood of their continued implementation.

> Proposition 50: When change agents work indirectly through opinion leaders and their aides during implementation, implementation and continuance will be more effective.

> Proposition 51: When change agents use mass-media and interpersonal channels to reinforce successful implementation, the likelihood of continuance then increases.

> Proposition 52: When change agents maintain contact with decision makers and provide them with follow-up information, the likelihood of continuation then increases.

During implementation, change agents monitor progress and adapt innovations as required. They coordinate opinion leaders and staff, who may be scattered throughout the organization, and communicate with decision-makers. Successful change agents work directly with opinion leaders, but they rarely are seen by workers. Since opinion leaders and aides are more familiar with and similar to other organizational members, they are more trusted, persuasive, and less threatening than change agents who work best initially

behind the scenes. Over time, as implementation proceeds and change agents are accepted for their competence into the organization, change agents can assume a more direct role.

During implementation, change agents also use mass-media and interpersonal channels of communication to reinforce successful campaigns and increase the likelihood of continuance. Mass media are effective in conveying messages to a wide audience. An in-house newsletter or local newspaper article giving information about a successful implementation can reassure an organization that its leaders are right. But interpersonal contact with decision-makers can rapidly update progress reports. Communicating with decision-makers is critical because their attitudes and beliefs will determine the continuance of innovations.

> Proposition 53: When change agents communicate the principles under-lying innovations, the likelihood of continuing the innovation increases.

> Proposition 54: When change agents encourage the self-reliance, competence, and internal motivation of organizational members, the likelihood of continuing or improving innovations increases.

Once organizational members discover a problem and the means to correct it, they next ask, "How does the innovation work?" Most change agents try to answer this question early in the process of innovation, their purpose being to convince clients of the need for change. Unless clients understand the principles underlying an innovation, they are more likely to discontinue it (Rogers, 1983). Introducing these principles is crucial to the long term success of the campaign, for they provide a logical understanding of the innovation. Change agents interested only in short term gains associated with rapid innovation may orchestrate change that produces environments in which clients are dependent on them for every action. Others, however, will try to develop competence and self-reliance in their clients. If they give them a new technical competence and ability, they help their clients become their own self-motivated change agents, able to assess problems and introduce or adapt innovations on their own. In effect, the best change agents try to eliminate themselves from the process by teaching their clients skills that make them independent. Clients advised by such change agents will probably continue innovations that are effective and modify or discontinue only those that are not.

> Proposition 55: When the organizational structure is high in centralization, low in complexity, and high in formalization, then an adopted innovation is more efficiently and successfully implemented.

As set forth earlier in Proposition 34, an innovation is likely to be adopted if an organization's structure is informal, simple, and less centralized. However, the opposite structure encourages quicker implementation. If every unit cannot be reorganized for implementation, subsystems, either reorganized or newly created, can speed the process, particularly if these subsystems are developed by the change agent and organizational staff in charge of innovation. To maximize efficient implementation, this structure must be simple, formal, and highly centralized. Centralization puts power and control in the hands of the few.

Decision-making becomes easier, as does implementation, because resources support the plan. Less complexity also makes implementation easier. When occupational areas are few and areas of specialized knowledge limited, consensus is much easier and innovations readily implemented. Formal structures also support implementation. When rules and procedures are formally stated, standards of operation are more easily understood and followed.

> Proposition 56: When cohesive, tightly coupled groups are formed during implementation, the likelihood of continuance increases.

> Proposition 57: When social networks in the organization create an acceptable account for the implemented innovation, a decision to continue is more likely.

As workers interact, their thoughts and beliefs undergo change as leaders and others respond. Some beliefs become acceptable; others are rejected. Often issues are exaggerated and amplified so that in-group beliefs are viewed as very positive and out-group beliefs are viewed as very negative. This social construction of reality results in a set of group beliefs and norms, and individuals who digress significantly from these beliefs and norms are viewed as deviants, are reprimanded, or even excluded from the group. Communication among co-workers is part of the socialization of new employees (Jablin, 1987b), and this communication determines how individuals come to view organizational life (Salancik & Pfeffer, 1978).

When organizational units adopt and implement innovations, they exert pressure on their members to continue the innovations. In tightly coupled, cohesive groups, workers most significantly interact to reinforce innovations. When they accept innovations, when they create an acceptable account of the innovation, the implemented innovation is likely to continue. But when members of units communicate new information about limitations or weaknesses in innovations, the continuation of these innovations will be challenged. When opinion leaders within these units have reason to question their validity, those innovations may be discontinued.

Applying theoretical constructs to describe drug abuse education and prevention programs

Up to this point we have presented the ideas of others; now we apply those ideas to the success of drug abuse education and prevention programs in institutions of higher education. Here we summarize programs and our findings supported by qualitative data. We also summarize the recent history of programs, and in theoretical terms from previous sections, we describe current conditions that our qualitative data demonstrates. Tables 6 and 7 show applications of such terms.

Terms	Definitions	Applications to Programs
1. Goals	intended outcomes	quality services, innovative program, efficient program, continued program support
2. Tasks	behaviors needed to accomplish a goal	informing, persuading, disseminating, counseling
3. Technology	method of doing a task	newsletters, peer counseling, policies, social events, networking
4. Structure	ordering, configuring of tasks	institutional organization, chain of command, the drug program structure
5. Personnel	employees, the experience and formal training required	coordinators, assistants, office staff, student workers, interns
6. Climate	shared social perceptions of the organization	perceptions of working conditions, formal and informal relationships, the autonomy of work, the fairness of the reward system, the overall warmth of the organization
7. Management	decision-making in organizations	how decisions are made in institutions, programs, the community, etc.
8. Leadership	top or middle management persuasive attempts to bring about change	the communication behaviors of administrators
9. Development	maturation of the system	the number of years the program has been operating & the changes over time
10. Communication	see Table 7	see Table 7

Table 6. Organizational terms applied to drug abuse education and prevention programs

Getting a Program: Knowledge, Persuasion, Decision

Since 1986, when the Fund for the Improvement of Postsecondary Education first encouraged the development of drug abuse education and prevention programs, institutions have increasingly made such programs a significant part of their commitment to students. Decades of study in the theory of systems formation and innovation now suggest that colleges and universities contemplating programs of their own can find a base of support for their efforts. Three areas of concern face the institution in its first efforts.

Terms	Definitions	Applications to Programs
a. Who/ the Sender	the source of a message	Directors, coordinators, staff
b. Says What/ Message 1) Message Content	the actual symbolic behavior what the message is about	the job, organizational matters, personal things
2) Message Style	the organization and language of the message	key words include counseling, prevention, health, mission
c. To Whom/ the Receiver	those processing the sender's message	audiences including students, the community, key decision-makers, other units
d. In Which Channel	how the message is packaged and delivered	
1) Diffusion Methods	context in which message was sent or received	documents, interviews, memos, staff meetings, problem solving meetings
2) Networks	configuration of social relationships	formal network, grapevine, opinion leaders, cliques
e. When	the chronological context	first year vs. second year of funding
f. With What Effects	outcomes of information exchange process	changes or reinforcement of knowledge, attitudes or behavior about drug abuse and about the program

Table 7. Communication and dissemination terms applied to drug abuse education and prevention programs

First, a variety of questions could be asked about the population from which the institution draws its students. Is it heterogeneous or homogeneous? Do traditional or non-traditional students come to the institution? Do large numbers of students commute? What beliefs about drugs and what social norms do students subscribe to? What are the socio-economic levels of students? Is the population conservative or liberal in its attitudes toward traditional moral values?

A second issue is the extent to which external systems hold colleges accountable. Students and parents, administrative and scholarly associations,

the community at large, boards of regents or trustees may influence the establishment of new programs. Government may likewise encourage programs through the Drug-Free Schools Act, a federal mandate and a catalyst for change.

A final factor is an external agency's support of drug abuse programs. As one source, the Fund for the Improvement of Postsecondary Education can play a major role as a change agent with information and financial resources. At any rate, interactions with external populations and sources of innovations must occur continuously throughout the innovation process.

Our data suggest that a combination of these factors do indeed influence the knowledge stage. A university becomes aware of drug abuse problems when its counseling center or office of student affairs provides evidence of campus drug problems. The Drug-Free Schools Act has focused the attention of academic administrators on their drug-education efforts, directing them to look outside their own organization for innovative programs and funding. Since educational institutions, in spite of their complexity, typically are neither highly centralized nor formalized, they naturally look to agencies of change such as the Fund for the Improvement of Post Secondary Education. When a director of grants or counseling center links with other institutions, it connects the institution to other sources of information crucial during the knowledge stage of innovation. Then, during the persuasion stage, administrators seek additional information from the Fund and other sources in an effort to produce favorable attitudes toward innovation. At this stage the college requests grant application forms from the Fund while it pursues other information by which to assess relative advantages of different innovations. While some institutions look at different programs for other possibilities, most pursue the Fund grants. Most attempt to design programs compatible with their own social structure and values, programs suitable for specific campus needs.

One of the more persuasive features of a grant from the Fund for the Improvement of Post Secondary Education is that it requires a two-year period of trial before institutionalization. Typically, a college contacts a comparable institution which has already received a grant. Their dialogue can reveal how a drug abuse program can be developed and can contribute to the institution's efforts to assess the innovation and form an attitude.

A unique finding from our data identified organizational members who had already dealt personally with drug abuse. Many were administrators who acted as advocates for any drug abuse program. They used their status and rank more as change agents rather than opinion leaders. Some were directly involved in a drug program, but more often they entered the knowledge stage as administrators pressing for a program's adoption and implementation. For example, a trustee of one university and the executive vice president of another both had children with histories of drug abuse. No source of knowledge and influence is more valuable than this one in the grant-seeking process. A grant application and its subsequent endorsement by such administrators is a de

facto decision to adopt and implement the innovation of a program.

For this innovation, the decision stage ends when the college decides to implement, assuming approval of funds. Fund grants allow no pre-adoption trial. Even though a campus drug abuse program may already be in place, universities must receive the grant before they implement a program. Applying institutions are, however, free to observe in advance programs already funded on other campuses.

Writing the grant proposal is demanding work. Grant writers must interact, not only with institutional representatives, but also with Fund officers. Writing the grant involves team members: grant writer, program director, and program coordinator. One member may fill more than one position. Indeed, the writer and director are often the same person with a different figure as coordinator. In universities containing routine grant procedures, the writer must integrate various segments of the campus into the process. Methods may include retreats for administrators at every level. As the program director designs the drug abuse program, administrators convene to hear proposals and discuss progress reports. Later, the grant writer, along with the institutional director of grants, usually discusses with Fund officials any uncertainties about strategies, style, and key words that will meet their requirements. The structural elements of the program can also be decided. Fitting the program into an administrative structure, managing financial resources, and assigning responsibilities are also considered.

