Analysis of role performance in a government agency

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ANALYSIS OF ROLE PERFORMANCE
IN A GOVERNMENT AGENCY

by

Tim George Shaffer

A Dissertation Submitted to the
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CHAPTER 1. INTRODUCTION

There has been a steady increase in both private and government programs since the mid-1930's. Many of these programs have had as their objective some form of social change at the local level. To promote and implement these changes, in many instances, formal organizations or agencies external to the local community have often been developed to work within the local community.

Within such formal organizations, the person most directly responsible for carrying out the desired change is the local change agent. It is his responsibility to translate the goals of his sponsoring agency into meaningful action in his local community.

The local change agent is rather unlike most actors in typical large bureaucratic organizations in at least one important respect. Within the usual bureaucratic setting, roles are defined and their performance carried out within the same organization or social system. An assembly man for an aircraft corporation, for example, will receive his directives within the corporation and carry out his assigned work, all within the corporation.

The role of the change agent is different. He receives his directives within the employing organization, but these directives assign him tasks to be carried out in another social system, his local community. The assembly worker, in performing his role, remains directly subject to the power and sanctions of his sponsoring organization. The change agent, on the other hand, must move out of the social environment of his initiating system into the social environment of another system, his local community, where he may
have very little of the direct protective power and sanctions of the initiating system.

Thus, the change agent is a member of two social systems. If the planned change is to come about, he must articulate these two social systems. That is, he must successfully form a systemic link between the two social systems. He must be the vehicle for transmitting the objectives of the change program from the initiating organization to the community.

Because of its importance and complexity, the role of the local change agent in planned change has been the focus of a series of sociological studies of government agencies conducted at Iowa State University. The primary purpose of these studies has been to gain a better understanding of the problems and capabilities of the local change agent as he carries out his assigned tasks. In keeping with this objective, this dissertation is an attempt to better understand how role performance is achieved by the local change agent.

If the role performance of the local change agent in this study is better understood, it may be helpful in understanding role performance in other similar complex social organizations that emphasize change such as county extension, welfare agencies, the Red Cross, and other similar local agencies.

The general objective of this dissertation is to determine how change agents respond to the role expectations created for them by the social system of which they are a part.

To facilitate the accomplishment of this general objective, three more specific objectives have been delineated.
The first specific objective is to describe the position of the local change agent as a link between a vertical and a horizontal social system. The major emphasis here is to study how the local change agent is associated with the social systems in which he perceives, understands, and then carries out the directives of his organization in his local community.

The second specific objective of this dissertation is to develop a conceptual model of the conditions under which role performance is achieved by the local change agent. With this model an attempt is made to focus on necessary conditions of participation that a change agent must meet in order to achieve a high degree of role performance. Or, on the other hand, if performance is low with respect to expectations, the model should provide some insight as to why it is low.

A third specific objective of this dissertation is to determine the degree to which the role performance of the local change agent can be accounted for in terms of these necessary conditions for role performance.

A fourth specific objective of this dissertation is to determine whether the conditions of role performance, as presented in the model, represent a sequence of stages through which the change agent must go to accomplish a high level of role performance.

Within these objectives the concept of role performance is not treated as though it were something apart from the social system, but as an integral part of the social system. That is, role performance is the product of a complex interaction of social systems elements and processes.

To accomplish the foregoing objectives the following order of presentation will be followed:

Chapter 2 will be devoted to the development of the theoretical
framework upon which this study is based. This development includes a statement of systems, social systems, the change agent as an actor in these social systems, and the model used in this study to assess his role behavior with respect to the formal expectations created for him within his social system. This chapter will be concluded with the general hypotheses that formally state the theoretical relationships tested in this study.

Chapter 3 presents the methodology employed in this study. This presentation includes a description of the empirical system studied (the civil defense bureaucracy), the sampling and data collection procedures, the operationalization of the key concepts, a statement of the empirical hypotheses, and a description of statistical procedures employed to test these hypotheses.

Chapter 4 presents the statistical findings resulting from tests of the empirical hypotheses.

Chapter 5 presents a summary of the findings and a statement of the implications of these findings with respect to the evaluation of the role behavior of the local change agent.
CHAPTER 2. FRAMEWORK FOR ANALYSIS

Introduction

The purpose of this chapter is to develop a theoretical framework to aid in conceptualization and measurement of the behavior of the local change agent as he responds to the expectations created for him by the social system of which he is a member (his role performance). The initial part of this development introduces the general social systems setting in which the role performance takes place. The culmination of his development will be the statement of a conceptual model of the necessary conditions by which role performance is achieved within the social system. In conjunction with this development, this chapter will selectively review some of the previous thoughts and research pertinent to the study of role performance.

The presentation of this development is in the following order. First, there will be a presentation of a general systems and social systems frame of reference defining and describing the social systems elements and processes. This presentation establishes the theoretical setting for each of the succeeding parts of this chapter. Second, the concept of role performance is defined and some of the early, non-system approaches to the study of role performance are presented as a background for viewing the approach taken in this study. Third, a social systems approach to the study of role performance is presented. The local change agent is described as a member of linked but differing social systems. How the elements and processes of the social systems provide a basis for the prediction of the actor's role behavior is presented. Fourth, a model for the study of how change agents respond to the expectations (directives) created for them within the
initiating social system is presented. And finally, the general hypotheses that formally state the relationships between the concepts of this model are presented.

The Social System

The concept of social system is central to this dissertation. It provides the general frame of reference for this study. In this section the social systems concept will be introduced and will then be considered as a basic point of reference. First, in this introduction the systems concept will be discussed. This discussion is presented as an elementary background to social systems and demonstrates that the concept social systems is associated not only with sociology or the behavioral sciences, but to science in general. Second, the social system is discussed. The social systems elements and processes are defined and briefly described.

The systems concept in science

The considerations presented in this section ultimately concern the problem of attaining a comprehensive view of the research to be presented as a behavioral science. Sociology, insofar as it is construed as a rational activity that attempts to provide resources for improving the decision making of an agent-client organization as studied herein, is not the study of isolated instances or events. This point, though often unheeded, was made in sociology by Max Weber over fifty years ago (143). Since Weber, a number of attempts at the achievement of this comprehensive unity in the behavioral sciences have been made (49). Among the most successful attempts at unity has been the development of the concept of
social systems. It is a subconcept of the concept "Systems" that has appeared in all fields of science with the same or very similar meaning in each (11, p. 72; 49, p. 630; 21, p. 198). A system in this context may roughly be defined as "a set of objects (structures) together with relationships between the objects and between their attributes" (57, p. 18).

A definition structured this loosely needs elaboration in order to convey its meaning. First, a system must be definable in the sense that it can be located with some precision in time and space. Second, once located, the objects (structures) and relationships (processes) can be described. And third, differences in structures and processes through time enable the researcher to further delineate different structural elements and processes.

The intent here is to construct general systematic relationships through time that occur in the empirical world. It is not, of course, the intent to establish a single, self-contained "general theory of practically everything" which will replace all of the more special theories. Such sweeping generality inevitably sacrifices content. Somewhere between the specific that has no relative meaning and the general that has no content there must be, depending upon one's purposes, an optimum degree of generality. It is at this optimum level that systems theory in the various areas of science has been aimed (21, p. 11). In general, the implication is that a great variety of disciplines must deal at a basic level with systems of one kind or another and that there must be many basic, though high level, orientating concepts which are relevant to systems and subsystems of all kinds. It is this implication or feeling in science that has led in turn to the elaboration of such concepts as isomorphism and interlocking systems
The point here is that systems which differ in their size, time, and specific substance may resemble one another in regard to certain invariant elements and/or processes, and there may also be significant subsets of such invariances that interlock. In essence, this body of theory ideally consists of an integrated group of descriptive, explanatory, and predictive concepts designed to study the nature of a wide variety of systems and interactions among systems.

More specifically, the systems framework may be said to provide the following functions within science. First, the framework serves to standardize and clarify the terminology or meaning of various widely used concepts. Second, it is a heuristic device that suggests areas of theoretical and analytical inquiry. Third, it provides a scheme for transfer of knowledge from one conceptual or theoretical level to another. Fourth, it facilitates the recognition of function, which in turn suggests areas of inquiry and analysis. Fifth, it provides a highly useful device in categorizing and coding large bodies of data for research purposes. And sixth, it facilitates the communication of insight from one discipline to another. In summary, the systems framework can be utilized as a source of operational concepts and working models which can be employed in the many specific areas of science for the generation of operationally and empirically testable hypotheses (152, p. 242).

The social systems concept

Within sociology, the systems approach has been conceptualized as the "social system." The concept seems to have been first used by Vilfredo Pareto but since has been used by many sociologists (102, pp. vii and 26).
The concept has provided sociologists with a broad theoretical framework which has been generalized to many levels of human social structure and activity. Through the study of and contribution to the social systems concept, sociologists have sought to gain a better understanding of the coordination of human activity. In this thesis the concept of social systems is used in an effort to produce some order among concepts and phenomena which might otherwise seem to be disorganized and unrelated.

More specifically, the concept will be used 1) as a basis for discussion and description of the major social units (social systems) with which the local change agent is affiliated, and 2) as a basis from which the concepts of the sequential model for role performance evaluation are derived.

Parsons' definition of social systems There have been many definers of the concept social systems.¹ Perhaps the most reputationally prominent of these is Talcott Parsons. His definitions of social system

¹Review of the literature on this point reveals a range of definitions of "systems" or "social systems" in social science. The range is from brief, minimal definition which sees a system as "any set of variables regardless of the degree of interrelationship among them" (38, p. 21) to a more detailed maximal type such as that given by Sorokin—a social system is a group of interacting groups of individuals which "has its raison d'être a consistent set of meanings-values-norms that satisfies their need(s) and for whose use, enjoyment, maintenance, and growth the individuals are freely or coercively bound together into one collectivity with a definite and consistent set of law-norms prescribing their conduct and interrelationships ..." (126, p. 27). Within this range there are a number of dimensions; some particularly amenable to description and some more amenable to analysis. Among the many definitions the following were considered either most popular and diverse or most comparatively interesting with respect to those definitions presented elsewhere in this study: (12, p. 199; 56, pp. 506-507; 22, pp. 8-11; 126, p. 29; 59, p. 87; 60, pp. 230-231).
are somewhat elusive. Timasheff points out this elusiveness by indicating that his definitions vary from place to place in his presentation. Timasheff states, "It is first defined as a plurality of individual actors interacting with one another and later as a network of relations between actors or a network of relations between actors or a network of interactive relationships" (130, p. 244). In *The Social System*, however, Parsons states that he reduces social systems to its "simplest possible terms."

He states that a social system consists of:

A plurality of individual actors interacting with each other in a situation which has at least a physical or environmental aspect, actors who are motivated in terms of a tendency to the "optimization of gratification" and whose relation to their situations, including each other, is defined and mediated in terms of a system of culturally structured and shared symbols (102, pp. 5-6).

According to Parsons, social norms are an all-important part of the development of a social system. Norms are a self-subsistent system in themselves (102, p. 19). They transcend the life span of any given actor in society and represent relatively consistent standards for behavior. Through this consistency in standards for behavior (expectations) role patterns are defined for given statuses. All persons have statuses and roles. Because of the normative effect on these statuses and roles, they "are not in general attributes of the actor, but the units of the social system" (102, p. 25). Again because of the consistency of social norms, status-role bundles tend to form into institutions. "... an institution will be said to be a complex of institutionalized role integrates which is of strategic structural significance in the social system in question" (102, p. 39). Parsons outlined three main groupings of institutions. These are the regulative, i.e., a discipline unit for the interests organized in the
social system; the relational, i.e., an institution which defines the status-roles of the social system members; and the cultural, i.e., the integrators of social life that internalize the common value patterns (102, p. 51). These institutions are large systems formed from status-roles that are highly integrated and standardized.

In any social system there is a necessity for a sufficient proportion of the system members to carry out (perform) the roles defined for them within the social system. This represents a functional prerequisite. Parsons outlines several of these minimum conditions for stability within the system. They are outlined in three general categories. First, there are those that are prerequisites with respect to the individuals, i.e., a minimum number of needs must be met for at least a minimum number of actors. Second, are those that are prerequisites with respect to society, i.e., a minimum of social control over deviant members must be maintained. And third, there are those that are prerequisites with respect to culture, i.e., there must be a minimum of normative or socializing influences to develop the system (102, pp. 26-27).

Loomis' definition of social systems Loomis presents another definition of social systems. He defines it as "a plurality of individual actors whose relations to each other are mutually oriented through the definition and mediation of a pattern of structured and shared symbols and expectations" (79, p. 5).

Obviously, except for Parsons' motivational dimension, this definition and that of Parsons have a great deal in common. What may be less obvious is that each of these definitions is also in common with the very general definition and description of systems presented earlier on pages 6 and 7.
The definitions of Parsons and Loomis each present "a plurality of individual actors" (objects) and a statement of the "relationships between the objects and between their attributes." Parsons attempts to bring the spacial but not the temporal limitation of a system into his definition. Loomis brings neither into his definition but follows his definition by stating that action in a social system is limited by territoriality, the physical area of the social system; size, the relevant population in the territory; and time, the planning horizon perceived by the social systems members (78, pp. 37-40). Each definer is suggesting that within these limitations patterns of values and behavior are established through structured and shared symbols.

These relationships can be described. And, as is the intent with any systems approach, a construct of these systematic relationships can be developed.

Loomis relates that the basis for delineating a social system is furnished by the more intense and frequent occurrence of specific types of interaction among members than non-members. Types of interaction may be determined by "extensity, intensity, duration, direction, and nature and extent of integration" (78, p. 5). Loomis continues,

For an understanding of 'society' or any of the systems that exist in society and in a sense compose it, attention must be turned to uniformities of interaction . . . The elements that constitute it as a social system and the processes that articulate it remain the same (78, p. 5).

Thus, from interaction arise orderly and systematic uniformities that are the "identifiable and interdependent" elements and processes of the social system. No matter what the social system, the pattern or construct for analysis of the system is the same. This includes nine elements, and
with each there is an associated process. In addition to these elements and processes, each social system also involves six master or comprehensive processes which integrate, stabilize, and alter social relations through time.

The social system elements include 1) belief (knowledge); 2) sentiments; 3) ends and goals, or objectives; 4) norms; 5) status-role (position); 6) rank; 7) sanctions; 8) facilities; and 9) power. For each of these nine elements there is one or more corresponding social processes. For example, the element sanctions has associated with it the process of sanctioning, and the element belief (knowledge) has associated with it the process of cognitive mapping or validity.

The social system has, in addition to the specialized process associated with each element, "comprehensive or master processes each of which activates many or all of the elements" (78, p. 7). These social systems master processes are 1) communications, 2) boundary maintenance, 3) systems linkage, 4) social control, 5) socialization, and 6) institutionalization.

The structure and dynamics of a social system at a given time or the change from one time to another can be described and analyzed in terms of these elements and processes. Whether the focus is upon a small group such as a family or group of friends, a very structured organization such as a military unit, or a nation-state such as the United States or the Soviet Union, the scientist has a systematic, consistent frame of reference (142, p. 143).

Social systems elements In this section a brief definition and description of each of the social systems elements is presented. An element is "simply one of the constituent parts of some larger whole"
These elements, of course, do not represent a physical, static form, but, instead, represent social consistencies that are altered by the processes of human relations through time.

**Belief (knowledge)** This element is defined by Loomis as "any proposition about any aspect of the universe that is accepted as true" (78, p. 11). Thus, belief is the individual actor's perception of any of the phenomena of the universe or the relationships between these phenomena. In keeping with the patterning of human behavior, actors within a given social system tend to selectively perceive the same or similar phenomena and relationships between these phenomena. As more rigorous criteria for selection and observation of phenomena are established, our belief (knowledge) is said to be more "scientific."

**Sentiments** This element is defined as being "primarily expressive and represents 'what we feel' about the world no matter why we feel it" (79, p. 11). Sentiments are what an actor feels about the phenomena of the universe. Obviously, this element is quite similar to the element of belief. Beliefs are viewed as what we know "about the universe and sentiments are expressive, representing 'what we feel' about the world."

A sentiment is an evaluative judgment of the phenomena and relationships between phenomena that he perceives. That is, it is his expressive feeling of such as right, good, moral or beautiful. Almost any conceivable aspect of any relationship can be, and somewhere probably has been, made the object of sentiments (62, p. 74). Sentiments concern the actor's perception of what ought to be or ought not to be instead of his perception of what is as in the element of belief. Beliefs and sentiments together provide the essential basis for the attitudes of the individual actors within the
social system. Attitudes, in turn, represent a predisposition to action. Herein is one of the basic motivational dimensions of the systems model.

**Ends, goals, or objectives**

The element of ends, goals, or objectives is defined as "the change that members of the social system expect to accomplish through appropriate interaction" (78, p. 15). The change agent is a member of the social system which has certain goals which its members strive to achieve. These goals are largely derived from the beliefs and sentiments of the members of that social system and they may be either formally or informally expressed. As they are formally expressed, they reflect the directives used to measure the role expectations of the local change agent in this study.

**Norms**

The concept of norms is defined as "all criteria for judging the character of conduct of both individual and group actions in any social system" (79, p. 12). They are the "rules of the game . . ." They constitute the standards determining what is right and wrong, appropriate and inappropriate, just and unjust, good and bad in social relationships (78, p. 17). Both formal and informal rules provide the means for efficient coordination of complex activities.¹ The importance of the norms concept in the social systems construct has been described to some extent with Parsons' definition of social system. Clearly Loomis, Parsons, and other social system theorists have considered this the most important element in that it provides the patterning of human social behavior (125, p. 73 and 77; 102, p. 16). Loomis states that norms are "the basic element

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¹An extensive discussion of the importance of rules in social organization is presented in J. G. March and H. A. Simon, Organizations (83).
patterning such activity as knowing, feeling, dividing functions and allocating status-roles, controlling, ranking, and sanctioning" (78, pp. 16-17). Norms are standards which influence all behavior systems within systems. They set the framework within which the stated ideals (goals) will be achieved in the ongoing interaction process. That is, the norms of the system largely determine not only the objectives of the system and individual role expectations associated with these objectives, but how these objectives and roles will be carried out (performed). In short, role performance is normatively defined.

Sanctions This element is defined by Loomis as "the rewards and penalties meted out by members of a social system as a device for inducing conformity to its norms and ends (78, p. 26). Norms define the standards of what should be done, what and how rules should be performed within a social system, but it is the process of sanctioning that maintains conformity to these standards. That is, for example, the local change agent not only has standards for the performance of his role, but there is a series of formal and informal, positive and negative sanctions to motivate his conforming to the goals, means, and norms that actually define his role in the social system.

Status-role (position) According to Loomis, the concept of status-role combines the structural element of status and the functional process of role. His summary statement on status-role refers to it as "that which is expected from an actor in a given situation" (79, p. 14). A status-role involves a position or social location and an actor carrying out these expectations that define this position. As the actor carries out these expectations he is said to be acting (78, p. 19), playing (132, 55),
or performing a role (55) with reference to others. The term change agent very roughly defines a status. The directives or expectations that the change agent receives by virtue of his occupying this status, define the role that he is to perform.

**Rank**

Social rank is defined by Loomis as the "standing," or relative status, or "importance an actor has for the system in which the rank is accorded ..." (78, p. 23). In general, it may be said that any given social system prescribes rank to its various members based on their qualifications for attaining the systems goals, adhering to the norms of the system, or for related past achievements. Social rank may be accorded an individual who occupies a given status through his participation in more than one social system. The rank accorded the local change agent in part can be derived from his participation in his sponsoring social system, but rank may be also accorded this same status on the basis of the role played in his local community. In addition, an actor may have many status-roles. He may, for example, be a family member, a voluntary association member, a political party member, and participate in a number of informal groups. In each, social rank will be accorded. To some extent, social rank may be cumulative. For example, a high rank accorded an actor in his occupational role may influence the rank that he is accorded in his role in voluntary associations.

**Power**

Loomis, in keeping with the popular definition of Max Weber (143, p. 152) defines social power as "the ability to control

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1For a current, comprehensive review of theoretical treatments of the concept power, see Chapter 2 of The Power Structure: Political Process in American Society by Arnold M. Rose (114, pp. 43-88).
others" (78, p. 20). "This ability to control others has often been divided by sociologists into two types, authority and influence. Authority is the right, as determined by the members of the system, to control the behavior of members in the system who hold specific positions or status-roles. Authority, then, resides in the formal status-role, not the individual. Influence, on the other hand, is the control over others which is built into the authority component of the status-role but results from the willingness of the subordinate to become involved with the superordinate on a personal basis. Thus influence is that segment of power which resides in the individual rather than any formal role relationships within the system.

This brief definition alone, however well it is agreed upon, leaves one with an oversimplified idea of social power. Power is one of the most extensively treated concepts in sociology. As Robert Bierstedt suggested, "Few problems in sociology are more perplexing than the problem of social power. In the entire lexicon of sociological concepts none is more troublesome than the concept of power" (14, p. 730). The troublesomeness of the concept may be the result of its complex interrelationship in the social systems elements and processes.

Any rationally organized social structure, such as those which promote planned change, may be considered as a social system. Within such a social system, there is an integrated complex of positions or status-roles. For each of these roles there is a number of expectations, obligations, and privileges. That is, each position has associated with it an implication of level of competence and responsibility. A differential in social rank
is accorded on the basis of this assessed level. A dominance and sub-
ordinance is thus accorded among positions which engender a reliance on 
social power. Men in one position may be ordered or commanded by those in
another. At each step upward in the positional hierarchy, the holder of
the position is given progressively greater authority to make decisions
and give orders to others for the accomplishment of the goals (ends) of
the system. Power thus becomes not a simple matter of manipulating people
for selfish ends but an essential factor in efficiently moving a social
system to its ends and maintaining its boundaries.

The power associated with a given position carries with it the impli-
cation of resistance to that power. If the system is to function properly
this resistance must be overcome. The basis of overcoming this resistance
is a system of positive and negative sanctions vested with the actor in the
position. If role performance is to be realistically expected, there must
be appropriate positive and negative sanctions to bring about fulfillment
of this expectation.

Perhaps the most popular subdivision of social power is the authority
and influence developed by Weber as described above. Other subdivisions
of the concept have been conceptualized that promise utility. Etzioni,
for example, arrives at three major subconcepts based upon the sanction
which is most appropriate for the application of the power (43). These

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Whether there has to be a hierarchy of social rank in all social sys-
tems or not is a matter of philosophical debate not particularly germane to
this dissertation. Marx, for example, presents the thesis that it is unnec-
essary while Michels in his popular "Iron Law of Oligarchy" asserts that it
is inevitable.
types of power are coercive, remunerative, and normative. Coercive power is that power which is dependent upon the application of or threat of physical sanctions. Remunerative power is that power which is dependent upon control over material resources and rewards derived from these resources. And normative power is that power which is dependent upon the allocation and manipulation of symbolic rewards.

Social power and its result should not be viewed exclusively from the top down. That is, as Gullahorn points out, power assumes a consent and/or ability on the part of the actor, to which power is applied, to comply with the assertions of the power (55a, p. 124).

**Facilities** The concept of facilities is defined by Loomis as "a means used to attain ends within the system" (78, p. 27). These means may include any or all physical, financial, individual human and social resources that might be used to attain the goals of the system.

**The master processes**

If description of the social system went no further than the elaboration of a set of concepts referring to the structural consistencies of that system, it would contribute to our knowledge and thoughts about that system. Inkeles points out that such a description would be analogous to anatomy without a physiology (62, p. 78). The concept of process must be considered if one is to understand how systems emerge, develop, persist, and change. The flows, actions, and reactions of human interaction are considered in terms of process. The idea of process implies the interacting and meshing of all the elements which are mentioned above. As pointed out earlier, Loomis delineated six comprehensive or master pro-
cesses relative to the dynamic aspects of a social system. These concepts are defined and briefly described below.

**Communications** The process of communication is defined by Loomis as "the process by which information, decisions, and directives are transmitted among actors and the way in which knowledge, opinions, and attitudes are formed or modified by interaction" (78, p. 30). Communications is thus the exchange of meaningful symbols among the actors in a social system.

The local change agent has a vast amount of information which he must exchange within his own organization and then selectively pass this information on in his community. If he is to perform his role efficiently, he must understand the internal communication of the social system, internalize this information, and communicate it to individuals in other social systems. The lack of efficient communication of expectations to the local change agent could adversely affect his role performance despite his enthusiasm or whatever other qualifications he might have.

**Boundary maintenance** Boundary maintenance is the process by which the social system creates and maintains its solidarity, identity, and interaction patterns. It is the process by which actors within the system and others outside the system are made aware of the identity and uniqueness of the particular social system relative to other social systems.

**Systemic linkage** Loomis defines systemic linkage as "the process whereby one or more of the elements of at least two social systems is articulated in such a manner that the two systems in some ways and on some occasions may be viewed as a single unit" (78, p. 32). It is this process by which one social system relates itself to another social system and interacts with the other system. The change agent, by the nature of his
position, has as a major part of his role the establishing of an all-important link between his sponsoring organization and his local community. Further, within his community his role requires that he coordinate the efforts of a number of organizations and associations. This coordinated activity is systemic linkage.

Socialization Socialization is the process through which the social and cultural heritage is transmitted. It is through this process that individual actors learn the sentiments, beliefs, ends, and norms of a social system. Socialization may be either formal, as in training sessions, or formal schooling; or informal, what one learns in his day-to-day interaction with his significant others. Merton discussed this process in his article, "Bureaucratic Structure and Personality." He concludes, "As a result of their day-to-day routines, people develop special preferences, antipathies, discriminations, and emphases" (82, p. 198). If the local change agent is to be effective, he must internalize the ends, beliefs, and norms of the social system. He must learn about and become committed to his social system.

Institutionalization Loomis defines institutionalization as "the process through which organizations are given structure and social action and interaction are made predictable" (78, p. 36). Institutionalization is a master process which patterns, shapes and lends consistency to other elements and processes of the social system. Of particular importance to institutionalization are the elements, norms, and sentiments. When actors know what is expected of them (norms) and when these expectations are positively evaluated (sentiments), the system is said to be institutionalized. In other words, when the behavior of the local change agent
indicates that he is not only aware of official expectancies but also identifies with, or becomes committed to these expectancies, it may be said that institutionalization has taken place.

**Social control**  
Social control is the process by which the social system rewards and punishes its members. It is the process by which deviation from the social system norms are controlled. The elements of beliefs, sentiments, norms, power, and sanctions are interrelated in the process of social control.

**Systems equilibrium**  
In the construct just presented a number of relatively stable structural elements and dynamic processes were described. With the introduction of the term process, the implication is that systems are constantly experiencing change. These changes may be prompted either by influences within the system or external to the system. In either instance the impact of pressures for change call for adjustments within the system, adjustments which accommodate the change and typically operate to minimize the impact on the system.

This is the concept of equilibrium. The implication is that there is a balance or adjustment between or among various conflicting forces. Perhaps this concept can be most easily understood in terms of the current international "balance of power." The geometric vector provides another example with the implication drawn from the resultant direction being the sum of the directed forces in the acting field. As in vector analysis, the equilibrium point may be seen as a static balance point that is held neutral or as a dynamic point moving along a vector line. From this it may
be seen, despite popular criticism (142, p. 144) that the equilibrium system is not necessarily a stable, static model. It can deal with degree of change, even rapid change, and the factors influencing that change.

Parsons and other social system theorists have taken it as axiomatic that systems "seek equilibrium" (142, p. 144). The importance of this theoretical phenomenon is that an individual actor's behavior with respect to the social system is largely dependent upon a balance among the mutually interdependent elements and processes of the social system. For example, Homans focused attention on the balance relationship between the process of social control (sanctioning) and the element of norms (59, pp. 301-308). A deviation from group norms represents a systems unbalance. Sanctions are brought to bear to bring about a new balance (homeostasis). In a like manner the local change agent is subject to performance norms. One might expect deviance from these norms to be reflected not in just social control but in possibly all of the interrelated elements and processes. The social systems method of role performance evaluation, to be presented later in this chapter, makes this assumption.

Role Performance

The previous section of this chapter has presented a social systems construct. This construct provides the general level frame of reference for this study. Within this general framework the focus of this study is on the role performance of the local change agent. This section presents a general discussion of the role performance concept. First, a descriptive definition of role performance is presented. Second, a historical or developmental discussion of the concept is presented. And finally, dis-
cussion of a social systems approach to the study of role performance evaluation for a complex occupational role is presented.

The role performance concept

With regard to the concept role, Biddle and Thomas tell us there is "... a bewildering profusion of labels and ideas and a disconcerting absence of agreement among experts concerning the definitions of terms ..." (13, p. 21). Perhaps this is not surprising in view of his listing of one hundred major contributors to the role concept since the early 1930's (13, pp. 8-9). Little attempt will be made here to rectify this confusion. Only an attempt will be made to 1) clarify the terms role and role performance with respect to their usage in this study, and 2) briefly relate this usage to what consistency this author has found in role theory.

Essentially, this section will present the conceptual ingredients of the concept role performance. The order of presentation has, first, a discussion of role, then expectations, and finally level of role performance.

Roles Status-role as a concept of the social systems construct was presented earlier in this chapter (pages 16-17). With this presentation was the implication that status-role is made up of both structural element and social process. First there is the structural aspect—that which the actor does in his relations with others with respect to the social system. This distinction was first drawn by the American anthropologist Ralph
Linton in 1936 in his *Study of Man* (25, pp. 113-114). Most modern writers in discussing the role concept follow this lead. Parsons and Loomis, the two social systems theorists introduced earlier in this chapter, are a part of this common usage.²

Parsons and Loomis, however, draw the status-role concept into the social systems framework. Parsons describes the distinction between status and role as being at the "very root" related to the reciprocal perspective of interaction. Parsons explains:

On the one hand each actor is an object of orientation for other actors (and for himself). Insofar as this object-significance derives from his position in the social relationship system it is a status significance. On the other hand each actor is oriented to other actors. In this capacity he is acting, not serving as object—this is what we mean by his playing a role . . . (102, p. 25).

From this he reaches the conclusion that "It should be made quite clear that statuses and roles . . . are not, in general, attributes of the actor but are units of the social system . . . " (102, p. 25).

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¹Origin of the term role is discussed by Moreno (89, p. 80) and Biddle and Thomas (13, p. 5-9). The word moved from Latin to French to English. Its first use as a technical concept is difficult to trace but Simmel made use of it in 1920 (120) and Park and Burgess also made reference to it as early as 1921 (101). Certainly popularization and early development, if not first use, came from George Herbert Mead through his students (87) and Moreno and his experimental role players in a Vienna theater (93, pp. 707-715).

²Sociologists have produced many definitions of role that reflect a wide variety of points of view. Three very helpful reviews of role definitions may be found in Neiman and Hughes (94, pp. 141-149), Rommetveit (113, pp. 3-21), Gross, et al. (55, pp. 11-20). In addition, a very extensive bibliography on the role concept can be found in Biddle and Thomas (13, pp. 383-429).
Parsons is implying that both status and role are a product of interaction. The position (status) can only exist with respect to its definition within a given social system. And likewise roles are seen as action being carried out with respect to the actor's orientation to some social system. Statuses and roles are dependent upon the participation of an actor in a patterned interactive relationship. Any definition of role that fails to reflect this dependency is, for the purposes of this study, inadequate. Therefore, in keeping with this position, role is defined by Parsons as:

A sector of the total orientation system of an individual actor which is organized about expectations in relation to a particular interaction context, that is integrated with a particular set of value standards which govern interaction with one or more others in the appropriate complementary roles (102, pp. 38-39).

This definition implies that man has not one role but many. One role is but a sector of one's total role orientation. Each role that an actor plays links him to a particular social system, a system with its own norms and values that govern reciprocal interaction. These norms and values represent internalized standards for behavior and they reflect the goals of the system.

**Expectations** Role expectations are the prescriptions and anticipations that define the behavior of an actor in a given position. Expectations may be either expressed overtly by formal demand or covertly by group norms. One's role in any given social system is organized about these expectations. From this, then, it may be seen that role expectations are not simply the directives or specifically stated tasks for incumbents of differentiated positions as is suggested in Gross (55, p. 59), for example, though it will tend to become this in certain types of formal organizations.
Instead role expectations refer to the prescriptions or value standards that each actor applies to all other members of his social system. Formal directives represent role expectations only insofar as these directives have been accepted or internalized by the actors in the social system. If the members of the social system have not accepted, or have not been able to accept, these directives, they are very likely not expectations for these actors.

In summary, expectations are essential to the governing of the behavior of individuals. If obligations and expectations are not realized either because of ambiguity or so-called deviant behavior, then the interpersonal activity which constitutes the social system breaks down. These expectations have to be accepted and acted upon for interaction to proceed, for role performance to occur.

Expectations thus defined are essentially normative. Every individual occupies many statuses (positions) in society. Each has associated with it certain norms of behavior. The norms prescribe how the actor in the status is expected to behave. The change agent, for example, has a status in the organization which carries with it certain expectations. These expectations define the actor's role in that organization.

Role performance Thus far in this section roles have been described as being organized about expectations, and these expectations were said to be a product of the system's norm value orientation. The concept of role

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1 This treatment of role expectations is largely in keeping with the majority treatment in role theory. See, for example, Goffman (50, pp. 80-85), Levinson (73, pp. 170-180), Linton (75), Sarbin (115, pp. 223-258).
performance is also a part of the interrelated role concepts.

Ultimately, performance is always judged relative to the goals of the social system. The actor does not, however, work independently on the goals, but works toward them as a part of cooperative, patterned activity. For this reason performance can only be judged relative to the role that the actor is expected to play in the achievement of the systems ends or goals. Expectations thus become the evaluative standards by which level of performance is judged. This level of performance is referred to as role performance.

Role performance involves a series of related ideas. People react to what they interpret to be the expectations for them within a system. They then look to the reaction of significant others. This reaction is a sanction. It may be positive or negative. Whichever, it then serves to redefine or reinterpret the role expectations for the actor. How well an actor is able to interpret these expectations, how well these expectations conform to his overall value system, and how physically and mentally able he is to carry out the role associated with these expectations reflects in his role performance. A lack of success at any one of these points may lead to low role performance.

**Development of the role performance concept**

Though comparatively rare in the study of government agencies (106, p. 802), the study of role performance and associated variables in a business organizational setting is quite common. Many business organizations have for years conducted their own studies of performance. March and Simon point out that few aspects of organizational behavior have been, and
continue to be, subject to so much research attention (83).

This concern is not without reason. One of the dominant characteristics of the growth of modern society has been the development of an increasingly large number of social organizations.

In each of these organizations, it is necessary for some individual or group of individuals to coordinate a number of factors in order to accomplish the objectives of the organization. These factors may vary in kind and relative importance, but no organization can operate, or even exist, without some coordinated human effort.

Though the need for effective, coordinated efforts is obvious, the achievement of this coordination is often very difficult and poorly understood despite the efforts of a great many social philosophers and researchers. At least as far back as Plato, men have been attempting to promote higher levels of performance from organization members. Plato undertook the study of the "harmony of organization" and called it the "science of guardianship." The conclusion of this philosophical study was that for harmony each person should take it upon himself to do that for which he is best fitted.

Unlike the conclusion of Plato, most social philosophy on human organization seems to have been couched in one or more ideological camps—i.e., religious, political, or economic interests. The supposition of each was that a particular social order would lead to more production for the general good of society. Most of these pre-scientific investigators such as Smith, Ricardo, Marx, and even the more "scientific" Weber generally regarded work as a commodity to be bought at the lowest price and sold at the highest, with the worker an interchangeable part to be maintained at
minimum cost in the production process. The same was true of most early attempts at a behavioral science approach to the study of social organization and levels of production within these organizations.

Much of the early study by those attempting a behavioral science approach was done in what is often called the Scientific Management School. The concept of role performance has largely grown out of this school.\(^1\) The school's development was largely based on the influence of F. W. Taylor during the first two decades of this century (129). This influence stressed the rationalizing work, the work place, and incentives in order to maximize output and induce workers to exert maximum effort in return for material gain. Man was viewed as an extension of the machine and his performance was judged in the same way. The approach of this group was every bit as allied with engineering and economics as it was with sociology. Time and motion studies were conducted along with studies of man's hunger and fears driving him to quest for profit. These researchers, Taylor's students, considered role performance in such terms as load, pace, rate, and fatigue. The approach recognized no conflict between man and the organization. The unquestioned assumption was that what was good for the management was also good for the worker.

Largely as a reaction to the Scientific Management approach, a second school of behaviorists was ushered in by Elton Mayo. This approach has

\(^{1}\)The term role performance is used very loosely here. Actually, in early studies a similar word such as productivity, output, or efficiency was used. It was not until after World War II that role related terms using role as an objective to modify such concepts as performance began to extensively appear (13, p. 7).
commonly been called the Human Relations in Industry School. The members of the school pointed out that all of man's needs are not economic. There are ways that management can adjust social and cultural needs and by so doing raise job satisfaction and productivity (role performance).

To discover these ways a series of rather carefully conducted studies were carried out during the 1920's and 1930's. This series includes the well-known studies conducted at the Western Electric Company's Hawthorne Works in Chicago from 1927 to 1932 (111). This development represents a strong rise in the paternalism of management. The worker was not only controlled on the job but his life off the job also became important to management. Some important conclusions from this series of research efforts of this period were that: 1) role performance is not determined by the actor's physical capacity but by this social "capacity," 2) non-economic rewards are central in determining motivation and job satisfaction of the actors, 3) increased specialization in division of labor does not necessarily lead to greater efficiency and higher role performance, and 4) actors do not react to directives, norms, and rewards as individuals but as members of groups. These conclusions were a direct refutation of the earlier Scientific Management premises. The workers were found to be producing far less than they were physically capable of producing and individual incentive systems put in by management were demonstrated to be ineffective. For the first time there was strong empirical evidence that all of the controls of role performance within a given organization are not in the hands of the managers but some are retained by the workers. Also, material rewards do not outline all of human needs but there are also "symbolic" needs such as the affection and respect of co-workers that may
affect role performance. Despite this extraordinarily productive beginning, the school died out in the 1930's. The researchers were too managerial, and sought to win employee loyalty either through crude bribery or, more often, subtle and sophisticated manipulation. With this orientation, shabby logic, coupled with false assumptions about the nature of man contributed to a period of general formal organization dissatisfaction with much rule making, rule breaking, and general dissension.

The contributions of this school, though they might have been arrived at earlier through the theoretical suggestions of such sociologists as Mead, Cooley, or in some respects Weber, are very important. They are still often cited in current studies of organizational behavior. Despite the later school's obvious contribution and improvement over the Scientific Management approach, the Human Relations approach still had disadvantages in common with its predecessor. Each approach saw it as the task of social science to show management how to control the workers. The focus is almost exclusively on organizations such as factories, banks, or insurance companies. Neither approach seems to have been seeking overriding organizational principles. Both approaches tended to look at the particular organization that they were studying as a completely self-contained unit or island in itself. As concerned as the Human Relations approach was with informal social groups, it was limited to the work place and failed to take into consideration the significant others one might have that could affect the performance of his job role. In addition, each of these approaches seems to have been rather limited in the number and clarity of concepts.
used to implement its investigation.1

Clearly a more comprehensive and balanced approach was needed. A long list of structuralists came in to fill the void, and they currently dominate the area of study. Most of the prominent structuralists--Barnard, Blau, Etzioni, Simon, Scott, Gouldner, and Selznick, to name a few, work basically from Weber's early typologies on power and bureaucratic structure. This more current group of researchers has attempted to take a more diverse and objective view of social organization. They have attempted to look at organizations descriptively and comparatively. With this perspective the concept of role performance was greatly de-emphasized, or, as in most studies, dropped altogether. Where the concept appears it is given little theoretical emphasis and is used only pragmatically as an index of productivity or efficiency, as had been done by those researchers of the earlier schools. The Industrial Management branch of the later school has developed a number of performance rating scales. These include peer group ratings, superior group rating scales, in-box-out-box rating scales, and other such devices (74; 85, pp. 456-485; 77).

The structuralists have contributed a great deal to our understanding of organizations, but relatively little to our understanding of the processes of individual productivity within these organizations. The structuralists have tended to continue, as their predecessors, to assume that all organization members share about equally in the organizations' goal orientation, and about all that is necessary for more production is a more efficient structure, more material means, and more remunerative passifica-

1For a more extensive criticism of these approaches see Bendix Reinhard and Lloyd Fisher, "The Perspectives of Elton Mayo," (42, pp. 113-126).
tion of members. Except where obvious reasons exist, little knowledge has been gained as to how and why one organization member will perform his role at a high level while another performs at a lower level. The process that an individual goes through in assuming the role defined by a set of expectations and then carrying through with appropriate behavior to a higher or lower degree has been investigated very little, particularly in complex organization roles such as that of the local change agent (106, pp. 807-808). This study, as pointed out earlier, is an attempt to gain a better understanding of this process.

A **social systems approach to role performance evaluation**

Another approach to the study of role performance is that of social systems. This approach treats role performance as a social phenomenon. As such, the patterns of expected behavior that determine roles are treated as a part of the more general network of patterned relations among people, described earlier in this chapter in the section on the social system. The important underlying assumption with this approach is that role performance is, after all, not apart from the social system but a part of it. Role performance is treated as a dependent variable, but it is done so with the full realization that role performance is not an independent final commodity but is a process of the social system and is thus necessarily articulated with the other elements and processes of the social system. The advantages of this approach were discussed in an earlier section of this chapter.

Under the direction of Joe M. Bohlen and George M. Beal, nearly all of the elements and processes of the Loomis social systems model were opera-
tionalized in an effort to determine the level of role performance of a group of local change agents (68; 71). This was the first time this had been accomplished. In this study, each of the general level concepts had a number of appropriate dimensions or subconcepts. For example, the concept Belief (knowledge) may be subdivided into a number of subconcepts such as technical knowledge, knowledge of the organization, knowledge of the local community, and knowledge of world figures, as well as other types of knowledge. A total of 51 independent variables were conceptualized and operationalized in this study.

In the analysis, first, single variable relationships were focused upon to determine the extent to which each of the independent variables was related to and predicted the level of role performance, ignoring all other independent variables. Second, a multiple variables analysis was focused upon, 1) determining the explanatory or predictive power of a number of independent variables taken together, and 2) determining the extent to which each independent variables is related to and predicts the level of role performance taking into account the other independent variables, that is, determining the relative importance of each independent variable used in the multiple variable analysis to predict level of role performance.

Approximate replication of this original study was carried out and completed in 1966 (69; 71). The data used in this dissertation come directly from this study. A description of the sampling and data collection procedures used are described in Chapter 3. A brief summary of the findings pertinent to this dissertation is presented in Appendix B.

In the above mentioned studies a wide range in level of role perform-
ance was found. The social systems approach employed facilitated the ex-
plaining of approximately 90 per cent of the statistical variance in the
role performance scores.

The Change Agent

To this point, a general social systems approach has been described. This approach was presented as a basis for further understanding of the
process of role performance. A section on role performance was presented
briefly describing this concept and relating it to the social systems
concept. Specific actors or pluralities of actors perform the roles in
social systems. This section presents a discussion of the change agent as
the focal status-role of this study. It presents him as playing a complex
sector of roles as an actor linking two major social systems.