Following institutional endorsement, the Fund for the Improvement of Post Secondary Education evaluates the grant proposal. Frequently, grants are rejected on their first submission. If so, the evaluation may lead to a reinterpretation of agency requirements and a revised proposal, a crucial phase of the process. When major defects have been repaired, minor shortcomings may be negotiated. But the Fund's expectations must be met before its approval.

The Fund for the Improvement for Postsecondary Education also requires that universities demonstrate their commitment to their proposals. They must show that financing a program will be shifted from grant moneys to those of the university. However, the Fund does not suggest how this change will be made, nor does it specify activities the institution must perform during the funding period or after the two-year trial. When it approves a grant, the decision stage of the innovation process is concluded. But adoption of an innovation is not the end of the process; it is only the beginning.

Program Implementation

The implementation stage begins when a university receives funding authorization for a program's operation, but usually several months pass before funds arrive. During the interim, the college plans the implementation and formalizes the roles of program director, program coordinator, and other members of its staff. Prior to funding, a university staff member acts as coordinator, but after approval an outside professional is hired for this position.

In most cases program personnel have counseling credentials and experience. In a typically small staff, the full-time program coordinator directs one or two part-time employees acquired from counseling or secretarial units. Additionally, students may serve as interns. Staffs remain small regardless of student numbers.

Program personnel accomplish their mission in various ways. They speak at forums, before clubs, and to other organizations. They assess drug abuse on campus and in the immediate community. Here knowledgeable students teach others about the extent and dangers of drugs. The program coordinator often influences change in policies, publicizing drug abuse information and organizing popular programs in peer education. The coordinator may sponsor special social events such as drug-free dances or festivals, assemble a drug abuse library, and make referrals to other departments or programs. When students need information, the program is their source, offering them printed flyers and announcements. "Preventive" counseling may be another activity, a natural one for a coordinator with a background in counseling. But prevention on one campus may be intervention on another. Personnel also organize their program's maintenance, writing its procedures and policies. They establish schedules and meet deadlines. Additionally, they report annually to the funding agency, more frequently to administrators.

Coordinators link their programs to others in various ways. Some serve on campus committees and there actively create cooperative programs. Many are reluctant to involve themselves in other activities or the politics of the campus. Consequently, systematic efforts to keep decision-makers informed are rare. Although coordinators report to their program directors, many, perhaps most, isolate themselves from other decision-makers. They know little of what information is important to administrators. If they are to be successful, they must know the leaders among various constituencies: students, upper-level administrators and other decision-makers, faculty and staff, the local community, and funding agencies.

Some coordinators must necessarily make their case before donors to their program. They are fund raisers, and they try to relate their activities to those of other institutions. Cooperation with other drug abuse programs at other institutions is important. Activities coordinated with other programs may be problematic: some coordinators tie their programs to those on other campuses, while others remain tied down at home.

Programs are often directed by a dean or other administrator in charge of student support services. This administrator often becomes the account manager of the grant. Other programs may fall under a university health center or become part of a counseling center, their directors reporting to the director of that center. As educational clearing houses on drug abuse, *most program activities are communication and management,* not counseling. Although under their funding proposals programs may have been intended to include faculty and staff, services are mostly directed at students. Occasionally, a college may even resist a program's efforts to influence its faculty or staff, pre-

ferring that the program be student-centered.

Although funds for programs derive from different sources, the college provides all supplies, personnel, and ancillary services. Four common sources are the university budget, student service fees, public or private grants, and private donations; all are processed through the institution. Some institutions already administer drug abuse efforts with grant supplements in place. New programs can rely on grant funding for their first year, but most continuing programs need allocations from institutional budgets and student fees.

Since there is no systematic method of evaluating these programs, characterizing the results of drug abuse programs has been difficult. Annual reports are still required, but the grant agency specifies no content. Even when programs employ a drug abuse survey, the absence of an evaluation specialist may compromise claims based on it. We are not sure a program of any size could demonstrate significant changes in campus-wide drug abuse over only a two-year period.

Results are ordinarily measured by the number and range of activities: the different programs, the clients served, the publicity and its frequency. In other words, the most common measure of effectiveness is quantity. Quality measures would include changes in beliefs, attitudes and behaviors. Although coordinators try to measure such things at the initiation of a program, further assessment falls off during implementation. A program keeping records of recidivism from its second year is exceptional. Likewise, few coordinators routinely measure cost-effectiveness, nor do they compare their activities with those of other programs. Reports of a program's successes seldom include the program's efficiency or relative advantages.

The Two-Year Cycle

Systems develop and change. For this program the most crucial changes occur during the first two years of funding. Grants require the promise of greater institutional support for programs during the second year. This shifting of support means a natural change in activities and in the way they are conceived and reported.

During the first year, the coordinator is a change agent introducing the college to an innovation. In effect, the grant has legitimized the coordinator who introduces the approved innovation. Prior to the grant, the administration has been persuaded to adopt an innovative program. After the grant, the college community at large becomes the object of efforts to implement it.

This early phase of the implementation process is the testing phase. The college examines the innovation to assess the match between problem and solution. From the results, it modifies its program to fit its specific needs. Director and coordinator now adjust the activities specified in the grant. As unforeseen opportunities and difficulties arise, the institution assumes ownership of the innovation in an effort to solve its operational problems.

Installation usually emerges during the second year of the grant, and the term to describe this phase is "transition." Now the community at large

begins to recognize the innovation as it becomes integrated. As errors are corrected during this second year, the college begins to assume greater financial and psychological responsibility for the program. In addition, the coordinator undergoes a transition from change agent representing the funding agency to opinion leader within the administrative structure. Viewed less as an outsider, the coordinator is integrated into the institution.

The final phase of implementation is institutionalization. It occurs at the end of the two-year grant when the university assumes full responsibility for funding. Even now institutions may reject innovations, but most choose to continue their programs. At this point the newness has disappeared, and programs are no longer viewed as separate entities.

Thus far we have shown one of the directions an institution may take in widening its service to the college community, particularly as the institution recognizes its obligations to protect the health and well-being of its constituents. What follows is a comparison of institutional factors as a college decides whether to continue the program. During its first year, a program is necessarily focused on its initiation in an unstable environment; at its end, as coordinators begin to stabilize their environment, implementation and institutionalization occur. Here we outline those features emphasized by our data.

In a program's first year, everything seems new. Tasks must be not only invented but also undertaken, and the means may well be novel. In the second year, although they assume new tasks, coordinators devote more effort to making the novelty routine. They anticipate other campus activities, as they plan their own. They may sponsor a drug-free week that in time becomes part of the college calendar. They revise first-year policies and procedures after their evaluation.

Since the first-year structure is normally decentralized and informal, its natural movement is toward increased formalization and centralization. As procedures are codified and the coordinator becomes the chief decision-maker, the counsel of others is seldom required. By the end of the first year, important questions about qualifications of personnel have been answered. Indeed, as activities become routine and formalized, more tasks can be performed by the less experienced under less supervision. If a program has employed graduate students its first year, undergraduates may suffice the second.

An important first year concern is building a healthy climate inside the program. Personnel are often overloaded, and the only primary motivators may be the supportiveness of coworkers and the coordinator. In the second year, there is a shift to reinforcing the rapport. Giving constructive feedback is important.

The first and second year distinction on this matter is not a clear distinction. There may be considerable turnover during the first year or the second year. The concerns of integrating and supporting new personnel may be an ongoing process, in addition to giving constructive feedback aimed at

reinforcing rapport and improving efficiency.

Along with the challenge of any first year are the additional responsibilities of a second. Whereas the principle management problems had been those of task creation and coordination, they now become ones of directing and delegating.

While such transitions are common, significant changes in the behaviors of coordinators are not. Many coordinators resist their own growth from educator to manager, for many will have no managerial experience. If first-year objectives are to make a program part of the system and to gain access to power, their second-year goals should be to change the system. But most coordinators want to run their programs independently, and they may regard the institution as an obstacle. Although initially the institution does not directly manage a program, it does employ professionals to do so in a relationship similar to that between the college and its academic units. However, the drug abuse program, as part of ancillary services, undergoes more scrutiny than an academic department. As the novelty of the program diminishes, the relationship between institution and program becomes even closer.

While success may mean many things, here the term relates organizational effectiveness to the successful initiation and implementation of an innovation. But what constitutes success changes as an environment changes and as organizations move through the process of adoption. In the first year of its grant, a college must emphasize the setting up of its drug program. The director must employ a coordinator. Then the coordinator must assemble a staff that can sustain a program's activities and forge social links across the campus. Because the environment is unstable, personnel must invent and adapt its tasks, technology, structure, climate, and management. In an environment in which the goals are high morale, quality, and innovation, effectiveness is measured by comparing these goals to the supportive climate achieved and the value of new services. The successful coordinator is the one who can hire, retain, and direct a creative staff that generates a variety of worthwhile activities.

During the first year, even though innovation has been adopted by the institution, the coordinator must convince the community at large of the new program's value. For the administration, the program is in its implementation stage. But for the community, the program remains an innovation seeking adoption. Its goals are continuance from one audience and acceptance from another, a division deriving from the unstable environment.

As the coordinator attempts various approaches, the program becomes visible to others. As the coordinator tests and re-invents, others in the institution may sample the program before deciding on its adoption. During the first year, a successful coordinator encourages the administration to continue the program and persuades the larger community to adopt its services, the success of which are measured by the program's acceptance.

During its second year, predictability increases and variety decreases. As the program repeats its activity and as its staff develops a routine and a sched-

ule, program and institutional personnel clarify both the formal and the informal social links between them, and the environment begins to stabilize. In such an environment, quantity and efficiency become new goals. The number of activities and students in the program, as well as efficiency and cost become important in the second year. Success now means doing more and doing it more economically. For some programs this transition begins late in the first year, for others in the middle of the next. From innovation, the program has now moved to installation. The coordinator moves from the role of change agent and newcomer to that of opinion leader and accepted member of the system. If the goal of the program has been its continuance, then success now depends on consistent support from the institution.