A change agent\(^1\) is a person who attempts to implement the decision to
make a deliberate effort to improve or in some way modify a given social
system.

There are many types and levels of change agents. Nearly every area
of public concern is represented by one or more change agents. Broadly
defined as above, the term includes such diverse proponents of change as
ministers, politicians, or possibly entrepreneurs. Essential, however, is
that the change agent functions as a systemic or communication link between
two or more social systems. There must be an organized decision-making body
as the initiating or sponsoring social system and a client or target system

\(^1\)The term change agent seems to have been first adopted by the National Training Laboratory in 1947 (76, p. 10). It has since been utilized by a number of authors. Among these is Lippitt (76), Beal (4, 5), Bennis (10), McGregor (86), Loomis (78, 80), Rogers (112), and Arensberg (1).
for the change as the second social system (see Diagram 1).

With this two-system definatory consideration, individuals attempting to bring about changes that they personally deem as beneficial are not considered change agents since they are acting in their own personal interest and not as an agent of a given social system. Also, representatives of organizations that are interested in change only as it affects their own organizational interest are not considered change agents since the end or change they are attempting to effect is directed ultimately at the sponsoring system, not the client system. Change in the client system is of either secondary concern or no concern at all. Thus, an automobile dealer may wish to effect a change in the client system to the extent that his product is adopted. One cannot deny that this is a change and it may be beneficial. But the automobile dealer is a change agent as defined in this study only to the extent that he is intentionally instituting a planned beneficial change in the client system. The desire and efforts to enhance his personal economic interests or those of his sponsoring system do not make him a change agent. He must serve as a link between a sponsoring system that is attempting to initiate planned change and a client system that is the object of this planned change.

Obviously, there are many changes in a given client system that are not brought about by change agents, and also there are many changes that might inadvertently be brought about by change agents which are not a part of his role as change agent.

In the same way, those implementing the change may be a part of or exterior to the client system. Thus, on the one hand, consultants, applied researchers, therapists or trainers may be imported from outside the
Case 1

Change agent as a direct systemic link. He is a member of both social systems.

Case 2

Change agent as an indirect systemic link. He is a member of the initiating social system.

Case 3

Change agent as an indirect systemic link. He is a member of the target social system.

Case 4

Change agent as an indirect systemic link. He is not a member of either social system.

Diagram 1. The change agent as a systemic link
client system may have inside resources, applied researchers, technicians, or administrators that can and do act as successful change agents (see Diagram 2).

As the structure and functions of either the initiating social system or the client system extend to extra-local levels, they have been referred to as developing **vertical** social patterns. As the structural and functional relations of the systems relate to or interact with each other they tend to form **horizontal** patterns. This distinction between horizontal and vertical patterns has been made by Warren (142, p. 161) and Deal (4, p. 12). With this distinction Warren cautions "... the attempt to identify a community's vertical units and its horizontal units is misleading. It is not the units which constitute the vertical or horizontal pattern; it is the vertical or horizontal aspects of the units—their relations, respectively, to extra-community systems and to each other" (142, p. 241).

**The vertical pattern and role definition pattern**

The initiation of change may come from a person, group, or larger collective of the client system or it may come from a completely external source. But in either instance, the initiation of planned change is almost always implemented by a formal, sponsoring organization. These organizations are bureaucratic structures with various levels of responsibility and associated territoriality.\(^1\) Formal lines of vertical communications are

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\(^1\)Local change agents whether governmental or private are those set up with powers and functions in specified local districts. Five categories of local territoriality are defined by the Bureau of Census. These are: municipalities, counties, townships, school districts, and special districts such as precinct or sales district (136).
Systemic Linkage:

a) Local change agent has a jointly defined status-role

b) Coordination by direct linkage in the horizontal system

c) Direct or indirect linkage at the vertical levels

Diagram 2. Systemic linkage: direct linkage^a

^aThis diagram is a variation from Beal's illustration of Warren's vertical and horizontal systems (4; 37).
established for the coordination of the status-roles that make up the organization (see Diagram 3). These formal organizations may take a wide variety of structural forms, but they tend to have a number of definitive characteristics in common. These common characteristics include: 1) a hierarchal structure of formal authority; 2) a hierarchal formal communications network; 3) an extensive system of formal rules; 4) an informal structure of authority; 5) informal and personal communications networks; 6) formal, impersonal directives of operations; 7) stress on various forms of technical competency; 8) administrated by full-time officials; and 9) fixed and official jurisdictional areas (143, pp. 329-341; 36, p. 49; 9, pp. 244-245; 108, p. 5).

Every such bureaucratic organization is a social system that is originally formed to accomplish some ends or goals that cannot be accomplished without the coordinated efforts of a number of persons working at different tasks. The implication is that each member of the organized social system must be willing to modify his own behavior so that it forms a congruent pattern with the coordinated behavior of other members. As a member of such a bureaucratic organization, the local change agent is expected to have some commitment to the general goals of the organization and conform to the expectations or directives that define his status-role.

Often these bureaucratically-structured systems extend to extra-community levels. For example, not only governmental units but also clubs, unions, businesses, churches, and other social units often have social structures that extend beyond the immediate community. There are ties between the local chain store and regional or national offices, between the local school and the state department of education, between the municipal
Systemic Linkage:

a) Single direct line of status-role definition in vertical system

b) Coordination by indirect linkage in the horizontal system

Diagram 3. Indirect systemic linkage\textsuperscript{a}

\textsuperscript{a}This diagram is a variation from Beal's illustration of Warren's vertical and horizontal systems (4; 37).
government and state government. Such ties form a vertical pattern of bureaucratic levels. These ties are usually clearly defined by legal contract, charter, legislation, or administrative agreement. The role of the local unit, and consequently the role of the local change agent, is primarily prescribed in terms of the overall objectives and operating procedures of the specific vertical pattern.

Obviously, control by the vertical system is not absolute. "... some types of extra-community systemic ties are less deliberate, planned, and bureaucratic than others" (142, p. 242). Warren makes the point, however, that by contrast with the horizontal pattern the performance of task functions are most influenced by the vertical system while systems maintenance functions tend to be most influenced by the horizontal pattern.

The horizontal pattern and role definition

Horizontal patterns, as previously stated, are those patterns which develop as social units maintain their systematic relationships with one another. The organizations of a community do not exist in complete autonomous disregard of each other. Each is integrated or articulated into the community. A pattern of horizontal relationships is formed. This pattern is not as deliberate or well planned as the more bureaucratic vertical patterns. Most often these patterns are informal but, nonetheless, a patterning does develop with even some degree of formalization and bureaucratization as is apparent in such developments as community chest, planning commissions, the chamber of commerce, the federation of churches, industrial development commission, and many other such formally organized coordinated units.
This articulation or coordination is most characteristic of the local level, but vertical structures at any level may be subject to horizontal patterning (see Diagram 3). These horizontal patterns may lead to a status-role that is jointly defined and directed by two or more vertical systems. The change agent may be a formal member and agent of the system of governing bodies and at the same time be a member of a specific public or private agency. Many civil defense directors, for example, have an occupational role with the local governing body and at the same time, by horizontal agreement, a formal role in the civil defense agency.

**Horizontal pattern and the change agent task**

The change agent has been described as forming the link between two social systems. He links the change initiating system to the client system. The dominant flow of authority is typically downward from the initiating source through the relatively formal vertical system to the change agent at the local level. With most vertical systems this flow is well established, though there are some relatively autonomous local units whose headquarters serves primarily a service function and whose channels of communication, though equally clear, tend to be up in direction as well as down.

Contrasting with this well-developed pattern extending above the change agent, the pattern, lines of communication, and appropriate forms of power in the client system are rather meager (142, p. 274). The local territoriality is a loosely defined social system with many subsystems that often have only a minimal link with the other subsystems of the community. They come under the local governing body and are a part of a general public that is exposed to a common mass media, but there is little effective
coordinating machinery. To accomplish his objective, the local change agent must establish cooperative ties with these many loosely coordinated subsystems and then with this cooperation promote the specific change program. He is forced to resort less to formal authority and more to the complicated informal ties and influence systems that, to a degree, link the diverse units of the horizontal pattern.

**Difficulty in performance assessment of the local change agent**

The local change agent has a complex job role. The nature of this role introduces some unique difficulties in the assessment of his level of performance. These difficulties ordinarily arise from one or more of three general aspects of his role.

First, difficulty arises in assessing the local change agent's role in that often his role is not clearly defined. His area of change is often new and the best methods of promoting this change may not be clearly outlined. In addition, his role may be defined by more than his immediate vertical structure (see Diagram 3). The local change agent is also often under reciprocal obligation to the various horizontal units which he is seeking to coordinate.

Second, local change agents must perform under very different social-environmental conditions. One given territoriality may not only be ecologically and geographically different from another but it might also be quite different in general attitude toward the change agents' suggested program. Often one community very near another will exhibit a more traditional or conservative behavioral pattern than the other. In such an instance, a direct objective comparison of achievement by the change agents in the
respective communities presents a distortion of the effectiveness of the change agents.

Third, a difficulty in the assessment of change agents' role comes from the lack of interaction and development of common norms between agents. There are few common, generally accepted methods developed and informally passed among change agents as is often done in the closer industrial setting. Each change agent tends to act more individually and develop his own style and method. Without an accepted "right way" it is difficult to apply an evaluation standard.

A Model for Role Performance Evaluation

Given the complexity of the local change agent's role and the difficulties in assessing this role, it appears that the following model might prove a basis for better understanding of the process by which role performance is achieved. This model, in keeping with the second general objective of the study, first presents a number of conditions suggested as necessary for the achievement of a high level of role performance. Four such conditions are presented. The basic assumption underlying the presentation of these conditions is that if an actor were not to meet one of these conditions, it would present an impediment to high levels of role performance. Second, it is suggested from the model that there may be a logical and empirical ordering of these conditions such that a sequence or series of heuristic stages exists among these conditions. It is then suggested, as above, that if such a sequence exists, restriction of the change agent at any one of these sequential stages will result in a correspondingly lower level of role performance.
In this section, there is first presented a description of the basic conditions of role performance. These conditions remain the essential concepts of the model for the second part of the discussion which is a presentation of the processual or sequential aspect of the model.

The conditions for role performance

The conditions of role performance are a set of heuristic criteria that must be met for role performance to be achieved. They are minimum essentials that an incumbent of a given role must meet as he accepts and then proceeds to carry out a role in a formal organization.

There are many circumstances under which an environmental situation may stimulate the spontaneous coordination of effort among human beings. For example, the imminent threat of natural disaster might stimulate such coordination. People may also be brought into cooperation by shared immediate values and expectations. Such cooperation is, however, more characteristic of ad hoc or voluntary groups. The conditions for acting in such groups are relatively simple. They include mostly being at the right place at the right time and sharing a given set of values. Conditions for role performance in a formal organization are a bit more complex.

Formal organization members do, of course, respond to environment and shared values, but they are guided more by a system of rules and enforcements that lead directly toward performance of goal attaining acts. Each role in such a system consists of sets of prescriptions or proscriptions that are to be followed if the goals of the system are to be achieved and its existence thus justified.

The change agent has such a role in his vertical system, a formal
organization. This role is not one in which he can spontaneously associate himself. He must learn the criteria of this role and must be willing and able to meet the prescriptions and proscriptions of the role. He must, in brief, meet the conditions of that role.

A set of four conditions suggested as essential for the role performance of the local change agent are outlined below. Either fewer or more conditions might have been introduced, but the ones developed here seemed particularly appropriate in the explanation and analysis of the role of the local change agent.

1. **Initiation** The first condition of role performance is Initiation. Initiation is the process whereby the actor internalizes the directives that define his role in the vertical system. It is a necessary condition that the actor or role incumbent must look at the expectations or directives defining the position and ultimately understand them. The basic assumption is that if the actor does not know the expectations of his role, he cannot perform that role well.

   The concept of Initiation includes more, however, than the simple learning of the required formal tasks. To learn only formal tasks constitutes learning only about one aspect of his role. Each role is related to a status in a dynamic social system. Therefore the concept also must include learning about the social system; i.e., learning about such as the norms, sanctions, and power relationships within the system. If the actor is to perform his role effectively, he must know not only his role definition, but the social system in which that role is couched.

   From past studies of initiation it appears that those actors who have been more extensively introduced to their job role have been found to
develop more favorable attitudes toward their role (commitment) and perform their role at higher levels (66). Studies of superior-subordinate communication (74) have revealed that there is "seriously deficient" understanding of job roles within bureaucratic structures (74, pp. 52-53). A low understanding of the job role seems to lead to a number of obstacles to high performance level. These include low cohesiveness (26, pp. 127-128 and 293-294), low loyalty among personnel (47; 26, pp. 25-26), and less work efficiency (47, p. 48).

In this study it is hypothesized that if the local agent has not achieved a high level of Initiation to his role, he will not achieve a high level of role performance. That is, 1) the less his formal introduction to his role, the lower will be his level of role performance, 2) the less his knowledge of his social system, the lower will be his level of role performance, and 3) the less his knowledge of his own role in that social system, the lower will be his level of role performance. The test of these relationships is presented in Chapter 3.

2. Acceptance-Commitment The second condition of role performance is Acceptance-Commitment. This concept refers to the actor's feelings of acceptance and cathectic-evaluative orientation toward his role in the vertical system. For the purpose of theoretical discussion, a distinction has been made between acceptance and commitment. Acceptance is the selection and evaluation among role alternatives, while Commitment is the value orientation of the actor toward his role once he has selected among the role alternatives. Parsons relates this distinction by pointing out that:
There may be a mode of evaluative interest in cultural patterns which we may call that of acceptance as distinguished from commitment . . . We accept a belief as 'true' without its becoming integrated into the system of action in any respect but with commitment there are 'patterns of value-orientation' that involve 'the integration of the components of orientation in a functioning whole.' This functioning whole must include overt action (102, p. 55).

In view of this theoretical distinction, acceptance and commitment, while combined in this study for analysis are discussed separately below.

**Acceptance**

Acceptance refers to the actor's ability and willingness or consent to accept the expectations or directives that define a prescribed role. Even if one has been exposed to the expectations (directives) defining a role and those expectations have been understood (condition 1, Initiation), one does not accept this set of expectations as a definition for his own behavior unless he has the willingness to accept. For any given actor, there are minimum conditions which must be met for the acceptance of a set of expectations as definition for his behavior. The actor must meet these minimum conditions before he begins overt activity in the role and a commitment to the role can be developed.

Essentially, the minimum conditions for acceptance concern the relationship between the actor and his social system. In a bureaucratic structure an essential element in this relationship is social power.\(^1\) The acceptance of directives is essentially the compliance to bureaucratic power. Many of the early definers of social power considered primarily the application of the power and not the acceptance of the directives by those subject to that power. For example, Weber (143, p. 152) and Dahl (33, 

\(^1\)For a general introductory statement of the concept power as a social systems element, see page 17 of this text.
Consider power as a line of influence and/or authority (social control). This line is primarily considered from the top down. As Weber states it, "Power' (Macht) is the probability that one actor within a social relationship will be in a position to carry out his own will despite resistance . . . " (143, p. 152). Within this definition, little attention is given to those actors subject to the power. Those in power maintain their power by legitimation, expertise, coercion, reward, or referents (49, pp. 150-167).

More currently, however, the power concept has been expanded to consider the actors subject to the power as well as the source and type of power. There is a consideration of the subject's ability to accept as well as his consent to accept the power over him. In this context power is defined somewhat differently. The definition will include the subject's ability and/or consent to accept the authority of the system. Barnard, for example, defines power in terms of this subjective aspect when he concludes,

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1 Weber presented the basis of power as being traditional authority, charismatic authority, and legitimate authority (143, p. 152). Parsons (103, pp. 58-60), and Gouldner (54, pp. 401-404) point out, however, that Weber began to set forth additional legal-rational bases for authority.

2 The concept of ability is presented as one of the basic conditions of role performance. It is discussed starting on page 56 of this chapter.

3 This approach to power which generally follows Weber seems to have been first developed by Barnard (3) and Simon (121, pp. 107-118). It was then widely disseminated and adopted (25, Chapter 7; 42, pp. 3-40; 105; 108, p. 88; 145, p. 35; 17, Chapter 7; 107, p. 815).

It is, however, very compatible with the early social-psychological approach of Cooley (28) and Mead (87). Mead stated, for example, "... but one must realize that for symbolic rewards to be effective, the recipient must identify with the granting organization and, even more important, the symbols must be appreciated by the recipient's significant others."
"... a subordinate is said to accept authority whenever he permits his behavior to be guided by the decision of a superior ..." (3, pp. 11, 22, and 130). If this permission or consent to be guided is to result in a higher level of role performance, there must be a capability of carrying out the tasks that constitute that role. The performer must, for example, have the knowledge and time to perform the role. Barnard sums up by outlining four minimum conditions for the acceptance of a role in a vertical system: 1) the actor must understand the role expectations (directives) that outline his role (see condition 1, Initiation, on page 49); 2) these role expectations must be consistent with the actor's perception of the organizational purpose; 3) the role expectations must be consistent with the actor's own personal interests; and 4) the actor must have the mental and physical ability to comply with the directives (3, p. 165).

The last three of these minimum conditions for acceptance serve as the basis for this second conceptual condition of the model presented here. These three minimum conditions are as follows: first, the expectations in defining the role of the local change agent must be consistent with what the actor personally perceives as important. If he personally has little or no feeling for the change that he is attempting to promote, he will very likely not be effective as an agent of that change. Second, if the actor feels that a particular change should be made, if it coincides with his own value system, he is more likely to belong to an organization where others share in this value orientation. If a local change agent is going to accept the role prescribed for him, he must also perceive it as being consistent with the organizational purpose. If he is identified with an organization, he will most likely be concerned with the persistence of the
goals of that organization. Third, if he has met the personal acceptance criterion, if the expectations are consistent with the organizational purpose, there are still potential physical and mental limitations to the acceptance of a role.

In summary, the change agent must, for example, have the time and financial resources to carry out the prescribed tasks. A man with many other professional and familial demands on his time will very likely not be able to accept the responsibilities assigned him as a change agent. Or, the agent who has the time but has no funds available to him to promote his assigned change program may not be able to accept these tasks. He will not perform his role at so high a level as the agent who has the funds to accept such aspects of the role.

Commitment Commitment refers to the cathetic-evaluative orientation of an actor toward his accepted role. After one has become aware of the prescribed expectations of a given role and met the criteria for acceptance of this role, he may begin to function in the position. It is at this point that the acceptance of a role may lead to commitment to the role. The actor begins to play the role and evaluate himself in terms of personal commitment to a given role within an organizational setting. This aspect of commitment is ably treated in "Norm Commitment and Conformity to Role-Status Obligations" by William J. Goode (51, pp. 246-258). Further examples of usage of the concept similar to the use in this study may be found in Argyris (2, p. 202), Gouldner (53, p. 467), and Becker (7, pp. 32-40).

Another aspect of the concept commitment deals with the commitment of organizations to their instrumental and systems maintaining goals. For a good summary discussion of this aspect of the commitment concept see "A Theory of Organizational Commitments" by Philip Selznick (118, pp. 194-202).
of this role. Parsons refers to this ongoing evaluation process as the "cathectic-evaluative orientation." The "cathectic" orientation refers to "the significance of ego's relation to the object or objects in question (in this case his role) for the gratification-depravation balance of his personality" (102, p. 7). This is an emotionally based orientation. It involves the actor's feelings or sentiments toward his role. Paralleling this emotionally based orientation there is a rationally based orientation. This orientation is termed the "evaluative" or "cognitive" by Parsons (102, pp. 7 and 209-211) or "cognitive mapping" by Loomis (78) and Tolman (131). The cognitive or cognitive mapping is an orientation of the actor that is concerned with the "alternatives of judgment or interpretation as to what objects are or what they 'mean'. There must be ordered selection among such alternatives" (102, p. 7). Thus, the concept of Commitment is concerned with the evaluative assessment—both emotional and rational—of the actor with respect to his role. For example, concern is with the actor's satisfaction with his social system and his role in that social system.

The local change agent who, having initially accepted the expectations defining the role, has not developed a positive feeling for that role (or who has arrived at other alternatives for his perceived need fulfillment) will very likely not become deeply involved in the role and will not perform the associated tasks at a high level. A study by Mann and Baumgartel found in one bureaucratic organization that a positive attitude toward one's occupational role is not only positively related to productivity, but it is also related to lower absence, lower turnover, and other factors favorable to higher levels of role performance (81). The research of Katz, Hoppock, and others, however, has indicated that the more productive are employees
engaged in highly routine jobs, the less satisfied with their occupational role; but as tasks become more varied and require more training and skill, the relationship appears to change progressively from a weak negative to positive (66; 67; 61; 128). For professional workers there is a strong positive relationship between attitude toward one's occupational role and level of role performance (74, p. 18).

It would seem the change agent has quite a varied occupational role. Based on the above discussion of Acceptance and Commitment, one could expect a similar positive relationship for this occupation. It is therefore hypothesized that the local change agent who has a high level of Acceptance-Commitment will have a high level of role performance. Those actors who have accepted the goals of the vertical system, who feel satisfied with their role in that organization, and who feel satisfied with the tasks that they must perform in that role will have a high level of role performance.

3. Ability The concept Ability refers to the personal and systems capability of the actor to carry out the expectations that define his role in the vertical system. Such capabilities are the facilities of the system, i.e., the means used by the system to attain its ends. The means of a change agency, for example, to accomplish the system's ends include its personnel, money, equipment, and any number of other potential resources. The basic assumption is that the adequacy of the means available for the system to meet its goals (ability) may affect the level of role performance of the local change agent.

1For a general discussion of the social systems concept of Facilities, see page 20 of Chapter 2.
The local change agent himself may be considered a facility of the vertical system. He is a resource or means of the system. His formal training, past experience, as well as his personal characteristics might be very important in accomplishing the ends of the system. Individual change agents differ greatly in such characteristics and these differences in ability might affect their level of role performance.

Not only do individuals differ in their capabilities and interests, but local agencies vary in the capabilities of accomplishing the goals of the vertical system. The vertical system works in concert with the various local governing bodies. These local governing bodies differ a great deal in the amount of facilities or resources that they can or are willing to allocate to the local agency. Some agencies are in more prosperous areas, or are in areas of greater perceived need, while others may be in the reverse situation. The local change agent who has been able to obtain the support of his local area may have greatly increased his ability to accomplish the ends of the vertical system.

Previous research on the effects of the formal preparation of incumbents of positions is abundant and extensive. It has been given emphasis over the years by educators and industrial managers. No effort will be made here to review this extensive area of research. Lippitt, Watson, and Westley do, however, treat the area rather extensively in their chapter, "The Scientific and Professional Training of Change Agents" (76, pp. 275-298). Another particularly pertinent item of research in this area is that

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1 For a further discussion of the relationship between the local change agent, and more specifically, the local civil defense director, and the local governing bodies, see Klonglan, et al. (70).
of Goffman (50). He found not only that those working in mental institutions with more formal education were assessed to be more productive, but that they also tended to identify more strongly with the system and had a better understanding of the system. Also, Gross, Mason, and McEachern (55, pp. 176-182) found that the length of formal preparation for the role of school superintendent led to "similar constellations of values and expectations . . . " which is, in turn, related positively to level of performance.

Research on the effects of differential capability within the vertical social system is less prolific. The problem is discussed and research cited in Likert's chapter on "The Nature of Highly Effective Groups" (74, pp. 162-177). Another general treatment of the subject with some research support may be found in Warren's discussion, "The Communities Vertical System" (142, pp. 237-266). The obvious inference of this theoretical treatment and its supporting research is that where more resources (facilities) have been made available to the change agent through his vertical system, the more effective he has been.

In view of the above generalizations and research, it is hypothesized that if the local change agent has not achieved a high level of personal and systems ability, he will not achieve a high level of role performance. That is, the more the formal education of the local change agent, the higher will be his level of role performance. The more funds and personnel he has at his disposal, the higher will be his level of role performance. And the more paid personnel he has within his organization, the higher will be his level of role performance. The tests of these relationships are presented in Chapter 3.
Involvement refers to the significant associations (mental and physical activity) that an actor has with the prescribed role. For the purpose of theoretical discussion there are two dimensions of involvement. The first is intensity of involvement, the second is type of involvement. These two dimensions are discussed separately below.

**Intensity** Reduced to its simplest form, this aspect of the concept Involvement refers to the range of time, effort, money, and other resources expended toward the fulfillment of the expectations which define the role. Just as commitment may be referred to in terms of degree, Involvement may also be referred to as ranging from high to low. Perhaps for this reason the concepts Commitment and Involvement are sometimes used synonymously or blended to the point of low utility.² For the purpose of this study, however, the terms, though related, are distinct. An actor might, for example, be quite committed to a particular change program (i.e., a strong positive cathetic-evaluative orientation) without becoming involved in that program. More immediate demands or restrictions may prevent the involvement. The reverse, though much less likely, is also conceivable.

With particular respect to the model presented here, it should be noted that Involvement means involved with the prescribed expectations or direc-

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¹ For a similar use of the concept involvement see Mores (90, pp. 76-96) and Campbell (24, pp. 33-40). Also, Sarbin (115) presents a somewhat similar usage that may have suggested the typology of Etzioni's (presented below). He contrasts seven "levels of organic involvement." At the low end of the scale he described behavior in which the actor is minimally involved. Few organic systems are engaged, and little effort is expended. On the other end of the scale there is maximal involvement and much effort is expended. The entire organism is involved.

² For example, see Etzioni (42, pp. 8-9).
tives. One might be very involved with peripheral or vaguely related tasks and not have a high level of involvement as defined here.

Types In addition to the intensity of involvement, there is also the potential for a wide range of kinds or types of involvement. These types of involvement might be categorized in a number of ways. Etzioni, for example, describes three kinds or types of involvement (42, pp. 9-11). They are alienative, calculative, and moral. This typology of involvement is based upon the motivation and commitment that the actor has for the involvement in the specific role. If, for example, the actor's cathetic-evaluative orientation is very negative, such as would be expected of an inmate in a prison, his involvement, regardless of level, would be of the alienative type. If, on the other hand, the actor had a low cathetic orientation and a high evaluative orientation as might be found in business organizations, his involvement would be typed as calculative. The third type, moral involvement, is based on a commitment of high cathetic orientation and low evaluative orientation as one would expect to find in a church or voluntary association membership. Local change agents, by this typology, would most likely have either, if not both, a calculative or a moral involvement as is in evidence by their being both paid and non-paid change agents.

Either intensity or type of involvement might affect the change agent's level of role performance. A change agent cannot accomplish his assigned tasks (ends) without some intensity of involvement. A good attitude alone is not sufficient for a change agent to achieve high levels of role performance. It is further likely, with respect to involvement, that the personal enthusiasm of a moral involvement along with the organization
and persistence of a calculative involvement might be more conducive to higher levels of role performance.

From this perspective it is hypothesized that the local change agent who has not maintained a high level of involvement with respect to his assigned expectations will have a low level of role performance. On the other hand, those directors who have spent more hours per week on their job role, who have worked more with the business organizations and voluntary associations of their local change area, and who have worked to build their local organization will have a high level of role performance. Tests of these relationships will be presented in Chapter 3.

5. Performance Performance or level of role performance is the final basic concept introduced in this study. It serves as the key dependent variable and refers to the actual level of performance of an actor with respect to the role expectations (directives) prescribed for him by the role definers of the vertical system.

The social system concept Status-Role has already been introduced.¹ The concept status implies a position in a given social structure while the concept role implies the standardized or institutionalized behavior associated with that status. An actor in a social system is under demands or expectations to behave in many ways that are associated with a given role. His actual or overt behavior in the role, once it is assumed, is usually referred to as role performance (13, p. 26; 50, p. 85; 152, p. 589).

More formal organizations such as the vertical system of the local

¹ For a general discussion of the concept Status-Role see page 16 of this study.
change agent will have a more clearly developed pattern of interlocking status-roles. For each of these status-roles a system of rules evolves to define the expected interdependent behavior for any individual who might elect to fill the position and play the role. These rules usually take the form of explicitly formulated directives and enforcing sanctions. How closely an actor conforms to a set of such role expectations or prescriptions is referred to in this study as his level of role performance.

There is an apparent similarity between the concept of involvement and the concept of performance. Both refer to the overt behavior of the actor with respect to prescribed behavior. The introduction of the concept level of role performance, however, makes the distinction clear. The concept level of role performance implies achievement; involvement does not. One must become involved to perform a prescribed role, but obviously some perform their role more efficiently than others and can achieve more with the expenditure of fewer resources. But, normatively speaking, the more involvement with the prescribed tasks, the higher the level of role performance. Etzioni agrees, suggesting that an intensification of involvement is associated with an increase in group cohesion and productivity (42, p. 194). A study by Coch and French (27, p. 479) substantiates this position, adding that the cohesion restricts change within the group.

In support of accessing performance with "respect to" prescribed expectations or directives, Parsons states that "Performance is always relative to a goal" and that "... performance criteria are, therefore, limited to their applicability to the relations of means and conditions to a given goal ..." (102, p. 95). He also cautions that goals are often set in terms of changing, pluralistic values, and for this reason specific,
rigid criteria for performance assessment might not represent the real situation. In this study it is assumed, however, that there is enough bureaucratic firmness to the structure to maintain sufficient consistency and agreement on goals so that specific judgmental criteria can be used in assessing level of role performance.

Though the change agency is a formal organization, it must be recognized, first, that formal organizations differ in the degree to which formalization or standardization has occurred, and, second, that an actor who assumes a role in a given system, no matter how formal, is affected by many forces which are extra-organizational such as his personality, his family, or competing organizations. Complete agreement between role expectations and level of role performance is therefore a highly unlikely occurrence.

Motivation Though it is not directly dealt with as a part of the tested relationships in this study, another essential condition of role performance is motivation. Motivation is an essential condition to any model involving human process though it is most often taken as a basic assumption. With the suggestion that role performance is a social systems concept involving process, the question arises as to what motivates the actor to proceed in the activities of this process. The question of source of motivation in role theory has been asked before. Nelson N. Foote in his important and popular article, "Identification as the Basis for a Theory of

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1 Very many authors have attempted to deal with the subject of human motivation. A number of bibliographies and summaries of the various theoretical positions may be found in popular social psychology texts but this author found D. C. McClelland's summary in Studies in Motivation (84) comprehensive and useful.
Motivation," summarized the problem as follows:

Role theory has suffered since inception from lack of a satisfactory account of motivation. It is all very well as far as it goes to state that a person learns to recognize standard situations and to play expected roles in them according to the status defined for him in each. But this is not enough when the person encounters alternatives and must resolve conflicting definitions of his appropriate behavior. Nor is it enough to account for the emergence of new roles in his conduct, nor for his more or less unique variations upon conventional roles ... Roles as such do not provide their own motive (45, p. 14).

Many of the more current role theorists have recognized this problem and attempted to deal with it eclectically. Coutu (29), Murphy (92), Newcomb (96), Sarbin (115), and Sargent (116) typically state that motivation is some one or a combination of psychic energy, tension or drive-reduction and management, or some hierarchy of innate and derived needs. Most of these attempted explanations would seem to be a marked improvement over the psychologists' explanation by either instincts or the recapitulation of childhood experience, but motive still remains a predisposition of the actor that is implied from his behavior.

Other role theorists have chosen to ignore the problem. In this category it is interesting to note that two of the most recent and widely acclaimed texts on role theory, Biddle (13) and Gross (55), hardly mention the concept of motivation. It is further interesting to note that popular texts on social organization dealing with role and role performance make little mention of motivation other than as is implied by the concept of compliance to social power (17; 43; 54; 82).

A number of investigators, largely from the field of industrial management, have entered into what this author feels is a futile, non-theoretical attempt to isolate methodologically "factors" that are labeled as motiva-
tional (58; 74; 77; 131). The problem with this approach seems to be multiple. First, the lists of reported reasons why a given occupational group took (or kept) their job seems only to describe the specific group or job being described, with little generalizability to other groups or jobs. Second, the researcher with this approach seems to have simply handed this complex problem over to a set of respondents who may not know their basis for motivation. Perhaps in the future this approach will come up with uniformities that suggest or substantiate more powerful theoretical explanations.

As a summary of the social-psychological theory and research on motivation, the least that can be said is that man in primitive societies or in the distant past worked to survive. He had to work in order to survive. But, as economics developed to a more sophisticated level where he no longer had to devote all of his waking hours to working for survival, he did not stop working. Norms developed through time which placed a value on work itself as well as the products of that work. The result is that as one is socialized into his environment, he learns not only to work for survival but also to work because others significant to him—his family, his peers, and other exponents of his cultural tradition—have taught him that work, material progress, and successful productive associations with others are good.¹

¹For empirical support of this position see (a) the family's influence on occupational motivation in research carried out by Bell (8, pp. 177-186) and Simpson (124, pp. 517-522), (b) the influence of socio-economic class on occupational motivation in research carried out by Coch (27, pp. 482-520) and Wilson (148), (c) the influence of religious affiliation on occupational motivation in research by Lenski (72) and the effects of achievement on occupational motivation in research by Crockett (31, pp. 191-204).
A social systems approach to motivation seems to be best represented by Talcott Parsons 1 (102; 104) and Joe M. Bohlen (18; 19). This approach is not strikingly different from the social-psychological explanation summarized above, but it does explain motivation rather well as a product of the actor's immersion in the norms and values of his social and cultural systems.

Parsons first defines the social system in terms of motivated action, "Social systems and personalities are conceived as modes of organization of motivated action (social systems are systems of motivated action organized about the relations of actors to each other) . . . " (104, p. 54). He then proceeds to explain this motivation as "those aspects of the actor's orientation to his situation which are related to actual or potential gratification or deprivation of the actor's need-disposition" (104, p. 59). This need-disposition or motivational orientation is broken down into three categories: 1) cognitive (rational) needs, 2) cathectic (emotional) needs, and 3) evaluative (calculative or functional) needs. In addition, each actor has a value orientation which commits him to the observance of certain norms or standards of selection that guide him in making choices.

Whenever an actor is forced (or motivated) to choose among various means objects, whenever he is forced to choose among various goal objects, whenever he is forced to choose among which need-disposition--whenever he is forced to make any choice whatever--his value orientations may commit him to certain norms that will guide him in his choices (118, p. 59).

Our normatively derived motivation then "supplies the energy with which

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1 For a general introductory discussion of the social systems approach, including that of Parsons, see page 8 of this text.
such plans of action are conceived and carried out" (118, p. 111) and our value orientation determines the intensity and direction in which this energy will be expended. Our motivation and associated value orientation are a product of interaction with our social and cultural systems.

Bohlen clarifies this position in his discussion of the thought processes of man when he states that:

... (man) builds up his experience world and makes judgments about each of these experiences as they occur. He judges them in terms of the relative satisfactions gained. He judges them to be good, bad or indifferent. The patterning of these judgments about one's past experiences forms what is commonly called one's value system. This value system is the basis of a set of tendencies to act in given directions vis-a-vis various categories of stimuli. These tendencies to act or attitudes are major influences in the determination of man's behavior ... (18, p. 4).

From the above discussion of motivation it is assumed that the motivation which provides the impetus for moving the actor through the successive stages of the role performance model is a complicated product of his interaction with others that ultimately determine his value orientation. His choices among alternatives are not then random but stimulated by his past experiences that give consistency to his expressed values and resulting social action. "... man inevitably (unless he is mentally ill) chooses the mean which he considers most consistent with his value system, i.e., the one which is most satisfactory" (18, p. 4).

The ends-means pattern of accomplishment Once motivated, man is confronted with a number of alternative ends (goals) and means to achieving these ends that he might see as being available to him. Bohlen follows up on the basic motivational explanation with a further explanation of how man acts in accordance with this value based motivation. Bohlen states:
Whenever a human being is faced with a stimulus (a problem) he responds not to it, but to the interpretation he places upon this stimulus in his experience world which includes his past experiences, his future expectancies or goals (ends and means) and his perceived relationships of this stimulus to both. He concerns himself not only with the realities of the situation as perceived through his sense organs but also with the possible outcomes resulting from choice of alternative responses he might make to the stimulus. Since he thinks in symbols, he can project himself into the future and choose the alternative which in his judgment will help him to maximize his satisfactions (18, p. 2).

Man perceives his future relationships in terms of his past experience. The future ends and means to those ends are a product of past interactions and judgments. He selects largely in terms of what he has found rewarding in the past. With this past experience he rationally evaluates the possible outcomes of his choices and selects that which he judges might be the most satisfying to him. In such a way he selects long and short-range goals and the most appropriate means of attaining these ends. Of course, not all of his selections prove to be successful or satisfying. A new time and situation may alter the reward pattern of past experience. There is, therefore, a constant selection among feasible alternatives with respect to both ends and means. A failure or limited success may make further pursuit impractical or eliminate access to that alternative altogether.

Ordinarily man's major objectives are not accomplished in one sustained effort but as a series of smaller efforts, each of which, if fruitful, moves him a little bit closer to his major objective or ultimate end. It is, for example, as a man walking across the street moves in a series of steps to accomplish his destination.

One could in the same way consider an individual moving through a
hierarchy of positions (tasks) to achieve a high level of role performance. Each successive accomplishment of a task would move him toward his ultimate objective and each would also increase his level of rewards, prestige, and power in that social system.\(^1\) If, on the other hand, he were thwarted in his attempt at task accomplishment, he might have to select other ends or make renewed efforts in the route (means) that he has already chosen.

**Summary of the conditions of role performance**

In keeping with the second general objective of this study, four general conditions of role performance in addition to basic motivation have been described. Further, the concept level of role performance has been described. For each of the four conditions of role performance a basic theoretical hypothesis was generated stipulating the existence of a relationship between that condition and level of role performance. The operationalization and test of these bivariate relationships will be described in the methodology chapter (Chapter 3) and the findings presented in the following chapter (Chapter 4). A brief review of these theoretical hypotheses follows.

A key focus of this dissertation is on the establishment of the set of conditions of role performance. Thus, the most general level theoretical hypothesis is simply that there is a relationship between the conditions of role performance and level of role performance. Within this very general level the following theoretical hypotheses were generated:

\(^1\)The important related discussion of social power and its effects upon maintaining individual actor's conformity to the norms of the social system through positive and negative sanctions is presented beginning on page 17.
1. There is a significant direct relationship between the condition Initiative and Level of Role Performance.

2. There is a significant direct relationship between the condition Acceptance-Commitment and Level of Role Performance.

3. There is a significant direct relationship between the condition Ability and Level of Role Performance.

4. There is a significant direct relationship between the condition Involvement and Level of Role Performance.

Each of these conditions of role performance has a number of subdimensions or subconcepts and are described with their operationalization in the methodology chapter. Though not listed here, there is by implication a subhypothesis generated for each of these subconcepts suggesting the significant positive relationship between that subconcept and level of role performance. The results of tests of these subhypotheses will be shown in summary form.

**Role performance as a process model**

Four conditions of role performance have been conceptualized. And it has been hypothesized that there is a relationship between each of these conditions and level of role performance. In this section it will be suggested that there may be an ordering among these concepts as a part of the consistency and patterning of human behavior within the social system.

Earlier in this presentation status-role was presented as a social systems concept involving both element and process. The concept role performance implies the dynamic quality of process. Social process involves all of the forms of social interaction that occur repetitively in
the human group. Any patterned behavior viewed through time can be thought of as a process. That is, it can be viewed as a series of social changes occurring to a person or a group of persons in which one step or stage develops out of the previous one. It is suggested here that role performance, then, may be seen as patterned behavior that succeeds through time in an ever-changing sequential succession. Further, in this study it is suggested that role performance may be a mental and behavioral process of specific though not discrete stages through which an actor must succeed.

The conditions of role performance presented earlier in this chapter may be viewed as stages of a sequential model. Each stage (condition) affects the next in such a way that when judgmental criteria are used the resultant level of role performance can be said to be directly affected by these stages.

The conditions of the conceptual model presented herein are similar

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1 The term "social process" appears to have been first developed by Park and Burgess at the University of Chicago. They treated the concept extensively in Introduction to the Science of Sociology (101). In this very influential text of the period, social process referred to the repetitive forms of behavior which are commonly found in human social life. That is, "... the process through which the distributive and ecological order of society is created" (101, p. 51). Some of the major social processes were classified as cooperation, competition, conflict, accommodation, and assimilation. In time, disagreement developed on just what should be included in the list of social processes. Emphasis in sociological investigation shifted from such general interaction categories to more specific situational settings. The importance of social process has, however, not declined.

2 A theoretical discussion of the validity of the concept "stages" in another model may be found in "Validity of the concept of stages in the adoption process" by George M. Beal, Joe M. Bohlen, and Everett M. Rogers (6).
to concepts presented in other sequential models. The decision-making model of Bohlen and Beal (19; 112), the communications model of Schramm (117), or the stimulus-interpretation-response sequences worked out in social-psychology may be considered as similar models. Each of these sequential models imply, as any model does, that there is order to some specific phenomenon. This order is not, however, a static order but a dynamic order. A model of static order may be thought of as represented by an explanatory shell around a given phenomenon or event. This shell contains all of the related concepts (variables) necessary to explain the event. A model of dynamic order, on the other hand, may be thought of as a concatenated series or sequence of factors which tend to converge on a certain point or event. The theory of evolution or the "big bang" theory of cosmology might be regarded as being of this type. The model presented here links a series of conditions that lead to higher or lower levels of role performance. It represents an attempt to describe some of the sequential activity occurring with the process of role performance.

Timasheff suggests that when one deals with sequence or the dynamic aspect of order he is dealing with order couched in causal propositions.

1One theoretically significant point of dissimilarity between the model presented herein and some of the more successful sequential models such as that of Bohlen and Beal is that the stages presented here lack comparative discreteness. That is, the stages are cumulative and so an actor may be active at more than one stage at any given time.

2Other examples of sequential models include Edwards (41), Simon (122; 123), and Cyert (32).

3For an extensive theoretical review of the concept "cause" and a review of the literature in this area, see Mueller, Causal Inference in Survey Research: A Discussion and Empirical Example (91).
(130, p. 162). He further points out that "Today, it is fashionable to avoid the very term 'cause' or at least to deny that causation implies sequence in time" (130, p. 147). Mario Bunge agrees in stating, "The causal principle fell into disrepute during the first half of our century as an effect of two independently acting influences: the criticism of empiricist philosophers, and the growing use in science and technology of statistical ideas and methods" (23, p. 432). The obvious problem is that cause cannot empirically be observed. Essential in the concept of cause, according to Bunge, is that X produces a change in Y, not simply that X predicts or is simultaneously associated with a change in Y (23, pp. 46-48). Our scientific operations are in terms of scale points and probability levels which at best can only lead to the inference of "cause." Blalock points out "One thinks in terms of a theoretical language that contains notions such as causes, forces, systems, and properites. But one's tests are made in terms of covariations, operations, and pointer readings" (15, p. 5). How well these operations correspond to what we attempt to describe theoretically is left to the discretion and agreement among scientists.¹

Despite the difficulties and considerable chance for error in the sequential or causal model, both Simon (122, pp. 11 and 39-41) and Blalock have made the point that research of this type does go on and that a great deal more is needed (15, p. 6). The model developed here is partly a result of acknowledgment of this point.

To this point the causal relationship has been discussed in such a way

¹The problem of theory running ahead of our ability to measure and develop strong epistemic correlations is discussed in Chapters 3-7 of F. S. C. Northrup's The Logic of the Science and the Humanities (79).
that the term "produces" or "forces" could be substituted. The implication
is that if A causes B, then B should be present if, and only if, A is pre-
sent. Blalock suggests that "... we might claim that A causes B if A is
both a necessary and sufficient condition for B" (15, p. 30). He suggests
further that this may be unnecessarily limiting the notion of causality.
There is "the likelihood that there will be more than one condition for B.
We might take A as a cause of B under any of the following conditions:

1. A is a necessary and sufficient condition for B.
2. A is a necessary but not a sufficient condition for B (i.e., A
   must be present but B need not always follow A).
3. A is a sufficient but not a necessary condition for B (i.e., B is
   always present when A is, but B may also occur when A is not
   present).
4. A is only partly necessary and/or sufficient for B (i.e., A must
   usually be present for B to occur, etc.) (15, p. 31).

Blalock qualifies this expansion of the use of the causality concept
by stating "... that we can never demonstrate necessity or sufficiency
empirically, although we can show them to be incorrect" (15, p. 31).

The second of the four situations above is of particular pertinence in
this dissertation. The causal model to be developed will suggest a hypo-
thesized causal relationship between the conditions of role performance such
that a prior condition is necessary for the succeeding condition but not
sufficient for it.

The sequence presented in this model does not mean to imply that one
condition causes the next in the sense that it brings it about. It causes
the next only in the sense that a previous condition or stage is necessary
though not sufficient for the next. A thorough understanding of the
initiating directives, for example, does not logically "cause" the accep-
tance of these directives. One condition is not necessarily the impetus or cause for going to the next. And it is not sufficient for the next. For example, a change agent might know a great deal about the directives that initiate a given change assignment but he might be very opposed to this change and not accept the role associated with that change. Thus, knowing the directives (initiation) is necessary to accepting them (acceptance-commitment) but not sufficient for their acceptance.

For this reason the model logically has more utility in determining the possible causes of low levels of role performance than it does for determining causes for high levels of role performance. If an actor scores high at one stage of the model, the model itself provides only a partial explanation as to why that actor scored high. The model, if demonstrated to be accurate, best tells us at what point in the performance process an actor might have been restricted from the higher level. It suggests what necessary conditions the actor might have met more successfully. It is at this point that the model might be quite helpful in suggesting one or more explanations for such performance levels.

The model developed here represents an attempt to deal with the dynamic aspects of role performance or, as is suggested, the role performance process. This role performance process is arbitrarily broken down into the following conditions or stages or conceptual purposes: 1) initiation, 2) acceptance-commitment, 3) ability, 4) involvement, and finally 5) the resultant level of role performance. It should be pointed out that there are not necessarily these five stages in the performance process. The number of concepts in the process is selected primarily on the basis of ease of conceptualization. Either fewer or more stages might be concep-
tualized for the performance process.

The first step in the development of a causal model is the establishment of a basic general ordering of the concepts. This initial ordering is simply a statement of the assumed relationship among a set of concepts. It is the preliminary hypothesized relationship.

The dilemma for the researcher at this point, according to Blalock, is to select a set of relationships "that are at the same time simple enough to permit him to think with the aid of the model but also sufficiently realistic that the simplifications required do not lead to predictions that are highly inaccurate" (15, p. 8). The selection of the initial order of relationships and the rationale for this ordering is presented below.

The first part of the selection process is to designate the dependent variable. It is the key concept in that it, in its quantified form, is what the causal model is designed to "explain." In this study the dependent variable has already been designated and described as $X_5$, Level of Role Performance.

Second, having designated the terminal end of the causal ordering, the first concept of the chain of order is designated. In selecting this concept the researcher attempts to choose that concept which is rationally prior to all other concepts in the model. Of the basic concepts introduced earlier in this study, $X_1$, Initiation is conceptualized as being causally prior to all other concepts. That is, it is not considered to be "caused" by any other concept in the model.

As a rationale for the selection, initiation has been described as being primarily concerned with the actor's internalization of the directives
that define his role in the vertical system. At this primary stage the actors are looking at the expectation or directives defining the position. Learning what expectations or tasks are required is prior to the acceptance of these tasks, the development of a systems capability of executing the directives, or the direct involvement in the tasks. The actors are at this stage surveying the role and what it might entail. This is his first association with the particular aspect of the role and the source of any redefinition of the role. For these reasons it was judged to be causally prior to the other concepts of the model.

It would seem that in order for one to internalize a set of directives there would have to be some basic or prior motivation\(^1\) for doing so. Studies of information seeking indicate that there are large individual differences in amount and types of information sought (150; 95; 41). The values associated with the motivation may come from a number of sources such as peer group pressure, family pressure, or pressure from the vertical system. Regardless of source, motivation is not only prior to a given set of role expectations, but it is necessary to the actual carrying out of the role and thus necessary to each of the conditions presented in this model.

From the above development it is hypothesized that those change agents who are low in their understanding of the directives of the vertical system will not only be low in level of role performance but that they will be low

\(^1\)Motivation might have been included as a preliminary condition of the role performance process. Twelve possible reasons for taking the focal position of this study were investigated, but comparative levels of motivation were not surveyed. The untested hypothesis here is that the higher the motivation level, the more the role expectations (directives) will be internalized. For a more extensive discussion of motivation in the model presented here, see page 63 of this study.
in each of the succeeding conditions of the role performance process. It is suggested that understanding the directives of a given social system is basic (a necessary condition) to the performance of the roles prescribed within that system. The internalizing of directives in itself is, however, not sufficient for high levels of role performance within a given system, but it is necessary for such performance.

Third, the second concept to be selected was $X_2$, Acceptance-Commitment. This concept was judged to follow $X_1$, Initiation, but to be causally prior to the other concepts of the model.

The rationale for this selection rests on the conclusion that it is only after an actor has learned the definition of the role that he can accept the tasks associated with that role and develop a commitment to their accomplishment. This acceptance and commitment, on the other hand, is essentially prior to the development of a personal and systems ability and an active involvement in the tasks. It is the acceptance and commitment that may lead one to develop an ability and become involved in the tasks. If an actor has not an acceptance and commitment, he will not develop his ability to become further involved in the tasks associated with the role.

From the above it is hypothesized that the local change agent who has not developed an acceptance and commitment to the role, whether or not he has internalized the prescribed role expectations, will not have developed a high level of ability to perform that prescribed role, will not have a high level of involvement with that role, and his level of performance with respect to that role will be low. If, on the other hand, the local change agent has internalized the prescribed expectations and he has a high level
of acceptance of these expectations, then the following conditions may be either high or low. He will have met a necessary condition for the next stage, but there are other necessary conditions of role performance which must also be met.

Fourth, having selected the first and second concept in the sequence the third is selected. The third concept selected in the model was $X_3$, Ability. Where a causal relationship was expected between $X_1$, Initiation, and $X_2$, Acceptance-Commitment, no causal relationship was posited between either of these two concepts and $X_3$, Ability. It was, however, considered to be causally prior to $X_4$, Involvement, and the dependent variable, $X_5$, Level of Role Performance.

In the rationale for this selection, it was recognized that though a level of ability is necessary to learn the directives (initiation) and accept these directives as a part of one's own role behavior, this level is minimal. The concept of ability as defined and described in this study is more concerned with the personal and systems capability developed to carry out an accepted job role. The development of such a capability does not come prior to the acceptance of a job role but is developed with time, training, and experience on the job, i.e., it is the accumulation of resources through time while actually playing the job role. Ability is prior to involvement and level of role performance, however, in that it represents the pool of resources that the actor has at his disposal to bring into involvement and finally, if successfully employed, achieved a high level of role performance.

Following the above development it is hypothesized that those change agents who are low in their personal and systems ability to pursue the
directives assigned through the vertical system will not only be low in level of role performance, but they will also be low in level of involvement. It is suggested that the development of an ability to carry out the directives of a given social system is a necessary condition of a high level of role performance, but it in itself is not sufficient for such performance. Therefore, those change agents who are high in their personal and systems ability may be either high or low on succeeding concept scores including level of role performance.

Fifth, the selection of the final concept can be done by obvious process of elimination, but there remains the assignment of its causal location in the model. The fourth concept to be assigned was $X_4$, Involvement. In the assignment of this concept it was concluded that each of the previously assigned concepts except the dependent variable, causally precedes the concept of involvement and that involvement is causally prior to $X_5$, Level of Role Performance.

The rationale for this assignment included the decision that involvement of local change agents could only come about through a complex of factors. He must know the expectations associated with his complex job role. He must have an acceptance and commitment to the job role particularly in that a great deal of the role is carried out without direct supervision. He must have the personal and systems capabilities to bring to bear on his many and diverse tasks. On the other hand, it was acknowledged that involvement is prior to level of role performance in that performance criteria cannot be achieved without an involvement of the actor. Yet, involvement is not in itself the achievement of a level of role performance in that an actor might devote a great deal of effort and energy to the accomplishment of a
given task and yet fail to gain any substantial accomplishment of it. Or, an actor might expend a great deal of time and effort on the job role but have directed this time and effort to peripheral or marginal tasks rather than priority tasks.

From the above development, it is hypothesized that those change agents who are low in involvement, i.e., who have not devoted the time and effort to the various performance and systems building tasks, will be low in level of role performance. They will not have met one of the necessary conditions of role performance. On the other hand, those change agents who tend to be high on involvement will tend to be high in level of role performance. The agent, to have been high on involvement, will have met the previous necessary conditions of role performance and also have met this final condition. From this cumulative effect one would, then, expect the highest causal relationship between involvement and level of role performance.

**Summary of the model**

The model is summarized in Diagram 4. At the initiation stage an actor may score high or low with respect to his knowledge of the directives that define his job role. If he scores low, his not meeting this condition either drops him out of the performance process altogether or he is restricted from high levels of role performance. He has no basis for high levels of performance. If he scores high on this initial condition, then he has the basis for higher performance and may at the second stage choose to accept the role expectations and develop a commitment to them as a basis for his behavior patterns. Again, at this second stage, if his meeting the criteria for this condition has been low, he drops out of the performance
process or is at least blocked from high levels in each succeeding stage. The result of being high or low at each successive condition remains the same. Being high on one condition is the only route of admission to being high at the next condition, and the succession through each stage at a high level is essential for high levels of role performance, the ultimate end in sight. Low role performance could be the result of the actor's being low on any one of the succeeding conditions. Being low on any one prior condition necessarily means that one cannot be high on any of the following, including the final performance stage.

\[
\text{High} \hspace{1cm} \text{High}
\]
\[
A \hspace{1cm} \text{High} \rightarrow \text{LRP}
\]
\[
\text{Low} \rightarrow X \hspace{1cm} \text{Low} \rightarrow X
\]
\[
\text{High} \hspace{1cm} \text{Low}
\]
\[
I \hspace{1cm} \text{In}
\]
\[
\text{High} \rightarrow A, C
\]
\[
I \rightarrow \text{In}
\]
\[
\text{Low} \rightarrow X
\]

\[X = \text{Limited access to successive stages}\]
\[I = \text{Initiation}\]
\[A, C = \text{Acceptance-Commitment}\]
\[A = \text{Ability}\]
\[\text{In} = \text{Involvement}\]
\[\text{LRP} = \text{Level of Role Performance}\]

Diagram 4. Summary of role performance process model

Thus far, the model has stressed the point that high levels of achievement for a given concept are the means of access to the next concept or stage of the sequence. Of course, however, none of the concepts of the model is either mutually exclusive or a zero-sum dichotomy. There is a
cumulative effect through the model and each concept is a continuum from high to low. There is no specific cut-off point where an actor is absolutely barred from further participation in the sequence. A series of very low scores would culminate in at least some performance achievement. Also, one who was high in only the first condition (initiation) might, if only because he at least understood the directives, have a higher level of performance score, though still low, than another who was low on each of the condition of the process. There is, then, expected to be some additive effect across the sequence even if one or more of the conditions screen the actor from high levels of role performance. (See Diagram 5.)

<table>
<thead>
<tr>
<th>Initiation</th>
<th>Acceptance-Commitment</th>
<th>Ability</th>
<th>Involvement</th>
<th>Performance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>AC</td>
<td>A</td>
<td>In</td>
<td>High</td>
</tr>
<tr>
<td>I</td>
<td>AC</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>AC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td></td>
<td></td>
<td></td>
<td>Low</td>
</tr>
</tbody>
</table>

Diagram 5. Possible cumulative effect

The description and diagrams above serve as a general illustration. A specialized diagrammatic convention has, however, been worked out by those using the causal approach. In these diagrams certain variables are re-

1 Though being low at any one stage limits access to the next stage, there may be some cumulative effect with respect to performance (see text, page 80).

2 For a more extensive description of these diagrammatic conventions and a review of associated literature, see Duncan (37, p. 2).
presented to be the dependent linear functions of others. Other variables and other relationships among variables may appear as a part of the diagram, but they are assumed as given and do not enter into the problematic. Each dependent variable is regarded as determined by some combination of independent variables. Such relationships are indicated by a one-way arrow between the determining variable and the dependent variable. Unanalyzed or assumed correlations between variables not causally dependent upon others in the system or model are shown by two-headed arrows on a curved connecting line rather than a straight line. In the representation of analysis, numerical quantities may be entered with each arrow. These values represent the path coefficients (beta weights). The initially hypothesized model in this study showing the arrows going from a particular variable to all other variables which causally follow it is illustrated in Diagram 6 below.

Diagram 6. Hypothesized causal model 1

General Hypotheses

The change agent has a role to perform. The problematic of this presentation is to determine more about how this change agent perceives, understands, and carries out his role. A model has been presented as a basis of furthering this understanding. A major purpose of this formu-
lation is to test the appropriateness of the model—to determine if the results predicted by it are substantiated in empirical examination.

To facilitate this test a number of general level hypotheses have been generated from the rationale of the theoretical presentation. These general level hypotheses may be summed as follows.

Role performance is subject to the conceptual conditions developed above and their subcomponents. Each of these concepts and subconcepts should, therefore, be strongly related to level of role performance. From this it follows that the first general hypothesis is as follows:

I. There is a relationship between each of the conditions of role performance (concepts and subconcepts of the model) and level of role performance.

The model was theorized to be more than an outline of conceptual components each having predictive power. It was suggested that these concepts were sequential, i.e., a path leading to role performance. A break or deficiency in meeting the conditions for role performance at any one point leads to deficiency through the rest of the sequence. The model, then, in itself, provides a hypothesis. It is the basis of the second general hypothesis that:

II. There is a sequential or path effect among the conditions of role performance (conceptual variables of the model).

Knowing that role performance may be defined as a sequential process might be important to our understanding of the role performance concept but the greatest potential utility in the study comes from 1) its contribution in helping the researcher understand why low levels of role performance are low and 2) the test of an attempt at predicting level of role performance on the basis of the actor's meeting a progression of conditions of
role performance. In short, to have utility the model just presented must have predictive power.

These two general level hypotheses, while related, will be examined and tested separately along with subhypotheses that each suggests in the following chapter. In the next chapter, the methodology chapter, the empirical system upon which this study is based will be described. After this description, the concepts and subconcepts relating to each of the three general level hypotheses will be operationalized and presented along with the developed empirical indicies and appropriate tests of relationships.
CHAPTER 3. METHODOLOGY

Introduction

The previous chapter presented a sequential model of the steps that an actor in a social system might have to go through to achieve a high level of role performance within a social system. This chapter will present the research methods used to test the sequential relationships suggested by this model. In this presentation five main functions will be served. First, a general description of the empirical social system within which this study was conducted is presented. Second, a resume and background of the studies on local director role performance conducted by the research team at Iowa State University is presented. Third, the field research procedures and techniques used in conducting this study are presented. This presentation includes a description of data collection and sampling procedures. Fourth, the operationalization of the basic concepts is presented. This presentation includes a general review of the basic model delimiting its central concepts and a description of the measures of these concepts. Fifth is presented an enumeration of the empirical hypotheses to be tested in the chapter to follow. And finally, the plan of statistical procedures and techniques employed in this study to provide a basis for the findings presented in the next chapter is presented.

Some sections of this chapter come with only minor revision from the two sociological studies upon which this dissertation is based (69; 69a). Though this author worked directly on the material at all of its various stages of preparation, especial recognition must be paid to each of the report authors and particularly to the team co-director, Gerald E. Klonglan, whose influence and extensive direct editing are clearly recognizable to those of us familiar with his work.
General Description of the Empirical System

There are many agencies of social change both within and outside of the various levels of government. Such agencies have as their objective the implementation of some form of desired change—i.e., to bring about a change from some existing state of affairs to another state that is regarded as being more desirable. The prior state of affairs that gave rise to the agency of change focused upon in this study is the threat of nuclear disaster. A Civil Defense agency was conceived and vested with the key responsibility of bringing about a greater state of readiness in the face of threatened nuclear attack.

The development of this agency and its programs as they exist today did not come about all at once. The Federal Civil Defense Act enacted in 1951 was the essential beginning. This act stated that the "responsibility of civil defense shall be vested primarily in the States and their political subdivisions" (Public Law 81-920, approved January 12, 1951, sec. 2) (64 Stat. 1246). In 1958 this policy statement was amended by Public Law 85-606 which stated that "responsibility for civil defense shall be vested jointly in the Federal Government and the several states and their political subdivisions" (approved August 8, 1959, sec. 2) (72 Stat. 532). Thus a preliminary vertical system was legally conceived.

Since the Berlin crisis in the fall of 1961, federal, state, and local governments have shown increasing interest in specifying and clarifying the goals of a comprehensive and realistic civil defense program, and in stimulating interest and participation of the populace in civil defense activities. Major civil defense emphasis since 1961 has been, and at the
time of this dissertation continues to be, focused on the development of
public fallout shelters through the National Fallout Shelter Survey, Mark­
ing, and Stocking Program.

As of July 25, 1965, enough public fallout shelter spaces had been
found in existing structures to accommodate 75 per cent of the population
of the United States. Licensed shelter spaces are available for about 43
per cent of the population; and spaces marked would accommodate about 42
per cent of the population. Nationally, spaces stocked for a full two­
week period are equivalent to 19 per cent of the population or about 34.4
million people (139).

At the present time, state civil defense organizations are being en­
couraged to give the highest priority to promoting Community Shelter
Utilization Plans throughout their state, while local political subdivisions
are urged to reduce remaining shelter deficits as soon as possible (138).

Levels of the vertical system

The development and implementation of these programs has gradually
evolved a functioning vertical social system extending from the federal
to the local level. The following is a brief review of these levels.

Federal and regional levels The Department of Defense-Office of
Civil Defense has been given the responsibility at the national level for
initiating the nation's expanded civil defense program. Eight regional
offices have been established as the administrative link between the Office
of Civil Defense in Washington, D. C., and state civil defense organiza­
tions. The regional offices are staffed with personnel trained in civil
defense technical operations, training, state-local requirements, adminis­
tration, auditing, and public information.

**State level** All fifty states currently have some form of civil defense legislation. State legislatures, in enacting law in this area, have adopted various patterns for authorizing state and local civil defense activities. Civil defense agencies and departments with differing organizational structures have been established, and varying degrees of authority and command responsibility have been vested in them and in the Chief Executives of the States (140).

**Local level (county, city, and town)** The organization of civil defense at the local level varies considerably from state to state and in many cases within a state (140). In some localities civil defense responsibilities are vested primarily in a local civil defense director, who is sometimes a paid person and sometimes a volunteer. The more densely populated the area, the more likely the director is to be a paid person. In other localities a local civil defense board has been established which sets policy for local civil defense activities and selects the local civil defense director. Some communities utilize existing governing bodies as the nucleus of their civil defense organization. For example, in some communities the local director is a paid public official such as a police or fire chief whose duties include civil defense responsibilities.

**Summary of the vertical system** Currently the organization of civil defense is not under a well-defined, tight vertical authority and responsibility structure. Because of its somewhat decentralized and "grass

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1 For an extensive discussion of the relationship of civil defense to local governing bodies, see Klonglan, Beal, Bohlen, and Nye (70).
roots" character the present civil defense organization cannot be operated in a manner similar to that of a paramilitary command or government line agency. States, for example, have the authority to decide the type of civil defense organization they wish to establish and, to a large extent, the type of tasks and objectives they wish the organization to accomplish. Likewise, within the horizontal system, local community officials in some cases have the authority to decide the type of organization and programs that will be adopted. In some cases, if a state or local community decides it does not desire a civil defense organization and program, it is not required to have one.

Once established, the effectiveness of a given structure depends upon communication and coordination throughout its various levels. The Office of Civil Defense not only has to communicate to state and local people that certain actions should be taken, but also why these actions are important. It is the responsibility of the state to effectively communicate the need for civil defense to local communities. If this communication fails, the structure fails even before it is adopted. There must be an effective voluntary systemic link developed between the horizontal and vertical system. This link by its voluntary nature must include two-way communication. That is, communication from local to state and national levels is also important because this is the chief source of civil defense organization "feedback" of community needs, attitudes, and actions.

The importance of state and local civil defense organizations in carrying out the National Fallout Shelter Program and related civil defense operations was emphasized throughout the testimony of the 1962 Congressional hearings on civil defense (135). A special concern at that time
was the level of ability of the local civil defense director as an effective change agent and the probability that local civil defense organizations would be able to support and carry out programs that would in the future form the nucleus of an effective civil defense program.

Responsibility of the change agent at the local level

It was obvious from the discussion at these 1962 Congressional hearings that if the expanded fallout shelter programs proposed by the federal government were to be carried out, there would have to be an increase in the planning, organizational training, and operational civil defense activities, particularly at the local community level. For example, a designated official at the local level, most probably the local civil defense director, was to be responsible for accomplishing the following tasks in implementing the National Fallout Shelter Survey, Marking and Stocking Program:

... to be the central source of information for the local subdivision and keep the appropriate public officials fully informed.
... to assist the architect and engineer contractor in making the necessary contacts with local officials and building owners for permission to gain entry to specific buildings for survey purposes.
... to locate and make arrangements for a warehouse or receiving point for the shelter supplies to be provided by the federal government.
... to determine, with the building's owner, the location within the building for storage spaces for the provisions.
... to arrange for and manage the transportation and placement of the provisions in the shelter building.
... to conduct periodic inspections and supervision of the provisions of their storage locations (133).

There would also be many other new duties in addition to these specific responsibilities for which the local civil defense director would be responsible ... for example, he would assist in monitoring commercial shelter and shelter supply dealers to protect the public from fraudulent
operations; revise operational survival plans to reflect the change in basic tactics from evacuation to shelter, including the development of plans for movement of the population to shelter, shelter management plans, review communication plans to permit the local government to issue guidance and instructions to their citizens in shelter; undertake a greatly stepped up public information and education program to permit the people to make effective use of the shelters; and guide the training of a large number of people as shelter managers and other shelter staff personnel such as communicators, radiological monitors, food and water distribution personnel, and sanitation specialists (134).

In addition to the above new tasks, ongoing work in civil defense at the local level was to be continued, i.e., the improvement of warning systems, the improvement of the radiological monitoring and evaluation system, and updating of survival item inventories, and the recruiting, training, and assigning of local government employees and volunteer auxiliaries to essential emergency services. At this time it was thought by some individuals present at the Congressional hearings, including the Director of the Office of Civil Defense, that existing local civil defense organizations might not be capable of doing all the things required of it (133). The possible role of military personnel was considered. The decision was made, however, to implement the new civil defense program through civil defense organizations at the local level. The civilian nature of civil defense was to be maintained. But in order to do this, local civil defense organizations would have to be given as much help as possible from state and national civil defense organizations in organizing and expanding their capability to carry out civil defense responsibilities.
A recent statement by the Director of Civil Defense, in which he discussed the military role in civil defense, affirms this point of view. "Military support for civil government, not military control in emergencies, is a manifestation of our democratic process and is a tradition deeply rooted in national life" (141).

Success at the local level continues to be a major goal of national and state civil defense personnel, for it is in the local community where lives will have to be saved if there should be an attack. Therefore, if realistic shelter programs are to fulfill their goal of saving lives, the local community must carry out its tasks in implementing them. Complete and detailed plans on paper alone would not save lives in a nuclear attack. Only if citizens in each community recognize the need for these plans and prepare themselves to carry out the many functions necessary to implement the proposed programs will the maximum number of lives be saved in the event of a nuclear attack.

In summary, the local civil defense director is the key change agent responsible for accomplishing the tasks necessary to make the current civil defense program operational. He has the major responsibility of translating the goals of civil defense into constructive actions in communities throughout the United States. In a sense, he is the "funnel" through which the plans, directives, materials, and communications developed at state and national levels pass. He is the systemic link between the vertical civil defense bureaucracy and the horizontal system of local community members, whose safety is the primary concern of the civil defense effort.
Background of the Study

Extensive sociological studies into a number of facets of civil defense have been conducted by the research team of the Department of Sociology and Anthropology at Iowa State University. One of the facets studied extensively is the role performance of the local civil defense director as he acts as a change agent for the civil defense bureaucracy. A series of studies in this area have been conducted in order to evolve a better understanding of this rather complicated job role. Below is a brief resume of this sequence of studies and a statement relating this dissertation to the total effort in this area.

The Iowa Pilot Study of 1962

The initial pilot study of the role performance of local civil defense directors was conducted in Iowa during the year of 1962. While a pilot study in perspective, this was an extensive study of the local civil defense director based on a fifty per cent random sample of all listed local civil defense directors in Iowa.

Prior to the study it was recognized by the researchers that the local civil defense director functioned as a key link between the vertical civil defense social system and the local community, the field of change. In view of the importance of this position to the desired change, emphasis for the study was placed upon the following general objectives:

1. An evaluation of typical civil defense director role performance, relative to potential or expected role performance, and,
2. An analysis of factors associated with given levels of role performance.
That is, the goals have not been only to analyze and describe what local civil defense directors were actually doing relative to their officially defined civil defense director role, but also to analyze the manner and extent to which other factors either constrained or enhanced the level of role performance.

Following these objectives the pilot study was set up and carried out. First, upon completion of the field work, a profile report of the local civil defense directors who were studied was written (71). The major objective of the study presented in the profile report was to determine the personal and social characteristics of local civil defense directors, emphasizing their civil defense attitudes, knowledge, and opinions. A second analytic report (71a) on Iowa civil defense directors stated these objectives:

1. Develop an analytical frame of reference, or model, which may be used in understanding factors which may affect the role performance of local civil defense directors.

2. Determine the role expectations held for local civil defense directors.

3. Determine the actual role performance of local civil defense directors.

4. Determine through use of the analytical frame of reference those factors (independent variables) which are related to the role performance of local civil defense directors. Such factors might be perceived as restraining or giving impetus to the progress of civil defense programs. The objective was to determine the degree or strength of relationship between each factor (independent variable) and the level of role perform-
5. To predict the role performance of local civil defense directors. The factors (independent variables) were analyzed to determine the extent to which the role performance level of local civil defense directors could be predicted from them.

The prediction of local director role performance level was done in two ways:

a. **Single variable relationships**: that is, studying the extent to which each of the independent variables predicts role performance, ignoring all other independent variables.

b. **Multiple variable relationships**: that is, studying the extent to which each independent variable predicts role performance, taking into account the effect of other independent variables.

The major analytical device developed and tested in the Iowa pilot study was a **social systems model**. The total civil defense organization (national, regional, state and local) was conceptualized as one complex vertical social system. That is, the civil defense organization was conceived as an active social system with patterns of interaction which are directed toward specific objectives. Within the civil defense organization (social system) individual actors perform tasks or roles that establish them as part of the social system and the subsystem in which their role performances are most highly relevant. A **social systems analysis** was selected because it presents a most adequate **general** frame of reference.

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1 For a more extensive discussion of the social systems concept, see Chapter 2, pages 8 through 20.
for studying the role performance of local civil defense directors and the factors which may affect their role performance.

The local civil defense director was conceptualized as a member of the civil defense social system and as the key link between the civil defense social system and another highly relevant social system, the local community or area of civil defense responsibility. Since the major purpose of the analytical part of the pilot study was to determine the factors which may affect (make it possible to predict) the role performance of local civil defense directors, the dependent variable of the study was role performance. Nine analytical elements and three analytical processes were delineated as the major factors which could affect a local director's role performance. The nine elements were: ends (goals), facilities (means), norms, sanctions, status-role, rank, power, belief (knowledge), and sentiments (values and attitudes). The three processes were: communication, boundary maintenance, and systemic linkage.¹

The social system concepts that were delineated and defined were first stated at a general level. Each of these concepts could have had a number of meaningful dimensions or subconcepts. For example, the concept belief (knowledge) may be subdivided into a number of meaningful subconcepts such as technical knowledge of civil defense, knowledge of the local civil defense area, and knowledge of world figures, as well as other types of knowledge. In the analytic pilot report, subconcepts were developed for the following general level concepts: belief (knowledge), goals, senti-

¹A more detailed definition of these concepts may be found in Chapter 2, pages 21 and 22.
ments, facilities (means), communications, and systemic linkage. Each sub-concept was analyzed as a unique independent variable, that is, each sub-concept was analyzed to determine how it might independently affect role performance.

A total of 51 independent variables were conceptualized; 43 of them subconcepts and six of them single measures of general social system concepts. Each of the 51 independent variables was operationalized or measured in the pilot study. The single variable relationship analysis focused on the extent to which each of the independent variables was related to and predicted level of role performance, ignoring all the other independent variables.

The multiple variable analysis focused on 1) determining the explanatory or predictive power of a number of independent variables taken together, and 2) determining the extent to which each independent variable is related to and predicts role performance taking into account the other independent variables, that is, determining the relative importance (strength) of each independent variable used in the multiple variable analysis to predict role performance.

**Need for additional data—1965**

The social systems model as developed and tested in the pilot study with local civil defense directors in Iowa was judged to be a valuable predictive model. However, a major concern of the Office of Civil Defense was whether or not the findings in the Iowa study could be generalized to other states. Because of this concern by personnel at the Office of Civil Defense, it was desirable to conduct a similar analysis of local civil
defense directors in three other states during fiscal year 1965. The states selected, representing different geographic areas and state civil defense organization structures, were Minnesota, Massachusetts, and Georgia.

Certain modifications and improvements were made in the social systems model, its concepts, and their empirical measures, after analysis of the Iowa pilot study. The data collection instrument was also revised so that it could be used in either an individual or a group interview situation.

The objectives of the 1965 study were the same as those for the 1962 pilot study as stated above. Of major interest was whether or not the findings of the Iowa study would or would not be supported by an analysis of data from these three additional states. It was hoped that the findings from all four states would provide a broader base for understanding local civil defense directors as local change agents and the factors which affect their level of role performance. Also of major concern was the degree of consistency and effectiveness of the social systems model as a research instrument in the descriptive comparison and analysis among and between major vertical social systems.

As with the Iowa pilot study, two reports were written upon completion of the field work and analysis. First, in 1965, a profile report (69) was prepared containing primarily descriptive and comparative information on the local civil defense directors of Minnesota, Georgia, and Massachusetts. Second, in 1966, an analytical report (69a) was written which focused on the social systems model as a basis for determining factors related to the prediction of levels of role performance for the local
directors. The predictive equations used in this second study were the same or similar to those used in the Iowa pilot study. The major additional complications were in the comparison between states and the pooling of the three states.

Initial investigation of the role performance concept

In both the Iowa pilot study and the 1965 follow-up the emphasis of analysis was upon the prediction of level of role performance. For this reason the role performance concept has been a central concern. Its empirical content and validity as developed in these studies was investigated intensively in 1966 (119). A report on the degree of consensus among role definers in both the horizontal and vertical systems was conducted in 1967 (70). And finally, this dissertation represents a continual theoretical investigation of the role performance concept. It is an attempt to determine whether or not the explication of the concept as a sequential process gives the researcher a better understanding of, and consequently a more powerful explanation of, the differences in level of role performance among the systems actors.

Data Collection Procedures

Within the general civil defense system, specific sections or subsystems were selected for the population of study. In this section these subsystems are described along with a brief rationale for their selection for study and a description of sampling and data collection procedures within these subsections of the overall sample.
The overall population studied

The overall population selected for study consisted of all local civil defense directors in the states of Minnesota, Georgia, and Massachusetts. Initially a random sample of the local civil defense directors of all 50 states was considered, but costs of a strong enough sample along with some difficulties in accounting for or justifying the uniqueness of some states led to a plan for a more intensive investigation of three states. These were judged by the researchers and the Office of Civil Defense to be most representative of the system found in the various areas of the country. Minnesota was selected to represent a more urban and more industrialized midwest state than Iowa, the pilot state; Massachusetts to represent a northeastern, industrial state; and Georgia as a representative of the southeast. There are considerable differences among the three state civil defense organizational structures. Brief descriptions of the civil defense organizational structures in the three states, at the time this research study was done, are included below to provide a better basis for understanding the populations studied. State civil defense officials in each of the three states have reviewed and approved the brief description and diagrams of their organizational structure as presented below.

Minnesota civil defense

All towns, cities, and counties in Minnesota are required by state law to have local civil defense organizations. Each of the states of the

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¹At the time of this study there were 726 local civil defense directors in Minnesota, 170 local civil defense directors in Georgia, and 297 local civil defense directors in Massachusetts.
three studied had this or a very similar requirement. The municipal civil defense directors in Minnesota are appointed by the mayor in a city, village, or borough and by the town board in towns. County boards appoint county civil defense directors. These county civil defense directors have jurisdiction throughout the county except within a city, village, borough, or town with a functional civil defense organization. The county director is, however, directed by state law to coordinate activities in his area and assist in the training of any civil defense personnel.

The state law requiring each political subdivision to have a local director leads to a comparatively large number of local directors. To coordinate and reinforce these local directors, there has been established six Mobile Support Areas (MSA) in the comparatively rural areas of the state and two Unified Command Areas (UNICOM) in the major metropolitan area of the state. These state area offices were designed largely to act as a liaison between the state level of the civil defense organization and the local level civil defense organization, the political subdivision officials and various private supporting systems.

Major responsibility at the state level, according to federal Civil Defense Guide (137, p. 10) and state law, resides with the governor of the state. It is his responsibility not only to coordinate through the civil defense organization, but also to coordinate through all of the state agencies and divisions. To assist him, the governor of Minnesota appoints, with the advice and consent of the state senate, a state director of civil

\[\text{Diagram 7 summarizes the formal structure for coordination between governing bodies and the various levels of the civil defense organization in Minnesota.}\]
Diagram 7. Minnesota Civil Defense Agency
defense. In addition the governor serves as chairman of a Civil Defense Advisory Council which acts as a civilian advisory unit for both the governor and the state director on all matters pertaining to civil defense within the state.

The civil defense program in the state of Minnesota is coordinated with the national program through Civil Defense Region IV. The Civil Defense Region IV headquarters is located in Battle Creek, Michigan. Other states in this region are Illinois, Indiana, Michigan, and Wisconsin.

Georgia civil defense

The Georgia Civil Defense Act of 1951 authorizes and directs all counties, cities, and towns with a population of 1,000 or more to establish a local organization for civil defense. The Act provides that cities and towns of over 1,000 population, by mutual agreement and legal action, may merge with the county civil defense unit to establish a total county organization. The governor, by federal (137, p. 10) and state law cited above, is responsible for coordination of all civil defense activities within the state of Georgia. This responsibility is delegated by law to the Adjutant General who, as the executive head of the Civil Defense Division, Georgia State Department of Defense, is the State Civil Defense Director. The same law also designates the Adjutant General as the State Disaster Coordinator.

For emergency operation the state is divided into seven civil defense emergency operational areas. Each area is under the supervision of a full time Area Director who is a member of the State Civil Defense Director's staff. The primary mission of the Area Director is to assist local offi-
cians and local directors in developing their organizations and to coordinate planning education and emergency operations within his particular area.

The local civil defense director, city or county, is nominated by the governing heads of the political subdivision and is appointed by the governor. The civil defense program in the state of Georgia is coordinated with the national program through Region III. The Civil Defense Region III headquarters is located in Thomasville, Georgia. Other states in this region are Alabama, Florida, Mississippi, North Carolina, South Carolina, Tennessee, and the Panama Canal Zone.

Massachusetts civil defense

The Massachusetts Civil Defense Acts of 1950, Chapter 639, as amended, were the basis of the civil defense organizational structure in Massachusetts at the time of this study. This act and federal law (137) makes the governor responsible for civil defense and disaster in Massachusetts. The governor, with the advice and consent of Governor's Executive Council, appoints the State Director. The governor of Massachusetts also appoints the members of the Civil Defense Advisory Council. The Civil Defense Advisory Council consists of such department heads and other officers of the commonwealth as the governor deems necessary, and the State Director of Civil Defense. The Civil Defense Advisory Council advises the governor and the director on matters pertaining to civil defense.

To implement the programs suggested at the state level, four Civil

1Diagram 8 represents a summary of direction, command, and advisory relationships between civil defense elements in Georgia.
Diagram 8. Civil defense in Georgia
Defense Area Directors are employed through the office of the state director. Each state area for civil defense is comprised of from four to six smaller areas called sectors administered by sector directors. Area and sector directors coordinate between the state civil defense director, state agencies and political subdivisions.

By state law, each town or city in Massachusetts is authorized and directed to establish a local organization for civil defense in accordance with the state civil defense plan and program. Executives of political subdivisions, mayors, city managers, or selectmen appoint local civil defense directors. Diagram 9 is a summary of command and advisory relationships between civil defense units in Massachusetts at the time of this study.

The civil defense program in the state of Massachusetts is coordinated with the national program through Region I. The Civil Defense Region I headquarters is located at Harvard, Massachusetts. Other states in this region are Connecticut, Maine, New Hampshire, New Jersey, New York, Rhode Island, Vermont, Puerto Rico, and the Virgin Islands.

Summary of state organizations

A general summary of lines of authority and responsibility in each of the three states studied, Minnesota, Georgia, and Massachusetts, at the time of the research study is presented in Diagram 10. Each of the three states is divided into civil defense areas. The area director in each state is a full time state employee whose functions are to coordinate, train, and evaluate civil defense organizations within his state.

It is at the county level where one finds some differences in struc-
Diagram 9. Massachusetts Civil Defense Agency
There are no county units of civil defense in Massachusetts. Areas, however, comprise several "sections," which, in turn, comprise several local civil defense units.

Every incorporated place in Minnesota and Massachusetts is required to have a civil defense organization. In Georgia, only incorporated places of 1000 or more are required to have a civil defense organization.

Diagram 10. Summary of civil defense structures in Minnesota, Georgia, and Massachusetts
ture among these states. While both Minnesota and Georgia have county civil defense directors, Massachusetts does not. The town or city is the typical unit of civil defense in Massachusetts. However, the state civil defense areas in Massachusetts are composed of smaller areas called sectors. These areas function in a manner similar to the counties in that the sector director's function, with regard to community directors, is very similar to that of the county director in Minnesota and Georgia.

It is at the local community level where the major differences among state civil defense structures are noted. Minnesota law requires every political subdivision, no matter how sparsely populated, to have a local civil defense director. Each political subdivision in Massachusetts is also required by state law to have a local civil defense organization. However, there are more small communities in Minnesota, dispersed in a much wider area, than in Massachusetts. Georgia law requires all counties and all communities of 1,000 population or more to have a local civil defense organization. This, of course, means that the stratified random sampling procedure utilized in this study (described in the next section), by necessity, resulted in many more municipal directors being interviewed in Minnesota than in the state of Georgia. As noted, Massachusetts had only municipal civil defense directors. Municipal directors are much less likely to have time and resources to the same extent as county civil defense directors. Because of this, area directors of civil defense in Minnesota probably face a number of problems of activation that are to some extent dissimilar to those in the other states.

It should be apparent from these facts that simple, gross comparisons between these states on the basis of preliminary data presented in this
study should be done cautiously. There are obvious state differences that shall be taken into consideration in interpretation of the data.

**Questionnaire design and pretest**

The questionnaire used in the original 1962 Iowa pilot study was revised for the three-state study during the fall and winter of 1964. The questions used to develop the role performance scale were adjusted and supplemented to coincide with the then current OCD official definition of the local director's role. Where needed, other questions were added to the original questionnaire to strengthen its analytic capability. Response choices to some questions were adjusted to possible greater "spread" in the response pattern distributions. Finally, the questionnaire was adapted so that it might be used in either a group interview situation or with a single respondent.

The revised questionnaire was pretested in February, 1965. Nine civil defense directors in Iowa were selected for the pretest. In order to determine the extent to which the questionnaire items were appropriate for the various types of local civil defense directors, the pretest group included county directors, full time paid municipal directors, and municipal volunteer directors.

During the pretest, the questions in the questionnaire were read aloud to the directors as a group, each of whom responded by indicating his answers in pencil on a blank questionnaire which had been provided before the interview began. As a result of this pretest some revisions in form and content were introduced to facilitate understanding of some questions and facilitate administration of the instrument.
The Minnesota sample and field procedures

A list of all local civil defense directors in Minnesota who had been on the job for at least six months as of December 22, 1964, was obtained from the Minnesota Department of Civil Defense. This list included a total of 644 municipal directors, 77 county directors, and 5 township directors, or a combined total of 726 local civil defense directors. These are respectively 89 per cent, 10 per cent, and 1 per cent of Minnesota's local civil defense directors.

A stratified, random sample of 90 local directors was selected for study, with 90 per cent of the sample being municipal directors (81 directors) and 10 per cent being county directors (9 directors). No township directors were selected because the township was not a typical unit of civil defense in Minnesota. Based upon the field interviewing experience in the Iowa pilot study, it was estimated that an approximate 10 per cent dropout rate could be expected in each state. The researchers' goal was to complete 80 interviews in each state.

The 90 civil defense directors in this sample were sent letters by the researchers and the Minnesota State Civil Defense Director inviting them to drive to one of six cities in Minnesota to be interviewed. In addition, the mayors and county board members to whom the 90 sample directors were responsible were sent letters by the researchers in the Department of Sociology, Iowa State University, asking them to encourage their local directors to cooperate. Minnesota area directors of civil defense telephoned each director in the sample in their area urging them to cooperate with the researchers. Directors who drove to a group interview center were reimbursed for mileage and meal expenses. A total of 48
directors attended the six group interviews in Minnesota; 28 directors who
did not come to a group interview center were contacted and interviewed
individually in their home community. A total of 76 directors were inter­
viewed in the spring of 1965 from the original list of 90.¹

The Georgia sample and field procedures

A list of all local civil defense directors in Georgia who had been
on the job for at least six months, as of January 7, 1965, was obtained
from the Georgia Deputy Director, Division of Civil Defense. This list
included 128 county directors (75 per cent of all local directors) and 42
municipal directors (25 per cent of all local directors), or a total of
170 local directors. A stratified random sample of 90 local directors was
selected for study, with approximately 75 per cent of the sample being
county directors (67 directors) and 25 per cent being municipal directors
(23 directors).