Table 8 summarizes the applicability of institutional factors during the first and second years of a grant. If its success is to be judged by the extent to which a program reaches its goals, institutions must realize that goals change as circumstances change, particularly during the transitional stage between the first and the second year of the grant. *In the first year of the grant, the program is in an unstable environment as it tests and re-invents the innovation.* The first

Factors	First Year	Second Year
1. Goals	innovation, quality, morale	efficiency, quantity
2. Task	diverse	uniform
3. Technology	craft, non-routine	engineering, routine
4. Structure	complex, decentralized, low formality	simple, centralized, formalized
5. Personnel	experience, credentials needed	fewer qualifications needed
6. Social Climate	maximally supportive	minimally supportive
7. Management	participative decisions	centralized decisions
8. Leadership	generate and advocate a vision	use vision to stimulate implementation
9. Development concerns	coordination, collaboration & creativity	delegation & control
10. Communication	much information, emphasizing goals, diffused in improvised or group problem solving formats	less information, emphasizing goals, diffused in documented or pre-planned formats

Table 8. The effective use of organizational factors

year goals include 1) high quality services, 2) innovative services, 3) high morale of the staff, 4) adoption of the program by the college and university community at large and 5) continued support of the institution's administration. Novelty and flexibility are at a premium. *In the second year of the grant, the environment stabilizes as the program is installed as part of the routine functioning of the institution.* The goals for this stage are 1) greater numbers of quality programs, 2) reaching a larger audience in the institution, 3) at reduced costs, 4) while maintaining a supportive climate, and 5) the continued support of the institution. Although the transition to the second phase emphasizes routinization and efficiency, a program needs some allowances to alter and invent within the program to meet the changing needs of the college and university community.

Hypotheses that predict success

In this section we derive hypotheses that help us predict how institutional factors may influence the success of a drug program. If this report were data-driven, this section would be part of a "Results" section. Statistics would directly support or reject hypotheses. In our research, support has come from theory, the data of others, logic, and our own qualitative data from analyzing documents, reports, interviews, and a focus group of program personnel.

Hypotheses are similar to propositions in two ways: first, they involve concepts which may be operationalized. Hypotheses can be tested. Secondly, they take the conditional form "if A, then B" and not the conditional form "when X, then Y." No data exists to support hypotheses since they are predictions. Thus if propositions are about the past, hypotheses are about the future. Propositions are about what is known; hypotheses are about the unknown. Nevertheless, in deductive theory building hypotheses are derived from propositions (Hawes, 1975). This process isolates specific instances from general statements and restates general conclusions about those specifics. If, for example, when working from the proposition, "when X, then Y," a theorist comes to believe that A and B are instances of X and Y, then the theorist concludes "if A, then B." When hypotheses are derived, they are said to have antecedent probability; that is, they have been linked logically to past research. When researchers employ their own data to substantiate hypotheses, the claim is said to have evidential probability. In deductive theory building, after several empirical demonstrations of its validity, the theoretical relationship in the hypothesis may be generalized as a proposition. More often, however, a series of hypotheses that test relationships between several similar variables produces a proposition inferred from separate studies (Dubin, 1978; Hawes, 1975).

In our next section hypotheses or groups of hypotheses are followed by brief explanations. Each explanation contains two important features: a first reference to one or more propositions as sources of the derivation that sup-

ports antecedent probability, and a second reference to our qualitative date that supports preliminary evidential probability.

Predictions of First-Year Success

Some hypotheses predict the first-year success of a drug program. Most have been derived from propositions about successful organizations in unstable environments during initiation and early implementation. *Several are derived from applicable propositions regardless of circumstances. These hypotheses are presented here because they are more important during a program's first year.*

> Hypothesis 1: If at the earliest stage of a grant proposal the writer gains broad participation at different institutional levels, then a program will be more likely to succeed.

This hypothesis is derived from Proposition 24. A college or university is a complex organization in which no program can be successful without information and support from a diversity of professionals. Input from these professionals offers comprehensive knowledge of problems, needs, and strategies. Group discussions can lead to solutions, decisions, and further commitments. In addition to correcting misunderstandings and reaching consensus, participants can inform others.

From our interviews we have found that few drug programs develop only from the writing of a grant. Most proposals evolved from those subsystems of the institution already engaged in alcohol and drug abuse issues, offices such as counseling or student justice. Faculties and most ancillary services have usually played minimal roles in the early stages of preparing grants. Several successful programs emphasized that widespread institutional support and involvement are crucial.

> Hypothesis 2: If a program lacks sufficient trialability, then the likelihood of its long term success will decrease.

This hypothesis derives from Proposition 38. The first year of the grant is the time to try a program and its strategies on different audiences. Finding what works most effectively during this testing period requires that the coordinator explore different methods. For this first year, dramatic results are secondary. Rather, the coordinator uses this time as an opportunity to test and adapt activities used elsewhere. During the second year, successful activities can be implemented after ineffective features have been eliminated.

Even though coordinators copy programs and activities used at other institutions, we found very few consciously focusing on the first year as a specific time to experiment with and develop programs. Experimentation and re-invention happened in a capricious and arbitrary manner.

Hypothesis 3: If institutional norms fail to support innovativeness and if the coordinator focuses exclusively on influencing administrators, then a program will not experience long term success.

A derivation of Propositions 29 and 46, this hypothesis applies to a program's second year as well as its first. It is difficult to influence an institution unreceptive to innovation and protective of the status quo. The absence of any culture of change poses unique problems. Obviously, the coordinator must work with administrators to gain their endorsement. However, the coordinator must make an even greater effort to identify and enlist the aid of faculty and ancillary services when the institutional climate discourages change. Coordinators need to consult opinion leaders, as well as their aides, who may be closer to other employees. Successful diffusion campaigns, conducted in an environment unfriendly to change, require the support of opinion-leaders and their subordinates rather than exclusively that of the institutional leadership.

In our interviews, coordinators believed their institutions favored innovativeness. Without investigating institutional history regarding change, coordinators made little effort to discover either those units open to change or those pockets of resistance. Determining an institution's desire for or reluctance toward innovation could prove vital in deciding on implementation strategies.

Hypothesis 4: If a program uses a variety of resources and suppliers, then it is more likely to succeed.

Derived from Proposition 3 and its relationship to social climate, this hypothesis applies regardless of circumstance. One system is dependent on another to the extent that the latter system controls a necessary resource. This dependency results from the second system's power to control the first (Emerson, 1962; Pfeffer, 1981). If a program can perform its tasks using a variety of resources and suppliers, it will be less dependent on any one resource or supplier, and as it develops multiple sources, it approaches independence and autonomy.

Looking for a variety of resources or suppliers may be costly. First of all, the search expends time that should be used for the program itself. Furthermore, if the program does find alternatives, it may cease to be regarded as part of the institution. Therefore, development must be undertaken within the constraints of institutional rules, both formal and informal, that influence the program's image. Without this integration of purpose, meeting the different demands and expectations of different funding sources will be problematic.

At the time of our analysis, most coordinators interviewed had limited experience in development. They regarded most funds received from other

sources as the institution's funds, but grant moneys they regarded as the exception. Nevertheless, most still recognized some danger in being supported exclusively by grant money or other external funds. Clearly then, coordinators must distinguish between campus and off-campus funds. For example, student-fee money is usually controlled by students, either exclusively or cooperatively. Distributing these funds is different from distributing funds within the general institutional budget. As a consequence, any appeals to student leaders must necessarily differ from those aimed at administrators.

> Hypothesis 5: If a program's objectives are integrated into the institution's mission statement, then a program is more likely to be effective.

Derived from Proposition 1, this hypothesis addresses institutional goals, the social and political climate, and leadership. If a drug program's objectives can be directly linked to a mission statement, the mission statement reminds the institution of its obligations to the program, the success of which now becomes a goal of the institution. Because institutional management of definitions is important, linking drug-program objectives to the mission statement defines the program in strong political language. The program itself then finds itself under constitutive rules. As it becomes part of a recognizable environment, the subsystem contributes to the organizational sense of the environment. Coordinators can use the mission statement to integrate their own programs with others across the campus. When a mission statement serves as a reminder of an elevating goal, it can link separate managers to such a goal in a spirit of teamwork (Larson & LaFasto, 1989).

Although we recognize that individual coordinators must take the lead, only a few of our interviewees bothered to mention their institution's mission statement. Most were too involved in mounting their programs during the first year. This hypothesis reminds future coordinators that mission statements can stimulate and reinforce cooperation and coordination.

> Hypothesis 6: If a coordinator keeps objectives general during the first year, then a program is more likely to succeed.

Derived from Proposition 18 on success in an unstable environment, this hypothesis suggests that the first year of the grant is a more unstable time than the second. Objectives expressed generally are more appropriate because they allow for more flexibility. Most coordinators interviewed did, indeed, set general objectives during a program's first year because they wanted to try a variety of approaches.

> Hypothesis 7: If a coordinator evaluates qualitatively during the first year, then a program is more likely to succeed.

Proposition 19, from which this hypothesis is derived, says that general objectives will be better evaluated qualitatively, particularly when the environment is unstable and so long as that evaluation is systematic. But few coordinators evaluate their programs systematically. Few are trained evaluators; fewer still employ evaluative consultants. Although coordinators may follow funding procedures and submit federally mandated annual reports, their effort is often haphazard. Furthermore, they may be insensitive to changes in evaluation that occur between the first and second year. Because the Fund for the Improvement of Postsecondary Education includes no specifics in its annual evaluations, comparisons with other institutions become difficult.

There were reports of strained relationships between program coordinators and evaluation consultants. The Fund had cut expenditures for evaluation consultants from some grants it had approved. For whatever reasons, there appeared to be some resistance to systematic assessment of the programs across institutions.

> Hypothesis 8: If a program increases the diversity of its services during the first year, then it is more likely to succeed.

> Hypothesis 9: If a coordinator reduces specialization and routinization of tasks during the first year, then a program is more likely to succeed.

> Hypothesis 10: If a coordinator and the administration reduce formalization and develop a decentralized structure during the first year, then the program is more likely to succeed.

These hypotheses derive from Propositions 20 through 22. They outline the tasks, technology, and organizational structures in unstable environments. All three propositions suggest that when its tasks are organized and structured to allow for creativity, a program increases its chances for success in an unstable environment.

Most coordinators acted in a manner consistent with these hypotheses. They generally avoided formality or routine for the first year. Most were busy creating and testing their programs. Indeed, these first-year challenges are what attract coordinators to programs.

> Hypothesis 11: During the first year, if a coordinator and the institution employ highly qualified staff members, then their program is more likely to succeed.