Civil defense directors in the sample were sent letters by the Iowa
State University Sociology research team and the Georgia State Civil De­
fense Director inviting them to drive to the Georgia Center for Continuing
Education, Athens, Georgia, to take part in a group interview. In addi­
tion, mayors and county officials were sent letters by the Iowa State
University research team asking them to encourage their directors to co­
operate with the researchers. Georgia area directors of civil defense
telephoned all of the directors in their areas who were drawn in the sample

¹When field interviews were conducted, it was found that: 7 directors
had recently resigned; 2 had moved from their community; 1 was on an ex­
tended vacation; 1 was unavailable because of his recent election to the
state legislature; 1 had died; 1 was seriously ill; and 1 refused to be
interviewed.
urging them to cooperate with the researchers. Directors who drove to the interview center were reimbursed for mileage, meals, and room expenses while at the center. A total of 42 directors attended two group interview sessions in Georgia. Thirty-eight directors who did not attend a group interview session were contacted and interviewed in their home communities. A total of 80 directors were interviewed in the spring of 1965 from the original list of 90.

The Massachusetts sample and field procedures

A list of all civil defense directors in Massachusetts who had been on the job at least six months as of April 8, 1965, was obtained from the Massachusetts State Director of Civil Defense. This list included a total of 297 active municipal civil defense directors. A random sample of 90 directors was selected for study.

Civil defense directors in Massachusetts were sent letters by the Iowa State University research team and the Massachusetts State Civil Defense Director inviting them to drive to one of three cities in Massachusetts to be interviewed. In addition, mayors and selectmen were sent letters by Iowa State University asking them to encourage their directors to cooperate. Massachusetts area directors of civil defense telephoned each director in the sample from their area urging them to cooperate with the researchers. Directors who drove to a group interview center were reimbursed for mileage and meals. A total of 60 directors attended the three

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1 When field interviews were conducted, it was found that: 6 directors had resigned; 1 director was on an extended vacation; 1 local unit had been discontinued; 1 director could not be located after repeated phone calls and inquiries; and 1 director had moved from that county.
group interviews in Massachusetts. Twenty-four directors who did not come to a group interview center were personally interviewed in their home community. A total of 84 directors were interviewed in the spring of 1965 from the original list of 90.¹

Summary of completed interviews

Approximately 90 per cent (240) of the 270 directors selected for study in the three states were interviewed. Approximately 92 per cent (69 of 75) of the county directors selected were interviewed, and approximately 88 per cent (171 of 195) of the municipal directors selected were interviewed.

The data in Table 1 summarize the interviews completed in Minnesota, Georgia, and Massachusetts.

Table 1. Summary of samples in Minnesota, Georgia, and Massachusetts

<table>
<thead>
<tr>
<th>Sample and interview summary</th>
<th>Minnesota</th>
<th>Georgia</th>
<th>Massachusetts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample size:</td>
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<td></td>
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<tr>
<td>1. County directors</td>
<td>9</td>
<td>66</td>
<td>-</td>
</tr>
<tr>
<td>2. Municipal directors</td>
<td>81</td>
<td>24</td>
<td>90</td>
</tr>
<tr>
<td>Total sample size</td>
<td>90</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>Completed interviews:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. County directors</td>
<td>9</td>
<td>60</td>
<td>-</td>
</tr>
<tr>
<td>2. Municipal directors</td>
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<td>20</td>
<td>84</td>
</tr>
<tr>
<td>Total completed interviews</td>
<td>76</td>
<td>80</td>
<td>84</td>
</tr>
</tbody>
</table>

¹When field interviews were conducted it was found that: 3 directors refused to be interviewed; 1 director was ill; and 2 directors had recently resigned.
Review of the Model and Operationalization of the Basic Concepts

Review of the model

The local change agent as a member of a particular vertical social system responds to the expectations placed upon him by other members of that social system. As a change agent, he attempts to carry out the objective of a change program in his local community. As he does so, he is performing his role as defined by the sponsoring, vertical social system.

The previous chapter of this dissertation presented a conceptual model and a tentative explanation of the conditions which the change agent must meet in order to achieve a high level of role performance. These conditions were suggested to be a series of stages normally encountered by the change agent. If the change agent does not meet one of these conditions, he is blocked from meeting the succeeding conditions, i.e., blocked from scoring high on any succeeding stage, including the final level of role performance.

In brief review, the rationale of the model asserts that the local change agent must first be initiated to the directives that define his role. A lack of clear definition of the role, it is hypothesized, would necessarily adversely affect the level of role performance of the actor. Second, the local change agent must, if he is to achieve a high level of role performance, not only be aware of the expectations or directives that define his role, but he must be willing and able to accept the directives that define his role and develop a commitment to these expectations.

In addition to the acceptance and development of a commitment to the
role, there must be, as a necessary condition of role performance, a
development of the personal and systems ability or capability to perform
the role. It has been hypothesized that a high level of ability is
essential to a high level of role performance.

A high level of ability may also be associated with a high level of
involvement. If an actor is committed to a set of tasks that he has ac­
cepted, and he has the ability to perform these tasks, it follows that he
will likely become involved in attempts to accomplish these tasks. In­
volvement is concerned with the expenditure of personal and systems
resources toward the accomplishment of the tasks assigned by the vertical
system.

The final condition of the model and the key dependent variable in
this study is role performance. Role performance or level of role perform­
ance is concerned with the amount of the prescribed role that is actually
carried out or performed by the actor. An actor might be deeply involved
in tasks associated with his role and still not achieve a high level of
what is expected. The basic hypothesis of this dissertation is that if,
and only if, the actor has been high on each of the preceding stages of
the model, he will be high on his level of role performance. An actor's
being low at any one stage of the sequence necessarily suggests that he
will be low on any of the succeeding steps including level of role per­
formance.

The conceptualization of these basic stages of the model provides the
key elements of analytical concern in this dissertation. The following is
a definitional summary of the basic concepts.
Variable $X_1$: **Initiation**

The concept of initiation is in this study operationally defined by the degree to which the actor has internalized the directives or expectations that define his role in the vertical social system.

Variable $X_2$: **Acceptance-Commitment**

The concept of acceptance-commitment is in this study operationally defined by the degree to which the actor has accepted and developed a cathetic-evaluative orientation toward the directives or expectations defining his own role in the vertical system.

Variable $X_3$: **Ability**

The concept of ability is in this study operationally defined by the degree to which the actor has developed the personal and systems capacity to carry out the expectations that define his role.

Variable $X_4$: **Involvement**

The concept of involvement is in this study operationally defined by the degree to which the actor has become mentally and physically active in the role prescribed for him by the vertical system.

Variable $X_5$: **Level of role performance**

The concept level of role performance is in this study operationally defined by the degree to which the behavior of an actor in a given position conforms to the role expectations (directives) prescribed for him in the vertical system which incorporates that position.

**Operationalization of the basic concepts**

The general hypotheses generated in the previous chapter, and thus the basic problem of this dissertation, rest directly upon the basic concepts outlined above. Any statement or test of relationship among these concepts depends upon the clarity of definition and preciseness of measurement of each of these concepts. Once definition and theoretical support has been achieved, the first basic step in proceeding toward a test of the relational propositions is to move these basic concepts from the theoretical level in which they were generated to an empirical level where ana-
lytical investigation can be carried out. To accomplish this basic step
the theoretical concept is first explicated\(^1\) to the form presented above
which more readily lends itself to operationalization,\(^2\) i.e., translated
into observable, numerative phenomena.

Each concept, then, has two levels, an empirical level and a theoret-
ical level. For effective, rigorous research, the measures used to
operationalize a concept at the empirical level and the theoretical level
of the same concept should be as closely linked or related as possible.
The correlation or relationship between the two levels of a single concept

\(^1\)Explication has been defined by Pap (100, p. 181), Kaplan (64), and
Phillips (107, p. 160), as the process of moving from a somewhat inexact
and loosely employed concept, the explicandum, to a precise and specifi-
cally employed concept, the explicatum.

\(^2\)Operationalization has been defined by DiRenzo (35, p. 270) and
Kaplan (64) as the process of defining concepts in terms of their sets
of operations or measures. That is, the concept is defined in terms of
methodology and not ontology. This process does not mean to imply, how-
ever, that the researcher can measure that which has not yet been defined
or described.

This term, and in fact the entire methodological approach of this
dissertation, is largely a product of a philosophical trend of the 1930's
called logical positivism. The dominant feature of logical positivism
is the logical analysis of language. Its primary objective is to clarify
a foundation for the empirical sciences through language analysis.
Development emanated from the Cambridge School and the Vienna Circle
which included such scholars as Russell, Carnap, Bergmann, White, and
Wittgenstein.

Sociologists and psychologists anxious to rid themselves of tradi-
tional metaphysics and develop some order within the field of study
sought the aid of the logical positivist. The resulting major influences
in contemporary sociology are 1) an effort in the field to clarify the
language and make it more precise, 2) a strengthening of the methodology
by more operational and quantifiable methods, 3) a trend toward more
logical and systematic models, 4) a realization of the importance of
logic and mathematics for an empirical science. A more extensive and
systematic review of these influences may be found in Chapter 1 of Berg-
mann (10a) and the introduction to Feigl (44).
has been called an epistemic correlation by Northrup (97, p. 117). The importance of a strong epistemic correlation suggests that each measure used as the basis of analysis, and thus as the basis of implication of the relationship among concepts, be presented in some detail. The remainder of this section is devoted to a detailed rationale and description of each of the measures developed to operationalize the basic concepts of the role performance model. It is intended that this rationale and description provide support for the logical, epistemic link between the theoretical or general level concept and its observable component.

The rationale for some of the basic concepts includes a subconceptualization. That is, the concept is developed as multi-dimensional and thus the logical and empirical combinations of parts. In these instances the logical relationship linking the subconcepts is presented along with the indication of strength of interrelationship of parts as suggested by their inter-item correlation. The development of the logical relationship of the subconcepts includes a statement of the assessed relative importance of the subconcepts and the resulting weighting system employed in combining the subconcepts to form the basic concept.

Briefly, the weighting system employed arbitrarily sets a maximum of 1000 total points for each of the subconcepts that make up the basic concepts. Within subconcepts points are allotted among parts of the subconcepts on equal proportion basis except for the role performance concept where further evaluation dictated otherwise. If, for example, there are two parts of a given subconcept measure, each part is allotted 500 points. Within any part of a measure, each item in the measure is weighted an equal proportion of the part points available. If there were 10 items in a
500-point part of a subconcept, for example, each item would have a maximum of 50 points available. A resume of point allocation for the various subconcepts and parts is as follows.

Resume of the Scoring System

Concept

\(X_1\): Initiation—3000 total possible points (1000 for each subconcept)

Subconcepts—set at 1000 total possible points each

1. Formal socialization—2 parts (500 points each part)
   - Part 1. Orientation 500 points
   - Part 2. Formal training 500 points
   - Total 1000 points

2. Knowledge of the vertical system—3 parts (333 points each part)
   - Part 1. Knowledge of system norms 333 points
   - Part 2. Knowledge of system power 333 points
   - Part 3. Knowledge of system sanction 333 points
   - Total 1000 points

3. Knowledge of the role—1000 points

\(X_2\): Acceptance–Commitment—4000 total possible points (1000 for each subconcept)

Subconcepts—set at 1000 total possible points each

\(^1\)Rounded to 1000 points.
1. Perception of the role of civil defense in the world today 1000 points
2. Perception of importance of actor's own role 1000 points
3. Perception of satisfaction from performing the role 1000 points
4. Perception of satisfaction with boundary maintenance role 1000 points

Total 4000 points

$X_3$: Ability—4000 total possible points (1000 for each subconcept)

Subconcepts—set at 1000 total possible points each

1. Amount of formal education 1000 points
2. Time and salary 1000 points
3. Civil defense budget 1000 points
4. Number of civil defense personnel 1000 points

Total 4000 points

$X_4$: Involvement—3000 total possible points

Subconcepts—set at 1000 total possible points each

1. Hours per week on civil defense job 1000 points
2. Involvement in systemic linkage—2 parts (500 points each part)
   Part 1. Contact with bureaucratic organizations 500 points
   Part 2. Contact with voluntary associations 500 points

Total 1000 points

3. Systems building 1000 points

Total 3000 points
X_{5}: Level of role performance—700 total possible points

Subconcepts—set at 100 total possible points each\(^1\)

1. Licensing, marking and stocking—3 parts (100 total points)
   Part 1. Licensing 20 points
   Part 2. Marking 30 points
   Part 3. Stocking 50 points
   Total 100 points

2. Director and control—2 parts (100 total points)
   Part 1. Establishing an EOC 70 points
   Part 2. Radio communications 30 points
   Total 100 points

3. Basic operational survival plan 100 points
4. Training and public education 100 points
5. Public information activities 100 points
6. Emergency services I—2 parts (100 total possible points)
   Part 1. Warning services 40 points
   Part 2. Radiological defense service 60 points
   Total 100 points

7. Emergency services II 100 points

Total 700 points

Each concept and subconcept is operationalized by a number of measures.

For each measure basic information is tabled indicating primarily the

\(^1\) Before weighting of relative importance by paired comparison factors. See text, page 202 for a description of the paired comparison weighting of the relative importance of task areas.
the range and distribution of responses. Where measures are combined for a total variable or concept score, the range and distribution of these total scores is also presented.

Variable $X_1$: Initiation  The concept Initiation has been defined as the degree to which the actor has internalized the directives or expectations that define his role in the vertical social system. If the actor in a given social system is to perform his role at a high level, the expectations or directives that define this role must be made known to that actor. Yet, the nature of the role of the change agent is such that the expectations defining this role are diverse, often complicated, and unclearly defined. This situation is true of the local civil defense director. There is no single place or document where his precise role expectations are defined. Their determination and relative importance had to be determined by the researchers. This determination was made through an extensive investigation of pertinent documents and interviews with civil defense officials. From this effort, specific task areas were delineated along with a ranking of their relative importance. This evaluation is basic to the researcher's position as to what actually are the expectations or directives for the local director. The Initiation concept is primarily concerned with the degree to which the local director has assimilated these expectations.

The measures of the Initiation concept deal primarily with the social systems concept of knowledge. In the operationalization of this concept there is a treatment of three aspects or subconcepts of the degree to which the actor has internalized the expectations defining his role. The first subconcept is concerned with the local director's degree of formal
socialization or job orientation into the role that he is expected to perform. The second subconcept is concerned with the local director's knowledge of his vertical social system. And the third subconcept is concerned with the local director's knowledge of his specific role in that vertical social system.

Each of these three subconcepts and their respective measures are described separately below. Following this, the weighting procedure for the combination of these concepts and empirical support for these procedures are presented along with an array of the total variable scores.

1. **Formal socialization**

   The subconcept Socialization is concerned with the degree to which the local director has been initiated to his role through his general job orientation and his formal civil defense training. That is, concern is with the process whereby actors learn to function in their social system. This subconcept is measured at the empirical level in two parts. It is measured first by the degree to which the local director perceived he had been adequately oriented to his job role and second by the actual amount of formal civil defense training the local director had received. This subconcept of Initiation is more concerned with the amount or degree to which the incumbent has been exposed to the process of socialization and less concerned with the level of effectiveness of this socialization process. The remaining two subconcepts of Initiation deal more specifically with the effectiveness of the socialization process. The rationale or assumption at this point is that no

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1 For a general theoretical definition of the social systems concept Socialization, see page 20 of this text.
matter how capable of retention the actor happens to be, he must first be exposed to or oriented to the expectations that define his role or he will not be able to attain a knowledge of that role or ultimately a high level of performance in that role. This subconcept is for this reason considered an important dimension of the Initiation concept.

To facilitate measurement, each local director was asked a series of questions to determine the degree of formal socialization he had received with respect to his job role. These questions were divided so as to deal with two equally weighted aspects or parts of the Socialization subconcept. The first part presents questions dealing with the local director's perception of the amount of socialization or job orientation he had received. The second part presents the question used to measure the amount of formal socialization, i.e., days of training the local directors had received.

Part 1 Job Orientation. This first part of the subconcept is measured by four questions. These four questions, the response categories, the relative weighting, and the possible points a respondent could receive for his response are shown below.

(1) "How would you describe the amount and adequacy of the 'job orientation' that you received from local governing bodies (mayors, boards of supervisors, etc.) prior to or right after accepting this position?"

(2) "How about your job orientation from other local civil defense directors in your area of the state?"

(3) "How about your job orientation from state civil defense officers or representatives?"
Questions 1, 2, and 3

Response | Points per response
---|---
I received little or no orientation | 41.6
I received some (an incomplete orientation) | 83.3
I received a great deal of orientation | 125.0

(4) "With regard to your knowledge and understanding of your own responsibilities and commitments, as local civil defense director which statement best describes your present feelings?"

Question 4

Response | Points per response
---|---
I understand no more than when I took the job | 0
I understand very little | 41.6
I somewhat understand | 83.3
I thoroughly understand | 125.0

A local director's score on this part of the Socialization subconcept could be obtained by adding together the points received for responses to each of the four questions. The possible range of scores on this part was from 125 to 500. Points obtained in Part 1 were added directly to points obtained in Part 2.

Part 2 Formal training. This part of the Socialization subconcept is concerned with the amount of formal civil defense training for each local director. To determine the amount of training each local director was asked what type of civil defense training he had had and the length of the training period. Training included classes sponsored by the Office of Civil Defense on subjects such as radiological monitoring, shelter management-

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1 Much of the statistical reasoning behind the method used to assign point or score values for this and many other measures presented in this study is explained in "Problems in the analysis of numbers assigned to stimuli by judges" by Wolins (149).
ment, medical self-help, fire, police, rescue, civil defense adult education, and communications. For each training area mentioned the respondent was asked to record the total duration of the training session.

From this information the total number of days of formal training was calculated for each director. Since a maximum of 500 points were available in this part of the subconcept, the scores are derived by multiplying the number of days of training by a weighting factor of 6.250. The possible range of scores was from 0 to 500 points.

Combining Parts 1 and 2 is accomplished for each respondent simply by adding the points received on Part 1 to the points received on Part 2. Some statistical justification for this combination is demonstrable in that there is a significant zero order correlation between the two parts of $r = .887$.

Each part was allotted a total number of 500 possible points to make a total number of 1000 possible points for the Socialization subconcept. An array of the subconcept scores and the number of directors receiving each score are found in Appendix A, page 259.

2. Knowledge of the vertical system

The subconcept Knowledge of the Vertical System is concerned with the degree to which the local director has attained a knowledge of his sponsoring vertical social system, the civil defense bureaucracy. The local director who is expected to function well in a given social system should have a good working knowledge of that system. This subconcept deals with the actor's knowledge of his social system. The measure of this subconcept is divided into three equally weighted parts. These parts are 1) knowledge of the norms of his system, 2) knowledge of the social power relationships of his system, and
3) knowledge of pertinent sanctions of the system.

Each local director was asked a series of questions to measure his level of knowledge in each of these areas or parts of the subconcept. The measures for each part are presented separately below.

**Part 1** Knowledge of the system's norms. This part is a measure designed to determine the local director's knowledge of what probably represent the most important norms in the system for the local director, requirements for federal financial assistance. Each director was shown a test of six possible requirements necessary for a local civil defense area to become eligible for federal financial assistance programs. Of these six possible requirements, three were actual requirements and three were not requirements. From the interview schedule directors were asked, "Of the following items please indicate which are requirements that must be met before your local civil defense area is eligible to participate in the Office of Civil Defense financial programs for Personnel and Administration." For each of the items listed below, the local director answered either "yes" he thought the item was a requirement or "no" he did not think the item was a requirement. He was also instructed to indicate how certain he was of these responses. Increased certainty added to his score. The list of possible requirements is as follows:

Possible Requirements¹

1. At least one paid civil defense director
2. Evidence of legal organization
3. An acceptable program paper
4. Been designated as a target area
5. A state-approved basic civil defense operational plan
6. A state-approved shelter utilization plan

¹Three items were dropped from an original nine-item scale on the basis of item-total correlation scale analysis.
Items 2, 3, and 5 were specific requirements, while items 1, 4, and 6 were not. Scoring of items takes into consideration that this is one part of a three-part concept. The highest possible score for each subconcept was arbitrarily set at 1000. The possible responses for each director and the score for each response are as follows:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Points for Correct items 2, 3, and 5</th>
<th>Points for Incorrect items 1, 4, and 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>No, Certainty 5</td>
<td>00</td>
<td>55.5</td>
</tr>
<tr>
<td>No, Certainty 4</td>
<td>10.4</td>
<td>45.0</td>
</tr>
<tr>
<td>No, Certainty 3</td>
<td>17.3</td>
<td>38.1</td>
</tr>
<tr>
<td>No, Certainty 2</td>
<td>20.9</td>
<td>34.7</td>
</tr>
<tr>
<td>No, Certainty 1</td>
<td>24.3</td>
<td>31.0</td>
</tr>
<tr>
<td>Uncertain or don't know</td>
<td>27.8</td>
<td>27.8</td>
</tr>
<tr>
<td>Yes, Certainty 1</td>
<td>31.0</td>
<td>24.3</td>
</tr>
<tr>
<td>Yes, Certainty 2</td>
<td>34.7</td>
<td>20.9</td>
</tr>
<tr>
<td>Yes, Certainty 3</td>
<td>38.1</td>
<td>17.3</td>
</tr>
<tr>
<td>Yes, Certainty 4</td>
<td>45.0</td>
<td>10.4</td>
</tr>
<tr>
<td>Yes, Certainty 5</td>
<td>55.5</td>
<td>00</td>
</tr>
</tbody>
</table>

The total score for this part was obtained by adding the individual director's points for each of the six items. A director who was quite certain that items 2, 3, and 5 were requirements and was also quite certain that items 1, 4, and 6 were not requirements received the most points. There was a possibility of 333 total points for this part of the subconcept. Points obtained by each respondent were added directly to his points obtained in parts 2 and 3.

**Part 2** Knowledge of the System's Social Power. This part of the subconcept Knowledge of the System is concerned with the local director's understanding or knowledge of the power patterns in the civil defense social system in general. The basic rationale is that unless the local director understands the authority structure in his vertical system, he
will be limited in his capability of carrying out the expectations associated with his role.

As in most large bureaucratic organizations, the authority patterns in the civil defense organization are very complex. Since some civil defense responsibility has been delegated to almost every federal department, there are many lines of civil defense authority to the state and local levels. The Department of Agriculture, Department of Health, Education and Welfare, Department of Labor and other departments have specific civil defense responsibilities and authority. The numerous lines of communication and areas of responsibility may or may not be coordinated at the state and local levels. The multiplicity of agencies and organizations having a civil defense role could be confusing for the local director and therefore affect his role performance. The measure presented below focuses on local directors' knowledge of this complex authority pattern.

This part of the subconcept is measured by the degree to which local directors had knowledge about some of the civil defense authority patterns: 1) within the civil defense organization and 2) between the civil defense organization and other departments and agencies of the government agencies. The empirical measure of the authority variable is composed of seven questions. Each local director may receive 47 points on each of these questions. The points on each of these questions are summed to arrive at the score for this part of the subconcept. This total number of possible points on the subconcept is 333. The development of the measure is described below.

The first question on the measure deals with local directors' knowl-
edge of the local governing bodies who have authority to appropriate funds for civil defense in their states. Knowledge of the source of local funds for civil defense may influence the ability of the local director to secure funds for civil defense measures. Each local director was asked, "Who at the local level has the authority to appropriate funds for civil defense measures in your own state?" Directors were to select the correct answer from the following closed-end responses:

- County Board of Supervisors (commissioners)
- City or Town Council (correct for Massachusetts)¹
- School Boards
- One and two above (correct for Georgia)²
- One, two, and three above (correct for Minnesota)³
- Don't know

The correct response for each state is indicated after the appropriate response category. Directors who indicated the correct response for their respective states were given 47 points. No points were given for other responses.

The question of the authority measure is concerned with local directors' knowledge of the person to whom the Director of the Office of Civil Defense is directly responsible. In other words, do the directors know this line of authority in the civil defense organization? Each local director was asked, "To whom is the Director of the National Office of

¹Authority for Massachusetts: a telephone conference with the State Deputy Director, August 11, 1965, and Massachusetts Civil Defense Act and Related Statutes.

²Authority for Georgia: Public Law 85-606 and Georgia Civil Defense Administrative Plan, October, 1962.

³Authority for Minnesota: Minnesota Statutes, Chapter 12, Section 12.2b.
Civil Defense directly responsible?\textsuperscript{1} The correct answer was to be selected from the following responses:

- President of the United States
- Secretary of Department of Health, Education, and Welfare
- Secretary of the Army (correct)
- Commanding Officer of the United States National Guard
- Joint Chiefs of Staff
- Don't know

The correct answer at the time interviews were taken was the Secretary of the Army. Forty-seven points were given for indicating the correct answer. No points were given for other responses.

The third question of the authority measure is concerned with the state civil defense authority pattern in reference to the person or group who selects the state civil defense director. Each director was asked the question, "Who selects the civil defense director for your state?\textsuperscript{2}"

The answer categories to this question were as follows:

- Don't know
- Governor (correct in all three states)
- Governor, subject to approval by the Legislature
- Governor or Adjutant General
- Civil Service
- Politicians
- National Civil Defense Director
- Appointed by Legislature
- Selectmen


\textsuperscript{2} Authority for questions used in Part 3, and also Parts 4, 5, 6, and 7: Minnesota—Minnesota Constitution, Article V, Section 6; Georgia—Georgia Law 1955, Codified as Sect. 86-1823 of the Code of Georgia, annotated; Massachusetts—Telephone conference with Deputy Director on August 11, 1965, and Massachusetts Civil Defense Act and Related Statutes.
The correct answer in all three states was the governor. Forty-seven points were given for indicating the correct answer. No points were given for other responses.

The fourth question of the authority measure is also concerned with authority in the state civil defense organization. Local directors were asked the question, "Who has the authority at the state level to declare a civil defense emergency?" The answer categories to this question were as follows:

- Don't know
- Governor (correct in all three states)
- Governor and/or State Director (or Adjutant General in Georgia)
- Governor, State Civil Defense Director, and Legislature
- Governor, Lt. Governor, or State Civil Defense Director
- State Civil Defense Director (or Adjutant General in Georgia)
- Public Safety Director

The correct answer in all three states was governor. Forty-seven points were given for indicating the correct answer. No points were given for other responses.

The fifth question of the authority measure is concerned with the direct line of authority within each of the state's civil defense organizations. Directors were asked the question, "If the state civil defense director were killed in an emergency situation, who would assume his responsibility and authority?" The answer categories to this question were as follows:

- Don't know
- Deputy, Assistant, or Associate Director (correct in all three states)
- Secretary of State
- Appointee of the Governor
- Acting Director
- Area Assistant or Directors of UNICOM 1 or 2
- Governor
- Deputy of Governor
The correct answer in all three states is the deputy director. Forty-seven points were given for indicating the correct answer. No points were given for other responses.

The sixth question of the authority measure is concerned with the line of civil defense authority at the gubernatorial level. Each local director was asked, "In an emergency who takes over state leadership if the governor is killed?" The correct response was to be selected from the following responses:

- Don't know
- The National Guard
- Lieutenant Governor (correct in all three states)
- Speaker of the House
- State Civil Defense Director

The correct response is lieutenant governor. Forty-seven points were given for indicating the correct answer. No points were given for other responses.

The last question of the authority measure is concerned with the directors' knowledge of the planned location of the emergency state capitol if the state capitol were bombed. Each director was asked the question, "If your state capitol were bombed, where would the emergency state capitol be set up?" The directors' answers to this question were as follows:

<table>
<thead>
<tr>
<th>For MINNESOTA</th>
<th>For GEORGIA</th>
<th>For MASSACHUSETTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don't know</td>
<td>Don't know</td>
<td>Don't know</td>
</tr>
<tr>
<td>Mankato (correct)</td>
<td>Athens (correct)</td>
<td>Framingham (correct)</td>
</tr>
<tr>
<td>Saint Peter</td>
<td>Conyers</td>
<td>Natick</td>
</tr>
<tr>
<td>Glen Lake</td>
<td>Macon</td>
<td>Archives of Statehouse</td>
</tr>
<tr>
<td>Rochester</td>
<td>Griffen</td>
<td>Springfield</td>
</tr>
<tr>
<td>Saint Paul</td>
<td>Americus</td>
<td>Boston</td>
</tr>
<tr>
<td></td>
<td>State Patrol Barracks</td>
<td>Worcester</td>
</tr>
<tr>
<td></td>
<td>Atlanta</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kennesau Mountain</td>
<td>Topsfield</td>
</tr>
</tbody>
</table>
The correct answer for each state is indicated above. Directors received 47 points for giving the correct answer. No points were given for other responses.

To determine a local director's score for part 2, Knowledge of the System's Social Power, the points the director received on each one of the 7 questions outlined above were added together. The maximum possible score was 333 and the minimum possible score 0.

**Part 3 Knowledge of the System's Sanctions.** This part of the sub-concept Knowledge of the System is concerned with the local director's understanding or knowledge of sanctions of the civil defense social system. These sanctions include the rewards, penalties, or restrictions that may be applied to the local director and his programs. The rationale is primarily that such sanctions in an organization need to be well defined and understood if the members of that organization are to maximize their effectiveness in the performance of their role.

One of the key rewards offered local civil defense organizations by the national organization is financial assistance. If certain standards of operation are met by the local unit, this reward system must be understood. Basic to this reward system is the establishment by the local unit of a state-approved Basic Operational Survival Plan. This part of the subconcept is concerned with knowledge of the advantages of the establishment of this basic plan.

The measure of this part is developed from the local directors' perceptions of the possible rewards related to the establishment of a Basic Operational Survival Plan for their areas. Local directors who have a more precise perception of advantages in establishing a state-approved
plan may be motivated to higher levels of role performance. The score for this part of the subconcept is composed of two measures described below.

In the first measure of the Knowledge of Sanctions subconcept, all local directors were asked, "Would any item or items below be of benefit to you in having a state-approved civil defense plan?"

1. Increased authority
2. Increased funds
3. Additional equipment
4. Better organization and cooperation with civil defense efforts
5. Reassuring for people
6. Increased acceptance or interest by people
7. Increased protection for people

Directors who said "yes" to the question were asked to indicate if each item would or would not be an advantage. In addition, each director ranked the first and second most important items.

In scoring this measure, the possible receipt of increased funds (item 2) or additional equipment (item 3) were considered the most important sanctions. A local director who indicated either "increased funds" or "additional equipment" (both being essential federal financial assistance items) and ranked either of these items as "first" most important received 83 points of the 333 possible points available on this part of the subconcept. If the director mentioned these items, and ranked either of them as "second" most important, he received 69 points. If the director mentioned either of the two items, but did not rank either as first or second, he received 55 points. In addition, if he indicated that the other 5 items were also advantages, he received 14 points for each of these, or an additional 69 points. Thus, a total of 153 points was possible for this part of the Knowledge of Sanctions subconcept. The scoring distribu-
tion is outlined below.

Question 1
Points:

Federal financial assistance item mentioned and ranked first most important 83

Federal financial assistance item mentioned and ranked second most important 69

Federal financial assistance mentioned and ranked but not ranked first or second most important 55

Plus 13.8 points for each of five other sanctions that could have been mentioned--possibly up to 69 additional points

Local directors who said their civil defense area had made substantial progress toward the establishment of a state-approved Basic Operational Survival Plan were asked which of the items listed below were reasons for setting up the plan. They were also asked to rank the first and second most important reasons.

1. Required for federal financial assistance
2. Influence of Cuban crisis
3. Attain better organization
4. Conform to or facilitate the operation of a basic plan
5. Attain more knowledge of operation
6. Secure or facilitate the safety of the people
7. Secure government surplus properties
8. Pressure from county and state government

The directors' responses on the second question were scored in the following manner.
Federal assistance mentioned and ranked first most important 83

Federal assistance mentioned and ranked second most important 69

Federal assistance mentioned but not ranked first or second most important 55

Plus 13.8 points for each of seven other sanctions that could have been mentioned—possibly up to 97 additional points

Thus, if a local director said that "required for federal financial assistance" was a reason for setting up the plan and ranked this as the first most important reason, he received 83 points. In addition, if he said each of the other 7 items were also reasons, he received 97 additional points (13.8 points for each of the other items). Thus, a total of 180 points was possible on question 2 of this measure.

A local director's total score for Knowledge of Sanctions is computed by summing the points received on questions 1 and 2. There is a total of 333 possible points for this part of the subconcept.

Combination of parts 1, 2, and 3 is accomplished for each respondent by simply adding the points received for each of the three parts together.

Each of the three parts was allotted a total number of 333 total possible points to make a total number of 1000 possible points for the Knowledge of the Social System subconcept. An array of the subconcept scores and the number of directors receiving each score are found in Appendix A, page 260.

3. Knowledge of the role

The subconcept Knowledge of the
Role is concerned with the degree to which the local director has attained a knowledge of his own specific role in the vertical system. It is not enough that the incumbent of a given position know about the vertical system of which he is a member. He must also know the extent to which his own role fits into the larger network of roles. He must know where his specific responsibilities begin and end. It is assumed that if the change agents are to perform well in their role, they must know the specific expectations of that role.

Earlier in this chapter a general description of the empirical system was presented. In this presentation the role of the local director as a change agent was discussed.

Seven major task areas were delineated as expectations. As was pointed out in the review of these seven task areas, there are many levels at which local director role expectations can be delineated and categorized. When measuring the local director’s own perception of his role, a more detailed listing of possible role responsibilities was used. In addition, to the seven general task areas delineated in the role performance section, more specific expectations were delineated. Even this more extended list, however, is not a complete, exhaustive enumeration of all the duties and responsibilities of the local director role. Such a listing would be impossible. A number of factors contribute to this impossibility. For example, local governing bodies as well as the Office of Civil Defense define the duties and responsibilities of local directors. The expecta-

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1See the section "General Description of the Empirical System," page 64.
tions of these local governing bodies may differ from one community to the next. Also, the tasks expected of the local director in an urban civil defense area may not be entirely the same as those of the director in a rural area. The list of tentative expectations used in this measure should, therefore, be considered as one of the possible listings of local director tasks and responsibilities and not a complete enumeration of local civil defense director tasks.

Another problem in delineating the role of the local civil defense director is the decision as to whether or not a civil defense task has actually been delegated to the local director. For example, the whole of a local civil defense program may be perceived as the responsibility of local elected officials. They in turn may or may not have delegated all of these responsibilities to the local director. In this study it is assumed that it is the local director's role to carry out the civil defense tasks delineated for the local civil defense area. Despite the assumption, in some areas this may not be an actuality.

To measure the local director's own perception of his role, a list of possible duties and responsibilities was compiled from Office of Civil Defense literature as well as state plans and directives and interviews with civil defense officials. The original list consisted of 37 items. After a scale analysis of these items was completed, it was determined that 16 of these items correlated best with the total score, yet were relatively independent of one another. These 16 items were used in the present study.

The sixteen items are as follows:
1. To establish emergency lines of succession in the local civil defense area.

2. To establish an emergency operating center for local government.

3. To develop a program paper.

4. To develop a plan for use of all personnel, facilities and equipment in case of emergency.

5. To carry out existing licensing, marking and stocking shelter program.

6. To develop plans to receive and care for evacuees from outside your civil defense area.

7. To develop plans to support and assist other civil defense areas.

8. To develop plans for dispersion of local government facilities in an emergency.

9. To assign pre-attack and post-attack civil defense missions and responsibilities to existing local government officials and units.

10. To develop and conduct the civil defense training program.

11. To give information about civil defense to mass media.

12. To work with local volunteer organizations on civil defense.

13. To order federal surplus equipment for your civil defense area.

14. To develop a city or county plan for civil defense.

15. To designate key government officials who are to be notified whenever an emergency exists.

16. To designate a cadre or group who would set up the relocation headquarters if time allowed.

All 16 items are responsibilities of local civil defense areas. For each of the 16 task items each director was asked to indicate the degree to which he perceived the task item to be his responsibility by responding in one of the following 11 categories. The points received by a director for his answer to each of the items are noted to the right of the possible response categories.
<table>
<thead>
<tr>
<th>Responses</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>No, Certainty 5</td>
<td>00.0</td>
</tr>
<tr>
<td>No, Certainty 4</td>
<td>11.7</td>
</tr>
<tr>
<td>No, Certainty 3</td>
<td>19.5</td>
</tr>
<tr>
<td>No, Certainty 2</td>
<td>23.4</td>
</tr>
<tr>
<td>No, Certainty 1</td>
<td>27.3</td>
</tr>
<tr>
<td>Uncertain or don't know</td>
<td>31.3</td>
</tr>
<tr>
<td>Yes, Certainty 1</td>
<td>35.2</td>
</tr>
<tr>
<td>Yes, Certainty 2</td>
<td>39.1</td>
</tr>
<tr>
<td>Yes, Certainty 3</td>
<td>43.0</td>
</tr>
<tr>
<td>Yes, Certainty 4</td>
<td>50.8</td>
</tr>
<tr>
<td>Yes, Certainty 5</td>
<td>62.5</td>
</tr>
</tbody>
</table>

The total score for the Knowledge of the Role subconcept was obtained by adding an individual director's points for each of the 16 items. Each director could obtain a possible total of 1000 points (16 items times 62.5 = 1000).

The array of scores for the Knowledge of the Role subconcept and the number of directors receiving each score are found in Appendix A, page 260.

**Total score for Variable X₁** Three subconcepts of the variable X₁, Initiation have been presented. These three subconcepts were considered to be equal dimensions of the basic concept Initiation. The accomplishment of a total variable score was therefore simply achieved by adding the subconcept scores for each respondent. Some empirical justification of this combination can be seen in the inter-item total correlations in Table 2.

With the combination of subconcepts the total number of possible points for each local director is 3000. An array of the scores for the concept Initiation and the number of directors receiving each score are found in Appendix A, page 261.
Table 2. Inter-item-total correlation of Initiation subconcept

<table>
<thead>
<tr>
<th>Subconcept</th>
<th>2. Knowledge of the system</th>
<th>3. Knowledge of the role</th>
<th>Total score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Formal socialization</td>
<td>.420</td>
<td>.377</td>
<td>.782</td>
</tr>
<tr>
<td>2. Knowledge of the system</td>
<td>-</td>
<td>.419</td>
<td>.807</td>
</tr>
<tr>
<td>3. Knowledge of the role</td>
<td>-</td>
<td>-</td>
<td>.739</td>
</tr>
</tbody>
</table>

Variable X₂: Acceptance

The concept Acceptance has been defined as the degree to which an actor accepts those directives or expectations which define the local director role as appropriate for his own personal behavior. If a local change agent is to perform his role at a high level, he must not only know what the directives are for that specific role (the concept Initiation), but he must accept these directives as appropriate for his own behavior.

A general theoretical presentation suggesting minimum conditions for accepting a role in a vertical social system was presented in the previous chapter. These minimum conditions for acceptance were as follows: 1) the actor must assimilate the directives that outline his role. (This condition is a key concern of the initiation stage of the model.) 2) the role expectations must be consistent with the actor's perceptions of the organization's purpose, 3) the role expectations and activities must be consistent with the actor's own personal satisfactions and interests, and 4) the actor must have the mental and physical ability to comply with the directives. These conditions for acceptance form the basic guide to the
operationalization of this concept. Concern here is primarily with the social systems concept of sentiments; the local director's feelings as to what the role of the civil defense organization ought to be, his feelings about the importance of his own role in the organization, and his personal satisfaction and resulting commitment derived from participation in this role.

Operationalization of the concept Acceptance was accomplished by first subdividing the concept into four subconcepts. These four subconcepts are considered equally important dimensions of the Acceptance concept. The first subconcept is concerned with the local director's perception of the role of Civil Defense in the World Today. The second subconcept is concerned with the actor's perception of the importance of his role in the social system. The third subconcept is concerned with the actor's perception of satisfaction gained from performing his civil defense role. And the fourth subconcept is concerned with the actor's degree of acceptance as reflected by his willingness to participate in the unprescribed boundary maintenance functions associated with his position.

Each of these four subconcepts and their respective measures is described separately below. Following this, the combination of the subconcepts and the empirical support for this combination is presented. An array of the total acceptance is presented in Appendix A, page 264.

1. Perception of Civil Defense in the World Today This subconcept is concerned with the degree to which the local director's feelings about the role of the civil defense organization in the world today are consistent with the role of civil defense as suggested by some of its
leading proponents. The assumption is that the more consistent the actor's perception of the organization's purpose with the actually outlined purpose, the more readily he will accept directives within that organization and consequently the higher his potential levels of role performance.

To measure this subconcept each local director was asked to respond to the following. "Here are a number of different statements concerning civil defense about which people have different opinions. We would like your opinion of each of the following statements." The 16 statements shown below were derived from critical dialogue about the role of civil defense in our nuclear age that had been carried on in the United States prior to the research study. Some of the statements came from officials and laymen who were proponents of civil defense and some did not. Five of the statements (those in italics) are "favorable" toward civil defense organizational development while the other 11 are "unfavorable." These 16 statements are listed below.

1. Civil defense is like insurance in that you don't know if you'll ever need it, but if you do, it sure is good to have around.

2. Civil defense measures we are taking today cannot be effective long enough to justify the cost; that is, they will soon be obsolete.

3. Civil defense in the United States has been too neglected.

4. Civil defense activities are nothing but a waste of money and human energy that could better be spent on waging the peace, such as disarmament talks.

5. If the Russians fear that our civil defense preparations will increase the likelihood of our striking them in a crisis, they will become trigger happy and attack us.

6. There can be no adequate defense against thermonuclear attack.

7. Civil defense should be abandoned because even if civil defense measures were effective in saving lives, a thermonuclear war would make living on earth impossible for the survivors.
8. Most critics of civil defense do not want to consider the possibility of a nuclear war being fought.

9. The civil defense effort is an admission that war is inevitable.

10. A civil defense program will lead to a "preventive war" by the United States, because by attacking first we can hold our casualties down.

11. A civil defense program will give our leaders a sense of false security in regard to the potential damages of a thermonuclear attack.

12. The civil defense effort is a defensive measure rather than an offensive measure.

13. The civil defense effort is not a sign of war hysteria and militarism.

14. The civil defense effort is creating a false sense of security among the people.

15. A thermonuclear war would mean the end of democracy as a political system.

16. Civil defense activities should be handled by the National Guard or by the Army Reserves.

The scoring for this subconcept was based upon the director's responses to each of the 16 statements. For each statement the director could receive from 0 to 63 points as indicated on the two continuums that follow.

The points obtained on each of the 16 items were summed to give a total score for the subconcept. The more a director agreed with favorable statements and disagreed with unfavorable ones, the more points he received. The total score could range from 0 to 1000 points. The higher the score the more consistent the feelings of the director were with leading proponents of civil defense. The array of total scores for this subconcept and the number of directors receiving each score are found in Appendix A, page 261.
Responses | Possible points for each "favorable" Civil defense statement | Possible points for each "unfavorable" Civil defense statement
---|---|---
Disagree, Certainty 5 | 00 | 63
Disagree, Certainty 4 | 12 | 51
Disagree, Certainty 3 | 20 | 43
Disagree, Certainty 2 | 23 | 39
Disagree, Certainty 1 | 27 | 35
Uncertain or don't know | 31 | 31
Agree, Certainty 1 | 35 | 27
Agree, Certainty 2 | 39 | 23
Agree, Certainty 3 | 43 | 20
Agree, Certainty 4 | 51 | 12
Agree, Certainty 5 | 63 | 00

2. Perception of Importance of Actor's Own Role

This subconcept is concerned with the actor's satisfaction with the status of his own role in the vertical social system. The basic assumption is that actors who are more satisfied with the status of their position have a higher degree of acceptance of that position and will, consequently, have a higher level of role performance.

To determine a local director's perception of the status of his role each local director was shown a list of eight specific aspects of his job role and asked to indicate for each the extent to which he was satisfied or dissatisfied with it. The questions used are listed below.

1. "How satisfied are you that you have been given enough authority by your civil defense superiors to do your job well?"

2. "How satisfied are you with your present position when you compare it to similar civil defense directorships in the state?"

3. "How satisfied are you with the progress you are making toward the goals which you set for yourself in your present position?"

4. "How satisfied are you that the people of your community give proper recognition to your work as civil defense director?"
5. "How satisfied are you with the amount of interest shown by the community in its civil defense system?"

6. "How satisfied are you that you are accepted as a professional expert to the degree to which you feel you are entitled by reason of your position, training, and experience?"

7. "How satisfied are you with your present job when you consider the expectations you had when you took the job?"

8. "How satisfied are you with the work that you do as a civil defense director?"

Points were assigned responses to each question as follows:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Possible Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dissatisfied, Certainty 5</td>
<td>00</td>
</tr>
<tr>
<td>Dissatisfied, Certainty 4</td>
<td>23</td>
</tr>
<tr>
<td>Dissatisfied, Certainty 3</td>
<td>39</td>
</tr>
<tr>
<td>Dissatisfied, Certainty 2</td>
<td>47</td>
</tr>
<tr>
<td>Dissatisfied, Certainty 1</td>
<td>55</td>
</tr>
<tr>
<td>Uncertain or don't know</td>
<td>62</td>
</tr>
<tr>
<td>Satisfied, Certainty 1</td>
<td>70</td>
</tr>
<tr>
<td>Satisfied, Certainty 2</td>
<td>78</td>
</tr>
<tr>
<td>Satisfied, Certainty 3</td>
<td>86</td>
</tr>
<tr>
<td>Satisfied, Certainty 4</td>
<td>102</td>
</tr>
<tr>
<td>Satisfied, Certainty 5</td>
<td>125</td>
</tr>
</tbody>
</table>

The points received on each of the eight listed job aspects were summed to give the total subconcept score. The maximum score possible is 1000. The array of scores for this subconcept and the number of directors receiving each score are found in Appendix A, page 262.

3. **Perception of Satisfaction from Performing the Role**

This subconcept of Acceptance is concerned with the local director's positive or negative feelings that he derives from performing his role. It is an attempt to determine whether the activities associated with his role are consistent with his own personal satisfactions and interests. Where the previous subconcept, subconcept 2, dealt with the director's perception of
the status of the role, this subconcept is concerned with the activities of the role.

This subconcept differs from the previous one also in the way in which it is measured. While the previous subconcept was an eight-item satisfaction index, the measure for this subconcept consists of eight separate items focusing on different aspects of the local director's job role. The eight items focus on: 1) the local director's perception of the opportunity his civil defense position gives him to do the things he finds most satisfying, 2) the local director's perception of the importance of civil defense giving him the opportunity to do things from which he gets the most satisfaction, 3) the local director's perception of aspects of his job that he dislikes, 4) the local director's perception of the importance of not having to do things as a civil defense director which he dislikes, 5) the local director's perception of whether he would take his current civil defense position if he had the decision to make again, 4) the local director's perception of the degree of excellence or superiority needed to carry out his job role, 7) the local director's perception of the degree to which he finds his job role personally attractive and worth while, and 8) the local director's perception of the amount of prestige that is accorded the work he does as a civil defense director in his local community.

**Item 1**  The first item of the measure is concerned with the local director's perception of the opportunity that his civil defense position gives him to do the things from which he gets the most satisfaction. To measure this perception each local director was asked, "What kind of opportunity does the civil defense directorship give you to do the things
from which you get the most satisfaction?" The director was then asked to indicate whether the position offered "little" or "good" opportunity. He was then asked to indicate his level of certainty about this choice on a five-point scale. The more certain the local director was of his perceived opportunity in his position, the more points he received. The distribution of points for the possible responses is as follows:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Item 1 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Little, Certainty 5</td>
<td>00</td>
</tr>
<tr>
<td>Little, Certainty 4</td>
<td>23</td>
</tr>
<tr>
<td>Little, Certainty 3</td>
<td>39</td>
</tr>
<tr>
<td>Little, Certainty 2</td>
<td>47</td>
</tr>
<tr>
<td>Little, Certainty 1</td>
<td>55</td>
</tr>
<tr>
<td>Uncertain or don't know</td>
<td>62</td>
</tr>
<tr>
<td>Good, Certainty 1</td>
<td>70</td>
</tr>
<tr>
<td>Good, Certainty 2</td>
<td>78</td>
</tr>
<tr>
<td>Good, Certainty 3</td>
<td>86</td>
</tr>
<tr>
<td>Good, Certainty 4</td>
<td>102</td>
</tr>
<tr>
<td>Good, Certainty 5</td>
<td>125</td>
</tr>
</tbody>
</table>

Item 2 The second item of the measure is concerned with the director's perception of the importance of having the opportunity to do things from which he gets the most satisfaction. Each director responded to the question, "The importance of civil defense giving me the opportunity to do things from which I get the most satisfaction is . . . " The distribution of points for the possible responses is as follows:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Item 2 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Of no importance</td>
<td>00</td>
</tr>
<tr>
<td>Little importance</td>
<td>31</td>
</tr>
<tr>
<td>Some importance</td>
<td>62</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>93</td>
</tr>
<tr>
<td>A great deal of importance</td>
<td>125</td>
</tr>
</tbody>
</table>
**Item 3** The third item of the measure is concerned with the local director's perception of the number of aspects of the local civil defense position which he dislikes. The measure is based on the assumption that the more aspects about the position that the local director dislikes, the less acceptance he has for his job. To measure the local director's dislikes of his job, he was asked, "What proportion of the things which you must do as a civil defense director do you dislike?"

For this measure the local director was first asked to indicate whether there were "many" or "few" things about his position that he disliked. He was then asked to indicate the level of certainty about this response on a five-point scale. The more certain the local director was that there were few things that he disliked the more points he received toward his subconcept score. The distribution of points for the possible responses is as follows:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Item 3 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Many, Certainty 5</td>
<td>00</td>
</tr>
<tr>
<td>Many, Certainty 4</td>
<td>23</td>
</tr>
<tr>
<td>Many, Certainty 3</td>
<td>39</td>
</tr>
<tr>
<td>Many, Certainty 2</td>
<td>47</td>
</tr>
<tr>
<td>Many, Certainty 1</td>
<td>55</td>
</tr>
<tr>
<td>Uncertain or don't know</td>
<td>62</td>
</tr>
<tr>
<td>Few, Certainty 1</td>
<td>70</td>
</tr>
<tr>
<td>Few, Certainty 2</td>
<td>78</td>
</tr>
<tr>
<td>Few, Certainty 3</td>
<td>86</td>
</tr>
<tr>
<td>Few, Certainty 4</td>
<td>102</td>
</tr>
<tr>
<td>Few, Certainty 5</td>
<td>125</td>
</tr>
</tbody>
</table>

**Item 4** The fourth item of the measure is concerned with the director's perception of the importance of not having to do things as a civil defense director which he dislikes. Each director responded to the question, "The importance of my not having to do things I dislike as a civil
defense director is ..." The distribution of points for the possible responses to item 4 is as follows:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Item 4 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Of no importance</td>
<td>00</td>
</tr>
<tr>
<td>Little importance</td>
<td>31</td>
</tr>
<tr>
<td>Some importance</td>
<td>62</td>
</tr>
<tr>
<td>Considerable importance</td>
<td>93</td>
</tr>
<tr>
<td>A great deal of importance</td>
<td>125</td>
</tr>
</tbody>
</table>

**Item 5** The fifth item of the measure of this subconcept is concerned with whether the local director would take his civil defense position if he were given the opportunity to make the decision again. It was assumed that the director who would elect to take his civil defense job again was more satisfied with his position than the director who would not. To determine this attitude each director was asked, "If you 'had it to do over again' would you take the civil defense directorship?"

For item 5 the more certain a local director was that he would take the job if it were offered to him again, the greater the number of points he received. The distribution of points for each possible response is as follows:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Item 5 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>No, Certainty 5</td>
<td>00</td>
</tr>
<tr>
<td>No, Certainty 4</td>
<td>23</td>
</tr>
<tr>
<td>No, Certainty 3</td>
<td>39</td>
</tr>
<tr>
<td>No, Certainty 2</td>
<td>47</td>
</tr>
<tr>
<td>No, Certainty 1</td>
<td>55</td>
</tr>
<tr>
<td>Uncertain or don't know</td>
<td>62</td>
</tr>
<tr>
<td>Yes, Certainty 1</td>
<td>70</td>
</tr>
<tr>
<td>Yes, Certainty 2</td>
<td>78</td>
</tr>
<tr>
<td>Yes, Certainty 3</td>
<td>86</td>
</tr>
<tr>
<td>Yes, Certainty 4</td>
<td>102</td>
</tr>
<tr>
<td>Yes, Certainty 5</td>
<td>125</td>
</tr>
</tbody>
</table>
Item 6 The sixth item is concerned with the local director's perception of the degree of "excellence" or "superiority" that is required for the performance of his role. Here the measure is directed at determining whether the local director finds the activities of his role challenging. To measure these feelings, the local director was asked to respond to the following: "Occupations require different degrees of 'excellence' or 'superiority' in their performance. Please indicate below the degree of excellence or superiority required by your civil defense position."

For item 6 the more certain the local director was of his perception of a high level of excellence or superiority, the greater the number of points he received. The distribution of points for the possible responses is as follows:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Item 6 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low, Certainty 5</td>
<td>00</td>
</tr>
<tr>
<td>Low, Certainty 4</td>
<td>23</td>
</tr>
<tr>
<td>Low, Certainty 3</td>
<td>39</td>
</tr>
<tr>
<td>Low, Certainty 2</td>
<td>47</td>
</tr>
<tr>
<td>Low, Certainty 1</td>
<td>55</td>
</tr>
<tr>
<td>Uncertain or don't know</td>
<td>62</td>
</tr>
<tr>
<td>High, Certainty 1</td>
<td>70</td>
</tr>
<tr>
<td>High, Certainty 2</td>
<td>78</td>
</tr>
<tr>
<td>High, Certainty 3</td>
<td>86</td>
</tr>
<tr>
<td>High, Certainty 4</td>
<td>102</td>
</tr>
<tr>
<td>High, Certainty 5</td>
<td>125</td>
</tr>
</tbody>
</table>

Item 7 The seventh item of the measure of this subconcept is concerned with determining the degree to which the local director feels his role is "personally attractive and worth while." It was assumed that the local director who found the job role personally attractive and worth while would have a higher level of acceptance of that role than those who did
not find it that way. To measure these feelings, the local director was asked to respond to the following: "Occupations vary in the extent to which people feel they are 'personally attractive and worthwhile'. How personally attractive and worthwhile do you find your civil defense directorship?"

For this measure the local directors were first asked to indicate whether they felt the role was "attractive" or "not attractive" and then asked to indicate on a five-point scale the degree of certainty in their choice. The more certain the local director was of the attractiveness of his job role, the higher the number of points he received. The distribution of points for the possible responses to item 7 is as follows:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Item 7 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not attractive, Certainty 5</td>
<td>125</td>
</tr>
<tr>
<td>Not attractive, Certainty 4</td>
<td>102</td>
</tr>
<tr>
<td>Not attractive, Certainty 3</td>
<td>86</td>
</tr>
<tr>
<td>Not attractive, Certainty 2</td>
<td>78</td>
</tr>
<tr>
<td>Not attractive, Certainty 1</td>
<td>70</td>
</tr>
<tr>
<td>Undecided or don't know</td>
<td>62</td>
</tr>
<tr>
<td>Attractive, Certainty 1</td>
<td>55</td>
</tr>
<tr>
<td>Attractive, Certainty 2</td>
<td>47</td>
</tr>
<tr>
<td>Attractive, Certainty 3</td>
<td>39</td>
</tr>
<tr>
<td>Attractive, Certainty 4</td>
<td>23</td>
</tr>
<tr>
<td>Attractive, Certainty 5</td>
<td>00</td>
</tr>
</tbody>
</table>

Item 8 The final item of the measure of this subconcept is concerned with the local director's feelings about the degree to which he, as a local civil defense director, has been accorded recognition or prestige. The primary assumption is that local directors who feel they are well recognized for the performance of their occupational role represent a higher level of acceptance and will consequently have a higher level of role performance.
To facilitate the measurement of this concept each local director was asked to respond to the following: "Occupations also vary in the extent to which other people in the community feel they are important and these people in the community associate various degrees of prestige with these occupations. How much prestige does your community associate with your civil defense directorship?"

For item 8 the local directors were first asked to respond "little" prestige or "much" prestige. Then they were asked to indicate how certain they were of this response on a five-point scale. Directors who responded "much" prestige and indicated they were most certain of it were given the greater number of points. The points assigned for each possible response are as follows:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Item 8 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Little, Certainty 5</td>
<td>00</td>
</tr>
<tr>
<td>Little, Certainty 4</td>
<td>23</td>
</tr>
<tr>
<td>Little, Certainty 3</td>
<td>39</td>
</tr>
<tr>
<td>Little, Certainty 2</td>
<td>47</td>
</tr>
<tr>
<td>Little, Certainty 1</td>
<td>55</td>
</tr>
<tr>
<td>Uncertain or don't know</td>
<td>62</td>
</tr>
<tr>
<td>Much, Certainty 1</td>
<td>70</td>
</tr>
<tr>
<td>Much, Certainty 2</td>
<td>78</td>
</tr>
<tr>
<td>Much, Certainty 3</td>
<td>86</td>
</tr>
<tr>
<td>Much, Certainty 4</td>
<td>102</td>
</tr>
<tr>
<td>Much, Certainty 5</td>
<td>125</td>
</tr>
</tbody>
</table>

The total score for the subconcept Perception of Satisfaction from Performing the Role was derived by simply adding the points for each of the eight tested items. The maximum total score possible is 1000. The array of scores for this subconcept and the number of directors receiving each score are found in Appendix A, page 263.
4. Perception of Satisfaction with Boundary Maintenance Role

The final subconcept of the Acceptance concept is concerned with the local director's willingness to participate in the boundary maintenance functions that go beyond any of the formal requirements of the role but yet are an integral part of that role. Boundary maintenance functions are those functions within the system by which the actors in that system maintain identity, solidarity, and consistent interaction patterns. In short, it is the process by which the actor maintains identity with his social system. The participation in such functions is an indication of acceptance and commitment to the social system.

To measure part 4 of the Acceptance concept each local director was first asked his perception of or actual participation in six boundary maintenance situations. These six situations were as follows: 1) interaction with friends about civil defense, 2) gathering socially with colleagues in civil defense, 3) calling on non-civil defense people to join in civil defense activities, 4) coordination activities among government agencies, 5) the establishment of ties with local directors outside of his own civil defense area, and 6) perception of desirability of a state-wide civil defense directors' association.

Each of these six boundary maintenance situations is described below, along with a description of the measurement and scoring procedures employed for this subconcept.

The first four boundary maintenance situations are concerned with the local civil defense director's personal interaction patterns with respect to civil defense. It was assumed that the more frequently a local director's personal interaction was oriented toward civil defense, the more he
demonstrated an acceptance and commitment to his civil defense role. As a measure each local director was asked to respond to the following, "We are interested in the frequency of your personal contacts that relate to civil defense. With reference to the categories below, please indicate if the following contacts were made: 1) never, 2) seldom, 3) sometimes, or 4) very often."

**Type of Contacts**

1) Talk about civil defense with your friends  
2) Gather socially with others who work in civil defense  
3) Call on people outside of civil defense to help with civil defense  
4) Seek to coordinate civil defense activities among other civil government agencies

Each director was given 166.7 points for each "very often" response, 111.1 points for each "sometimes" response, 55.6 points for each "seldom" response, and 0 points for each "never" indicated. The highest possible number of points on the four items is 666.6 and the lowest number of points is 0.

The fifth boundary maintenance situation is concerned with the number of civil defense directors with whom the respondent had worked. It was assumed that working with other local directors was an indication of acceptance and commitment to the local director role.

As a measure of this aspect of boundary maintenance each local director was asked, "Have you ever worked with county or city civil defense directors outside of your own local civil defense area?" Respondents who answered "yes" were then asked, "How many different county and city civil defense directors outside of your own local civil defense area have you
worked with directly?"

In the assignment of points, 166.7 were given directors who indicated they had worked with 10 or more other county or city civil defense directors. Directors who named 4 to 9 directors were given 111.1 points. Directors who named 1 to 3 directors were given 55.6 points. No points were given to directors who had not worked with another local director.

The sixth boundary maintenance situation is concerned with the directors' attitudes toward the state-wide civil defense directors' association. Directors who favored a local directors' organization were considered to be indicating a desire to strengthen the solidarity and identity of the total civil defense social system and thus indicating a higher level of acceptance and commitment to the role.

As a measure each local director was asked, "In your opinion is the idea of a state-wide civil defense directors' association desirable?" If the local director indicated that a state-wide civil defense directors' association was undesirable, he received no points. If the respondent indicated he was uncertain or didn't know, he received 55.6 points, and if he felt it was desirable, he received 166.7 points.

The total score for the subconcept Perception of Satisfaction with Boundary Maintenance Role is determined for each local director by summing the points he received on each of the items delineated above. The maximum possible score was 1000 and the minimum score 0. The array of scores for the subconcept and the number of directors receiving each score are found in Appendix A, page 263.

The total Acceptance-Commitment score is a summarization of subconcept scores. An array of these scores and the number of respondents receiving each score may be found in Appendix A, page 264.
Variable $X_3$: Ability

The concept Ability has been defined as the degree to which an actor has established the resources and capabilities necessary to expedite the goals of his social system. The assumption is that if the local change agent in a given social system is to perform his role at a high level, he must have the resources and other capabilities of doing so.

The change agent's role is diverse, involving time and money expenditures as well as mental abilities. Yet, many change agents are much less well equipped to carry out this role than others. A local change agent who has been well initiated into his role and who has met the criteria of acceptance of this role may be restricted in his performance of that role by the lack of ability to carry out his tasks. Ability is, therefore, viewed as a necessary condition of a high level of role performance.

The independent variable or concept introduced below is mainly a consideration of the personal and systems facilities.\(^1\) The concept is operationalized in four subconcepts. Each of these four subconcepts represents facilities potentially at the disposal of the local change agent. The first of these four subconcepts is concerned with the amount of formal education of the local director. The second subconcept is concerned with the amount of time and salary formally assigned the local director's position by the civil defense bureaucracy in cooperation with the local governing bodies. The third subconcept of the Ability concept is concerned with the amount of the budget for the local director's civil

\(^1\)For a definition of the social systems concept of facilities, see page 20 of Chapter 2.
defense area. The fourth subconcept of the Ability concept is concerned with the number of civil defense personnel available to the local director to aid him in carrying out the tasks associated with his role. Each of these four subconcepts is considered to be an equally important dimension of the Ability concept.

Each of these four subconcepts and their respective measures are described separately below. Following this description is the presentation of the procedure for combining the subconcepts into a single measure along with the empirical justification for so doing.

1. Amount of Formal Education  This subconcept is concerned with the amount of formal education of the local director. The local director's formal education may be an important facility in his role as a change agent. He is expected to make and maintain systemic linkages throughout his local community. Many of these links must be with persons with higher levels of education. The local director's own personal level of education in such instances might prove to be an asset. Or, again, the local director may find his formal education an asset in pursuing the knowledge and skills needed to perform the more unique technical tasks associated with the role.

As a measure of the subconcept Amount of Formal Education each local director was asked to indicate the number of years of formal education that he had completed. The number of years was scored so as to weight this subconcept in equal proportion to the other three subconcepts of ability (1000 available points for each concept). To accomplish this, each year of formal education was weighted by the factor of 50. This weighting made a possible range of scores of from 0 to 1000 points. The higher the number
of years of formal education, the higher the score. An array of the years of formal education, points awarded for these years of formal education and the number of directors receiving each score are found in Appendix A, page 264.

2. **Time and salary**  The second subconcept of Ability is concerned with the time-salary status of the local director. The local governing bodies in cooperation with the civil defense bureaucracy decide on the amount of time and salary to be expended on local civil defense. They decide if the local director's job role is to be full time or part time, and they set the level of the salary. In each of the three states studied, local directors may be part time or full time. They may also be either volunteer or paid civil defense directors. The assumption upon which this measure is based is that the more time and pay that has been allotted or arranged by the local director, the greater will be his ability to carry out the tasks associated with his role.

As a measure of this subconcept each director was asked to indicate whether he was a full or part-time local director. If he was part time, he was asked to indicate what part of his work time was spent on the civil defense job role. He was also asked if he was paid or volunteer. From this information categories were developed combining the time and salary status for each local director. These categories, the score assigned to each category, and the number and per cent of directors in each category are found in Appendix A, page 265.

3. **Civil Defense Budget**  In many local civil defense areas there is a financial sum budgeted through the governing bodies for the support of local civil defense operations. The third subconcept of
Ability is concerned with the amount of such local civil defense funds. The assumption is that such appropriations serve to increase the ability of the local civil defense director to carry out the tasks associated with his role. The more budgeted funds available to him, the greater is his ability of working through his system to act upon the program of change.

As a measure of this subconcept the local directors were asked to record the actual amount of funds received for the current fiscal year from any one or a combination of public budgets such as county, city, and/or federal budgets. The measure does not include privately contributed funds such as those from industry, private charities, or individual donations. Nor does it include the funds contributed by the local director himself.

To score this measure, first, the four extremely high budget figures that were reported were cut back to correspond to those in the top of the group to avoid the statistical swamping effect of the high variance on these extreme deviations. This reduced the highest budget figures to 30,000 dollars. Since the highest possible subconcept score is 1000 points, each dollar figure was multiplied by a weight of .033 to arrive at the score for this subconcept. The scores for this subconcept are not arrayed because of the necessarily long enumeration. However, an array of budget figures by category is presented in Appendix A, page 265 to give an indication of the spread on the actual measure.

4. **Number of Paid Civil Defense Personnel** A number of the local civil defense areas have a staff of paid personnel. This subconcept is concerned with the number of such personnel. The assumption basic to
including this subconcept as a dimension of the Ability concept is that
the more persons the local director has at his disposal to help him, the
greater is his potential ability to accomplish the tasks associated with
his job role. That is, the added personnel increases the ability of his
social system to pursue its goals and objectives.

As a measure of the number of full-time paid personnel, each local
director was asked to state the number of full-time paid equivalents.
The response was weighted by multiplying that actual number by a weight
of 62.5 to arrive at a total highest number of 1000 points for the sub-
concept. The scores for this subconcept are arrayed only by summary cate-
gories because of the necessarily long enumeration. This array is found
in Appendix A, page 266.

The total score for the concept is derived by the combination of the
four subconcepts presented above. Each of the subconcepts was assumed
on a rationale basis to be a dimension of the personal or systems facil-
ities at the disposal of the local civil defense director. Some empirical
support, however, for this combination can be seen in the inter-item
correlations of these dimensions. Table 3 presents these correlations.

The combination of scores resulted in a highest possible score for
the concept of 4000 points (1000 points for each subconcept) and a
lowest possible score of 0. An array of the scores and the number of
local directors receiving each score are found in Appendix A, page 266.

Variable X₄: Involvement  The concept of Involvement has been
defined in this study as the actual mental and physical participation
in the tasks that are specifically designated as the responsibility of the
actor by directives originating in the vertical system. Involvement is,
Table 3. Inter-item correlation of the subconcepts of the Ability concept

<table>
<thead>
<tr>
<th>Subconcept</th>
<th>2. Time and salary</th>
<th>3. Civil defense budget</th>
<th>4. No. paid civil defense pers.</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Amount of formal education</td>
<td>- .056</td>
<td>.124</td>
<td>.071</td>
<td>.271</td>
</tr>
<tr>
<td>2. Time and salary</td>
<td>-</td>
<td>.478</td>
<td>.424</td>
<td>.871</td>
</tr>
<tr>
<td>3. Civil defense budget</td>
<td>-</td>
<td>-</td>
<td>.655</td>
<td>.774</td>
</tr>
<tr>
<td>4. No. paid civil defense personnel</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.659</td>
</tr>
</tbody>
</table>

therefore, any effort directed toward the accomplishment of the goals of the system regardless of whether that effort is fruitful or not. The basic assumption is, however, that if the local director is to perform his role at a high level, he must become involved in the general range of activities associated with his role.

A general discussion of the concept Initiation is presented in the previous chapter. In this chapter the concept is presented as having two dimensions, intensity and type. There is a wide range of activities associated with the local director's role. With the local change agent there is a wide variety of types of activities in which he may become involved. Once involved, there is, again, a wide range of potential intensity of involvement. Particularly since the nature of the position of the local change agent is such that it is removed from the direct surveillance of the administrators of the vertical system and into the less
structured horizontal system, both the range of types of activity and the intensity of activity may vary a great deal. Concern here is with both of these dimensions. A number of types of involvement are surveyed as well as the intensity of this involvement.

Operationalization of the Involvement concept was accomplished by first dividing the concept into three subconcepts. These subconcepts take into consideration both intensity and type of involvement. They are first, Hours Per Week on the Civil Defense Job. This is basically a measure concerned with intensity of involvement. Second, the subconcept Involvement With Systems Linkages is described. This subconcept is in two parts. The first part is concerned with involvement with local bureaucratic organizations. The second part is concerned with involvement with voluntary associations. This subconcept is concerned with both intensity and type of involvement. And the third subconcept of Involvement, concerned with systems building activities, is described. This subconcept also is concerned with both intensity and type of involvement.

The measures used to operationalize each of these subconcepts are described separately below. Following this description, the combination of the subconcepts and the empirical support for this combination are presented, and an array of the total variable scores is found in Appendix A, page 268.

1. **Hours Per Week on the Civil Defense Job** This subconcept of Involvement is concerned with the total number of hours per week of involvement of the local director in his job role. The number of hours spent on the job per week is assumed to be primarily an indication of the intensity of involvement, though there is also a likelihood that the time
an individual spent at his job role, the more types of task roles he would encounter. This assumption might be particularly valid where a number of the change agents are on a part time and a voluntary basis.

As a measure of the number of hours per week that a local director is on the job, each director was asked, "Since taking this position about how many hours a week have you actually spent on your civil defense job?" Each director was asked to check one of the seven response categories listed in the array in Appendix A, page 267. The range of possible scores for each subconcept is from 0 to 1000. A score of a possible 1 to 1000 as indicated in the array was assigned to each director's response to this measure and used as the director's score for this subconcept. The array of scores and the number of directors receiving each score are found in Appendix A, page 267.

2. **Involvement in Systems Linkage** One of the key areas of involvement for a local change agent is systemic linkage. Systemic linkage was defined in the previous chapter as the process whereby the elements of at least two social systems become articulated so that in some ways they function as a single system. It is the process through which the local change agent solicits the various members of his horizontal system to participate in the activities directed toward the achievement of the ends prescribed by his vertical system. If the local change agent is to be effective, involvement in the establishment of such links is essential. He cannot hope to carry out alone all of the tasks that have been assigned him. Involvement with the various subsystems of the community may therefore be viewed not as an end in itself (active role performance) but as a means to the accomplishment of the tasks that have been designated as
performance criteria for the local director.

This subconcept has been divided into two parts. The first is Involvement with Bureaucratic Organizations and the second is Involvement with Voluntary Associations. These two parts are described separately below.

Part 1 Involvement with Bureaucratic Organizations. Many of the current civil defense programs are quite dependent upon the cooperation of local organizations and agencies that exist in the local community for some other, non-civil defense purpose. If the local director does not see the need for involvement with such organizations, or if he has not the time he can give for such involvement, his level of role performance may be low.

In the construction of the measure of this subconcept there was concern for more than just frequency of contact between the local director and specific organizations. There was concern as to whether or not the involvement was of sufficient intensity to lead to 1) a feeling of productivity and 2) a feeling of strong ties for future cooperation.

To accomplish this concern each local director was shown a list of 20 formal organizations or representatives of organizations with whom he might possibly be working and asked to indicate whether or not he had worked with each during the past year. The organizations were as follows:

1. State Civil Defense Office
2. Local Board of Welfare
3. Local Agriculture Extension Service
4. Local school superintendents
5. Local employment office
6. Local police force
7. Local fire department
8. Local business firms
9. Local veterinarians
10. Local transportation people
11. Local utility companies
12. Local units of the National Guard
13. Local county or municipal defense agency
14. County Board of Supervisors
15. Local clubs and social organizations
16. Local Chapter of the American Red Cross
17. State highway police
18. Local medical and health personnel
19. Soil conservation service
20. County (or city) civil defense directors
21. Social radio communication groups and civil air patrol
22. U. S. Army Corps of Engineers NCB'S
23. Forestry unit

The directors were then asked, "Now for each of the groups with whom you have been working indicate how productive this relationship has been in terms of civil defense . . . very productive, somewhat productive or unproductive?" The more a local director perceived a productive relationship with the organizations, the higher it was expected his role performance would be. Local directors received points for this part of the measure as follows: For each group or organization the local director had worked with and established a "very productive" relationship, he was given 10.9 points. He was given 7.2 points if he had had a "somewhat productive" relationship with the group or organization and 3.6 points if his estimate of the relationship with the group or organization was "unproductive." A director who indicated he had not worked with the group or organization received 0 points. Directors who indicated there was no such individual or group in their civil defense area also received 0

1In addition to the 20 organizations or organization representatives shown local directors, each director could add other groups and organizations to the list. Organizations 21-23 were specified by one or more directors.
points. The total possible points for this part of the measure is 250 (10.9 points x 23 organizations). These points were added directly to the points received on the next part of the measure which was developed in the following way.

The second part of this systemic linkage measure is concerned with directors' perceptions of the strength of ties for future cooperation that had been achieved through working with these same groups and organizations. For each of the groups and organizations with which the director had worked in the past year the director was asked to indicate his estimate of the strength of ties for future cooperation. That is, the local director specified if the potential strength of ties established was: "strong," "weak," or "none." For each group or organization with which a local director had worked and had established "strong" ties for future cooperation, an additional 10.9 points were given. If the director perceived that "weak" ties existed for future cooperation, an additional 7.2 points were given. If "no" ties for future cooperation had been established, an additional 3.6 points were given. A director indicating there was no such individual or group in his civil defense area was given 0 points. The total possible points for the second part of the measure was 250 (10.9 x 23 organizations).

The score for this second part of the subconcept was obtained by summing the total number of points received on the two parts of the measure. The total possible points for this first half of the subconcept was 500.

Part 2 Involvement with Voluntary Associations. The local change agent, in order to promote his desired change, must also depend a great deal upon the cooperation of the voluntary associations of his local
community. If the local change agent does not see the need for involvement with such associations, or if he does not have time that he can give for such involvement, his role performance may be affected.

In the measurement of the local civil defense director's involvement with the voluntary associations of his local community, concern was not only with the number of associations with which he had become involved but also with the local director's estimation of the degree of community influence of the particular association. The assumption was the ability to locate and work with the key organizations of the community might be a greater asset to a high level of role performance than simple frequency of contact.

To ascertain a local director's perception of which voluntary associations he thought were influential in his community, he was shown the following list of voluntary associations which might be influential and asked to indicate which ones were most influential in his local civil defense area. He was also asked to rank the three most influential organizations. The director was also asked to add any influential voluntary associations not on the list.

1. Lions
2. Kiwanis
3. Rotary
4. Chamber of Commerce
5. Jr. Chamber of Commerce
6. Parent Teachers Association (PTA)
7. Farm Bureau
8. National Farmers' Union
9. Grange
10. National Farmers' Organization (NFO)
11. Eagles
12. Elks
13. Moose
14. Odd Fellows
15. Masons
16. American Legion
17. VFW
18. American Veterans (Am Vets)
19. Knights of Columbus
20. Knights of Pythias
21. Church organizations
22. Women's organizations
23. Business and professional organizations
Obviously, the associations named by a director may or may not have influence in his civil defense area. The question asked the director is a measure of his perception of influential association and is not necessarily the actual influence pattern among associations in the community.

After the director had indicated which groups he thought were influential, he was asked which groups he had worked with in the past year. Scoring on this measure takes into consideration 1) whether or not the organization was perceived by the director as being influential in the director's civil defense area, 2) the local director's ranking of the relative influence of the formal organizations in his civil defense area, and 3) whether or not the local director had worked with the formal organization in some type of civil defense activity.

It was assumed in the scoring system employed that the higher the local director ranked a particular organization and the more he had worked with that organization, the higher would be his productive involvement. For each voluntary association listed the director could receive from 0 to 9 points. The points were obtained as follows:

<table>
<thead>
<tr>
<th>Possible Points</th>
<th>Responses</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Most influential organization (ranked 1) but had not worked with it</td>
<td></td>
</tr>
<tr>
<td>2.4</td>
<td>Second most influential organization (ranked 2) but had not worked with it</td>
<td></td>
</tr>
<tr>
<td>4.8</td>
<td>Third most influential organization (ranked 3) but had not worked with it</td>
<td></td>
</tr>
<tr>
<td>7.3</td>
<td>Influential organization but not ranked as one of top 3 and had not worked with organization in civil defense area</td>
<td></td>
</tr>
</tbody>
</table>

(Continued)
Possible Points | Responses
--- | ---
9.7 | Not an influential organization and had not worked with it; or not in such an organization in civil defense area
12.1 | Not an influential organization but had worked with it
14.5 | An influential organization but not ranked as one of top 3 and had worked with it
16.9 | Third most influential organization (ranked 3) and had worked with it
19.3 | Second most influential organization (ranked 2) and had worked with it
21.7 | Most influential organization (ranked 1) and had worked with it

The maximum possible score for this second half of the subconcept was 500 (217.4 points x 23 associations). The total number of 1000 possible points for the subconcept was arrived at by adding the scores received on the two measures of the subconcept. The two measures were treated equally. That is, there were 500 possible points for each. Some empirical justification for the direct combination can be seen in that the inter-item correlation between the two measures was $r = .621$.

An array of the total scores for the Involvement in Systemic Linkage subconcept and the number of local directors receiving each score are found in Appendix A, page 267.

3. **Involvement in Systems Building** This subconcept of Involvement is concerned with how involved the local director becomes in the process of systems building. The process of systems building is that process whereby the actor attempts to build into his system a means capability which can then be directed toward the accomplishment of the
ends of that system. If the local director has been involved in systems building, it is assumed that he has been involved in types of activities that might lead him to higher levels of role performance.

This subconcept is operationalized in three parts. These parts are as follows: 1) the development of a program paper, 2) the development of an increased civil defense budget, and 3) the development of separate facilities. Each of these parts of the Involvement with Systems Building measure is described separately below.

The first part of the subconcept is concerned with the development of a program paper. In order to measure this aspect of involvement with systems building each director was asked if a program paper had been developed for his local civil defense area. The presence of this document implies that the local political unit had at least partially legitimized and sanctioned the local civil defense program within his local community. A program paper is a management and planning document maintained by the political subdivision. In the program paper are recorded previous civil defense accomplishments and the projected activities of the political subdivision for the immediate future. Having a program paper is also one of the requirements a political subdivision must meet in order to be eligible for federal matching funds assistance. These federal matching funds may be for additional personnel (P & A) and/or for hardware and equipment. It was assumed that the presence of P & A funds and/or hardware funds was indicative of systems building.

Each local director was asked these questions, 1) "Does your civil defense area have a program paper? 2) Is your civil defense area participating in government personnel and administration (P & A) funds? 3) Is
your civil defense area participating in government hardware matching funds?"

Each part of the subconcept was accorded equal importance. Therefore each of the three parts had a total number of 333.3 or one-third of the total possible subconcept points (1000 points).

Distribution of points for part 1 is as follows:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Possible Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No program paper</td>
<td>0</td>
</tr>
<tr>
<td>2. Local area has a program paper but has received no P &amp; A funds or hardware funds</td>
<td>166.7</td>
</tr>
<tr>
<td>3. Local area has a program paper and has received hardware funds</td>
<td>222.2</td>
</tr>
<tr>
<td>4. Local area has a program paper and has received P &amp; A funds</td>
<td>277.8</td>
</tr>
<tr>
<td>5. Local area has a program paper and has received both P &amp; A funds and hardware funds</td>
<td>333.3</td>
</tr>
</tbody>
</table>

For the second part it was assumed that an increase in local civil defense budget, personnel and office space would be regarded as evidence of "building" a local civil defense system, i.e., "Systems Building." To determine whether or not any increases in budget, personnel or office space had occurred, each local director was asked to list his civil defense organization's budget for the current and the previous year. Each director also listed the number of full time, paid civil defense personnel in his organization for the current and previous years, as well as his organization's office space for the current and previous year. Points were assigned to the director's responses to these three questions as follows.

The points a local director could receive on part 2 of the Involvement With Systems Building subconcept could thus range from 0 to 333.3.
Possible Responses

<table>
<thead>
<tr>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Budget change:</td>
</tr>
<tr>
<td>a. No funds either year 0</td>
</tr>
<tr>
<td>b. Less funds this year 55.6</td>
</tr>
<tr>
<td>c. Same funds as last year 55.6</td>
</tr>
<tr>
<td>d. More funds this year 111.1</td>
</tr>
<tr>
<td>2. Personnel change:</td>
</tr>
<tr>
<td>a. No paid personnel either year 0</td>
</tr>
<tr>
<td>b. Less paid personnel this year 55.6</td>
</tr>
<tr>
<td>c. Same number of personnel this year 55.6</td>
</tr>
<tr>
<td>d. More personnel this year 111.1</td>
</tr>
<tr>
<td>3. Change in office space:</td>
</tr>
<tr>
<td>a. No space either year 0</td>
</tr>
<tr>
<td>b. Less space this year 55.6</td>
</tr>
<tr>
<td>c. Same office space this year 55.6</td>
</tr>
<tr>
<td>d. More office space this year 111.1</td>
</tr>
</tbody>
</table>

For the third part it was also assumed that a separate office and separate annual budget could be regarded as further evidence of "Systems Building." Each director was asked whether or not he had a separate office not located in some other civic or governmental office. In addition, each director was asked whether or not his civil defense organization had a separate annual budget. A local civil defense director could receive up to 166.7 points for each item, or a total of 333.3 points for the two items shown below.

<table>
<thead>
<tr>
<th>Possible Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Separate office:</td>
</tr>
<tr>
<td>a. No 0</td>
</tr>
<tr>
<td>b. Yes 166.7</td>
</tr>
<tr>
<td>2. Separate budget:</td>
</tr>
<tr>
<td>a. No 0</td>
</tr>
<tr>
<td>b. Yes 166.7</td>
</tr>
</tbody>
</table>
A local director's total subconcept score for Involvement With Systems Building was obtained by adding the points received on parts 1, 2, and 3. Thus, the total maximum score could range from 0 to 1000. The array of scores for the subconcept and the number of directors receiving each score are shown in Appendix A, page 268.

The Dependent Variable $X_5$: Role Performance

A position or status is a social location within a social system. A role is a set of expectations that define the anticipated behavior of an incumbent of the specific position.

Role performance is defined as the actual behavior of the incumbent in the position. Level of role performance is the degree to which the actual behavior of the actor conforms to the role expectations defined for him in his social system or job role by other members of that same vertical system. With this set of definitions it is necessary to ask: What is actually expected of a local civil defense director? How well is the local director doing what is expected of him? These two questions make an important distinction between the concept role and the concept level of role performance. A role is a set of expectations applied to an incumbent of a position; in this study, the set of expectations of the local civil defense director. Role performance is the actual behavior of an incumbent of a position; in this study, the actual behavior of the local civil defense director. By comparing a local director's role performance to what is expected of him (his role) one can measure the degree to which a director has met the expectations held for him, his level of role performance.
Before it is possible to determine the degree to which a local director has met the expectations held for him, however, it is necessary to determine what is expected of him, that is, specify his role. In the next section of this chapter some of the problems encountered in determining what is expected of a local civil defense director are described. Following the general discussion of role expectations a list of the specific tasks expected of the local civil defense directors is presented. The degree to which a local civil defense director has carried out these expectations will determine his level of role performance score. A level of role performance score will be computed for each director.

The local civil defense director's role

The determination of what is expected of the local civil defense director (his role) was divided into three distinct steps. First, it was ascertained who the key person or persons are in the social system who define the expectations or tasks for the local civil defense director. Second, it was determined what specific expectations or tasks have been delineated by those who define the role. Third, an effort was made to have those who determined the role expectations evaluate the relative importance of each task with respect to every other task, and, based on this evaluation, assign priorities or weights to each of the delineated tasks. Each of these steps is discussed below.

Definers of role expectations There are numerous persons and groups who have expectations of the local civil defense director. These include national, regional, and state civil defense officials. In addition, local governing officials and the general public may also hold role
expectations for the incumbent of a given position. Thus, each of these
groups or persons could be considered as a potential role definer for the
local civil defense director. For example, local governing officials may
have role expectations for the local director that express their unique
understanding and concern for their own locality. The regional director
of civil defense may have, on the other hand, a different set of role
expectations that apply not to one locality but to all of the director­
ships in his region. There is, therefore, the possibility of not one but
many sets of expectations to which the actual role performance of the
local director could be compared.¹

Further, the set of expectations held by any one group or person may
change with time. The definition of role expectations for the local civil
defense director may, therefore, differ between role definers, as well as
change with time for any one role definer. It is important to specify
which particular expectations at any given time are being used to evaluate
role performance.

Selecting a role definer for this study As was stated earlier
in this chapter, the populations of local civil defense directors selected
for this research study consisted of all local civil defense directors in
the states of Minnesota, Georgia, and Massachusetts. Because the popula­
tion being studied was selected from three different states, it was
necessary to consult with role definers whose role expectations would be

¹There may or may not be a high degree of agreement or consensus
among each of these many potential role definers. The study presented in
this dissertation did not have as one of its objectives the study of con­
sensus among potential role definers. One study of this type was carried
out by the Iowa State University research team. This report focused upon
the agreement among local governing bodies (70).
equally applicable to local civil defense directors in each of the three states. Since the Office of Civil Defense has been given the responsibility at the national level for initiating the nation's civil defense program, it was selected as the key role definer for this study.

**Definition of expectations or tasks**

The Office of Civil Defense has prepared a management document that prescribes specific tasks a state or local government unit should perform to build its civil defense capability. This management document is called the *program paper*.