A derivative of Proposition 23, this hypothesis argues that the more qualified the staff, the fewer the risks in an uncertain environment. Our data suggest that most coordinators were experienced counselors of drug abusers, that their credentials and advanced degrees were in counseling or the study

of addiction, and that a similar pattern existed in their staffs. Many drug programs often emerged from institutional counseling offices.

As noted earlier, most of the coordinator's work is that of management and communication, and the programs are primarily to educate. In only a few instances was a coordinator's training or experience in management, communication, or education found to be a criterion for employment. Most institutions failed to assist in workshops for coordinators charged with training staff members drawn from other academic departments. Some coordinators interviewed did express a need for such expertise.

> Hypothesis 12: If a coordinator trains and manages staff members, then a program will be more likely to succeed.

This hypothesis is derived from Propositions 43 and 54. Along with planning and coordinating the diffusion campaign, the coordinator must also organize and manage a staff. These duties include setting objectives and establishing qualitative or quantitative methods of evaluation. The coordinator also monitors staff assignments, suggests solutions to difficult problems, and formally evaluates progress. The coordinator encourages self-reliance and initiative, including staff members in decision-making and challenging projects, supporting them and recognizing them for significant achievement.

Our interviews revealed that the climate in which most staffs work was positive and open but that coordinators fell short in developing staff members. Coordinators dedicated a great deal of time working through their own agenda, but little to personnel management. Most staff members felt overburdened working toward objectives and at jobs too often over-generalized. Timetables and deadlines, they said, seldom related to goals, and few coordinators followed specific criteria in formally evaluating personnel.

> Hypothesis 13: If a program's advocates are situated in the higher levels of institutional administration, then a program is more likely to succeed.

Related to Proposition 2 on organizational structure and the social climate, this hypothesis speaks to the authority and status of a program's supporters in the institution's hierarchy, those who are more likely to accumulate rewards and resources than those in lower positions. Furthermore, the officers in these positions are more likely to influence other decision-makers. Our interviewees all recognized this fact of institutional life, and many reported that the position of their director was an important contributor to the program's success. In most cases, coordinators reported directly to a dean or a vice president.

Coordinators can also find several informal advocates. Our data show that at least one person of authority has had experience with drug abuse, whether as an administrator or as part of the environment (perhaps an

influential alumnus or a member of a board of regents). These opinion leaders in the already existing social network can become advocates if they are included in decisions as members of boards created to advise coordinators of drug abuse programs.

> Hypothesis 14: If a coordinator establishes a relationship with administrators and other decision-makers at implementation, then a program will be more likely to experience long term success.

Derived from Proposition 2, this hypothesis refers to the greater access to rewards and resources held by institutional officers who finally determine a program's continuation. Coordinators must make themselves known to those in authority and maintain their profile for the life of the program. These relationships create not only identity but also direct channels of distortion-free information to administrators. From interviews with coordinators, we discovered that few ever established real contact with administrators and that their written reports and memos were the bulk of their communication. As a result, most failed to understand who decides a program's institutionalization. Moreover, coordinators said they were unaware of the decision-making process. Thus they viewed themselves as detached from it, perhaps because many fear involvement in campus politics, preferring independence in their activities instead.

> Hypothesis 15: If a coordinator develops a comprehensive plan for a diffusion campaign, then a program will be more likely to succeed.

According to Propositions 42 and 43 on the change agent role in diffusion campaigns, coordinators must take the initiative in conceiving and implementing activities. They must first analyze their audiences' needs before planning a program to meet those needs. Then a strategy may be developed around messages for each audience and a schedule for their dissemination.

Our interviews revealed that few coordinators ever identified all the different audiences on campus or designed specific messages for any of them. This absence of strategic thinking strongly suggests that few coordinators see themselves as managers of comprehensive programs.

> Hypothesis 16: If the dissemination of program information meets the needs of organizational members and audiences, then a program is more likely to be effective.

Proposition 5 was the first of several about internal dissemination. The hypothesis derived from it suggests that there are several audiences, each one needing to hear a different message.

The first and most obvious is the audience of customers, namely, students and staff. Most dissemination is directed toward this audience. However, our data suggested most written or printed messages were merely announcements or reports of activities. Even this news varied in the extent to which it met the needs of a specific campus. Most coordinators tried a program and then saw if it was received favorably, or they adopted a program successfully employed at another institution. However, without a systematic assessment of what their own primary audience needs to know, coordinators could never accurately judge their program's effectiveness.

The second important audience is that of institutional authorities who will decide a program's fate. Most coordinators interviewed appear unaware of who decides, when to apply for funds, and who decides to continue a program. Beyond their director or other supervisor, they knew little about the information likely to persuade this audience of decision-makers.

A third audience is made up of organizational units related to the program, including those that compete yet cooperate with it. Interviews revealed no systematic effort to assess their needs for information or to plan its dissemination. This problem may arise in part from a failure in definition. Although Fund policy insisted that college students be the most significant target of a program's efforts, it said little about what efforts constitute "education." Grant instructions provided examples of mentor programs and training, but these examples may have been confusing to inexperienced applicants. If the Fund surveyed earlier applicants, it could then clarify its expectations for future applicants.

> Hypothesis 17: If a coordinator's dissemination activities are adapted to the capacities of organizational units, then a program is more likely to succeed.

Proposition 6, about load and overload, suggested that organizational units have a limited capacity to process information. When a program adjusts its dissemination of information to the capacity of another unit to absorb it, the message will more likely be heard. The hypothesis also points to the coordinator's knowledge of other institutional units. What information do they routinely discard? What information do they store or communicate? What is the easiest form for processing their information? When is the best time to inform other units?

Our interviews suggested that coordinators made little effort to understand other information environments. Coordinators created programs and publicized them only for and to their clients. They neither knew nor cared how to plan for internal dissemination or overload. They may have been so overloaded themselves that they had no time to plan.

> Hypothesis 18: If a program can be labeled with more powerful language, then it is more likely to be effective.

Hypotheses 19: If a coordinator encodes messages in the language of the system's deep structure, then a program is more likely to be effective.

Propositions 4 and 8, on constitutive rules, deep structure, and organizational politics, apply regardless of environmental conditions and are the bases of these hypotheses. Effective coordination requires language that will appropriately interpret the program and its activities, language that is familiar yet powerful. If institutional authority controls through definitions, then a coordinator's language can either constrain or empower a program, for some labels are more powerful than others.

Coordinators interviewed were sensitive to this issue. They repeatedly identified their association with "counseling" as an obstacle to success. Because many grant applications were initiated from counseling programs and because many coordinators come from counseling backgrounds, this labeling seems a natural result. Sometimes, establishing a preventive program within a counseling center reinforces the counseling label. Furthermore, coordinators saw the label as an obstacle because their programs became indistinguishable from the general counseling effort and administrators saw no need for separate entities. Drug abuse programs became dependent on the overall counseling programs. If counseling had status, the preventive program had status. Programs were also seen as student services. Usually this labeling followed when a dean or vice president supervised an office of student affairs. Our interviewees reported that such supervision reduced their own credibility when they dealt with institutional faculty or staff. Although one goal may be to influence a large number of students, a program may find itself unduly restricted by such labeling, for the program can influence large numbers only if large numbers of faculty and staff support it. Diminishing resources mean that institutions must reduce their costs, and student services may become a convenient target.

Although some programs may be recognizable units in strong counseling programs, most can benefit from cutting their association with counseling. While most coordinators suggested institutional health centers as appropriate associations, we remain unconvinced. What is clear is that programs should not be labeled as "student counseling."

Hypothesis 20: If the program a) disseminates high amounts of information and b) disseminates information in improvised formats or through group decision-making formats in the first year, then the program is more likely to be successful.

This hypothesis derives from Proposition 24, which suggests that when uncertainty is greatest in unstable environments, more information must be disseminated. Furthermore, the richest channels must be employed since

they have the highest capacity to carry it.

No clear pattern from our data emerged regarding problem solving meetings, but improvisation within groups was common. Coordinators often relied on accepted norms as the basis for their basic communication, improvising around these norms. A common complaint was that some meetings were poorly organized. As we have noted earlier, most coordinators lacked the skills, training, or experience required of those who would conduct well-run meetings.

> Hypothesis 21: If during the first year a program's messages to decision makers emphasize quality, innovativeness, or morale, then these messages are more likely to be persuasive.

Derived from Proposition 25, this hypothesis speaks to the content of messages in unstable environments. While the proposition assumes that messages consistent with organizational goals will be more persuasive, and since unstable environments are less hostile to new, improved, or promising elements of a program, messages about these goals will be more effective.

As already noted, coordinators did not construct internal dissemination plans. Although some emphasized content, as suggested by the hypothesis, their communication was seldom strategic. That is, coordinators' messages were reactions to random and unpredictable events.

> Hypothesis 22: If a coordinator's messages to the institution reveal a performance gap, then a program is more likely to succeed.

A derivation of Proposition 27, this hypothesis implies that change begins with the perception of a problem. Coordinators who provide evidence of drug and alcohol problems on campus and demonstrate how those problems undercut institutional expectations can awaken a drowsing administration. As organizational members learn more, their motivation to change increases.

This hypothesis also emphasizes messages to the community, not merely those to administrators. Because coordinators address different audiences and because administrators must perceive performance gaps before applying for a grant, the community at large may still need to be persuaded that a program is needed.

From our interviews, we discovered that coordinators tried to document alcohol and drug problems with general information not specifically related to their campus. Often they cited national statistics but neglected any local data. Clearly they must do more at the community level to demonstrate institutional performance gaps.

> Hypothesis 23: If a coordinator communicates in a variety of ways, then a program is more likely to be effective.

Derived from Proposition 7, arguing that redundancy improves clarity and lessens distortion, this hypothesis suggests that many methods sustain interest and improve persuasion. Although we found ample evidence that coordinators did communicate in various ways, their choices were seldom strategic. They showed little appreciation for different methods and made little or no attempt to design any internal dissemination plan.

> Hypothesis 24: If a coordinator develops a strategy emphasizing both interpersonal and mass-media channels, then a program is more likely to succeed.

This hypothesis is derived from Propositions 7 and 45. While interpersonal channels deliver rich information, they cost more time and effort to maintain. Conversely, mass-media channels provide a large audience with rapid but often general information. Newsletters, newspaper articles, brochures, memos, and posters disseminate initial information about a program effectively, while one-on-one discussions better influence key decision-makers and opinion leaders on campus. The successful coordinator judiciously employs both channels.

Our interviews revealed that even though coordinators often used both channels, they did so without efficiency or purpose. They should try to develop specific strategies for reaching specific audiences before resorting to either method.