Because the program paper constitutes a rather explicit role definition for the local civil defense director, regardless of whether or not his community is currently participating in federal assistance programs, it was the primary source used to determine their role expectations. Discussions as to the applicability of the program paper as a role expectation criterion were held with Office of Civil Defense staff members during late 1964. From these discussions seven general civil defense director role task areas were delineated and defined. These seven general task areas, then, constitute an official role definition for the local civil defense director by the federal level of the vertical system.

The seven role performance task areas delineated for measurement were as follows:

1. The degree to which the local director had licensed, marked, and stocked eligible buildings in his civil defense area.

2. The degree to which a state-approved basic operational survival plan had been established for the local civil defense area.

3. The degree to which direction and control measures had been developed for the local civil defense area. This task area included: a) the degree to which an emergency operating center had been established, equipped and tested; and b) the degree to which emergency radio communication services had been developed.
4. The degree to which emergency services had been developed. This included: a) the establishment of warning services for the civil defense area; and b) the degree to which radiological defense measures had been developed. (This task area will hereafter be referred to as Emergency Services 1.)

5. The degree to which other emergency services had been assigned in the local civil defense area (hereafter referred to as Emergency Services 2). This area included pre-attack supporting programs such as fire, rescue, medical, and so on.

6. The degree to which training and public education programs had been carried out in the civil defense area.

7. The degree to which public information activities had been carried out in the civil defense area.

The "mandatory" priority areas listed in the Program Paper Guide for 1965 were: 1) Shelter, 2) Operational Planning, 3) Direction and Control, 4) Increased Readiness, 5) Warning, and 6) Radiological Defense.

Insofar as budgets and manpower resources permitted, state and local government officials were instructed by the program paper to also include activities in supporting areas such as police, fire, rescue, health-medical, emergency information (Emergency Services 2 above), training and public education, and public information activities.

Relative importance of task areas The task areas or role expectations for local civil defense directors having been delineated by a set of role definers, the next step was to determine the relative importance of each task area with respect to every other task area.

To determine the relative importance of the seven task areas, Office of Civil Defense personnel were asked to compare each task area to every

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1Office of Civil Defense personnel advised the researchers that as of October 29, 1964, civil defense directors had not yet been given adequate guidelines in this task area, so it was not included in the role performance scale.
other task area and to indicate which task in the pair was more important. For example, Office of Civil Defense personnel were asked to judge which was the more important task: "Licensing, Marking and Stocking of Eligible Buildings" or "Direction and Control." Next, "Licensing, Marking and Stocking of Eligible Buildings" was compared to "Establishment of an Approved State Operational Survival Plan." This procedural method of comparing each task with every other task to determine their relative position is called the method of paired comparison.\(^1\)

In all, 21 paired comparisons were necessary to compare the importance of each task area with that of every other task. The rank order of tasks obtained by this paired comparison method is presented in Table 4. The rank order was obtained by comparing each task with the six other tasks. Each time a task was ranked more important than another task, the more important task was given a score of 1 and the less important task a score of 0. This scoring is recorded in Table 4. To read the table one selects a column task (such as column 2, "Direction and Control") and proceeds to read down the column.

The first number in column 2 is 0. This means that the column task, "Direction and Control," is less important than the row task, in this case "Licensing, Marking and Stocking of Eligible Buildings." The second item in column 2 is the diagonal X. (The plan was not compared to itself, i.e., it is both the row and column task; this symbol is used procedurally to indicate that the task "Licensing, Marking and Stocking," is expected of

\(^1\)For further description of the technique, see Allen L. Edwards, *Techniques of Attitude Scale Construction* (40).
Table 4. Relative importance of task areas

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Columns</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Licensing, Marking, Stocking</td>
<td>Licensing &amp; Control Plan Training &amp; Education Public Information Emergency Services 1 Emergency Services 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Licensing, Marking, Stocking</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2. Direction and Control</td>
<td>1</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>3. Operational Plan</td>
<td>1</td>
<td>1</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>4. Training and Public Education</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>5. Public Information</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>6. Emergency Services 1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>X</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>7. Emergency Services 2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Total Score</td>
<td>6.0</td>
<td>5.0</td>
<td>4.0</td>
<td>3.0</td>
<td>2.0</td>
<td>1.0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>7.0</td>
<td>6.0</td>
<td>5.0</td>
<td>4.0</td>
<td>3.0</td>
<td>2.0</td>
<td>1.0</td>
<td></td>
</tr>
</tbody>
</table>
the local director.) The third symbol in column 2 is 1, which indicates the column task, "Direction and Control," is more important than the row task, in this case "Establishing a Basic Operational Survival Plan." The 4th, 5th, 6th, 7th, and 8th numbers in column 2 are also 1 which indicates that "Direction and Control" was considered more important than any of the corresponding row tasks.

The reader can likewise select another column task and see how it compares to every row task. Whenever there is a 1 below the diagonal in the table, it means that the column task for that cell is more important than the row task corresponding to that cell. If there would have been a 1 above the diagonal in the table, it would have meant that the column task for that cell was less important than the row task corresponding to that cell. By adding up the comparison values in any one column the score, or relative weight, of each task is obtained. Thus, for column 1 (Task Area 1, "Licensing, Marking and Stocking") the total score is 6. The total for column 2 (Task Area 2, "Direction and Control") is 5. By ordering the total column scores from high to low an ordinal ranking of the seven task areas is obtained. Because it was necessary to have some weight for even the least important task ("Emergency Services 2"), the least important task was given a weight of 1. The other 6 task area weights were then completed by adding 1 to the total score for each task area. Thus, a paired comparison ranking is obtained which can be used as one basis for quantitatively evaluating the relationship between role performance and role expectations.

This method alone does not, however, allow for unequal weighting of tasks; e.g., it is not possible by using the method of paired comparison
to determine if licensing is just slightly more important than having an approved plan or 10 times more important. In an attempt to determine the relative weight (or interval) between each of the task areas the following procedure was used.

Office of Civil Defense personnel were asked to assign 100 points among the seven task areas. They were asked to assign any number of the 100 points to each of the task areas. First, points were assigned to the most important task area. Then, the remaining points were assigned to the other six task areas. The general task areas and the points assigned to each are shown below.

<table>
<thead>
<tr>
<th>General task areas</th>
<th>Number of points assigned</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Licensing, Marking and Stocking</td>
<td>35</td>
</tr>
<tr>
<td>2. Direction and Control</td>
<td>15</td>
</tr>
<tr>
<td>3. Operational Plan</td>
<td>15</td>
</tr>
<tr>
<td>4. Training and Public Education</td>
<td>10</td>
</tr>
<tr>
<td>5. Public Information</td>
<td>10</td>
</tr>
<tr>
<td>6. Emergency Services 1</td>
<td>10</td>
</tr>
<tr>
<td>7. Emergency Services 2</td>
<td>05</td>
</tr>
<tr>
<td>Total points</td>
<td>100</td>
</tr>
</tbody>
</table>

The first role performance score is called the **Paired Comparison Role Performance Score**. It includes all seven of the task areas and each task area has the relative importance of its total score as indicated in Table 4. That is, "Licensing, Marking and Stocking of Eligible Buildings" has a weight of 7; "Direction and Control," 6; the "Plan," 5; "Training and Education," 4; "Public Information," 3; "Emergency Services 1," 2; and "Emergency Services 2," 1. The sum total of these weights is 28.

The second role performance score is called the **Relative Evaluation Role Performance Score**. This score consists of the total of seven tasks
delineated by the Office of Civil Defense personnel, with each task area weighted according to number of points from 100 assigned to it. In effect, Office of Civil Defense personnel have indicated what per cent of the total role performance each of the seven task areas would comprise; i.e., "Licensing, Marking and Stocking" would comprise 35 per cent of the total; "Operational Plan," 15 per cent; and so on.

For the purposes of this study, little difference in effect was found between the two performance scoring techniques. A zero order correlation of \( r = .967 \) was found between the two techniques. For this reason and the sake of expediency the paired comparison scoring is used exclusively in the remainder of this study. For an extensive discussion and analysis of the effects of different scoring techniques, see Shaffer (119).

The empirical measure of role performance

The discussion thus far has been concerned with the determination of specific role expectations (tasks) of the local civil defense director and an evaluation of the relative importance of these expectations. In this section the empirical measure developed for each of the seven expectations (task areas) will be presented. For each expectation a question or series of questions was asked the local director to ascertain the extent to which each task area had been performed. For each expectation a director could receive a score ranging from 0 to 100; 0 if he had done nothing, 100 if he had done everything expected of him.

Task Area 1: Licensing, marking and stocking of eligible buildings

The National Fallout Shelter Survey, Marking and Stocking Program has been
one of the primary components of the civil defense program in the United States since 1961. To determine the extent to which each director had succeeded in licensing, marking and stocking eligible buildings in his civil defense area, each director was asked to indicate: 1) the number of buildings found eligible for licensing, marking and stocking in his area ("eligible" meant a building with at least 50 shelter spaces and with a protection factor of 40); 2) the number of buildings licensed; 3) the number of buildings marked; and 4) the number of buildings stocked.

A building, licensing, marking and stocking score for each director was determined by computing the ratio of: 1) buildings licensed, 2) buildings marked, and 3) buildings stocked to the number of buildings found eligible in the director's area. The total task score was obtained by multiplying the ratio of licensed buildings by .2, the ratio of marked buildings by .3 and the ratio of stocked buildings by .5 and then adding these three component scores. For example, if a director had licensed 75 per cent of his eligible buildings, marked 50 per cent of his eligible buildings and stocked 25 per cent of his eligible buildings, his licensing, marking and stocking score would be 42.5 as shown below.

\[
\begin{align*}
75 \times (.2) &= 15.0 \\
50 \times (.3) &= 15.0 \\
25 \times (.5) &= 12.5 \\
\text{42.5 points}
\end{align*}
\]

The weights for these three subtasks were determined by judgment of Office of Civil Defense personnel.
Directors who reported no eligible buildings in their civil defense area were arbitrarily given a score of 100. It was assumed they would have licensed, marked and stocked buildings if any had been available. ¹

The array of the buildings licensed, marked and stocked scores and the number of directors receiving each score are found in Appendix A, page 269.

**Task Area 2: Direction and control**  Task Area 2 consists of two subtasks: "establishing an emergency operating center (EOC)" and "arranging for the use of emergency radio communication systems." Subtask 1, "establishing an emergency operating system," was judged by Office of Civil Defense personnel to constitute 70 per cent of Task Area 2, while Subtask 2, "radio communications," was judged to constitute the other 30 per cent of Task Area 2. Possible scores for this task area range from 0 to 100.

**Subtask 1: Establishing an emergency operating center** One of the role expectations of the local civil defense director was to establish an emergency operating center (EOC). The EOC is the structure or place where the local director will direct, control and command in the event of an emergency. The measure of this subtask examines the extent to which a local director has an emergency operating center which has been staffed, stocked with equipment and supplies and tested. The empirical

¹A statistical scale analysis of the relationships among the seven task areas indicated that the seven task areas scaled best when this method of scoring was used. That is, each task area score was significantly correlated with the total role performance score, yet relatively independent of other task area scores when this method of scoring was used. The second alternative was to assign the directors who reported no eligible buildings a score of 0.
measure of local director performance for this subtask is based upon the
director's responses to the following eight questions: 1) Has an Emer-
gency Operating Center (Control Center) been designated for your local
civil defense area? 2) What is the protection factor of your Emergency
Operating Center? 3) How many square feet of floor space do you have in
your Emergency Operating Center? 4) How many people will probably operate
in your Emergency Operating Center in an emergency? 5) Has any equipment
or supplies been installed or stored in your Emergency Operating Center?
6) Have the following types of equipment and supplies been installed or
stored in your Emergency Operating Center—radiological equipment with
analysis capability, communications equipment and survival (medical, food,
etc.) supplies? 7) Does your Emergency Operating Center have an emergency
power source? 8) Has your Emergency Operating Center been used in any
test situation?

Those directors who said an emergency operating center had been desig-
nated (question 1) received 20 points.

If the director's EOC had a protection factor (PF) of 100 or more, he
was given 10 points (question 2).

A local civil defense director was given 10 points if his emergency
operating center had space enough to provide 10 square feet for each per-
son who would operate in it (questions 3 and 4).

Each director could receive 40 points (10 points each) for having in-
stalled: 1) radiological equipment with analysis capability, 2) communica-
tions equipment, 3) survival supplies and 4) an emergency power source
(questions 5, 6, and 7).

Those directors who said their emergency operating center had been
used in a test situation (question 8) were given 20 points.

Thus, each local director could receive an unweighted score ranging from 0 to 100 for Subtask 1, "emergency operating center." Each local director's unweighted Subtask 1 score was then multiplied by .70 to determine his weighted Subtask 1 score, since Subtask 1 constitutes 70 per cent of Task Area 2, "Direction and Control." Thus, each local director could receive a score ranging from 0 to 70 for Subtask 1. This weighted score was added to the director's score on Subtask 2 (described below) in order to obtain a total score for Task Area 2, "Direction and Control."

Subtask 2: Radio communication

Subtask 2 was that of arranging for the use of existing radio communication systems in an emergency. Effective communication systems is one of the goals of civil defense in any emergency effort. Local civil defense directors are, therefore, expected to be aware of the alternative methods of emergency communications and to make arrangements in advance for possible access to these communications systems in an emergency.

To determine the extent to which local directors had arranged for the use of radio communication systems in an emergency, the following procedure was used. Each director was shown a list of 11 radio communication systems that might be used in an emergency and was asked which, if any, were available in his civil defense area and which, if any, he had made arrangements to use. The communications systems listed were: 1) Radio Amateur Communication Emergency Systems, 2) power company short wave systems, 3) veterinarians' short wave systems, 4) state police or sheriffs' radio, 5) local police radio, 6) ground-air radio, 7) taxi radio systems, 8) telephone company systems, 9) emergency broadcast service, 10) highway commission
radio systems, and 11) fire department radio systems. Each director was also asked to add to the list any additional communication systems existing in his local civil defense area.

A radio communication score was developed for each director as follows. First, the number of radio communication systems available in a director's civil defense area was determined. Second, the number of radio communication systems a director had made arrangements to use in an emergency was determined. Third, the ratio of the number of radio communication systems which a director had made arrangements to use to the number of radio communication systems for which arrangement to use could be made was calculated. The percentage ratio was then multiplied by .3 since Subtask 2 constitutes 30 per cent of Task Area 2, "Direction and Control." Thus, each local director could receive a score ranging from 0 to 30 for Subtask 2.

The score for Task 2 was obtained by summing the two subtask scores for each director. Possible scores for Task Area 2 could thus range from 0 to 100.

The array of scores for Task Area 2 and the number of directors receiving each score are found in Appendix A, page 269.

**Task Area 3: Establishing a basic operational survival plan**

The establishment of a state-approved Basic Operational Survival Plan was another of the primary tasks expected of the local civil defense director. The establishment of a plan is important for a number of reasons. Its establishment is evidence of the legal recognition of civil defense. It establishes a link between the civil defense organization and the local community. The establishment of a state-approved plan is also one of the
prerequisites for obtaining financial assistance from federal sources for local civil defense operations. In establishing a plan the local direction has gained a degree of recognition for the civil defense organization from the local governing officials of the community.

The empirical measure of local director performance for this task area is based upon the amount of progress that a local director has made toward the establishment of a state-approved Basic Operation Survival Plan. The director was first asked if he had considered, or perhaps established, a Basic Operational Survival Plan in his local civil defense area. If the director had at least considered a plan, he was asked to indicate the current status of the plan from the following list of statements:

1. The Basic Plan has been written up, but as of this date has not been submitted for required local approval (to City Council or Board of Supervisors or equivalent).
2. The Basic Plan has been submitted for required local approval, but no action as yet has been taken by them to approve the plan.
3. All required local approval of the basic plan has been obtained, but the State Office of Civil Defense has not been contacted.
4. The Basic Plan has been presented to the State Office of Civil Defense for approval, but the state's approval has not been received as of this date.
5. The Basic Plan has been approved by the State Office of Civil Defense.

A basic plan score was assigned to each director depending upon the status of his basic plan. A director who had not considered a basic plan was given a score of 0. A director received a score of 20 if a plan had been written up but not yet submitted for local approval. A score of 40 was given the local director who had submitted a plan for local approval, but local approval had not been received. A score of 60 was given to the
director who had obtained local approval of a plan, but who had not yet submitted the plan for state approval. A score of 80 was given to directors who had obtained local approval of a plan and who had submitted it for state approval, but had not yet received state approval. The highest possible score of 100 was given to a director who had a state-approved basic plan.

The distribution of scores and the number of directors receiving each basic plan score are found in Appendix A, page 270.

Task Area 4: Training and public education Many civil defense resources are allocated on the assumption that an informed public will have a better chance of surviving the effects of any possible nuclear attack. Providing the public with the needed information about civil defense is one of the major tasks confronting the local director. The local director is responsible for informing the people about nuclear fallout and its effects. The director must also inform the people regarding what can be done to combat these effects if a disaster occurs.

In performing this task of creating an informed public, the local director must carry on various programs aimed at communicating to a large number of people in his area.

In some cases, formal classes or seminars may be the most effective means to reach the public. In other instances, and to supplement classes and seminars, mass media may be effectively used. Task Area 4 measures the degree to which a local director has been able to train and educate the public in his local civil defense area, while Task Area 5, "public information activities," measures the degree to which a local director has been able to make use of mass communication media to inform the
people in his local area about civil defense.

To measure role performance in Task Area 4, local directors were asked if they had promoted or assisted in any formal civil defense educational activities within the past 12 months. Those who said they had promoted or assisted in educational activities were asked to indicate the number of people trained in the following areas:

1. Seminar for industrial or business leaders
2. Rural civil defense
3. Civil defense adult education program
4. Medical self help
5. Shelter manager
6. Radiological defense monitors
7. Auxiliary police
8. Auxiliary fire
9. First aid including nurses training
10. Rescue including heavy, light and underwater
11. Communications
12. Other general: university extension courses, supply and power

Civil defense activities number 1-8 were listed on the questionnaire, while activities 9-12 were specified as other training courses by some local civil defense directors.

For each formal civil defense activity listed above, the local directors were rank-ordered in terms of the number of people they had trained (or for whom they had made arrangements to be trained). The distribution of local civil defense directors was then arranged in deciles. A decile is a cluster of directors composing 10 per cent of the total three-state sample. Directors who had trained no people for a given course were given 0 points; those directors in the first decile were given 10 points; those in the second, 20 points and so on. A local director's total score for Task Area 4 was determined by summing his 12 individual activity area scores and dividing by 12. Thus, Task Area 4 scores ranging from 0 to 100
were possible.

The array of scores and the number of directors receiving each score are found in Appendix A, page 270.

**Task Area 5: Public information activities**

Mass media, such as radio, television, newspapers and exhibits may be used to inform the public about civil defense as well as personal communication through speeches. Indeed, these means may be the most effective in reaching those members of the public who are least likely to be motivated or able to participate in formal civil defense classes and seminars.

The measure for Task Area 5 considers the local director's use of six different types of media to inform the public about civil defense. Local directors were asked, "Have you done any work in the area of [public information] during the past 12 months?" Each local director was asked to state the number of public information activities he had accomplished in each of the following six areas during the past 12 months:

1. Speeches concerning some aspect of civil defense the director had made.
2. Civil defense related newspaper articles the director had written
3. Civil defense related radio or TV scripts written or placed by the director
4. TV or newspaper articles the director had persuaded others to made on their own
5. Civil defense exhibits, displays and informational booths sponsored by the director
6. Civil defense pamphlets and bulletins distributed by the director

For each of the six public information activity areas the local directors were rank-ordered on the basis of the number of activities they had accomplished in the area. The directors were then categorized into deciles
to which scores were assigned. For example, directors who had made no
speeches received no points, a director in the first speech decile re-
ceived 10 points, a director in the second speech decile received 20
points and so on. The directors' six activity area scores were summed
and divided by 6 to obtain the total score for the public information
task area. Possible total scores for Task Area 5 could range from 0 to
100.

The array of scores and the number of directors receiving each score
are found in Appendix A, page 270.

**Task Area 6: Emergency services 1 (warning services and radiological
defense services)**

This task area consists of 2 subtask areas, the
"establishment of warning services" and the "establishment of radiologi-
cal defense services." Subtask 1, "warning services," was judged by
Office of Civil Defense personnel to constitute 40 per cent of Task Area 6,
while Subtask 2, "radiological defense services," was judged to constitute
the other 60 per cent of Task Area 6.

**Subtask 1: Warning services**

Not only must the public be
trained and informed relative to civil defense programs and activities,
but some positive means must be available at the local level to quickly
warn the public of an impending threat. The local director is responsible
to develop and coordinate warning activities at the local level.

A local director's score on Subtask 1 was based upon his responses
to the following four questions:

1. "Does your civil defense area have a local warning point on the
NAWAS or a sheriff's warning system?"

2. "Do you have an outdoor siren warning system?"
3. "What per cent of the population in your local civil defense area is covered by the warning system?"

4. "Have you tested alerting procedures, warning dissemination and warning devices within the last 6 months?"

Local directors were given 25 points each for responding in the affirmative to questions 1, 2, and 4 above. Question 3 was scored on the basis of whether or not 100 per cent of the population was covered by the warning system. A director was given 25 points if 100 per cent coverage had been attained and no points if a 10.0 per cent coverage was not obtained.

Thus, each local director could receive a possible unweighted score ranging from 0 to 100 for Subtask 1, "warning services." Each local director's unweighted Subtask 1 score was then multiplied by .40 to determine his weighted Subtask 1 score, since Subtask 1 constitutes 40 per cent of Task Area 6. Thus, each local director could receive a possible score ranging from 0 to 40 for Subtask 1. This weighted score was added to the director's score on Subtask 2 (described below) in order to obtain a total score for Task 6.

Subtask 2: Radiological defense service Another of the local director's responsibilities was to coordinate the radiological defense of his local area. Thus, he is interested in training a cadre capable of assessing the fallout danger to his local community should there be a nuclear attack.

The empirical measure of local director performance for Subtask 2 is based on the director's responses to the following nine questions: 1) Does your local civil defense area have any Radiological Monitoring Capability? 2) Have you trained (or had trained) and assigned RADEF officers for public fallout shelters and/or monitors for monitoring
stations? 3) Indicate the number of RADEF officers trained for public fallout shelters. 4) Indicate the number of monitors trained for monitoring stations. 5) Have you secured and placed any RADEF instruments? 6) Indicate the number placed in public fallout shelters. 7) Indicate the number placed in monitoring stations. 8) Is a written or updated set of procedures for receipt, evaluation and dissemination of RADEF reports in your Emergency Operating Center? 9) Have you tested and calibrated all RADEF instruments in the last 6 months?"

Directors who said their local area had a radiological capability were given 10 points (question 1).

Directors could receive up to 50 points by having trained the total number of RADEF officers and/or monitors for public fallout shelters and monitoring stations suggested by Office of Civil Defense guidelines. Office of Civil Defense guidelines stated that each director should train four officers and/or monitors per public fallout shelter. Fallout shelters in this study were considered to be buildings that had been licensed, marked and stocked by local directors. Each director should also train one monitor per jurisdiction, and an additional seven monitors per 10,000 population. The number of officers and/or monitors each local director should have trained for public fallout shelters, and the number of monitors he should have trained for his jurisdiction and his population were determined. Two ratios were computed. First, the ratio of officers and/or monitors actually trained for shelters to the number of officers and/or monitors required was calculated. Directors who reported no "eligible" buildings were arbitrarily given a ratio of 1.00 for this ratio. Second, the ratio of monitors trained for the local director's jurisdiction and
his population to the number of monitors required was calculated. The average of the two ratios was determined and this average ratio was divided by 2 so that local directors could earn from 0 to 50 points according to their answers to questions 2-4.

Each director could receive up to 20 points on the basis of the number of RADEF instruments placed in public fallout shelters and monitoring stations (questions 5, 6, and 7). Office of Civil Defense personnel had determined that a local director should have placed one set of radiological instruments in each public fallout shelter and one set in each monitoring station. The ratio of instruments actually placed in public fallout shelters to those which should have been placed in public fallout shelters was calculated. The ratio of instruments actually placed in monitoring stations to those which should have been placed was also calculated. These two ratios were averaged and this average divided by 5, resulting in scores of 0 to 20.

Each director who said that a written or updated set of procedures for receipt, evaluation and dissemination of RADEF reports in his EOC was given 10 points (question 8).

Each director who said he had tested and calibrated all RADEF instruments in the last 6 months was given 10 points (question 9).

A director's unweighted score for Subtask 2, "radiological defense services," could range from 0 to 100. This unweighted score was then multiplied by .6 since Subtask 2 constitutes 60 per cent of Task Area 6. Thus, each local director could receive a possible score ranging from 0 to 60 for Subtask 2.

The total Task Area 6 score for each director was obtained by summing
the two subtask scores for each director. Possible scores for Task Area 6 could thus range from 0 to 100.

The array of Task Area 6 scores and the number of directors receiving each score are found in Appendix A, page 271.

**Task Area 7: Emergency services 2** It is recognized by civil defense officials that a local director cannot fully accomplish all of his assigned tasks by himself. He is expected to secure the cooperation of others in his local area who are already trained in some of the skills that will probably be needed if there is a nuclear attack.

"Emergency services 2" focuses on the degree to which a local civil defense director had assigned responsibility for emergency services to various individuals and organizations within his civil defense area, and also upon the activity level of the appointees.

A Task Area 7 score was developed for each director as follows. First, each local director was asked to indicate which of the following nine emergency services personnel had been assigned:

1. Communication
2. Emergency information
3. Police
4. Fire and rescue
5. Engineering
6. Health and medical
7. Welfare
8. Supply
9. Transportation

Second, for each emergency service the director was asked to indicate the extent of the appointee's activity level: none, some or a great deal. Thus, the director could have given one of four responses for each emergency service area: 1) emergency responsibilities not assigned, 2) assigned, but appointee not active, 3) assigned and some appointee activity,
and 4) assigned and a great deal of appointee activity.

To determine a total score for this area, Office of Civil Defense personnel suggested that activity areas 3 and 6 each be given a weight of 30; activity areas 1, 2, 4, and 7 each a weight of 20; and activity areas 5, 8, and 9 each a weight of 10. The four possible local director responses for each of the nine emergency areas and the scoring method utilized for the areas are shown below.

Points Assigned for Emergency Services

<table>
<thead>
<tr>
<th>Responses</th>
<th>3, 6</th>
<th>1, 2, 4, 7</th>
<th>5, 8, 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Emergency responsibilities</td>
<td>00</td>
<td>00</td>
<td>00</td>
</tr>
<tr>
<td>not assigned</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Assigned, but no activity</td>
<td>20</td>
<td>10</td>
<td>05</td>
</tr>
<tr>
<td>3. Assigned, and some activity</td>
<td>25</td>
<td>15</td>
<td>05</td>
</tr>
<tr>
<td>4. Assigned, and a great deal of activity</td>
<td>30</td>
<td>20</td>
<td>10</td>
</tr>
</tbody>
</table>

A local director who reported some services were not "available in his area" was arbitrarily given credit for having arranged for these services.

Using this procedure, it was possible for a local civil defense director to obtain an unweighted score ranging from 0 to 170. Each director's unweighted score was divided by 1.7 to determine his Task Area 7 score, which could range from 0 to 100. The array of Task Area 7 scores and the number of directors receiving each score are found in Appendix A, page 271.

The Paired Comparison Role Performance Score

To determine a Paired Comparison Role Performance Score for each director, the following procedure was used. The score a director received on each of the seven task areas (which could range from 0 to 100 for each
task area) was multiplied by the paired comparison weight of that task (the weight for each task area is recorded in the total row of Table 4, page 184, and also in the first row of Table 5). An example of how a director's Paired Comparison Role Performance Score was calculated is shown in Table 5. The seven task area role expectations are columns 1 through 7. Row 1 shows the paired comparison weights from Table 4. Row 2 shows the individual task scores received by a hypothetical director. The total column shows this director's Paired Comparison Role Performance Score. This score was obtained by multiplying each individual task area score (row 2) by its corresponding paired comparison weight (row 1) and summing across all 7 task areas (summing row 3).

Table 5. Example of a local director's Paired Comparison Role Performance Score

<table>
<thead>
<tr>
<th>Role Expectations or Tasks</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>License and Control</td>
<td>Train. and Plan</td>
<td>Public Info.</td>
<td>Em. Serv 1</td>
<td>Em. Serv 2</td>
<td>Score</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weights</td>
<td>7.0</td>
<td>6.0</td>
<td>5.0</td>
<td>4.0</td>
<td>3.0</td>
<td>2.0</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Task scores</td>
<td>100</td>
<td>20</td>
<td>20</td>
<td>38</td>
<td>40</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Product</td>
<td>700</td>
<td>120</td>
<td>100</td>
<td>152</td>
<td>120</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>(Row 1 times Row 2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1192</td>
<td></td>
</tr>
</tbody>
</table>

The maximum possible Paired Comparison Role Performance Score is 2,800; the minimum possible score is zero. The array, presented in Appendix A, page 272, summarizes the actual Paired Comparison Role Performance Scores.
Empirical Hypotheses

The above measures provide the epistemic link to the empirical level. It is at this level that the empirical tests of relationship are conducted. This section provides a summary at the empirical level of the several hypotheses that have been generated at the theoretical level.

The order of presentation in this section will be in two major parts following the two general level hypotheses stated on the final pages of the theory chapter, pages 85--86. These hypotheses were concerned with, first, the bivariate relationships between the conditions of role performance and level of role performance, and second, the multiple linear relationship of these same conditions to level of role performance.

The empirical hypotheses of this study are as follows:

Empirical Hypothesis I. There will be a positive relationship between the sample members' scores for each of the conditions of role performance (concepts and subconcepts) and their scores for level of role performance.

E.H. A. There will be a positive relationship between the sample members' initiation scores and their scores on level of role performance.

E.H. A-1. There will be a positive relationship between the sample members' formal socialization scores and their score on level of role performance.

E.H. A-2. There will be a positive relationship between the sample members' knowledge of the vertical system scores and their score on level of role performance.

E.H. A-3. There will be a positive relationship between the sample members' knowledge of the role scores and their score on level of role performance.
E.H. B. There will be a positive relationship between the sample members' acceptance-commitment scores and their score on level of role performance.

E.H. B-1. There will be a positive relationship between the sample members' perception of the role of civil defense in the world today and their score on level of role performance.

E.H. B-2. There will be a positive relationship between the sample members' perception of importance of actor's own role scores and their score on level of role performance.

E.H. B-3. There will be a positive relationship between the sample members' perception of satisfaction from performing the role scores and their score on level of role performance.

E.H. B-4. There will be a positive relationship between the sample members' perception of satisfaction with boundary maintenance scores and their score on level of role performance.

E.H. C. There will be a positive relationship between the sample members' ability scores and their score on level of role performance.

E.H. C-1. There will be a positive relationship between the sample members' amount of formal education scores and their score on level of role performance.

E.H. C-2. There will be a positive relationship between the sample members' time and salary scores and their score on level of role performance.

E.H. C-3. There will be a positive relationship between the sample members' civil defense budget scores and their score on level of role performance.

E.H. C-4. There will be a positive relationship between the sample members' number of civil defense personnel scores and their score on level of role performance.

E.H. D. There will be a positive relationship between the sample members' involvement scores and their score on level of role performance.
E.H. D-1. There will be a positive relationship between the sample members' hours per week on civil defense job scores and their score on level of role performance.

E.H. D-2. There will be a positive relationship between the sample members' involvement in systemic linkage scores and their score on level of role performance.

E.H. D-3. There will be a positive relationship between the sample members' systems buildings scores and their score on level of role performance.

**Empirical Hypothesis II.** There will be a sequential or path effect among the scores of the sample members on the conceptual variables of the model as diagrammed below.

![Diagram 11. Hypothesized model under test](attachment:image)

\[ X_1 = \text{Initiation} \]
\[ X_2 = \text{Acceptance-Commitment} \]
\[ X_3 = \text{Ability} \]
\[ X_4 = \text{Involvement} \]

1Because of diagramming complications, the straight line representing a direct causal relationship between \( X_1 \) and \( X_4 \) has been omitted.
Such a relationship is assumed on the basis of the asymmetric relationships demonstrated by significant beta weights between variables. On this basis, the empirical hypotheses presented below represent only the major relationships tested in the model. They do not take into account either the hypothesized relative strengths of the variables (the cumulative effect) or the ordering suggested from these relative strengths.

With these considerations, the following hypotheses may be presented.

E.H. A. There will be a significant direct linear relationship between the sample members’ initiation scores and their score on level of role performance.

E.H. A-1. There will be a significant direct linear relationship between the sample members’ initiation scores and their scores on involvement.

E.H. A-2. There will be a significant direct linear relationship between the sample members’ initiation scores and their scores on acceptance-commitment.

E.H. B. There will be a significant direct linear relationship between the sample members’ acceptance-commitment scores and their score on level of role performance.

E.H. B-1. There will be a significant direct linear relationship between the sample members’ acceptance-commitment scores and their score on involvement.

E.H. C. There will be a significant direct linear relationship between the sample members’ ability scores and their score on level of role performance.

E.H. C-1. There will be a significant direct linear relationship between the sample members’ ability scores and their scores on involvement.

E.H. D. There will be a significant direct linear relationship between the sample members’ involvement scores and their score on level of role performance.

These hypotheses represent only the first tests of the model. Rejection of one or more of these hypotheses results in the retest of each other hypothesis because the elimination of one may have an effect on all the rest.
That is, a supported hypothesis may depend upon the presence of a variable that is not itself significant.

To avoid redundancy, the individual hypotheses are not relisted for each additional test of the altered model.

Methods of Analysis

The methods of analysis employed in testing the first general hypothesis are rather different from the analysis methods employed in testing the second general hypothesis. For this reason these analyses will be described separately below.

Analysis of the first general hypothesis

The first general hypothesis is concerned with the relationship between each of the conditions of role performance and level of role performance. The analysis presented in conjunction with this hypothesis represents an attempt to empirically demonstrate that these conditions are essential to level of role performance.

To demonstrate these relationships, a number of empirical hypotheses were generated in the previous sections. To test these empirical hypotheses, simple product-moment correlation was employed. This is a measure of association designed to measure the amount of spread or distribution about a linear least-squares line. Dynamically considered it measures the rate of change in one variable relative to the other. Viewed in this way, the correlation coefficient $r$ is primarily a predictive device. It enables the researcher to expect a level of one variable by observation of another.

Also reported with the $r$ coefficient in selected instances is the
interdependent statistic $r^2$. This coefficient represents the overall proportion of the total variation of one variable that is statistically explained by the other, i.e., "... the ratio of explained variation in X to the total variation in X (16a, p. 298).

The key assumptions associated with product-moment correlation are that the variables have bivariate normal distribution, and that the relationship between the variables is linear. Correlation measures only linear association. Also, as with most statistics, it must be assumed that the variables were measured without error, that randomness was maintained in sampling procedures, and that the individual sample units are independent.  

It is acknowledged that not all of the data in this study conform to the criteria of these assumptions. In making the statistical tests, however, the assumptions necessary to apply these tests were made. The following reasons provide some justification for this treatment.

First, all of the units of the sample were drawn on the basis of

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1 From this it follows that $1-r^2$ represents the proportion of the total variance that is statistically unexplained.

2 Though this set of assumptions seems to represent the general feeling expressed in most statistics books reviewed, not all agree that these assumptions need be made. William T. Hays in his text, Statistics for Psychologists, for example, describes regression and correlation as being descriptive statistics and as such:

... it is not necessary to make any assumption at all about the form of the distribution, the variability of Y scores within X columns or 'arrays', or the true level of measurement represented by the scores in order to employ linear regression and correlation indices to describe a given set of data. So long as there are N distinct cases each having two numerical scores, X and Y, then the descriptive statistic of correlation and regression may be used ... and this is a perfectly adequate way to talk about the tendency for these numerical scores to associate or 'go together' in a linear way ... (57a, p. 510).
random selection.

Second, the law of large numbers and the central limit theorem tend to lend justification. The law of large numbers suggests that no matter what the form of the population distribution, the distribution of the sample means becomes more concentrated about the population mean as the sample size increases. The central limit theorem suggests that the distribution of the sample mean becomes more normally distributed as the sample size increases. In view of the sample size in this study, it would seem that both of these propositions lend support to making the above assumptions.

Third, most of the variables used in this study by actual observation exhibit a high degree of normality and homogeneity.

Probability levels preselected in this study were the traditional .05 or .01 levels of probability. They are used as the cut-off point in accepting or rejecting the null hypotheses. It might be noted at this point that increasing the sample size increases the probability of rejecting the null hypotheses and the sample size in this study is fairly large, 240 respondents.

The results of these tests are presented in the findings chapter beginning on page 215.

Analysis of the second general hypothesis

The second general hypothesis of this study is concerned with the causal relationship among the conditions of role performance and the level of role performance. In the theory chapter a set of causal relationships was generated which culminated in the model of hypothesized relationships
illustrated on page 206. The analysis presented in conjunction with these hypothesized relationships represents an attempt to empirically demonstrate that there is a causal relationship among these conditions that is causally ordered as illustrated.

The technique selected to facilitate this analysis is usually referred to as "path analysis." The method was probably first introduced by Wright in 1936 (145), but until recently, the technique has had little influence on sociological research.¹ The recent revival of interest has been largely due to the influence of Blalock (15) and Simon (122).

Path analysis is a statistical technique which makes use of standard beta coefficients as path coefficients to provide a "goodness of fit" test for causal models. It provides statistical evidence that may be interpreted as causal relationships and relative strengths of such relationships within the model. It further provides an accounting for the effects of exogenous variables on the variables under study.

The recursive equations Using the model as a guide the next step in analysis is to present the appropriate system of recursive equations. The purpose in this set of equations is to let the researcher identify the causal ordering of the variables. In this regard Blalock states:

Recursive systems have the property that the experimenter can, by entering at a particular point, change only the values of whatever \( X_i \) happen to appear at that point or below, whereas more general structural equations do not have this property . . . The objective in limiting ourselves to recursive systems . . . is to reduce the flexibility of our mathematical system so as to coincide more realistically with experimental models in which a

¹For a more extensive review of the development of the technique and its introduction into sociology, see Coward (30) and Mueller (91).
simple causal ordering is presumed. Where such an ordering cannot legitimately be assumed, the use of such recursive systems will of course not be appropriate (15, p. 57).

The first set of recursive equations generated to represent the model in this study is derived as follows. First, a standard regression equation is written for each variable that appears in the causal model. The regression equation for a given variable includes as its terms all the other variables that are considered to be causally linked to it (30, p. 14). Since variable $X_1$, Initiation, and $X_3$, Ability, are not causally preceded by any other variables in the model, they are not represented by regression equations in the recursive system. Following this procedure and referring to the causal model, Diagram 11, page 206, the recursive equations representing the model are as follows:

Equation 1: $X_2 = b_{21} X_1 + e_2$

Equation 2: $X_4 = b_{41.23} X_1 + b_{42.13} X_2 + b_{43.12} X_3 + e_4$

Equation 3: $X_5 = b_{51.234} X_1 + b_{52.134} X_2 + b_{53.124} X_3 + b_{54.123} X_4 + e_5$

Each of the three equations of the recursive set was run in linear regression analysis. This analysis provided a set of partial regression coefficients. These coefficients were treated in two ways. First, for each coefficient the calculated t value was compared with the tabular t value at the .05 level of significance. This procedure provided the basis for rejection of hypothesized causal relationships. If the partial coefficient was not significant at the .05 level of probability, the hypothesized relationship was rejected and the causal arrow representing $X_1$ was removed from the diagram.

\[1\text{Italics are Blalock's.}\]
that relationship in the diagram of the model was removed.

In this study rejection did take place and two additional runs of the altered recursive equations had to be made before all relationships were statistically acceptable. These reruns and model alterations will be described in the findings and conclusions chapters.

Second, once the causal relationships were established, the following procedure was used to arrive at the comparative relative strengths among the variables of the model. The partial regression coefficients were converted into standardized regression coefficients. The formula employed for this is as follows: 

\[ b_{ij}^* = \frac{b_{ij} s_i}{s_j} \]

where \( b_{ij}^* \) is the standardized coefficient and \( b_{ij} \) is the regular regression coefficient. The terms \( s_i \) and \( s_j \) represent the standard deviations of \( X_i \) and \( X_j \) (91, p. 32).

The standardized partial regression coefficients (beta coefficients) thus obtained are called "path coefficients" and designated (P) by Duncan and Werts (37, p. 4; 144, p. 511). These coefficients are at this point placed in their appropriate place on the model and may be used as a basis of comparison with each other with respect to relative strength or importance of effect on dependent variables (91, p. 32). These coefficients are entered and interpreted in the findings and conclusions chapters.

The key assumptions of path analysis include the general assumptions outlined above for product-moment correlation. In addition, several other assumptions must be made.

1. It must be assumed that the regression equations may be used to represent asymmetrical causal relationships as opposed to the symmetrical

\[ ^1 \text{For an extensive treatment of both the theoretical and statistical assumptions of path analysis, see Mueller (91, p. 15).} \]
relationships represented by the correlation equation. That is, the re-
gression equation \( Y_i = a + bX_i + e_i \) is asymmetrical in that it makes a
statistical difference which variable is considered the dependent variable.
On the other hand, with correlation it makes no statistical difference
which variable is selected as dependent.

2. It must be assumed that the variables in the model have face
validity. Without this validity the whole causal scheme breaks down
(16, p. 13).

3. Additivity among the variables is assumed. The variables must be
conceived to be measured on an interval scale or near an interval scale
(37, p. 3).

Again it is acknowledged that not all of these assumptions were met
or tested to determine the degree to which they were met. It does, how-
ever, suggest that in view of the previously outlined justification (pages
209-210) that the data were appropriately collected and analysis appropri-
ately applied.

Data processing and computation

The data processing and computation for this study was done mainly
on standard IBM equipment. The major portion of computation was done on
the IBM 360-70 computer of the Iowa State University Statistical Labora-
tory. The remainder was done on a SMC Marchant 880P electronic calculator.
CHAPTER 4. FINDINGS

The second chapter of this study introduced a theoretical frame of reference as a means of dealing with the objectives introduced in the first chapter. This explanatory frame of reference served as a guide in the generation of a set of general level hypotheses. The methodology chapter described the research procedures and techniques for testing these hypotheses. Empirical hypotheses were derived, conceptual measures were developed, and statistical testing procedures were described. In this chapter the results of these inductive statistical tests are presented. The emphasis is not on the interpretation of the analysis but the systematic presentation of the test results irrespective of their theoretical implication.

The order of presentation of the empirical hypotheses in the previous chapter followed the general ordering of their theoretical derivation. This order of presentation is again followed here. The findings associated with General Level Hypothesis I and its subhypotheses are presented first, followed by the findings associated with General Level Hypothesis II. In each instance, the general format which will be followed in this section will be to:

1. Present a restatement of the empirical hypotheses.¹

2. Present the results of the statistical tests as they relate to that respective empirical hypothesis.

¹It should be noted that the test of the hypothesis is actually of the null form and that rejection of the null does not necessarily mean the acceptance of positive form. Rejects of the null does, however, lend support to the positive form.
This presentation of the findings is as follows:

**Empirical Hypothesis I:** There will be a positive relationship between the sample members' scores for each of the conditions of role performance (concepts and subconcepts) and their score for level of role performance.

Empirical hypothesis I will be tested by the hypotheses and sub-hypotheses generated by the concepts and subconcepts of the conditions of role performance. If a major portion of these more specific hypotheses are supported, the general level hypothesis will be regarded as supported.

To test the empirical hypotheses under this general hypothesis, the correlation coefficient $r$ is used as described in the previous chapter, page 208. This testing procedure suggests that one more preset criterion for rejection of the null hypotheses be established. In this study the .05 and .01 levels of certainty were selected. With this sample of 240, and a two-tailed test, an $r$ of .128 or greater will reject the null hypothesis at the .05 level of significance, and an $r$ of .165 or greater will reject the null hypothesis at the .01 level of significance.

The F test is employed to further test the significance of the linear relationship obtained in observation. The F test is used to test the null hypothesis that there is no linear relationship between variables in the population being studied. This test is based on the ratio of variances in the two variables under test.

Often the t test, which is based upon the comparison of means, is used for the same purpose. It is not employed in the tests of empirical hypothesis I, however, since it is regarded as a special case of F, and $t^2 = F$, thus producing exactly the same results with the two tests (16a, p. 253; 41, p. 146; 57a, p. 521).
For this study, on a two-tailed test, an F, with 1 and 238 degrees of freedom, equal to or greater than 3.87 at the .05 level or 6.45 at the .01 level of significance serves as basis for rejection of the null hypothesis that \( p = 0 \).

E.H. A. There will be a positive relationship between the sample members' initiation scores and their score on level of role performance.

The calculated correlation coefficient is 0.679. This coefficient is significant at the .01 level. The proportion of explained variance, \( r^2 \), is 0.461. The computed F ratio with 1 and 238 degrees of freedom is 203.54, which is significant at the .01 level. The null hypothesis is refuted, thus these data suggest support for the original proposition.

E.H. A-1. There will be a positive relationship between the sample members' formal socialization scores and their score on level of role performance.

The calculated correlation coefficient is 0.544. This coefficient is significant at the .01 level. The proportion of explained variance, \( r^2 \), is 0.296. The computed F ratio with 1 and 238 degrees of freedom is 100.01, which is significant at the .01 level. The null hypothesis is refuted, thus these data suggest support for the original proposition.

E.H. A-2. There will be a positive relationship between the sample members' knowledge of the vertical system scores and their score on level of role performance.

The calculated correlation coefficient is 0.619. This coefficient is significant at the .01 level. The proportion of explained variance, \( r^2 \), is 0.383. The computed F ratio with 1 and 238 degrees of freedom is

\[ \text{Though F was chosen for the test of significance rather than t, for comparison purposes the tabular value of t at the .05 level is 1.96, and at the .01 level it is 2.55.} \]
147.85, which is significant at the .01 level. The null hypothesis is refuted, thus these data suggest support for the original proposition.

E.H. A-3. There will be a positive relationship between the sample members' knowledge of the role scores and their score on level of role performance.

The calculated correlation coefficient is .399. This coefficient is significant at the .01 level. The proportion of explained variance, $r^2$, is .159. The computed F ratio with 1 and 238 degrees of freedom is 45.05, which is significant at the .01 level. The null hypothesis is refuted, thus these data suggest support for the original proposition.

E.H. B. There will be a positive relationship between the sample members' acceptance-commitment scores and their score on level of role performance.

The calculated correlation coefficient is .585. This coefficient is significant at the .01 level. The proportion of explained variance, $r^2$, is .342. The computed F ratio with 1 and 238 degrees of freedom is 123.81, which is significant at the .01 level. The null hypothesis is refuted, thus these data suggest support for the original proposition.

E.H. B-1. There will be a positive relationship between the sample members' acceptance of systems goals scores and their score on level of role performance.

The calculated correlation coefficient is .336. This coefficient is significant at the .01 level. The proportion of explained variance, $r^2$, is .113. The computed F ratio with 1 and 238 degrees of freedom is 30.27, which is significant at the .01 level. The null hypothesis is refuted, thus these data suggest support for the original proposition.
E.H. B-2. There will be a positive relationship between the sample members' perception of role importance scores and their score on level of role performance.

The calculated correlation coefficient is .360. This coefficient is significant at the .01 level. The proportion of explained variance, $r^2$, is .130. The computed F ratio with 1 and 238 degrees of freedom is 35.41, which is significant at the .01 level. The null hypothesis is refuted, thus these data suggest support for the original proposition.

E.H. B-3. There will be a positive relationship between the sample members' perception of satisfaction with the role scores and their score on level of role performance.

The calculated correlation coefficient is .471. This coefficient is significant at the .01 level. The proportion of explained variance, $r^2$, is .221. The computed F ratio with 1 and 238 degrees of freedom is 67.83, which is significant at the .01 level. The null hypothesis is refuted, thus these data suggest support for the original proposition.

E.H. B-4. There will be a positive relationship between the sample members' perception of satisfaction with boundary maintenance scores and their score on level of role performance.

The calculated correlation coefficient is .575. This coefficient is significant at the .01 level. The proportion of explained variance, $r^2$, is .331. The computed F ratio with 1 and 238 degrees of freedom is 117.52, which is significant at the .01 level. The null hypothesis is refuted, thus these data suggest support for the original proposition.

E.H. C. There will be a positive relationship between the sample members' ability scores and their score on level of role performance.
The calculated correlation coefficient is .462. This coefficient is significant at the .01 level. The proportion of explained variance, $r^2$, is .213. The computed F ratio with 1 and 238 degrees of freedom is 64.55, which is significant at the .01 level. The null hypothesis is refuted, thus these data suggest support for the original proposition.

E.H. C-1. There will be a positive relationship between the sample members' amount of formal education scores and their score on level of role performance.

The calculated correlation coefficient is .147. This coefficient is not significant at the .01 level, though it is at the .05 level. The proportion of explained variance, $r^2$, is .130. The computed F ratio with 1 and 238 degrees of freedom is 5.236, which is not significant at the .01 level, but is at the .05 level. The null hypothesis at the .01 level is confirmed, thus these data do not sufficiently support the original proposition.

E.H. C-2. There will be a positive relationship between the sample members' time and salary scores and their score on level of role performance.

The calculated correlation coefficient is .361. This coefficient is significant at the .01 level. The proportion of explained variance, $r^2$, is .130. The computed F ratio with 1 and 238 degrees of freedom is 35.65, which is significant at the .01 level. The null hypothesis is refuted, thus these data suggest support for the original proposition.

E.H. C-3. There will be a positive relationship between the sample members' civil defense budget scores and their score on level of role performance.

The calculated correlation coefficient is .774. This coefficient is significant at the .01 level. The proportion of explained variance, $r^2$,
is .599. The computed F ratio with 1 and 238 degrees of freedom is 355.64, which is significant at the .01 level. The null hypothesis is refuted, thus these data suggest support for the original proposition.

E.H. C-4. There will be a positive relationship between the sample members' number of civil defense personnel scores and their score on level of role performance.

The calculated correlation coefficient is .311. This coefficient is significant at the .01 level. The proportion of explained variance, $r^2$, is .097. The computed F ratio with 1 and 238 degrees of freedom is 25.47, which is significant at the .01 level. The null hypothesis is refuted, thus these data suggest support for the original proposition.

E.H. D. There will be a positive relationship between the sample members' involvement scores and their score on level of role performance.

The calculated correlation coefficient is .702. This coefficient is significant at the .01 level. The proportion of explained variance, $r^2$, is .493. The computed F ratio with 1 and 238 degrees of freedom is 231.24, which is significant at the .01 level. The null hypothesis is refuted, thus these data suggest support for the original proposition.

E.H. D-1. There will be a positive relationship between the sample members' hours per week on the civil defense job scores and their score on level of role performance.

The calculated correlation coefficient is .578. This coefficient is significant at the .01 level. The proportion of explained variance, $r^2$, is .334. The computed F ratio with 1 and 238 degrees of freedom is 119.41, which is significant at the .01 level. The null hypothesis is refuted, thus these data suggest support for the original proposition.
E.H. D-2. There will be a positive relationship between the sample members' involvement in systemic linkage scores and their score on level of role performance.

The calculated correlation coefficient is .573. This coefficient is significant at the .01 level. The proportion of explained variance, $r^2$, is .328. The computed F ratio with 1 and 238 degrees of freedom is 116.31, which is significant at the .01 level. The null hypothesis is refuted, thus these data suggest support for the original proposition.

E.H. D-3. There will be a positive relationship between the sample members' involvement in systems building scores and their score on level of role performance.

The calculated correlation coefficient is .678. This coefficient is significant at the .01 level. The proportion of explained variance, $r^2$, is .460. The computed F ratio with 1 and 238 degrees of freedom is 202.49, which is significant at the .01 level. The null hypothesis is refuted, thus these data suggest support for the original proposition.

Summary of Tests of Hypothesis I

The general level hypothesis designated as I is a proposition involving all of the single variable relationships of the model. The purpose of this section is to present a summary of these single variable relationships.

Below is a summary table of the single relationships between each of the concepts and subconcepts of the model and level of role performance.

Table 6 summarizes the following information. For each variable, 1) the value of $r$, the correlation coefficient; the value of $r^2$; 2) the proportion of the total variation explained by $x$; 3) the value of $1 - r^2$, the proportion of the total variation unexplained by $x$; and 4) the value
Table 6. Single variable relationships: each independent variable related to level of role performance

<table>
<thead>
<tr>
<th>Major Concept</th>
<th>Hypothesis Designation</th>
<th>Independent Variable Name</th>
<th>(1)^a</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)^b</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>r</td>
<td>r²</td>
<td>1-r²</td>
<td>F₁</td>
</tr>
<tr>
<td>X₁, Initiation</td>
<td>A</td>
<td>Initiation</td>
<td>.679</td>
<td>.461</td>
<td>.539</td>
<td>203.54</td>
</tr>
<tr>
<td></td>
<td>A-1</td>
<td>Formal socialization</td>
<td>.544</td>
<td>.296</td>
<td>.704</td>
<td>100.01</td>
</tr>
<tr>
<td></td>
<td>A-2</td>
<td>Knowledge of the vertical system</td>
<td>.619</td>
<td>.383</td>
<td>.617</td>
<td>147.85</td>
</tr>
<tr>
<td></td>
<td>A-3</td>
<td>Knowledge of the role</td>
<td>.399</td>
<td>.159</td>
<td>.841</td>
<td>45.05</td>
</tr>
<tr>
<td>X₂, Acceptance-Commitment</td>
<td>B</td>
<td>Acceptance-Commitment</td>
<td>.585</td>
<td>.342</td>
<td>.658</td>
<td>123.81</td>
</tr>
<tr>
<td></td>
<td>B-1</td>
<td>Acceptance of systems goals</td>
<td>.336</td>
<td>.113</td>
<td>.887</td>
<td>30.27</td>
</tr>
<tr>
<td></td>
<td>B-2</td>
<td>Perception of role importance</td>
<td>.360</td>
<td>.130</td>
<td>.870</td>
<td>35.41</td>
</tr>
<tr>
<td></td>
<td>B-3</td>
<td>Perception of satisfaction with role</td>
<td>.471</td>
<td>.221</td>
<td>.778</td>
<td>67.83</td>
</tr>
<tr>
<td></td>
<td>B-4</td>
<td>Perception of satisfaction with boundary maintenance</td>
<td>.575</td>
<td>.331</td>
<td>.669</td>
<td>117.52</td>
</tr>
<tr>
<td>X₃, Ability</td>
<td>C</td>
<td>Ability</td>
<td>.462</td>
<td>.213</td>
<td>.787</td>
<td>64.55</td>
</tr>
<tr>
<td></td>
<td>C-1</td>
<td>Amount of formal education</td>
<td>.147</td>
<td>.022</td>
<td>.978</td>
<td>5.24</td>
</tr>
<tr>
<td></td>
<td>C-2</td>
<td>Time and salary</td>
<td>.361</td>
<td>.130</td>
<td>.870</td>
<td>35.65</td>
</tr>
<tr>
<td></td>
<td>C-3</td>
<td>Civil defense budget</td>
<td>.774</td>
<td>.599</td>
<td>.401</td>
<td>355.64</td>
</tr>
<tr>
<td></td>
<td>C-4</td>
<td>Number of civil defense personnel</td>
<td>.311</td>
<td>.097</td>
<td>.903</td>
<td>25.47</td>
</tr>
<tr>
<td>X₄, Involvement</td>
<td>D</td>
<td>Involvement</td>
<td>.702</td>
<td>.493</td>
<td>.507</td>
<td>231.24</td>
</tr>
<tr>
<td></td>
<td>D-1</td>
<td>Hours per week on the CD job</td>
<td>.578</td>
<td>.334</td>
<td>.666</td>
<td>119.41</td>
</tr>
<tr>
<td></td>
<td>D-2</td>
<td>Involvement in systemic linkage</td>
<td>.573</td>
<td>.328</td>
<td>.672</td>
<td>116.31</td>
</tr>
<tr>
<td></td>
<td>D-3</td>
<td>Involvement in systems building</td>
<td>.678</td>
<td>.460</td>
<td>.540</td>
<td>202.49</td>
</tr>
</tbody>
</table>

^a The tabular value for r at .01 level of significance is r = .165.
^b The tabular value for F at the .01 level of significance is F = 6.45.
of $F$, the calculated figure used to test significance of the statistic.

**Empirical Hypothesis II:** There will be a sequential or path effect among the scores of the sample means on the conceptual variable of the model (see the diagram of the model on page 206).

Empirical hypothesis II will be tested by the hypothesized relationship generated among the conceptual conditions of the role performance model presented. If a major portion of these hypothesized relationships are supported, the general level hypothesis will be regarded as supported.

Each of the hypothesized linear relationships of the model is listed separately below. It should be recognized, however, that they were not tested separately but as a part of the system of recursive equations listed on page 212.

A product of this regression analysis is the partial regression coefficient for each hypothesized relationship. These coefficients are then standardized to yield what is referred to as the path coefficient. The equation utilized for this derivation was presented on page 213.

As a test of significance, the calculated value of $t$ for each path coefficient was then checked against the tabular value at the .05 level of significance, $t = 1.96$. A calculated value that was as large or larger served as the basis for rejection of the original null hypothesis.

**E.H. A.** There will be a significant direct linear relationship between the sample members' initiation scores and their score on level of role performance.

The calculated path coefficient is .3192. This coefficient is significant at the .05 level. The computed $t$ value with 238 degrees of freedom ($n-2$) is 7.4688.
E.H. A-1. There will be a significant direct linear relationship between the sample members' initiation scores and their scores on involvement.

The calculated path coefficient is .4105. This coefficient is significant at the .05 level. The computed t value with 238 degrees of freedom (n-2) is 211.0761.

E.H. A-2. There will be a significant direct linear relationship between the sample members' initiation scores and their scores on acceptance-commitment.

The calculated path coefficient is .4501. This coefficient is significant at the .05 level. The computed t value with 238 degrees of freedom (n-2) is 14.4233.

E.H. B. There will be a significant direct linear relationship between the sample members' acceptance-commitment scores and their score on level of role performance.

The calculated path coefficient is .0916. This coefficient is significant at the .05 level. The computed t value with 238 degrees of freedom (n-2) is 1.9815.

E.H. B-1. There will be a significant direct linear relationship between the sample members' acceptance-commitment scores and their scores on involvement.

The calculated path coefficient is .1855. This coefficient is significant at the .05 level. The computed t value with 238 degrees of freedom (n-2) is 4.3479.

E.H. C. There will be a significant direct linear relationship between the sample members' ability scores and their score on level of role performance.

The calculated path coefficient is .0707. This coefficient is significant at the .05 level. The computed t value with 238 degrees of freedom (n-2) is 1.3934.
E.H. C-1. There will be a significant direct linear relationship between the sample members' ability scores and their scores on involvement.

The calculated path coefficient is .3376. This coefficient is significant at the .05 level. The computed t value with 238 degrees of freedom (n-2) is 7.3775.

E.H. D. There will be a significant direct linear relationship between the sample members' involvement scores and their score on level of role performance.

The calculated path coefficient is .1574. This coefficient is significant at the .05 level. The computed t value with 238 degrees of freedom (n-2) is 2.8891.

Summary of Tests of Hypothesis II

The general level hypothesis designated as II is a proposition involving the multiple linear relationships of the model. The purpose of this section is to present a summary of these relationships.

A summary of the regular and standard regression coefficients for the initial set of recursive equations is presented in Table 7 below.

The calculated t values for each tested relationship of the initial model is presented in Table 8. These calculated values were compared to the tabular value of t at the .05 level with (n-2) degrees of freedom as a test of significance.
Table 7. Regular and standard regression coefficients for the first set of recursive equations

<table>
<thead>
<tr>
<th>Regression Coefficient</th>
<th>Regular</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>b_{21}</td>
<td>1.0181</td>
<td>.4501</td>
</tr>
<tr>
<td>b_{41.23}</td>
<td>.9285</td>
<td>.4105</td>
</tr>
<tr>
<td>b_{42.13}</td>
<td>.1887</td>
<td>.1855</td>
</tr>
<tr>
<td>b_{43.12}</td>
<td>.2970</td>
<td>.3376</td>
</tr>
<tr>
<td>b_{51.234}</td>
<td>.7221</td>
<td>.3192</td>
</tr>
<tr>
<td>b_{52.134}</td>
<td>.0932</td>
<td>.0916</td>
</tr>
<tr>
<td>b_{53.124}</td>
<td>.0621</td>
<td>.0707(^a)</td>
</tr>
<tr>
<td>b_{54.123}</td>
<td>.1120</td>
<td>.1574</td>
</tr>
</tbody>
</table>

\(^a\)This regression coefficient is not significant at the .05 level.

Table 8. Calculated values of t associated with each regression term of the first set of recursive equations

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>(X_1)</th>
<th>(X_2)</th>
<th>(X_3)</th>
<th>(X_4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(X_2)</td>
<td>14.4233</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(X_4)</td>
<td>11.0761</td>
<td>4.3479</td>
<td>7.3775</td>
<td>-</td>
</tr>
<tr>
<td>(X_5)</td>
<td>7.4688</td>
<td>1.9815</td>
<td>1.3934(^a)</td>
<td>2.8891</td>
</tr>
</tbody>
</table>

\(^a\)Not a significant value of t at the .05 level.
Upon running the first regression analysis, it was found that one of the hypothesized relationships did not hold. The model was altered accordingly by the elimination of the line and causal arrow between $X_3$, Ability, and $X_5$, Level of Role Performance. (See Diagram 12 below.)

The remaining relationships were analyzed as a second set of recursive equations. Table 9 presents a summary of the regular and standard regression coefficients for this second set of recursive equations.

The calculated t values for each tested relationship of the second model are presented in Table 10. The same criterion for rejecting the null was used on the second run as the first.

Since a second run of the regression equations revealed still another relationship that was not significant at the .05 level, this term was eliminated and the model was again altered accordingly. The
Table 9. Regular and standard coefficients for the second set of recursive equations

<table>
<thead>
<tr>
<th>Regression Coefficient</th>
<th>Regular</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>$b_{21}$</td>
<td>1.0181</td>
<td>.4501</td>
</tr>
<tr>
<td>$b_{41.2}$</td>
<td>.9210</td>
<td>.3876</td>
</tr>
<tr>
<td>$b_{42.1}$</td>
<td>.6283</td>
<td>.3466</td>
</tr>
<tr>
<td>$b_{51.24}$</td>
<td>.4645</td>
<td>4.2812</td>
</tr>
<tr>
<td>$b_{52.14}$</td>
<td>.0943</td>
<td>.0927</td>
</tr>
<tr>
<td>$b_{54.12}$</td>
<td>.3373</td>
<td>.4741</td>
</tr>
</tbody>
</table>

*Not significant at the .05 level.*

Table 10. Calculated values of $t$ associated with each regression term of the second set of recursive equations

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Independent Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$X_1$</td>
</tr>
<tr>
<td>$X_2$</td>
<td>7.4687</td>
</tr>
<tr>
<td>$X_4$</td>
<td>3.2244</td>
</tr>
<tr>
<td>$X_5$</td>
<td>4.2812</td>
</tr>
</tbody>
</table>

*This coefficient is not significant at the .05 level.*

The line and causal arrow was eliminated between $X_2$, Acceptance-Commitment, and $X_5$, Level of Role Performance. (See Diagram 13.)

The remaining variables were again run in the regression equation to
Diagram 13. Third set of relationships tested

determine the multiple effects of this new combination. Table 11 presents a summary of the regular and standard regression coefficients for this third set of recursive equations.

The calculated t values for each tested relationship of the third model are presented in Table 12. The same criterion, the .05 level of

Table 11. Regular and standard regression coefficients for the third set of recursive equations

<table>
<thead>
<tr>
<th>Regression Coefficient</th>
<th>Regular</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>$b_{21}$</td>
<td>1.0181</td>
<td>.4501</td>
</tr>
<tr>
<td>$b_{41}$</td>
<td>1.2213</td>
<td>.3769</td>
</tr>
<tr>
<td>$b_{51.4}$</td>
<td>.5142</td>
<td>.2273</td>
</tr>
<tr>
<td>$b_{54.1}$</td>
<td>.3711</td>
<td>.5217</td>
</tr>
</tbody>
</table>
significance, was used on these relationships as used on the first and second runs.

Table 12. Calculated values of t associated with each regression term of the third set of recursive equations

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>X₁</th>
<th>X₄</th>
</tr>
</thead>
<tbody>
<tr>
<td>X₄</td>
<td>6.4189</td>
<td>-</td>
</tr>
<tr>
<td>X₅</td>
<td>4.9873</td>
<td>5.8810</td>
</tr>
</tbody>
</table>

All relationships were found to be significant on the third run, thus the model altered in accordance was accepted. As a further test, however, variable X₃, Ability, was re-entered into the equation in the absence of X₂, Acceptance-Commitment, to see if the effects of X₂ were such that X₃ would be significant in the absence of X₂. The result was that the regular b between X₃ and X₅ was -.0251 with a t value of -.3925 which, of course, suggested that X₃ should not be reintroduced.

At this point, the model in Diagram 14 was accepted and the path coefficients added as an indication of relative strength.

As presented earlier, the recursive equations are basically multiple regression equations. The key factor in these equations has been the b value which is standardized to provide the path coefficient. But the conventional results of the regression are also of importance in interpreting the model under test. Table 13 presents a summary of the square root multiple R; the explained variance, $R^2$; the unexplained variance, $1 - R^2$; and the F test of significance for each regression on variable 5 of the model.
Diagram 14. Final diagram of relationships with path coefficients added

*Note these two relationships are correlation coefficients, not path coefficients.

Table 13. Summary of multiple regression on level of role performance for each model test

<table>
<thead>
<tr>
<th>Model test</th>
<th>Square Root Multiple R</th>
<th>Multiple R² (explained)</th>
<th>1-R² (unexplained)</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial</td>
<td>.710</td>
<td>.504</td>
<td>.496</td>
<td>59.695</td>
</tr>
<tr>
<td>Second</td>
<td>.738</td>
<td>.545</td>
<td>.455</td>
<td>94.310</td>
</tr>
<tr>
<td>Third</td>
<td>.736</td>
<td>.541</td>
<td>.459</td>
<td>139.794</td>
</tr>
</tbody>
</table>
CHAPTER 5. SUMMARY AND CONCLUSIONS

General Summary

This study has focused upon gaining a better understanding of the local change agent as he carries out his assigned role in the horizontal social system. He was conceptualized as an actor who must form an essential link between the role defining vertical system and his local community conceptualized as the horizontal system. It is the complexity of this position that adds to the importance and the difficulty in assessing the level of performance of those holding such a position.

Following this preliminary orientation, the primary general objective of the study was to investigate how the local change agents respond to the role expectations created for them by the social system of which they are part. To implement this investigation, four specific objectives were generated.

Each of these specific objectives was directed toward accomplishing the above general objectives. First, it was a specific objective to describe the position of the change agent as a link between the horizontal and vertical social systems. This objective was carried out by first discussing the concepts of systems, social systems, horizontal and vertical social systems, and then finally describing the local change agent in conjunction with the social systems.

Second, it was a specific objective of this study to develop a conceptual model of the necessary conditions for the achievement of a high level of role performance by a local change agent. A set of such conditions was theoretically developed and described beginning on page 47.
The third objective was to subject these conditions to analysis in order to determine the degree to which they might be used to account for varying levels of role performance among local change agents. The result of this bivariate analysis begins on page 216.

As a fourth and final specific objective an attempt was made to determine the degree to which these previously outlined conditions could be considered as a path or sequence of stages. The analytical results of this attempt are presented beginning on page 224.

The pursuance of these objectives led directly to the formulation of the two central, general hypotheses of this dissertation which were:

I. There is a relationship between each of the conditions of role performance (concepts and subconcepts of the model) and level of role performance.

II. There is a sequential or path effect among the conditions of role performance (concepts of the model).

Each of these general hypotheses yielded a number of interrelated subhypotheses. After operationalization of the concepts, the hypotheses were moved to the empirical level for test. These empirical hypotheses are presented beginning on page 204. Of the 18 hypotheses and subhypotheses tested under general hypothesis I, only one hypothesis (concerning amount of formal education) was unsupported. The series of hypotheses tested under general hypothesis II resulted in the rejection of two of the original relationships posited in the model (the relationship between ability and level of role performance, and the relationship between acceptance-commitment and level of role performance).

The number and strength of confirmed relationships under general hypothesis I provide the basis for judged support of this general hypoth-
esis. The conclusion is, therefore, that there is justification for considering the local change agent's role in terms of a set of minimum conditions that must be met for high levels of performance. These conditions are most likely not the only ones that could be conceptualized, but they are conditions that provide a basis for better understanding the differential in level of role performance among local change agents.

General hypothesis II was also judged to be supported on the basis of confirmed empirical hypotheses. Two alterations in the original model, however, were made on the basis of unconfirmed hypotheses. The conclusion is that there is empirical justification for considering the necessary conditions of role performance as a causal sequence of events. On the basis of both strong correlational findings and path analysis findings, there is evidence to support the theoretical suggestion that if an incumbent is low on one of the conceptual stages, he will likely be low on succeeding stages of the sequence.

Interpretation of the Causal Model

The question at this point, aside from the formal confirmation or rejection of hypotheses, is, what does the causal model presented and tested tell us about role performance as a process?

Unlike correlation which has a rather straightforward and simple interpretation, the interpretation of path analysis is not so evident. It depends upon some familiarity with correlation, regression, and simultaneous equations. But more importantly, it requires a background of experience in interpreting data and a drawing inference from this same data, since it is primarily an interpretive device for gaining a
better understanding of diverse logical systems.

In this study it should first be noted that each of the variables introduced into the recursive equations was significantly correlated with the key dependent variable, level of role performance. Yet on the running of the linear regression and standardizing of the betas, it was found that variable $X_3$, Ability, was not directly related to the dependent variable. This suggests an indirect relationship of $X_3$ to the dependent variable, $X_5$ through $X_4$, Involvement. The analysis indicates, therefore, that ability, as defined and measured, affects involvement which, in turn, affects the level of role performance. This interpretation, following Coward (30, p. 18), suggests that the product-moment correlation between $X_3$ and $X_5$ would be substantially reduced by partialling out variable $X_4$.  

The theoretical implication here with respect to interpreting the model is that ability as defined is not likely to produce high levels of role performance without involvement. A look at the development of the ability measure suggests the soundness of this empirical indication. Particularly the part of the measure subconceptualized as systems ability which requires an involvement on the part of the actor for its development.

An additional and important methodological implication is aptly pointed out by Coward:

... as variables are considered in sets, or systems, the interdependence effects among variables becomes observable. Thus, to the extent that theory is modified by empirical observations, theoretical relationships based on two-variable observations may be very different from theoretical relationships based on multi-variable observations (30, p. 18).

---

Variable $X_4$ was partialled out with the expected result. While $r_{35} = .462$, the partial was $r_{35.4} = .220$, which represents a substantial reduction.
On the second run of the recursive equations with variable $X_3$ removed, it was found that the hypothesized relationship between $X_2$, Acceptance-Commitment, and the dependent variable did not hold at the preset significance level. Again, despite the relatively high correlation coefficient of $r = .585$, rejection of the multi-variate relationship occurred.

This finding was not anticipated. Apparently the development of an acceptance and commitment to the job role is related to level of role performance indirectly through involvement. That is, the analysis indicates that if the actor's acceptance and commitment are to be considered as related to the level of role performance, then consideration should be given to his development of a higher level of involvement.

Another aspect of interpreting the causal model is that of relative strengths of the variable. In path analysis this is primarily determined by the size of the path coefficients.\(^1\)

Focusing on this study one can see that the strongest relationship based on standard betas are between $X_4$ and $X_5$, $X_1$ and $X_2$, $X_4$ and $X_1$, and $X_1$ and $X_5$ in descending order. This constitutes a rather weak confirmation of the originally theorized order of strength of relationship.

The strongest relationship was originally posited between $X_4$ and $X_5$. This is clearly the case. While the correlation coefficient between these

\(^1\)It should be made clear at this point that the path coefficients are not on the same -1.0 to +1.0 continuum as the correlation coefficients. The path coefficient is an indication of slope, a ratio of change in units of $X$ to units of $Y$. The path coefficients are normally much smaller than correlation coefficients.
two was only slightly higher than between $X_1$ and $X_2$, the path coefficient is much larger indicating a strong linear relationship.

The strong relationship between $X_1$ and $X_2$ was much less anticipated. Perhaps this finding can best be explained in terms of feedback effect explained later in this chapter, page 243. It can also be explained to some extent in that it is not only directly related to variable $X_5$, but it is also indirectly related through each of the succeeding variables in the model.

While the standardized beta has been presented as an indication of relative strength, no claim is made that these relative strengths are proportional. For example, it may be noted that the magnitude of relationship between $b_{51.4}$ is .227 while that between $b_{54.1}$ is .522. This author has not been able to establish sufficient evidence to claim that the relationship $b_{54.1}$ is approximately twice as strong as that between $b_{51.4}$. The claim is only that $b_{54.1}$ is stronger.

In summary, it may be seen from the above discussion that the scheme of path analysis enables the researcher to more critically focus not only on the weak spots of his logically derived model, but also on potential explanation of what might have been theoretically overlooked. It provides a system for studying indirect as well as direct effects of variables in the proposed system. And it tends to force the theory builder into a higher degree of internal consistency with a closer accounting for basic assumptions (37, p. 7).
Further Evaluation of Path Procedures

The purpose of this section is not simply to cast doubt on the conclusions or to make excuses for uncertainties but to briefly summarize this author's experiences with the relatively new technique of path analysis. Further, this section is not an attempt to outline all of the pros and cons of the technique but only to suggest some of its strengths and weaknesses insofar as this attempted application is concerned.

Causal ordering

First, as a point of clarification, the causal approach seems to be applied in two similar yet rather different ways that often seem confused in the literature. There are first those researchers who report not to know the causes of an event and attempt through causal analysis to arrive at a set of causally significant factors to explain the event. This approach is reminiscent of early applications of factor analysis. Second, there are those researchers that recognize that they have logical causes of an event but want to employ causal analysis to ascribe relative importance and/or sequence among preselected causal factors.

This study was primarily of the latter type. It is an attempt to infer not only a sequence of causal factors but also the relative strength of these factors with respect to this ability to predict the dependent variable.

This attempt is suggested by the second general objective of the study, which was to determine the causal or path effect among the preselected variables of the model. As pointed out, this objective was in the main accomplished. The question still remains, however: What does
this mean? Has there been empirical evidence introduced to support the equation, "If A, then B"? This author suggests that if it is an empirical statement that we are considering, there is in fact evidence to support the proposition. At least one of possibly a large number of mathematically acceptable explanations has been arrived at.1

This statement is clarified by considering the mathematical statement such as is often found in physics. In such examples the notion of forcing or producing is common. For example, in the equation $F = Ma$ (force = mass x acceleration) one would say that a given mass accelerated to a given speed will cause (or produce) a force of a specific amount. A change in $M$ (mass) holding a (acceleration) constant will cause a proportionate change in $F$ (force). For those more familiar with statistics, the forced choice in determining degrees of freedom will serve as a better example of the mathematical or empirical notion of cause.

But, on a logical basis, a causal statement must depend upon what events are described and how these events are described. That is, in imputing logical causal order to events or actions, as is attempted in this dissertation, judgments must initially be made on the basis of values. From an infinite spread of types and levels of logical causes, the researcher centers on what he judges to be the cause and then proceeds to make his empirical tests for consistency. Given another value system, another competent researcher might possibly causally explain the same event in terms of different concepts and at a different level. Thus, the

1Using the technique presented in this study, the maximum number of direct causal relationships is $\frac{(n)(n-1)}{2} - 1$. With reordering of the concepts one would figure the permutations of the number of variables.
researcher with his empirical test has only demonstrated that the causal series that he has chosen has empirical consistency. He has not demonstrated the cause of an event. He has only an empirical basis for suggesting some empirical support for what remains basically a logical causal sequence. That is, cause is basically imputed at the theoretical level and the recursive regression equation gives some support for the consistency of this logic.

Looking more specifically at the technique used in this causal analysis, one can see it is clearly a derivative of the common variety of multiple regression. Variables can and often are ranked in terms of their strength of contribution to the overall pool of variance.\(^1\)

In such instances the b's obtained in the multiple regression equation are an indication of the slope in the regression line that would be obtained by holding constant all other independent variables in the equation. That is, it is an indication of the amount of change in the dependent variable that could be expected of a given standardized change in an independent variable with the others in the system held constant. At this point it might be well for the reader to recall the mathematical example above, \(F = Ma\). Holding constant on acceleration enabled a causal statement to be made about \(F\) given a change in \(M\).

It seems, following the above example, that since a given independent variable as it is introduced into the equation must take into account the constant effects of previously introduced variables, it would make a

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\(^1\)For example, see Appendix B of this study which arrays the 54 social systems variables by size of their regression coefficient. Coupling this procedure with a simple goodness of fit test for the standardized beta weights gives us the essentials of path analysis.
difference as to which variables had been previously introduced. The size of these variables will, even if held constant, have an effect on the size of the $b$ coefficient. This phenomenon is acknowledged by the fact that the technique requires that the researcher logically preselect the order of the variables in the sequence.

This effect of constants, in fact, seemed to be the case in this study. Each of the product-moment correlations between the independent variables of the model and the dependent variable was relatively high. It was therefore expected that any one of these might explain a large amount of the pool of variance and thus be a strong predictor (high $b$ value) of the dependent variable. This was found to be the case particularly when that variable was introduced first into the equation. That is, the relative importance of a given variable seemed to be influenced by where it was introduced into the recursive equations. The earlier it was introduced, the higher its $b$ value relative to others in the equations. This apparent effect made the statement of relative importance suspect unless, of course, one takes it into consideration in his interpretation.

In this study the relative importance of $b$ values with respect to level of role performance were, despite the possible effects just described, in the theorized order, with the exception of acceptance-commitment. Acceptance-commitment was not only out of the theorized order, but was rejected as having a significant linear relationship. And it is interesting to note that this rejection occurred despite bivariate relationship of $r = .585$ and an explained variance of $r^2 = .342$.

Several articles on path analysis state that the standardized $b$ in
the recursive equation indicates relative strength or importance (20, p. 373). This author is not, on the basis of this study, suggesting the contrary. But it is suggested that there is much about this coefficient that is either not known or has not been adequately explained.

Feedback

Feedback is the interaction effect between the concepts of a process model. The interpretation of the findings of this study should take this effect into consideration. The model presented and tested herein, as pointed out in the theoretical development, differs from such as the adoption-diffusion model in that the concepts or stages are not as discrete in this model as they are in the adoption-diffusion model. For example, in the adoption-diffusion model, when one has become aware of a particular farm practice, he has arrived at a disposition that is rather distinct from unaware, or if he has tried a given practice, this is distinct from not having tried it at all. The more important point here is that once he is in the trial stage of the model, this is likely to have little if any effect on awareness—or at least little effect of consequence with respect to interpretation of the model. There is little or no concern with feedback.

In the model presented herein, however, the situation is different. Once an actor is at the involvement stage, he may also be in the process of initiation into the new norms of the system. He will be developing higher or lower levels of acceptance-commitment, and through his increased familiarity he may be increasing his level of ability. This is the feedback effect.
Some of the developers of path analysis hint that the feedback effect is taken into account as factors are held constant or that excessive feedback will lead to the rejection of the causal hypothesis, but most simply ignore the problem altogether (37, pp. 5 and 16; 16, pp. 25-26). With respect to this and other such "confounding variables," Blalock states that the problem can be reduced by careful design but,

At some point the experimenter must stop and make the simplifying assumptions that such variables might have negligible effects. Otherwise, he cannot make any causal inference at all . . . The point we are emphasizing is that no matter how elaborate the design, certain simplifying assumptions must always be made. In particular, we must at some point assume that the effects of confounding factors are negligible . . . the plausibility of this particular kind of assumption is always a question of degree (16, pp. 25 and 26).

Such recognition of the problem does not in itself suggest a practical remedy. The types of assumptions that one is willing to make are a question of degree, but often there are some guideposts indicating the risks of making the assumption. For example, most statistics texts describe the effects or risks of the assumption of linearity in correlation and regression. In path analysis, however, no guideposts have as yet been worked out for making such assumptions. The question must still remain quite unanswered as to whether the b values would have been higher, lower, or just the same if the confounding feedback effect had been properly understood and empirically controlled, if necessary.

If, on the other hand, it is concluded that path analysis can only be used on discrete variables with no feedback, and none of the literature

\[1\] Italics are Blalock's.
surveyed by this author concluded such, then the life and utility of this statistic will likely be quite limited in social research. Again, further development and description of this aspect of the technique are needed.

Finally, as a concluding statement, this author suggests that the research presented in this dissertation demonstrates at a minimum limited support for each of the two general level hypotheses. There is potential utility in the conceptualized conditions of role performance. Also, understanding a predominant sequence among these conditions might have further utility. There are, however, still existing a number of problems in firmly establishing a causal sequence among such concepts. These problems need to be better understood through further research, controlled application, and, particularly, statistical technique development.
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<th>Publisher/Location</th>
<th>Year</th>
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<td>1962.</td>
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<td>1952.</td>
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<td>69</td>
<td>Klonglan, Gerald E., George M. Beal, Joe M. Bohlen, and Charles L. Mulford</td>
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<td>1966.</td>
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251


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Sincere appreciation is difficult to adequately express in words. This acknowledgment is but a mere mention where much more is felt. Also, this short listing must remain incomplete in that there have been many with words of advice and encouragement as well as those who have helped indirectly. To each of these persons I wish to extend my appreciation.

More specifically, appreciation is extended to Dr. Joe M. Bohlen, who has not only helpfully guided this dissertation but has been a consistent help and influence throughout my academic program.

My sincere appreciation is also extended to Dr. Gerald Klonglan. Dr. Klonglan is another to whom thanks must go not only for his work on my doctorate committee but also for the encouragement, advice, and help over the long run that has made this effort possible.

Special thanks must also be extended to Paul Yarbrough. Mr. Yarbrough has so often unselfishly made efforts in my behalf. He helped at a number of the stages of development of this dissertation. He was not only valuable in an advisory capacity but was also a valuable liaison with the campus in the preparation of this manuscript.

My appreciation is extended to Mr. E. Walter Coward, Jr., and Dr. Richard Warren for their invaluable advice on statistical techniques and interpretation; and to Dr. Richard S. Brooks, who proofread the final manuscript.

My thanks also are extended to Dr. Virgil Lagomarcino, Dr. Ronald Powers, and Dr. Ross Talbott for their willingness to serve on my graduate committee.
Finally, I would like to publicly extend my appreciation to the Department of Defense, Office of Civil Defense and the Iowa Agricultural and Home Economics Experiment Station for the financial support that they provided through the sociology research team.
This appendix contains the arrays of scores resulting from the collation of individual scores on each of the conceptual measures presented in the methodology chapter. Each table of this appendix presents either an array of scores or score categories and the number and per cent of respondents receiving each score.

The order of presentation in this appendix follows the order of appearance in the text. Each array is designated in accordance with the scheme presented beginning on page 122 of the methodology chapter.