> Hypothesis 25: If a coordinator can identify opinion leaders early in the implementation stage, make contact with them, and work through them, then a program will be more likely to achieve long term success.

This hypothesis is derived from Propositions 45 through 47 and Proposition 50. These propositions emphasize how crucial it is for coordinators to establish and maintain interpersonal contact with opinion leaders. Some opinion leaders are highly visible since they hold formal positions and titles. Most, however, are emergent leaders within informal, social networks; therefore, they are much more difficult to identify. They are respected by members of their reference groups, are highly trustworthy, and have demonstrated good judgment and understanding of important issues.

Opinion leaders are similar to their followers. They can persuade easily because they pose little threat to their groups. But as outsiders pushing change, coordinators may invite suspicion. At first, members may find it difficult to relate to a coordinator who at the same time must contact opinion leaders directly and convince them of the value of the a drug abuse program. Once opinion leaders have been persuaded, their support will directly impact others in their social network, triggering a successful diffusion campaign. Once they have been convinced, the rate of adoption will accelerate rapidly.

Our interviews indicated that most coordinators failed to develop strategies for identifying and working through opinion leaders. Few saw their institutions as comprising groups guided by opinion leaders; as a result, they saw no need to develop any framework of influence.

> Hypothesis 26: If the program coordinator becomes highly visible by becoming involved in campus activities and serving on committees, key decision-makers as well as other organizational members will view the coordinator and the program with greater credibility, and then, the program will experience more long term success.

Derived from Proposition 44, this hypothesis suggests that invisible coordinators seldom establish campus networks necessary for success. What decision-makers think of a program's coordinator determines the worth of the program. Coordinators will in turn influence perceptions of their programs. Every time a coordinator accepts a speaking engagement or serves on a committee, the network expands, dialogue about the program begins, and knowledge of it spreads.

As indicated above, our interviews revealed that few coordinators developed extensive networks on their campuses. They communicated mostly with those like themselves who were associated with problems of abuse and counseling. They avoided politics and isolated themselves from key decision-makers and others. If they hope for success, they must broaden their social networks.

> Hypothesis 27: If a coordinator's goals include a successful manipulation of the environment and revitalizing the institution, then a program is more likely to succeed.

As derived from Proposition 26 that deals with unstable environments, this hypothesis suggests that a coordinator must prepare for change and that if the environment is unstable the coordinator must attempt to influence and direct that change. Because drug-awareness programs are about change, institutions develop them in response to change and as agencies of change. Programs serve the institution best in the first year if they awaken the community to problems of drug abuse. Indeed, most coordinators interviewed did direct their programs as instruments of change during their first year.

Predictions of Success in the Second Year

This section presents only those hypotheses that apply to the second year. *However, hypotheses 3, 4, 5, 12, 13, 16, 17, 18, 19, and 23 still apply to the second year because they address continuing concerns regardless of circumstances.* In the second year, however, additional issues arise.

When an innovation is implemented, the coordinator must continue to confirm and reinforce the program. Now as a campus opinion leader, the coordinator must remain visible and involved in institutional networks, for a program's credibility and acceptance depend on the perceived involvement and competence of its coordinator. Speaking to campus organizations and serving on institutional committees are two ways a program coordinator can publicize the program. Later during confirmation, a coordinator must keep in touch with programs and activities sponsored by the Fund for the Improvement of Post Secondary Education, joining state or regional consortia and attending conventions and workshops. Without these external contacts, a coordinator will soon lack new information and ideas necessary for continuation and improvement.

> Hypothesis 28: If the institution does not have slack resources, then a program will be more likely to be discontinued.

Derived from Proposition 31 and 32, this hypothesis looks at the necessary slack resources required to initiate and continue a program. With adequate funding for personnel, equipment, and supplies, a program can be sustained; without it, maintaining effectiveness is doubtful. If the institution must retrench financially, some of its programs must be cut or trimmed. Any program's protection rests on its effectiveness and its source of funding. Unexpected cutbacks and shortages have severely crippled some programs and seriously limited their delivery of services.

> Hypothesis 29: If a coordinator develops specific objectives during the second year, then a program is more likely to succeed.

Derived from Proposition 9 on setting goals in a stable environment, this hypothesis assumes that when events are predictable, the coordinator who specifies the goals of a program can more easily reach those goals. We found little evidence that coordinators specified their objectives in either the first or the second year. They typically attempted to create programs with visibility. Although some may have defined specific intermediate objectives, most did not.

> Hypothesis 30: If a coordinator evaluates quantitatively during the second year, then a program is more likely to succeed.

> Hypothesis 31: If a coordinator produces observable results, then a program will probably be continued.

Both hypotheses derive from Propositions 10 and 39. Quantitative evaluation is possible when objectives are specified, and such evaluation methods can develop a history of events and criteria for further evaluation. Tangible

results validate a program and justify its expense. Competing for funds, coordinators can point to these results, crucial evidence for institutionalization during the second year of the cycle.

Our interviews revealed that few coordinators systematically measured their success; their annual reports simply described activities rather than results. As anecdotal evidence became the norm, what quantitative results they did offer came from studies poorly designed and replete with unjustified claims. Finally, some coordinators even failed to submit a report to the Fund. Coordinators of new programs, unable to identify variables, often find evaluation particularly difficult. Theory-based evaluation may be the best alternative (Chen, 1990). This report is an example of a theory identifying variables subject to quantification.

Hypothesis 32: If a program decreases the diversity of its services during the second year, then it will be more likely to succeed.

Hypothesis 33: If a coordinator specializes and routinizes tasks during the second year, then a program will be more likely to succeed.

Hypothesis 34: If the program coordinator and the administration increase the formalization of the program and if the program uses a centralized structure during the second year, then the program is more likely to succeed.

Hypothesis 35: If a coordinator develops formal job descriptions and procedures during the second year, then a program is more likely to succeed.

Hypothesis 36: If a program's structure is altered during the second year so that it becomes less complex, more formal, and more centralized, then the long term success of a program is more likely.

Derived from Propositions 11 through 13 and Proposition 55, these hypotheses recognize that during the first year a program operates in an unstable environment where criteria for success are unclear. A coordinator must consider all institutional interests at a time of experimentation and testing of different activities. During the second year, however, a coordinator must create a more stable environment by selecting those activities which are working well, eliminating the least effective ones, and reducing the diversity of tasks. During the second year, a coordinator must strive for a streamlined, efficient operation focused on specific staff responsibilities written and clearly defined. In addition to individual job descriptions and procedures, a coordinator must set specific, measurable, and attainable work goals.

Our interviews revealed that few coordinators distinguished between first

and second year actions. We found little evidence to indicate they reviewed or revised their programs, or reorganized their staffs or their tasks for more efficiency in the second year. Indeed, coordinators often seemed unaware of change.

> Hypothesis 37: If during the second year, a coordinator and institution employ a staff with minimal qualifications, then a program will be more likely to be successful.

Derived from Proposition 14, this hypothesis suggests that costs can be reduced by using less qualified individuals since innovation has slowed and tasks have been simplified. We found no trend suggesting that program employment practices did, in fact, change from one year to the next. Most programs were still in need of qualified personnel for critical services. Since coordinators appeared to make little effort to routinize and formalize, many tasks still required highly qualified staff. Although our data lend little support for our hypothesis, the hypothesis has strong logical support. This hypothesis, along with the four preceding it, suggest that coordinators are missing opportunities to make their programs more cost effective.

> Hypothesis 38: If coordinators develop their staffs by increasing staff members' self-reliance, competence, and internal motivation, then they will continue to modify and improve their programs and thus increase the likelihood of continuation.

Derived from Proposition 54, this hypothesis suggests that coordinators who continue to manage and develop their staffs during the second year increase competence and self-reliance. Coordinators who take a long term approach to change realize that staff members need the skills to detect new problems as they arise, discover new approaches, and adapt operational procedures. Staff members working for a coordinator interested in their development are more likely to continue those elements of the program that are effective and to modify those that are not. This willingness to change increases the likelihood of a program's long term success.

While our interviews provided little information on this issue, staff employees, overall, said their morale was high, even though they felt overworked. However, it is impossible to draw specific conclusions from our limited data on staff development.

> Hypothesis 39: If the program a) disseminates low amounts of information and b) disseminates information in documents or through pre-planned formats in the second year, then the program is more likely to be successful.

Derived from Proposition 15, on stable environments, this hypothesis suggests that because uncertainly diminishes in stable environments, less information is needed there. Furthermore, mass media, documents, and live presentations may be successful because their capacities are lower.

Our data indicated no clear pattern of dissemination. Coordinators ordinarily relied on institutional practices as a basis for their own communication, and they improvised appropriately around those norms during the first year, but with little movement toward documented or planned formats. Evidence supporting this hypothesis is sparse since coordinators showed little variance in their communication. However, as in our earlier hypotheses regarding organizational tasks, technology, and structure, there is strong logical proof. Again, the hypothesis suggests coordinators do have opportunities to improve their communication even when they must reduce it.

Hypothesis 40: If a program produces positive results but those results are not visible to key decision-makers, then it is more likely to be discontinued.

Hypothesis 41: If a coordinator provides administrators, other key decision makers, and the larger community with positive messages of accomplishment, then a program is more likely to achieve long term success.

Derived from Propositions 2, 39, and 52, these hypotheses state that while good results are vital, their visibility is crucial. Coordinators need a formal plan of dissemination that will get this information to various audiences, especially administrators and other decision-makers who will determine a program's future.

Our interviews indicated most coordinators neglected plans for informing others about their successes. Even though they occasionally reported anecdotal evidence, they provided limited quantitative results. While many felt visibility is essential, they found it difficult to measure results or to determine what had worked well.

Hypothesis 42: If during the second year, messages about a program emphasize the quantity and cost effectiveness of service, then the messages are more likely to be persuasive.

This hypothesis derives from Proposition 16 which suggests that messages are more effective if they are consistent with objectives. In a stable environment, goals should be those of quantity and efficiency. Messages that discuss these issues are likely to be successful.

In our interviews we found that coordinators often focused their persuasive messages on such issues, usually reporting the number of students receiving services. However, their reports of efficiency were less common.

Furthermore, their persuasive content varied little as they disseminated similar messages during the first and second years.

> Hypothesis 43: If a coordinator informs administrators and key decision makers about the principles underlying a program, then it can expect long term success.

Derived from Proposition 53, this hypothesis suggests that early in the diffusion campaign coordinators make the institution aware of drug and alcohol-abuse problems and offer solutions to correct them. Later in their campaigns, however, they need to lay out the principles of their program. These principles deepen administrators' understanding and make discontinuance less likely. When the underlying structure, its logical roots, and its research bases are clarified, the program's long term prospects increase.

Our interviews revealed that most coordinators' messages focused on awareness or practical knowledge but that few communicated the principles of their programs. Coordinators' limited access to decision-makers made it difficult to express their concern. However, more knowledge of these principles will inspire administrators to a better understanding of a program's purpose.

> Hypothesis 44: If a program loses its relative advantage, then it will be more likely to be discontinued.

> Hypothesis 45: If a program is perceived as incompatible with existing values, history, and institutional needs, then it will be more likely to be discontinued.

> Hypothesis 46: If a program is perceived as too complex or too difficult to understand, then it will be more likely to be discontinued.

Hypotheses 44 through 46 are derivations of Propositions 35 through 37, respectively, each of which identifies one major factor which might emerge during the second year and thus jeopardize the institutionalization and continuance of the program. All three are rooted in the perceptions of administrators or other institutional members who may be influenced to some degree by a coordinator.

A program maintains its relative advantage to the degree that its reputation is better than those of other prevention programs which might be proposed or discovered. When a program expresses values and calls for action consistent with the institution's values and expectations, it is viewed as fitting the needs of the institution. In addition, a program is more acceptable if it is easy to understand. Each factor makes the program more attractive, and its presence increases the likelihood of continuance.

Our interviews revealed mixed findings among coordinators on these

factors. Some indicated problems with relative advantage, observing that their programs were indistinguishable from others on campus. For example, distinctions between drug prevention and drug rehabilitation were unclear. Some institutions seemed to value rehabilitation over prevention; therefore, some prevention programs were less favored. Finally, some coordinators believed that the complexity perceived in their programs and activities may have been misunderstood. Indeed, some programs projected a complex, even incomprehensible image.

> Hypothesis 47: If a coordinator encourages positive and acceptable accounts of a program among different audiences across campus, then it is more likely to be continued.

This hypothesis derives from Propositions 8, 56, and 57. If reality is created during discussions among work groups, and if coordinators offer positive information that furthers acceptance, then the likelihood of continuance is increased. Presentations to campus groups encourage debate and promote student discussions on alcohol- and drug-related issues. This awareness, in turn, creates an ongoing dialogue. A clear sign of program success occurs when groups talk about the program using the vernacular and "deep structure" language of the group.

Our interviews revealed some coordinators recognized the importance of student involvement in the dialogue on drug problems, but they showed less engagement with other institutional groups. As catalysts for change, coordinators must take a greater role in widening the discussion.

> Hypothesis 48: If a coordinator uses mass media to reinforce the success of a program, then it is more likely to be continued.

This hypothesis is derived from Proposition 51. Mass media can quickly reinforce beliefs. When a program becomes a positive force on campus, newsletters and news releases reporting program successes can strengthen an institution's commitment. Our interviews suggested that coordinators used mass media occasionally to reinforce their success. When they did, it was more to expose the institution to the need for a prevention program than to demonstrate practical results.

> Hypothesis 49: If a coordinator moves from the role of change agent to opinion leader during implementation, then a program will be more likely to achieve long term success.

Derived from Propositions 40 through 42 and Proposition 44, this hypothesis suggests that so long as coordinators are viewed as outsiders, their programs will seem foreign to institutional members. Coordinators who empathize with and adapt to the institution will gradually establish credibili-

ty. Over time, their threat will diminish and their opinions and programs will be respected. As coordinators are seen as opinion leaders themselves, they will gain influence over others.

Our interviews revealed that few coordinators ever deeply involved themselves in the social networks of their colleges. Failing to affiliate with a broad cross-section of the campus, they limited the effect of their leadership.

> Hypothesis 50: If a coordinator becomes a member of a consortium or Fund network, then a program will be more likely to achieve long term success.

Derived from Propositions 30, 32, and 57, this hypothesis addresses the problem of coordinators working individually on individual campuses. Because they are accountable to the Fund throughout the two-year period of the grant, many coordinators continue their relationship with the agency even after the institutionalization of their programs. The Fund also maintains continuing support for coordinators, support that may weaken after a program's institutionalization. Regional consortia and conventions, for instance, can maintain networks between agency and coordinator and among other coordinators with similar problems.

In our interviews coordinators revealed that they recognize the importance of a consortium. From these support groups they learned they were not alone, that others have the same frustrations over similar problems, and that they can share with others new ideas and solutions. Coordinators saw these gatherings as providing opportunities for catharsis as well as insight.

> Hypothesis 51: If during the second year, a coordinator's goals are aimed at adapting to the environment and implementing decisions efficiently, then a program is more likely to be successful.

This hypothesis derives from Proposition 17 and the condition of environments. It suggests that instead of disrupting its environment, an organization should take advantage of the predictability inherent in stability. What coordinators must do is to change, not just initiate the need for change.

Our interviews showed this concept to be the most difficult to grasp. Most coordinators accepted the challenges of setting up a program, but maintaining that program was another matter.

Recommendations

In previous sections, we described our approach to theory building, set boundaries, and explained organizational change and innovation. We identified outcomes of the process, described drug abuse education and preven-

tion programs, and predicted the influence of institutional factors on them. The recommendations we make for those working in such programs are extensions of our hypotheses.

Our recommendations are about dealing with institutional factors related to the success of drug abuse education programs as an organizational unit. Coordinators and others interested in improving their own efforts should consider how these recommendations apply to their own situation. We present our recommendations here with little additional explanation. We have included the hypothetical basis for each in parentheses, and in some instances we do report examples from our qualitative data.

Recommendations to Coordinators Preparing Proposals

> Recommendation 1: Involve as many institutional departments in the grant-writing phase as possible (Hypothesis 1).

> Recommendation 2: Write an internal dissemination plan as a part of the grant proposal (Hypotheses 15-17).

Develop a plan of communication for every audience you want to influence. In your plan include monthly timetables, objectives for each communication, different channels of communication to be used, messages or activities employed, methods to evaluate the success of communication, and follow-up procedures. Table 9 displays first and second year priorities.

Recommendations to Coordinators during the First Year of the Grant

> Recommendation 3: Direct every activity to produce change and visibilty (Hypotheses 2, 27).

Offer yourself to make public presentations about your program to as many campus and community groups as you can. Be known to and get to know others in the system. Make your program (and yourself) known to the institution and the larger community. Attend college social and academic events. Cross as many boundaries of higher education as possible, both horizontal and vertical. Look for appropriate committees and volunteer to serve on them.

> Recommendation 4: Assess your institution's climate to determine the degree of innovation possible (Hypothesis 3).

> Recommendation 5: When you try a new service or activity, give it enough time to assess its benefits (Hypothesis 2).

Factors	First Year	Second Year
a. Who/ the Sender	emphasize credibility of coordinator as change agent, develop staff	emphasize credibility of coordinator as as opinion leader
b. Says What/ Message		
1) Message Content	focus on performance gap, the quality and innovativeness of services	publicize program's success, demonstrate continued need
2) Message Style	develop plan, use powerful language	revise plan, use powerful language
c. To Whom/ the Receiver	identify audiences, conduct information needs analysis	revise analysis
d. In Which Channels		
1) Diffusion Methods	use mass and interpersonal, use richer methods	use fewer, less rich methods
2) Networks	use formal, informal, initiate external links	rely more on formal, maintain external links
e. When	creativity, re-invention	installing, institutionalizing
f. With What Effects	create and change perceptions, behaviors	reinforce perceptions, behaviors

Table 9. Priorities for effective internal dissemination

Recommendation 6: Identify a variety of sources for resources, both public and private funding, and create a plan of development based on all possible funds; then, begin implementing your plan (Hypothesis 4).

Recommendation 7: Review your institution's mission statement to insure drug abuse prevention and education are included; if not, begin the process that would include these concerns in the mission statement (Hypothesis 5).

Recommendation 8: Specifically link the goals and objectives of the drug abuse education program to the institution's mission statement (Hypothesis 5).

Develop your own program's mission statement. Use it as a rationale for your program when you present it in documents to the administration, faculty, students, and others in the institutional community.

Recommendation 9: Check and correct formal documents to insure that

your program's objectives can be clearly linked to the institution's mission. Look at formal reports to supervisors and any documents containing joint objectives with other programs (Hypothesis 5).

Recommendation 10: Develop general first-year objectives that encourage creativity (Hypothesis 6).

Adapt general principles and objectives of your program to specific audiences and campus structures so that re-invention and modification will accommodate as many as possible.

Recommendation 11: Establish your program's short term (first-year) as well as long-term (beyond first-year) written objectives; review and revise them annually (Hypotheses 6, 29).

Recommendation 12: Evaluate the effectiveness of your services for the first year, measuring qualitatively; include "customer" interviews as part of your systematic plan of evaluation (Hypothesis 7).

Table 10 shows how the elements in your plan might change during the two years of funding.

Recommendation 13: Undertake a variety of tasks informally and as decentralized as possible; use every means to encourage creativity (Hypotheses 8-10).

Recommendation 14: Employ a staff with experience and qualifications in education, communication, and management (Hypothesis 11).

Recommendation 15: Design a staff development plan to insure and enhance staff skills. Workshops and other forms of instruction are methods of improving education, communication and management skills (Hypothesis 12).

Recommendation 16: Establish a direct reporting line to a vice president or a dean (Hypothesis 13).

Recommendation 17: Identify potential opinion leaders in the informal network and include them in your program (Hypotheses 14, 25).

Factors	First Year	Second Year
1. Goals of Evaluation	more formative evaluation	more summative evaluation
2. Program Objectives		
a. Outcomes	change perceptions of clients and audiences	reinforce perceptions, change behavior
b. Specificity	lower	higher
3. Samples	purposive	random
4. Designs	descriptive, correlational, ex post facto	ex post facto, experimental
5. Data Gathering Methods	qualitative, interviews, focus groups, surveys	quantitative, surveys, records of behavior
6. Results Display	narratives, anecdotes, descriptive statistics, some inferential statistics	descriptive statistics, inferential statistics
7. Generalizability	low	high

Table 10. Priorities for effective evaluation

Become familiar with the organizational structure, lines of authority, and responsible personnel. Locate both the formal chain of command and the informal sources of power, those with greater credibility and those with influence within groups. Identify particularly those key decision-makers who will decide your program's adoption and institutionalization.

> Recommendation 18: Develop a special line of communication with opinion leaders which can be used to send information and gain feedback (Hypotheses 14, 25).

One method of implementing these recommendations is to organize an advisory board made up of opinion leaders who can encourage the involvement of others and a flow of information.

> Recommendation 19: Develop a procedure, telephone or mail, by which to survey the adequacy of information received about your program and the attitudes about the program (Hypotheses 15-17).

When you have identified your audiences, whether administration, faculty, or students, and their understanding of and disposition toward your program, use the results to develop specific goals and strategies for reaching those audiences. After your program is operational, repeat your survey in a

post-test, this time observing strengths and weaknesses discovered.

Recommendation 20: Construct an internal dissemination plan if one was not included in your original proposal; otherwise, review the original and revise it for the processing capacities of your audiences (Hypotheses 15-17).

Recommendation 21: Assess the information needs and capacities of students, staff, key decision-makers, and other organizational units interacting with your program (Hypotheses 16-17).

Recommendation 22: In your publications and presentations, avoid expressions that associate your program with "student counseling" (Hypotheses 18-19).

Recommendation 23: During the first year select a name for the program and program activities that does not imply "student counseling" (Hypotheses 18-19).

Relating your program to the student health center or to a campus "wellness" program is a better strategy.

Recommendation 24: From the beginning of your first year, report your program's activities and services, using language appropriate to your institution (Hypotheses 18-19).

Particularly important are the terms "prevention and awareness" and the degree of emphasis to be placed on "alcohol" and "drugs." How is your program different from others on your campus? Where does "prevention" end and "rehabilitation" begin? How does "counseling" in a "prevention and awareness" program differ from "counseling" in a "rehabilitation" program? You must be able to answer such questions appropriately.

Recommendation 25: Disseminate a large quantity of information about your services using improvised and group formats (Hypothesis 20).

This is true for program staff as well as key personnel around the institution. It does not apply to the methods for disseminating information about drug abuse as part of a program service.

Recommendation 26: Emphasize the quality and innovativeness of your services in messages to the campus community at large (Hypothesis 21).

Recommendation 27: Emphasize the need for your program when your institution first hears about it (Hypothesis 22).

Recommendation 28: Use a variety of communication channels to disseminate information, being sure to include mass communication and interpersonal channels (Hypotheses 23, 24).

Recommendation 29: Use your expertise and competence to establish your credibility as a change agent (Hypothesis 49).

Recommendations to Coordinators During the Second Year of the Grant

Recommendation 30: During the second year, continue your development plan created during the first year (Hypotheses 3-4).

Now is the time to evaluate and revise as well as to solicit support and resources outside the institution. Within the institution, look to student services rather than the general budget for full or partial support.

Recommendation 31: Review and revise general written objectives, developing specific ones which you can measure and more easily evaluate (Hypothesis 29).

Recommendation 32: Use a quantitative evaluation system for the second year (Hypotheses 30-31).

Recommendation 33: Formalize and simplify your services, delivery system, and organizational structure by developing specific policies and procedures that will reduce costs of routine features of your program (Hypotheses 32-36).

Recommendation 34: Continue developing those professionals retained on your staff, using less skilled employees to accomplish simpler tasks (Hypotheses 37-38).

Recommendation 35: Disseminate less information about your program but do so in documented or planned formats (Hypothesis 39).

Reports, staff meetings, formal presentations, and mass media should be your major methods of dissemination. For example, if you publish a quarterly newsletter that presents and advocates your program, you can reach administrators, faculty, and other influential bodies such as student-government or student-fees committees.

Recommendation 36: Design new messages to reinforce positive impressions created during your first year (Hypotheses 40-41).

For example, if you can publicize both positive and negative results associated with drug and alcohol issues, you can show changes in and support for your program, thereby justifying your additional efforts.

Recommendation 37: Emphasize in your messages all of your services, the audiences for them, and your efficiency in delivering them (Hypothesis 42).

Recommendation 38: Although costs and quantity should be detailed, use additional messages now to inform key decision makers and opinion leaders about the general principles underlying your services (Hypothesis 43).

Recommendation 39: Continue to emphasize in your messages the advantages of your services, their compatibility with the institutional goals, and their ease of delivery (Hypotheses 44-46).

Recommendation 40: Create opportunities for opinion leaders and key decision-makers to share and reinforce their positive impressions of your program; let them represent your work to other audiences (Hypothesis 47).

Recommendation 41: Reinforce face-to-face communication and your services by means of mass media (Hypothesis 48).

Recommendation 42: Transform your role from that of a change agent to that of an opinion leader as you rely more on trust than on expertise to build your credibility (Hypothesis 49).

Recommendation 43: Link your program to other drug programs by joining a consortium (Hypothesis 50).

External affiliations keep you in touch with new knowledge about other

programs and additional support available to all coordinators.

> Recommendation 44: During the second year focus more on adjusting to change and channeling change rather than creating it (Hypothesis 51).

Recommendations to the Fund for the Improvement of Postsecondary Education

> Recommendation 45: Encourage the participation of several organizational units in writing the grant proposal; give preferential reviews to institutions that demonstrate the program will be supported by more than one department (Hypothesis 1).

> Recommendation 46: Include in the original proposal a section that describes the first-year qualitative evaluation system as well as specific quantitative methods for the second year (Hypothesis 7).

> Recommendation 47: Require that all proposals designate funds either for a consultant to design and supervise evaluation or for expertise in evaluation to be developed from within the program staff (Hypotheses 7, 12, 30-31).

> Recommendation 48: Sponsor Fund educational administration workshops in evaluation, management, and communication (Hypotheses 7, 11-12, 30-31).

> Recommendation 49: Favor new grant proposals for programs from institutions already staffed with experts in education, communication, and management (Hypotheses 1,12).

> Recommendation 50: Require that coordinators complete an internal dissemination plan as part of their first-year report, that an evaluation or update of their plan be a part of their second-year report, and that audiences, a chronological schedule of communications, and methods of dissemination (whether mass media or interpersonal channels) be specified (Hypothesis 15).

> Recommendation 51: Require that institutions in their initial proposals demonstrate their financial support for their coordinator participating in external consortia and work-

shops (Hypothesis 50).

Recommendation 52: Provide specific feedback to those programs mak-
ing annual reports (Hypotheses 31, 40, 47).

Grantees consistently complained about the lack of feedback from
grantors. Feedback could go a long way in helping coordinators correct and
improve their programs. The Fund should also standardize and limit the con-
tent and length of grantees' annual reports so that a more timely but still
detailed evaluation could be provided. Favorable responses would also con-
firm successes.

Recommendation 53: Encourage coordinators to attend and make pre-
sentations at Fund meetings (Hypothesis 50).

Recommendation 54: Initiate follow-up grants for programs that have
been institutionalized (Hypotheses 28, 38, 51).

Specific criteria outlined in such grants can highlight model programs
and foster their continuance, as well as raise successful and worthy programs
to the highest level of institutional maintenance.

References

Ackoff, R. L., & Emery, F. E. (1972). *On purposeful systems.* Chicago: Aldine.

Allport, F. (1924). *Social psychology.* Boston: Houghton Mifflin.

Ashby, W. R. (1954). *Design for a brain.* New York: Chapman & Hall.

Ashby, W. R. (1956). *An introduction to cybernetics.* London: Chapman & Hall.

Axelrod, R. (1984). *The evolution of cooperation.* New York: Basic Books.

Bakke, E. W. (1950). *Bonds of organization.* New York: Harper & Row.

Bennis, W. G. (1976). Organizations of the future. In J. L. Owen, P. A. Page, & G. I. Zimmerman (Eds.), *Communication in organizations* (pp. 84-101). St. Paul, MN: West.

Bennis, W. G., & Nanus, B. (1985). *Leaders: The strategies for taking charge.* New York: Harper & Row.

Berger, C. R., & Bradac, J. J. (1982). *Language and social knowledge: Uncertainty in interpersonal relationships.* London: Edward Arnold.

Berger, C. R., & Calabrese, R. J. (1975). Some explorations in initial interaction and beyond: Toward a developmental theory of interpersonal communication; *Human Communication Research, 1,* 99-112.

Bertalanffy, L. von (1968). *General systems theory: Foundations, development, applications.* New York: George Braziller.

Buckley, W. (1967). *Sociology and modern systems theory.* Englewood Cliffs, NJ: Prentice-Hall.

Buckley, W. (1968). *Modern systems research for the behavioral scientist.* Chicago: Aldine.

Burns, T., & Stalker, G. M. (1961). *The management of innovation.* London: Tavistock.

Campbell, J. P., & Pritchard, R. D. (1976). Motivation theory in industrial and organizational psychology. In M. D. Dunnette (Ed.), *Handbook of industrial and organizational psychology* (pp. 63-119). Chicago: Rand McNally.

Chaffee, S. H., & Hochheimer, J. L. (1985). The beginnings of political communication research in the United States: Origins of the "limited effects" model. In E. M. Rogers & F. Balle (Eds.), *The media revolution in America and in Western Europe.* Norwood, NJ: Ablex.

Chen, H. (1990). *Theory-driven evaluations.* Newbury Park, CA: Sage.

Corning, P. (1983). *The synergism hypothesis: A theory of progressive evolution.* New York: McGraw-Hill.

Cusella, L. (1987). Feedback, motivation, and performance. In F. M. Jablin, L. L. Putnam, K. H. Roberts, & L. W. Porter (Eds.), *Handbook of organizational communication: An interdisciplinary perspective* (pp. 624-678). Beverly Hills, CA: Sage.

Cyert, R. M., & March, J. G. (1963). *A behavioral theory of the firm.* Englewood Cliffs, NJ: Prentice-Hall.

Daft, R. L. (1983). *Organization theory and design.* St. Paul, MN: West.

Daft, R. L., & Lengel, R. H. (1986). Organizational information requirements, media richness, and structural design. *Management Science, 32,* 554-571.

Daft, R. L., & Mcintosh, N. B. (1981). A tentative exploration into amount and equivocality of information processing in organizational work units. *Administrative Science Quarterly, 26,* 207-224.

Daniels, T. D., & Spiker, B. K. (1983). Social exchange and the relationship between information adequacy and relational satisfaction. *Western Journal of Speech Communication, 47,* 118-137.

Downey, H. K., Hellreigel, D. H., & Slocum, J. W. (1975). Environmental uncertainty: The construct and its operationalization. *Administrative Science Quarterly, 20,* 613-629.

Dubin, R. (1978). *Theory building* (2nd ed.). New York: Free Press.

Emerson, R. M. (1962). Power-dependence relations. *American Sociological Review, 27,* 31-41.

Emery, F., & Trist, E. L. (1965). The causal texture of organizational environments. *Human Relations, 18,* 21-32.

Etzioni, A. (1964). *Modern organizations.* Englewood Cliffs, NJ: Prentice-Hall.

Falcione, R. L., Sussman, L., & Herden, R. P. (1987). Communication climate in organizations. In F. M. Jablin, L. L. Putnam, K. H. Roberts, & L. W. Porter (Eds.), *Handbook of organizational communication: An interdisciplinary perspective* (pp. 195-227). Beverly Hills, CA: Sage.

Farace, R. V., Monge, P. R., & Russell, H. M. (1977). *Communicating and organizing.* Reading, MA: Addison-Wesley.

Fayol, H. (1949). *General and industrial management* (C. Storrs, trans.). London: Pitman. (Original work published 1916)

Fielder, F. E. (1967). *A theory of leadership effectiveness.* New York: McGraw-Hill.

Fisher, B. A. (1978). *Perspectives on human communication.* New York: Macmillan.

Fisher, B. A. (1982). The pragmatic perspective of human communication: A view from systems theory. In F. E. X. Dance (Ed.), *Human communication theory: Comparative essays* (pp. 192-219). New York: Harper & Row.

Frost, P. J. (1987). Power, politics, and influence. In F. M. Jablin, L. L. Putnam, K. H. Roberts, & L. W. Porter (Eds.), *Handbook of organizational communication: An interdisciplinary perspective* (pp. 503-548). Beverly Hills, CA: Sage.

Galbraith, J. R. (1977). *Organization design.* Reading, MA: Addison-Wesley.

Gibbs, J. P. (1967). Identification of statements of theory construction. *Sociology and Social Research, 52*, 72-87.

Goldhaber, G. M. (1986). *Organizational communication* (4th ed.). Dubuque, IA: Wm. C. Brown.

Gratz, R. D., & Salem, P. J. (1981). *Organizational communication and higher education.* AAHE-ERIC/Higher Education Research Report No. 10. Washington, DC: American Association for Higher Education.

Greenbaum, H. H., Clampitt, P., & Willihnganz, S. (1988). Organizational communication: An examination of four instruments. *Management Communication Quarterly, 2*(2), 245 -282.

Greenbaum, H. H., Hellweg, S. A., & Falcione, R. L. (1988). Organizational communication evaluation: An overview 1950-81. In G. M. Goldhaber & G. A. Barnett (Eds.), *Handbook of organizational communication* (pp. 275-317). Norwood, NJ: Ablex.

Greiner, L. E. (1972). Patterns of organization change. *Harvard Business Review, 45*(4), 119-130.

Hage, G. (1980). *Theories of organizations: Form, process, and transformation.* New York: Wiley.

Hall, A. D., & Fagen, R. E. (1956). Definition of system. *General Systems Yearbook, 1,* 18-28.

Hawes, L. (1975). *Pragmatics of analoguing: Theory and model construction in communication.* Reading, MA: Addison-Wesley.

Hersey, P., & Blanchard, K. H. (1977). *Management of organizational behavior: Utilizing human resources* (3rd ed.). Englewood Cliffs, NJ: Prentice-Hall.

Hitt, W. D. (1988). *The leader-manager.* Champaign, IL: Sagamore.

Huber, G. P., & Daft, R. L. (1987). The information environments of organizations. In

F. M. Jablin, L. L. Putnam, K. H. Roberts, & L. W. Porter (Eds.), *Handbook of organizational communication: An interdisciplinary perspective* (pp. 130-164). Beverly Hills, CA: Sage.

Jablin, F. (1987a). Formal organization structure. In F. M. Jablin, L. L. Putnam, K. H. Roberts, & L. W. Porter (Eds.), *Handbook of organizational communication: An interdisciplinary perspective* (pp. 389-419). Beverly Hills, CA: Sage.

Jablin, F. (1987b). Organizational entry, assimilation, and exit. In F. M. Jablin, L. L. Putnam, K. H. Roberts, & L. W. Porter (Eds.), *Handbook of organizational communication: An interdisciplinary perspective* (pp. 679-740). Beverly Hills, CA: Sage.

Johnson, B. M. (1977). *Communication: The process of organizing.* Boston: Allyn & Bacon.

Katz, D., & Kahn, R. (1978). *The social psychology of organizations* (2nd Ed.). New York: Wiley.

Katz, R. (Ed.). (1988). *Managing professionals in innovative organizations: A collection of readings.* New York: Harper Business.

Kerlinger, F. N. (1986). *Foundations of behavioral research* (3rd ed.). New York: Holt, Rinehart & Winston.

Kotter, J. (1990). *A force for change: How leadership differs from management.* New York: Free Press.

Koozes, J. M., & Pozner, B. Z. (1987). *The leadership challenge: How to get extraordinary things done in organizations.* San Francisco: Jossy-Bass.

Krone, K. J., Jablin, F., & Putnam, L. (1987). Communication theory and organizational theory: Multiple perspectives. In F. M. Jablin, L. L. Putnam, K. H. Roberts, & L. W. Porter (Eds.), *Handbook of organizational communication: An interdisciplinary perspective* (pp. 18-40). Beverly Hills, CA: Sage.

Kuhn, A. (1975). *Unified social science.* Homewood, IL: Dorsey.

Larson, C. E., & LaFasto, F. M. J. (1989). *Teamwork: What can go right/What can go wrong.* Newbury Park, CA: Sage.

Lawrence, P. R., & Lorsch, J. W. (1967). *Organization and environment.* Boston: Harvard Business School.

Lazerfeld, P. F., Berelson, B., & Gaudet, H. (1944). *The people's choice.* New York: Duell, Sloan and Pearce.

Leblebici, H., & Salancik, G. (1981). Effect of environmental uncertainty on information and decision processes in banks. *Administrative Science Quarterly, 26,* 578-596.

Likert, R. (1967). *The human organization.* New York: McGraw-Hill.

Meyer, J. W. (1975). *Notes on the structure of educational organizations* (Occasional Paper No. 3). Palo Alto, CA: Stanford University Center for Research and Development in Teaching. (ERIC Document Reproduction Service No. ED 109 768)

Miller, J. G. (1978). *Living systems.* New York: McGraw-Hill.

Muchinsky, P. M. (1977). Organizational communication: Relationships to organizational climate and job satisfaction. *Academy of Management Journal, 20,* 592-607.

Pearce, W. B. (1989). *Communication and the human condition.* Carbondale, IL: Southern Illinois University Press.

Penley, L. E. (1982). An investigation of the information processing framework of organizational communication. *Human Communication Research, 8,* 348-365.

Perrow, C. (1970). *Organizational analysis: A sociological approach.* Belmont, CA: Wadsworth.

Pfeffer, J. (1981). *Management as symbolic action: The creation and maintenance of organi-*

zational paradigms. In L. L. Cummings & B. M. Shaw (Eds.), *Research in organizational behavior* (Vol. 3, pp. 1-52). Greenwich, CT: JAI Press.

Porat, M. (1977). *The information society: Definition and measurement.* Washington, DC: U. S. Government Printing Office.

Quinn, R. E. (1988). *Beyond rational management: Mastering the paradoxes and competing demands of high performance.* San Francisco: Jossey-Bass.

Reichenbach, H. (1949). *The theory of probability.* Berkeley, CA: University of California Press.

Roberts, K. H., & O'Reilly, C. A. , III (1974). Measuring organizational communication. *Journal of Applied Psychology, 59,* 321-326.

Rogers, E. M. (1983). *Diffusion of innovations* (3rd ed.). New York: Free Press.

Rogers, E. M. (1986). *Communication technology: The new media in society.* New York: Free Press.

Rogers, E. M., & Agarwala-Rogers, R. (1976). *Communication in organizations.* New York: Free Press.

Rogers, E. M., & Kincaid, D. L. (1981). *Communication networks: Toward a new paradigm for research.* New York: Free Press.

Roloff, M. E. (1981). *Interpersonal communication: The social exchange approach.* Beverly Hills, CA: Sage.

Salancik, G. R., & Pfeffer, J. (1978). A social information processing approach to job attitudes and task design. *Administrative Science Quarterly, 23,* 224-253.

Salem, P. J., & Gratz, R. D. (1983). High technology and social devolution. In N. Callaos (Ed.), *Proceedings of the 1983 World Conference on Systems.* Caracas, Venezuela: The Foundation for the Investigation and Integration of Systems.

Salem, P. J., & Williams, M. L. (1981). *Research questions and some tentative answers about hospitals: Modeling the sociology of communication.* Paper presented at the annual meeting of the Speech Communication Association, Anaheim, CA.

Salem, P. J., & Williams, M. L. (1984). Uncertainty and satisfaction: The importance of information in hospital communication. *Journal of Applied Communication, 12,* 75-89.

Sapolsky, H. M. (1967). Organizational structure and innovation. *Journal of Business, 40,* 497-510.

Schutz, W. C. (1966). *The interpersonal underworld.* Palo Alto, CA: Science & Behavior Books.

Searle, J. (1969). *Speech acts: An essay in the philosophy of language.* Cambridge: Cambridge University Press.

Shimanoff, S. B. (1980). *Communication rules: Theory and research.* Beverly Hills, CA: Sage.

Smith, M. J. (1982). *Persuasion and human action.* Belmont, CA: Wadsworth.

Sommerhoff, G. (1969). The abstract characteristics of living systems. In F. E. Emery (Ed.), *Systems thinking* (pp. 147-202). Baltimore, MD: Penguin.

Steers, R. (1975). Problems in the measurement of organizational effectiveness. *Administration Science Quarterly, 20,* 546-58.

Stohl, C., & Redding, W. C. (1987). Messages and message exchange processes. In F. M. Jablin, L. L. Putnam, K. H. Roberts, & L. W. Porter (Eds.), *Handbook of organizational communication: An interdisciplinary perspective* (pp. 451-502). Beverly Hills, CA: Sage.

Strauss, A., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques.* Newbury Park, CA: Sage.

Thompson, J. D. (1967). *Organizations in action.* New York, NY: McGraw-Hill.

Watzlawick, P., Beavin, J., & Jackson, D. (1967). *Pragmatics of human communication.* New York: Norton.

Weick, K. (1979). *The social psychology of organizing* (2nd ed.). Reading, MA: Addison-Wesley.

Woodward, J. (1965). *Industrial organization: Theory and practice.* London: Oxford Press.

Yukl, G. A. (1 989). *Leadership in organizations* (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.

Zaltman, G., R. Duncan, & J. Holbek. (1973). *Innovations and organizations.* New York: Wiley.