Table 14. Array of score categories for Formal Socialization subconcept

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<tr>
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<th>Categories of scores</th>
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<th>% of 240</th>
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<td>526 - 550</td>
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<td>1.7</td>
</tr>
<tr>
<td>101 - 125</td>
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<td>551 - 575</td>
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<td>.8</td>
</tr>
<tr>
<td>126 - 150</td>
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<td>0.0</td>
<td>576 - 600</td>
<td>2</td>
<td>.8</td>
</tr>
<tr>
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<td>601 - 625</td>
<td>3</td>
<td>1.3</td>
</tr>
<tr>
<td>176 - 200</td>
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<td>0.0</td>
<td>626 - 650</td>
<td>2</td>
<td>.8</td>
</tr>
<tr>
<td>201 - 225</td>
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<td>651 - 675</td>
<td>2</td>
<td>.8</td>
</tr>
<tr>
<td>226 - 250</td>
<td>22</td>
<td>9.2</td>
<td>676 - 700</td>
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<td>.4</td>
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<tr>
<td>251 - 275</td>
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<td>4.6</td>
<td>701 - 725</td>
<td>2</td>
<td>.8</td>
</tr>
<tr>
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<tr>
<td>351 - 375</td>
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<tr>
<td>376 - 400</td>
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<td>826 - 850</td>
<td>3</td>
<td>1.3</td>
</tr>
<tr>
<td>401 - 425</td>
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<tr>
<td>426 - 450</td>
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<td>5.4</td>
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<td>451 - 475</td>
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Table 15. Array of score categories for Knowledge of the Vertical System subconcept

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<td>Total 240</td>
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Table 16. Array of score categories for Knowledge of the Local Director Role subconcept

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</tr>
<tr>
<td>526 - 550</td>
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<td>0.0</td>
<td>776 - 800</td>
<td>8</td>
<td>3.3</td>
</tr>
<tr>
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Table 17. Array of score categories for Initiation concept

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<th>% of 240</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 1000</td>
<td>1</td>
<td>.4</td>
<td>1801 - 1900</td>
<td>26</td>
<td>10.8</td>
</tr>
<tr>
<td>1001 - 1100</td>
<td>3</td>
<td>1.3</td>
<td>1901 - 2000</td>
<td>27</td>
<td>11.3</td>
</tr>
<tr>
<td>1101 - 1200</td>
<td>7</td>
<td>2.9</td>
<td>2001 - 2100</td>
<td>32</td>
<td>13.3</td>
</tr>
<tr>
<td>1201 - 1300</td>
<td>7</td>
<td>2.9</td>
<td>2101 - 2200</td>
<td>19</td>
<td>7.9</td>
</tr>
<tr>
<td>1301 - 1400</td>
<td>6</td>
<td>2.5</td>
<td>2201 - 2300</td>
<td>11</td>
<td>4.6</td>
</tr>
<tr>
<td>1401 - 1500</td>
<td>13</td>
<td>5.4</td>
<td>2301 - 2400</td>
<td>8</td>
<td>3.3</td>
</tr>
<tr>
<td>1501 - 1600</td>
<td>14</td>
<td>5.8</td>
<td>2401 - 2500</td>
<td>7</td>
<td>2.9</td>
</tr>
<tr>
<td>1601 - 1700</td>
<td>22</td>
<td>9.2</td>
<td>2501 - 2639</td>
<td>6</td>
<td>2.1</td>
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<tr>
<td>1701 - 1800</td>
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<td>Total</td>
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Table 18. Array of score categories for Role of Civil Defense in the World Today subconcept

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<th>No.</th>
<th>% of 240</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 500</td>
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<td>776 - 800</td>
<td>21</td>
<td>8.8</td>
</tr>
<tr>
<td>501 - 525</td>
<td>2</td>
<td>.8</td>
<td>801 - 825</td>
<td>25</td>
<td>10.4</td>
</tr>
<tr>
<td>526 - 550</td>
<td>0</td>
<td>0.0</td>
<td>826 - 850</td>
<td>11</td>
<td>4.6</td>
</tr>
<tr>
<td>551 - 575</td>
<td>4</td>
<td>1.7</td>
<td>851 - 875</td>
<td>16</td>
<td>6.7</td>
</tr>
<tr>
<td>576 - 600</td>
<td>1</td>
<td>.4</td>
<td>876 - 900</td>
<td>22</td>
<td>9.2</td>
</tr>
<tr>
<td>601 - 625</td>
<td>2</td>
<td>.8</td>
<td>901 - 925</td>
<td>18</td>
<td>7.5</td>
</tr>
<tr>
<td>626 - 650</td>
<td>3</td>
<td>1.3</td>
<td>926 - 950</td>
<td>20</td>
<td>8.3</td>
</tr>
<tr>
<td>651 - 675</td>
<td>6</td>
<td>2.5</td>
<td>951 - 975</td>
<td>14</td>
<td>5.8</td>
</tr>
<tr>
<td>676 - 700</td>
<td>6</td>
<td>2.5</td>
<td>976 - 1000</td>
<td>30</td>
<td>12.5</td>
</tr>
<tr>
<td>701 - 725</td>
<td>11</td>
<td>4.6</td>
<td>Total</td>
<td>240</td>
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</tr>
<tr>
<td>726 - 750</td>
<td>12</td>
<td>5.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>751 - 775</td>
<td>16</td>
<td>6.7</td>
<td></td>
<td></td>
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Table 19. Array of score categories for Perception of Importance of Actor's Own Role subconcept

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<th>Categories of scores</th>
<th>No.</th>
<th>% of 240</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 100</td>
<td>1</td>
<td>.4</td>
<td>526 - 550</td>
<td>7</td>
<td>2.9</td>
</tr>
<tr>
<td>101 - 125</td>
<td>3</td>
<td>1.3</td>
<td>551 - 575</td>
<td>10</td>
<td>2.4</td>
</tr>
<tr>
<td>126 - 150</td>
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<td>0.0</td>
<td>576 - 600</td>
<td>12</td>
<td>5.0</td>
</tr>
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<td>151 - 175</td>
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<td>601 - 625</td>
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</tr>
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<td>176 - 200</td>
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<td>0.0</td>
<td>626 - 650</td>
<td>10</td>
<td>2.4</td>
</tr>
<tr>
<td>201 - 225</td>
<td>2</td>
<td>.8</td>
<td>651 - 675</td>
<td>19</td>
<td>7.9</td>
</tr>
<tr>
<td>226 - 250</td>
<td>3</td>
<td>1.3</td>
<td>676 - 700</td>
<td>9</td>
<td>3.8</td>
</tr>
<tr>
<td>251 - 275</td>
<td>2</td>
<td>.8</td>
<td>701 - 725</td>
<td>13</td>
<td>5.4</td>
</tr>
<tr>
<td>276 - 300</td>
<td>4</td>
<td>1.7</td>
<td>726 - 750</td>
<td>17</td>
<td>7.1</td>
</tr>
<tr>
<td>301 - 325</td>
<td>7</td>
<td>2.9</td>
<td>751 - 775</td>
<td>9</td>
<td>3.8</td>
</tr>
<tr>
<td>326 - 350</td>
<td>4</td>
<td>1.7</td>
<td>776 - 800</td>
<td>5</td>
<td>2.1</td>
</tr>
<tr>
<td>351 - 375</td>
<td>6</td>
<td>2.5</td>
<td>801 - 825</td>
<td>7</td>
<td>2.9</td>
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<tr>
<td>376 - 400</td>
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<td>826 - 850</td>
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<td>2.9</td>
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<td>851 - 875</td>
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<tr>
<td>426 - 450</td>
<td>7</td>
<td>2.9</td>
<td>876 - 900</td>
<td>2</td>
<td>.8</td>
</tr>
<tr>
<td>451 - 475</td>
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<td>5.4</td>
<td>901 - 925</td>
<td>4</td>
<td>1.7</td>
</tr>
<tr>
<td>476 - 500</td>
<td>9</td>
<td>3.8</td>
<td>926 - 950</td>
<td>2</td>
<td>.8</td>
</tr>
<tr>
<td>501 - 525</td>
<td>10</td>
<td>2.4</td>
<td>951 - 975</td>
<td>2</td>
<td>.8</td>
</tr>
<tr>
<td>976 - 1000</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>1.7</td>
</tr>
<tr>
<td>Total</td>
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Table 20. Array of score categories for Perception of Satisfaction from Performing the Role subconcept

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<th>Categories of scores</th>
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<th>Categories of scores</th>
<th>No.</th>
<th>% of 240</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 200</td>
<td>2</td>
<td>.8</td>
<td>576 - 600</td>
<td>22</td>
<td>9.2</td>
</tr>
<tr>
<td>201 - 225</td>
<td>2</td>
<td>.8</td>
<td>601 - 625</td>
<td>18</td>
<td>7.5</td>
</tr>
<tr>
<td>226 - 250</td>
<td>0</td>
<td>0.0</td>
<td>626 - 650</td>
<td>17</td>
<td>7.1</td>
</tr>
<tr>
<td>251 - 275</td>
<td>1</td>
<td>.4</td>
<td>651 - 675</td>
<td>14</td>
<td>5.8</td>
</tr>
<tr>
<td>276 - 300</td>
<td>3</td>
<td>1.3</td>
<td>676 - 700</td>
<td>12</td>
<td>5.0</td>
</tr>
<tr>
<td>301 - 325</td>
<td>0</td>
<td>0.0</td>
<td>701 - 725</td>
<td>11</td>
<td>4.6</td>
</tr>
<tr>
<td>326 - 350</td>
<td>5</td>
<td>2.1</td>
<td>726 - 750</td>
<td>8</td>
<td>3.3</td>
</tr>
<tr>
<td>351 - 375</td>
<td>4</td>
<td>1.7</td>
<td>751 - 775</td>
<td>6</td>
<td>2.5</td>
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<tr>
<td>376 - 400</td>
<td>2</td>
<td>.8</td>
<td>776 - 800</td>
<td>10</td>
<td>4.2</td>
</tr>
<tr>
<td>401 - 425</td>
<td>8</td>
<td>3.3</td>
<td>801 - 825</td>
<td>3</td>
<td>1.3</td>
</tr>
<tr>
<td>426 - 450</td>
<td>7</td>
<td>2.9</td>
<td>826 - 850</td>
<td>8</td>
<td>3.3</td>
</tr>
<tr>
<td>451 - 475</td>
<td>12</td>
<td>5.0</td>
<td>851 - 875</td>
<td>4</td>
<td>1.7</td>
</tr>
<tr>
<td>476 - 500</td>
<td>19</td>
<td>7.9</td>
<td>876 - 900</td>
<td>2</td>
<td>.8</td>
</tr>
<tr>
<td>501 - 525</td>
<td>10</td>
<td>4.2</td>
<td>901 - 925</td>
<td>2</td>
<td>.8</td>
</tr>
<tr>
<td>526 - 575</td>
<td>26</td>
<td>10.8</td>
<td>926 - 1000</td>
<td>2</td>
<td>.8</td>
</tr>
<tr>
<td>Total</td>
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</table>

Table 21. Array of score categories for Perception of Satisfaction with Boundary Maintenance Role subconcept

<table>
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<tr>
<th>Categories of scores</th>
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<th>% of 240</th>
<th>Categories of scores</th>
<th>No.</th>
<th>% of 240</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 150</td>
<td>2</td>
<td>.8</td>
<td>551 - 600</td>
<td>14</td>
<td>5.8</td>
</tr>
<tr>
<td>151 - 200</td>
<td>2</td>
<td>.8</td>
<td>601 - 625</td>
<td>21</td>
<td>8.8</td>
</tr>
<tr>
<td>201 - 250</td>
<td>3</td>
<td>1.3</td>
<td>651 - 675</td>
<td>16</td>
<td>6.7</td>
</tr>
<tr>
<td>251 - 300</td>
<td>2</td>
<td>.8</td>
<td>701 - 750</td>
<td>21</td>
<td>8.8</td>
</tr>
<tr>
<td>301 - 350</td>
<td>10</td>
<td>4.2</td>
<td>751 - 800</td>
<td>31</td>
<td>12.9</td>
</tr>
<tr>
<td>351 - 400</td>
<td>12</td>
<td>5.0</td>
<td>801 - 850</td>
<td>23</td>
<td>9.6</td>
</tr>
<tr>
<td>401 - 450</td>
<td>17</td>
<td>7.1</td>
<td>851 - 900</td>
<td>17</td>
<td>7.1</td>
</tr>
<tr>
<td>451 - 500</td>
<td>20</td>
<td>8.3</td>
<td>901 - 950</td>
<td>23</td>
<td>9.6</td>
</tr>
<tr>
<td>501 - 550</td>
<td>0</td>
<td>0.0</td>
<td>951 - 1000</td>
<td>6</td>
<td>2.5</td>
</tr>
<tr>
<td>Total</td>
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<td>100.0</td>
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<td></td>
<td></td>
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Table 22. Array of score categories for Acceptance-Commitment concept

<table>
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<th>Categories of scores</th>
<th>No.</th>
<th>% of 240</th>
</tr>
</thead>
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<td>3001 - 3200</td>
<td>27</td>
<td>11.3</td>
</tr>
<tr>
<td>1401 - 1600</td>
<td>2</td>
<td>.8</td>
<td>3201 - 3400</td>
<td>25</td>
<td>10.4</td>
</tr>
<tr>
<td>1601 - 1800</td>
<td>7</td>
<td>2.9</td>
<td>3401 - 3600</td>
<td>13</td>
<td>5.4</td>
</tr>
<tr>
<td>1801 - 2000</td>
<td>13</td>
<td>5.4</td>
<td>3601 - 3722</td>
<td>6</td>
<td>2.5</td>
</tr>
<tr>
<td>2001 - 2200</td>
<td>16</td>
<td>6.7</td>
<td>Total</td>
<td>240</td>
<td>100.0</td>
</tr>
<tr>
<td>2201 - 2400</td>
<td>28</td>
<td>11.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2401 - 2600</td>
<td>30</td>
<td>12.5</td>
<td></td>
<td></td>
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<td>2601 - 2800</td>
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<td></td>
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<td>2801 - 3000</td>
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<td>13.8</td>
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</table>

Table 23. Array of scores for Formal Education subconcept

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<th>Years of education scores</th>
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<th>Years of education scores</th>
<th>No.</th>
<th>% of 240</th>
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<tr>
<td>400</td>
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<td>700</td>
<td>33</td>
<td>13.8</td>
</tr>
<tr>
<td>450</td>
<td>7</td>
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<td>16</td>
<td>6.7</td>
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<td>500</td>
<td>12</td>
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<td>800</td>
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<td>12.9</td>
</tr>
<tr>
<td>550</td>
<td>12</td>
<td>5.0</td>
<td>850</td>
<td>9</td>
<td>3.8</td>
</tr>
<tr>
<td>600</td>
<td>69</td>
<td>28.8</td>
<td>900</td>
<td>7</td>
<td>2.9</td>
</tr>
<tr>
<td>650</td>
<td>15</td>
<td>6.3</td>
<td>950</td>
<td>3</td>
<td>1.3</td>
</tr>
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<td></td>
<td>Total</td>
<td>240</td>
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</tr>
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</table>
Table 24. Array for Time and Salary Status of the Director subconcept

<table>
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<th>Categories</th>
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<tr>
<td>0</td>
<td>Part-time volunteer</td>
<td>119</td>
<td>49.6</td>
</tr>
<tr>
<td>333</td>
<td>Less than half-time paid</td>
<td>41</td>
<td>17.1</td>
</tr>
<tr>
<td>500</td>
<td>Half-time paid, but less than full time</td>
<td>39</td>
<td>16.3</td>
</tr>
<tr>
<td>667</td>
<td>Full-time volunteer</td>
<td>11</td>
<td>4.6</td>
</tr>
<tr>
<td>1000</td>
<td>Full-time paid</td>
<td>30</td>
<td>12.5</td>
</tr>
<tr>
<td></td>
<td>Total</td>
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</tr>
</tbody>
</table>

Table 25. Array for Budget for Local Civil Defense Area subconcept

<table>
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<th>Dollars</th>
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<th>Dollars</th>
<th>No.</th>
<th>% of 240</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 500</td>
<td>110</td>
<td>45.8</td>
<td>6001 - 6500</td>
<td>3</td>
<td>1.3</td>
</tr>
<tr>
<td>501 - 1000</td>
<td>30</td>
<td>12.5</td>
<td>6501 - 7000</td>
<td>2</td>
<td>.8</td>
</tr>
<tr>
<td>1001 - 1500</td>
<td>15</td>
<td>6.3</td>
<td>7001 - 7500</td>
<td>1</td>
<td>.4</td>
</tr>
<tr>
<td>1501 - 2000</td>
<td>14</td>
<td>5.8</td>
<td>7501 - 8000</td>
<td>1</td>
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</tr>
<tr>
<td>2001 - 2500</td>
<td>2</td>
<td>.8</td>
<td>8001 - 8500</td>
<td>2</td>
<td>.8</td>
</tr>
<tr>
<td>2501 - 3000</td>
<td>7</td>
<td>2.9</td>
<td>8501 - 9000</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>3001 - 3500</td>
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<td>9001 - 10,000</td>
<td>2</td>
<td>.8</td>
</tr>
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<td>10,000 +</td>
<td>22</td>
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</tr>
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</tr>
<tr>
<td>4501 - 5000</td>
<td>7</td>
<td>2.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5001 - 5500</td>
<td>2</td>
<td>.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5501 - 6000</td>
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<td>1.3</td>
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Table 26. Array for Number of Paid Civil Defense Personnel subconcept

<table>
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<tr>
<th>Paid man years</th>
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<th>Paid man years</th>
<th>No.</th>
<th>% of 240</th>
</tr>
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<tbody>
<tr>
<td>0.0</td>
<td>157</td>
<td>65.4</td>
<td>3.1 - 3.5</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Less than 1.0</td>
<td>28</td>
<td>11.7</td>
<td>3.6 - 4.0</td>
<td>1</td>
<td>.4</td>
</tr>
<tr>
<td>1.0 - 1.5</td>
<td>37</td>
<td>15.4</td>
<td>4.1 - 4.5</td>
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<td>0.0</td>
</tr>
<tr>
<td>1.6 - 2.0</td>
<td>14</td>
<td>5.8</td>
<td>4.6 - 5.0</td>
<td>1</td>
<td>.4</td>
</tr>
<tr>
<td>2.1 - 2.5</td>
<td>1</td>
<td>.4</td>
<td>16.0</td>
<td>1</td>
<td>.4</td>
</tr>
<tr>
<td>2.6 - 3.0</td>
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<td>0.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
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</table>

Table 27. Array of score categories for Ability concept

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<tr>
<th>Categories of scores</th>
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<th>Categories of scores</th>
<th>No.</th>
<th>% of 240</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 400</td>
<td>9</td>
<td>3.8</td>
<td>1801 - 1900</td>
<td>4</td>
<td>1.7</td>
</tr>
<tr>
<td>401 - 500</td>
<td>7</td>
<td>2.9</td>
<td>1901 - 2000</td>
<td>5</td>
<td>2.1</td>
</tr>
<tr>
<td>501 - 600</td>
<td>22</td>
<td>9.2</td>
<td>2001 - 2100</td>
<td>3</td>
<td>1.3</td>
</tr>
<tr>
<td>601 - 700</td>
<td>27</td>
<td>11.3</td>
<td>2101 - 2200</td>
<td>2</td>
<td>.8</td>
</tr>
<tr>
<td>701 - 800</td>
<td>23</td>
<td>9.6</td>
<td>2201 - 2300</td>
<td>4</td>
<td>1.7</td>
</tr>
<tr>
<td>801 - 900</td>
<td>25</td>
<td>10.4</td>
<td>2301 - 2400</td>
<td>1</td>
<td>.4</td>
</tr>
<tr>
<td>901 - 1000</td>
<td>17</td>
<td>7.1</td>
<td>2401 - 2500</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>1001 - 1100</td>
<td>16</td>
<td>6.7</td>
<td>2501 - 2600</td>
<td>2</td>
<td>.8</td>
</tr>
<tr>
<td>1101 - 1200</td>
<td>16</td>
<td>6.7</td>
<td>2601 - 2700</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>1201 - 1300</td>
<td>18</td>
<td>7.5</td>
<td>2701 - 2800</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>1301 - 1400</td>
<td>20</td>
<td>8.3</td>
<td>2801 - 2900</td>
<td>1</td>
<td>.4</td>
</tr>
<tr>
<td>1401 - 1500</td>
<td>7</td>
<td>2.9</td>
<td>2901 - 3000</td>
<td>0</td>
<td>0.0</td>
</tr>
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<td>1501 - 1600</td>
<td>3</td>
<td>1.3</td>
<td>3001 - 4000</td>
<td>3</td>
<td>1.3</td>
</tr>
<tr>
<td>1601 - 1700</td>
<td>2</td>
<td>.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1701 - 1800</td>
<td>3</td>
<td>1.3</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>Total</td>
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### Table 28. Array for Hours Per Week on Civil Defense Job subconcept

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<th>Score</th>
<th>Hours</th>
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<tbody>
<tr>
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<td>39</td>
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</tr>
<tr>
<td>286</td>
<td>2 - 5</td>
<td>74</td>
<td>30.8</td>
</tr>
<tr>
<td>429</td>
<td>6 - 10</td>
<td>45</td>
<td>18.8</td>
</tr>
<tr>
<td>571</td>
<td>11-20</td>
<td>27</td>
<td>11.3</td>
</tr>
<tr>
<td>714</td>
<td>21-30</td>
<td>15</td>
<td>6.3</td>
</tr>
<tr>
<td>857</td>
<td>31-40</td>
<td>11</td>
<td>4.6</td>
</tr>
<tr>
<td>1000</td>
<td>41 and over</td>
<td>29</td>
<td>12.1</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>240</td>
<td>100.0</td>
</tr>
</tbody>
</table>

### Table 29. Array of score categories for Involvement with Systemic Linkage subconcept

<table>
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<tr>
<th>Categories of scores</th>
<th>No.</th>
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<th>Categories of scores</th>
<th>No.</th>
<th>% of 240</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 200</td>
<td>0</td>
<td>0.0</td>
<td>476 - 500</td>
<td>14</td>
<td>5.8</td>
</tr>
<tr>
<td>201 - 225</td>
<td>1</td>
<td>0.4</td>
<td>501 - 525</td>
<td>15</td>
<td>6.3</td>
</tr>
<tr>
<td>226 - 250</td>
<td>5</td>
<td>2.1</td>
<td>526 - 575</td>
<td>30</td>
<td>12.5</td>
</tr>
<tr>
<td>251 - 275</td>
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<td>3.3</td>
<td>576 - 600</td>
<td>11</td>
<td>4.6</td>
</tr>
<tr>
<td>276 - 300</td>
<td>6</td>
<td>2.5</td>
<td>601 - 625</td>
<td>13</td>
<td>5.4</td>
</tr>
<tr>
<td>301 - 325</td>
<td>13</td>
<td>5.4</td>
<td>626 - 650</td>
<td>12</td>
<td>5.0</td>
</tr>
<tr>
<td>326 - 350</td>
<td>11</td>
<td>4.6</td>
<td>651 - 675</td>
<td>9</td>
<td>3.8</td>
</tr>
<tr>
<td>351 - 375</td>
<td>10</td>
<td>4.2</td>
<td>676 - 749</td>
<td>6</td>
<td>2.5</td>
</tr>
<tr>
<td>376 - 400</td>
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<td>5.4</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>426 - 450</td>
<td>23</td>
<td>9.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>451 - 475</td>
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<td>9.2</td>
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<td></td>
<td></td>
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</tbody>
</table>
Table 30. Array for Involvement with Systems Building subconcept

<table>
<thead>
<tr>
<th>Score</th>
<th>No.</th>
<th>% of 240</th>
<th>Score</th>
<th>No.</th>
<th>% of 240</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>25</td>
<td>10.4</td>
<td>500.0</td>
<td>22</td>
<td>9.2</td>
</tr>
<tr>
<td>55.6</td>
<td>16</td>
<td>6.7</td>
<td>555.6</td>
<td>13</td>
<td>5.4</td>
</tr>
<tr>
<td>111.1</td>
<td>5</td>
<td>2.1</td>
<td>611.1</td>
<td>8</td>
<td>3.3</td>
</tr>
<tr>
<td>166.7</td>
<td>9</td>
<td>3.8</td>
<td>666.7</td>
<td>23</td>
<td>9.6</td>
</tr>
<tr>
<td>222.2</td>
<td>19</td>
<td>7.9</td>
<td>722.2</td>
<td>16</td>
<td>6.7</td>
</tr>
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<td>277.8</td>
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<td>5.0</td>
<td>777.8</td>
<td>7</td>
<td>2.9</td>
</tr>
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<td>7</td>
<td>2.9</td>
<td>833.3</td>
<td>21</td>
<td>8.8</td>
</tr>
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<td>5</td>
<td>2.1</td>
<td>888.9</td>
<td>13</td>
<td>5.4</td>
</tr>
<tr>
<td>444.4</td>
<td>15</td>
<td>6.3</td>
<td>944.4</td>
<td>3</td>
<td>1.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1000.0</td>
<td>1</td>
<td>.4</td>
</tr>
<tr>
<td>Total</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 31. Array of score categories for Involvement concept

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<th>Categories of scores</th>
<th>No.</th>
<th>% of 240</th>
<th>Categories of scores</th>
<th>No.</th>
<th>% of 240</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 500</td>
<td>15</td>
<td>6.3</td>
<td>1601 - 1700</td>
<td>15</td>
<td>6.3</td>
</tr>
<tr>
<td>501 - 600</td>
<td>9</td>
<td>3.8</td>
<td>1701 - 1800</td>
<td>11</td>
<td>4.6</td>
</tr>
<tr>
<td>601 - 700</td>
<td>11</td>
<td>4.6</td>
<td>1801 - 1900</td>
<td>13</td>
<td>5.4</td>
</tr>
<tr>
<td>701 - 800</td>
<td>9</td>
<td>3.8</td>
<td>1901 - 2000</td>
<td>4</td>
<td>1.7</td>
</tr>
<tr>
<td>801 - 900</td>
<td>18</td>
<td>7.5</td>
<td>2001 - 2100</td>
<td>5</td>
<td>2.1</td>
</tr>
<tr>
<td>901 - 1000</td>
<td>16</td>
<td>6.7</td>
<td>2101 - 2200</td>
<td>5</td>
<td>2.1</td>
</tr>
<tr>
<td>1001 - 1100</td>
<td>11</td>
<td>4.6</td>
<td>2201 - 2300</td>
<td>9</td>
<td>3.8</td>
</tr>
<tr>
<td>1101 - 1200</td>
<td>9</td>
<td>3.8</td>
<td>2301 - 2400</td>
<td>8</td>
<td>3.3</td>
</tr>
<tr>
<td>1201 - 1300</td>
<td>12</td>
<td>5.0</td>
<td>2401 - 2500</td>
<td>7</td>
<td>2.9</td>
</tr>
<tr>
<td>1301 - 1400</td>
<td>20</td>
<td>8.3</td>
<td>2501 - 2600</td>
<td>10</td>
<td>4.2</td>
</tr>
<tr>
<td>1401 - 1500</td>
<td>13</td>
<td>5.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1501 - 1600</td>
<td>10</td>
<td>4.2</td>
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<td></td>
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<td>Total</td>
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<td>100.0</td>
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</table>
Table 32. Array of score categories for Licensing, Marking and Stocking of Eligible Buildings subconcept (Task Area 1)

<table>
<thead>
<tr>
<th>Categories of scores</th>
<th>No.</th>
<th>% of 240</th>
<th>Categories of scores</th>
<th>No.</th>
<th>% of 240</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 10</td>
<td>20</td>
<td>8.3</td>
<td>61 - 70</td>
<td>8</td>
<td>3.3</td>
</tr>
<tr>
<td>11 - 20</td>
<td>7</td>
<td>2.9</td>
<td>71 - 80</td>
<td>8</td>
<td>3.3</td>
</tr>
<tr>
<td>21 - 30</td>
<td>6</td>
<td>2.5</td>
<td>81 - 90</td>
<td>9</td>
<td>3.8</td>
</tr>
<tr>
<td>31 - 40</td>
<td>3</td>
<td>1.3</td>
<td>91 - 100</td>
<td>158</td>
<td>65.8</td>
</tr>
<tr>
<td>41 - 50</td>
<td>14</td>
<td>5.8</td>
<td>Total</td>
<td>240</td>
<td>100.0</td>
</tr>
<tr>
<td>51 - 60</td>
<td>7</td>
<td>2.9</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 33. Array of score categories for Direction and Control subconcept (Task Area 2)

<table>
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<tr>
<th>Categories of scores</th>
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<th>Categories of scores</th>
<th>No.</th>
<th>% of 240</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 10</td>
<td>30</td>
<td>12.5</td>
<td>61 - 70</td>
<td>20</td>
<td>8.3</td>
</tr>
<tr>
<td>11 - 20</td>
<td>32</td>
<td>13.3</td>
<td>71 - 80</td>
<td>38</td>
<td>15.8</td>
</tr>
<tr>
<td>21 - 30</td>
<td>40</td>
<td>16.7</td>
<td>81 - 90</td>
<td>21</td>
<td>8.8</td>
</tr>
<tr>
<td>31 - 40</td>
<td>12</td>
<td>5.0</td>
<td>91 - 100</td>
<td>6</td>
<td>2.5</td>
</tr>
<tr>
<td>41 - 50</td>
<td>18</td>
<td>7.5</td>
<td>Total</td>
<td>240</td>
<td>100.0</td>
</tr>
<tr>
<td>51 - 60</td>
<td>23</td>
<td>9.6</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 34. Array of scores for Establishing a Basic Operational Survival Plan subconcept (Task Area 3)

<table>
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<th>% of 240</th>
<th>Score</th>
<th>No.</th>
<th>% of 240</th>
</tr>
</thead>
<tbody>
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<td>60</td>
<td>13</td>
<td>5.4</td>
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<td>20</td>
<td>21</td>
<td>8.8</td>
<td>80</td>
<td>3</td>
<td>1.3</td>
</tr>
<tr>
<td>40</td>
<td>10</td>
<td>4.2</td>
<td>100</td>
<td>55</td>
<td>65.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Table 35. Array of score categories for Training and Public Education subconcept (Task Area 4)

<table>
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<tr>
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<th>Categories of scores</th>
<th>No.</th>
<th>% of 240</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 10</td>
<td>114</td>
<td>47.5</td>
<td>31 - 40</td>
<td>22</td>
<td>9.2</td>
</tr>
<tr>
<td>11 - 20</td>
<td>54</td>
<td>22.5</td>
<td>41 - 50</td>
<td>14</td>
<td>5.8</td>
</tr>
<tr>
<td>21 - 30</td>
<td>27</td>
<td>11.3</td>
<td>51 - 60</td>
<td>4</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>61 - 68</td>
<td>5</td>
<td>2.1</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Table 36. Array of score categories for Public Information subconcept (Task Area 5)

<table>
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<th>Categories of scores</th>
<th>No.</th>
<th>% of 240</th>
</tr>
</thead>
<tbody>
<tr>
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<td>86</td>
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<td>61 - 70</td>
<td>8</td>
<td>3.3</td>
</tr>
<tr>
<td>11 - 20</td>
<td>43</td>
<td>17.9</td>
<td>71 - 80</td>
<td>7</td>
<td>2.9</td>
</tr>
<tr>
<td>21 - 30</td>
<td>25</td>
<td>10.4</td>
<td>81 - 90</td>
<td>6</td>
<td>2.5</td>
</tr>
<tr>
<td>31 - 40</td>
<td>25</td>
<td>10.4</td>
<td>91 - 93</td>
<td>1</td>
<td>.4</td>
</tr>
<tr>
<td>41 - 50</td>
<td>22</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51 - 60</td>
<td>17</td>
<td>7.1</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total</td>
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<td>100.0</td>
</tr>
</tbody>
</table>
Table 37. Array of score categories for Emergency Services 1 subconcept (Task Area 6)

<table>
<thead>
<tr>
<th>Categories of scores</th>
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<th>Categories of scores</th>
<th>No.</th>
<th>% of 240</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 13</td>
<td>13</td>
<td>5.4</td>
<td>61 - 70</td>
<td>34</td>
<td>14.2</td>
</tr>
<tr>
<td>11 - 20</td>
<td>10</td>
<td>4.2</td>
<td>71 - 80</td>
<td>41</td>
<td>17.1</td>
</tr>
<tr>
<td>21 - 30</td>
<td>15</td>
<td>6.3</td>
<td>81 - 90</td>
<td>35</td>
<td>14.6</td>
</tr>
<tr>
<td>31 - 40</td>
<td>18</td>
<td>7.5</td>
<td>91 - 97</td>
<td>10</td>
<td>4.2</td>
</tr>
<tr>
<td>41 - 50</td>
<td>28</td>
<td>11.7</td>
<td>Total</td>
<td>240</td>
<td>100.0</td>
</tr>
<tr>
<td>51 - 60</td>
<td>36</td>
<td>15.0</td>
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<td></td>
</tr>
</tbody>
</table>

Table 38. Array of score categories for Emergency Services 2 subconcept (Task Area 7)

<table>
<thead>
<tr>
<th>Categories of scores</th>
<th>No.</th>
<th>% of 240</th>
<th>Categories of scores</th>
<th>No.</th>
<th>% of 240</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 10</td>
<td>24</td>
<td>10.0</td>
<td>61 - 70</td>
<td>24</td>
<td>10.0</td>
</tr>
<tr>
<td>11 - 20</td>
<td>0</td>
<td>0.0</td>
<td>71 - 80</td>
<td>75</td>
<td>31.3</td>
</tr>
<tr>
<td>21 - 30</td>
<td>5</td>
<td>2.1</td>
<td>81 - 90</td>
<td>50</td>
<td>20.8</td>
</tr>
<tr>
<td>31 - 40</td>
<td>4</td>
<td>1.7</td>
<td>91 - 100</td>
<td>30</td>
<td>12.5</td>
</tr>
<tr>
<td>41 - 50</td>
<td>17</td>
<td>7.1</td>
<td>Total</td>
<td>240</td>
<td>100.0</td>
</tr>
<tr>
<td>51 - 60</td>
<td>11</td>
<td>4.6</td>
<td></td>
<td></td>
<td></td>
</tr>
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</table>
Table 39. Array of score categories for Paired Comparison Role Performance (Total Performance Score)

<table>
<thead>
<tr>
<th>Categories of scores</th>
<th>No.</th>
<th>% of 240</th>
</tr>
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<tbody>
<tr>
<td>0 - 100</td>
<td>1</td>
<td>.4</td>
</tr>
<tr>
<td>101 - 200</td>
<td>2</td>
<td>.8</td>
</tr>
<tr>
<td>201 - 300</td>
<td>1</td>
<td>.4</td>
</tr>
<tr>
<td>301 - 400</td>
<td>3</td>
<td>1.3</td>
</tr>
<tr>
<td>401 - 500</td>
<td>2</td>
<td>.8</td>
</tr>
<tr>
<td>501 - 600</td>
<td>3</td>
<td>1.3</td>
</tr>
<tr>
<td>601 - 700</td>
<td>2</td>
<td>.8</td>
</tr>
<tr>
<td>701 - 800</td>
<td>9</td>
<td>3.8</td>
</tr>
<tr>
<td>801 - 900</td>
<td>8</td>
<td>3.3</td>
</tr>
<tr>
<td>901 - 1000</td>
<td>19</td>
<td>7.9</td>
</tr>
<tr>
<td>1001 - 1100</td>
<td>8</td>
<td>3.3</td>
</tr>
<tr>
<td>1101 - 1200</td>
<td>10</td>
<td>4.2</td>
</tr>
<tr>
<td>1201 - 1300</td>
<td>7</td>
<td>2.9</td>
</tr>
<tr>
<td>1301 - 1400</td>
<td>14</td>
<td>5.8</td>
</tr>
<tr>
<td>1401 - 1500</td>
<td>18</td>
<td>7.5</td>
</tr>
<tr>
<td>1501 - 1600</td>
<td>15</td>
<td>6.3</td>
</tr>
<tr>
<td>1601 - 1700</td>
<td>15</td>
<td>6.3</td>
</tr>
<tr>
<td>1701 - 1800</td>
<td>15</td>
<td>6.3</td>
</tr>
<tr>
<td>1801 - 1900</td>
<td>24</td>
<td>10.0</td>
</tr>
<tr>
<td>1901 - 2000</td>
<td>23</td>
<td>9.6</td>
</tr>
<tr>
<td>2001 - 2100</td>
<td>19</td>
<td>7.9</td>
</tr>
<tr>
<td>2101 - 2200</td>
<td>9</td>
<td>3.8</td>
</tr>
<tr>
<td>2201 - 2300</td>
<td>8</td>
<td>3.3</td>
</tr>
<tr>
<td>2301 - 2400</td>
<td>5</td>
<td>2.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>240</td>
<td>100.0</td>
</tr>
</tbody>
</table>
APPENDIX B

The following tabular presentation is a summary of the multiple regression analysis as presented in the prediction report of the three-state study from which the data in this dissertation originated (69a, pp. 427-431). The same rounding procedures were used on the tabular values of this table as were used in the body of the dissertation.
Table 40. Three-state total multiple variable relationships: Paired Comparison Role Performance score and 57 independent variables (ordered by beta weight)

<table>
<thead>
<tr>
<th>Major Concept</th>
<th>Rank</th>
<th>Variable No.</th>
<th>Variable Name</th>
<th>(1) Beta Weight</th>
<th>(2) t-value on partial b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanctions</td>
<td>1</td>
<td>25</td>
<td>Advantages of a local CD plan</td>
<td>.2531</td>
<td>4.0646^a</td>
</tr>
<tr>
<td>Institutionalization</td>
<td>2</td>
<td>57</td>
<td>System building</td>
<td>.2521</td>
<td>2.8408^a</td>
</tr>
<tr>
<td>Communication</td>
<td>3</td>
<td>47</td>
<td>Use of technologically competent CD information sources</td>
<td>.2345</td>
<td>1.1633</td>
</tr>
<tr>
<td>Facilities</td>
<td>4</td>
<td>11</td>
<td>Hours per week on CD job</td>
<td>.1639</td>
<td>1.8128^b</td>
</tr>
<tr>
<td>Belief</td>
<td>5</td>
<td>34</td>
<td>Knowledge of world figures</td>
<td>.1497</td>
<td>2.5946^a</td>
</tr>
<tr>
<td>Ends</td>
<td>6</td>
<td>23</td>
<td>Civil, deterrence and military goal orientation</td>
<td>-.1493</td>
<td>-1.1298</td>
</tr>
<tr>
<td>Communication</td>
<td>7</td>
<td>48</td>
<td>Technologically competent sources as most useful CD information sources</td>
<td>-.1424</td>
<td>-1.2720</td>
</tr>
<tr>
<td>Systemic Linkage</td>
<td>8</td>
<td>53</td>
<td>Working with formal organizations</td>
<td>.1226</td>
<td>2.0515^a</td>
</tr>
<tr>
<td>Systemic Linkage</td>
<td>9</td>
<td>55</td>
<td>Employer and family linkages</td>
<td>-.1202</td>
<td>-2.1534^a</td>
</tr>
<tr>
<td>Communication</td>
<td>10</td>
<td>46</td>
<td>Total number of CD information sources used</td>
<td>-.1195</td>
<td>-.7807</td>
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<tr>
<td>Facilities</td>
<td>11</td>
<td>19</td>
<td>Family fallout shelter preparation</td>
<td>.1148</td>
<td>1.4154</td>
</tr>
<tr>
<td>Boundary Maintenance</td>
<td>12</td>
<td>51</td>
<td>Boundary maintenance</td>
<td>.1109</td>
<td>1.3578</td>
</tr>
<tr>
<td>Power</td>
<td>13</td>
<td>32</td>
<td>Knowledge of authority</td>
<td>-.1042</td>
<td>-1.7168^b</td>
</tr>
<tr>
<td>Ends</td>
<td>14</td>
<td>22</td>
<td>Civil and deterrence goal orientation</td>
<td>.0995</td>
<td>1.6632^b</td>
</tr>
<tr>
<td>Facilities</td>
<td>15</td>
<td>3</td>
<td>Time and salary status of director</td>
<td>-.0865</td>
<td>-1.1957</td>
</tr>
</tbody>
</table>

^aSignificant at .05 level (two-tailed test), t-value equal to or greater than 1.96 with 182 degrees of freedom.

^bSignificant at .10 level (two-tailed test), t-value equal to or greater than 1.64 with 182 degrees of freedom.
<table>
<thead>
<tr>
<th>Major Concept</th>
<th>Rank Order</th>
<th>Variable Order</th>
<th>Variable Name</th>
<th>Beta Weight (1)</th>
<th>t-value on partial (2)</th>
<th>Beta Weight partial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities</td>
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<td>Population of the local director's CD area</td>
<td>-.0851</td>
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<tr>
<td>Communication</td>
<td>17</td>
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<td>Communication with nearby local CD personnel</td>
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<td>1.2141</td>
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</tr>
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<td>Sentiments</td>
<td>18</td>
<td>39</td>
<td>Perception of consistency of CD goals</td>
<td>-.0784</td>
<td>-1.2870</td>
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</tr>
<tr>
<td>Sentiments</td>
<td>19</td>
<td>41</td>
<td>Perception of state and national CD personnel</td>
<td>.0766</td>
<td>1.3848</td>
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<tr>
<td>Facilities</td>
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<td>8</td>
<td>Previous CD related experience</td>
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<td>-1.3214</td>
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<tr>
<td>Rank</td>
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<td>30</td>
<td>Perceived role attractiveness</td>
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<td>1.0054</td>
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<td>Facilities</td>
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<td>10</td>
<td>Amount of formal CD training</td>
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<td>1.1055</td>
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<td>Systemic Linkage</td>
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<td>54</td>
<td>Formal organization membership</td>
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<td>Status-role</td>
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<td>28</td>
<td>Self-perception of local director role</td>
<td>.0546</td>
<td>.8393</td>
<td></td>
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<td>Sanctions</td>
<td>25</td>
<td>27</td>
<td>Number of sanctioning individuals and groups</td>
<td>-.0438</td>
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<td>.7501</td>
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<td>Sentiments</td>
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<td>42</td>
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<td>.0427</td>
<td>.7682</td>
<td>.6926</td>
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<tr>
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<td>Occupation</td>
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<td>-1.0655</td>
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<td>9</td>
<td>Years in present CD position</td>
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<td>.7343</td>
<td>.7065</td>
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<td>33</td>
<td>Technical CD knowledge</td>
<td>.0417</td>
<td>.6269</td>
<td>.6926</td>
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<td>45</td>
<td>Personal involvement in civil defense</td>
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<td>.6926</td>
<td>.7065</td>
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<tr>
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<td>12</td>
<td>Age</td>
<td>.0396</td>
<td>.7343</td>
<td>.7065</td>
</tr>
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<td>32</td>
<td>56</td>
<td>Job orientation</td>
<td>.0380</td>
<td>.6269</td>
<td>.6926</td>
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<td>5</td>
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<td>Variable Name</td>
<td>(1) Beta Weight</td>
<td>(2) t-value on partial b</td>
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<td>Type of director</td>
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<td>.5885</td>
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<tr>
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<td>35</td>
<td>24</td>
<td>Understanding rules for federal financial assistance</td>
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<td>.6121</td>
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<tr>
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<td>36</td>
<td>35</td>
<td>Role of civil defense in the world today</td>
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<td>.5176</td>
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<tr>
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<td>37</td>
<td>20</td>
<td>Personal emergency provisions</td>
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<td>.3593</td>
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<td>38</td>
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<td>7</td>
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<td>.4951</td>
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<td>Perceived chances of personal sanctions</td>
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<td>Sentiments</td>
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<td>37</td>
<td>Perception of adequacy of defining CD goals</td>
<td>-.0264</td>
<td>-.4255</td>
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<tr>
<td>Sentiments</td>
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<td>40</td>
<td>Perception of adequacy of CD communication channels</td>
<td>-.0249</td>
<td>-.3962</td>
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<td>Sentiments</td>
<td>43</td>
<td>38</td>
<td>Perceived adequacy of meeting CD goals</td>
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<td>.3502</td>
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<tr>
<td>Sentiments</td>
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<td>43</td>
<td>Job satisfaction I: Status of job</td>
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<td>.3296</td>
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<td>Job satisfaction II: Interesting aspects of job</td>
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<td>-.3189</td>
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<tr>
<td>Rank</td>
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<td>31</td>
<td>Perceived occupational rank of CD position</td>
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<td>49</td>
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<td>Education</td>
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</table>
Table 40 (Continued)

<table>
<thead>
<tr>
<th>Major Concept</th>
<th>Rank Order</th>
<th>Variable No.</th>
<th>Variable Name</th>
<th>(1) Beta Weight</th>
<th>(2) t-value on partial b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities</td>
<td>49</td>
<td>15</td>
<td>Family income</td>
<td>.0143</td>
<td>.2584</td>
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<tr>
<td>Ends</td>
<td>50</td>
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<td>Civil defense goal orientation</td>
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<td>Social rank accorded to the local director position</td>
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</tr>
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<td>Facilities</td>
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<td>6</td>
<td>Number of paid CD personnel</td>
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<td>-.0830</td>
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<td>Sentiments</td>
<td>53</td>
<td>36</td>
<td>Perception of threat</td>
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<td>.0880</td>
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<tr>
<td>Facilities</td>
<td>54</td>
<td>17</td>
<td>Years of residence in community</td>
<td>.0033</td>
<td>-.0611</td>
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<tr>
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<td>52</td>
<td>Working with local groups and individuals</td>
<td>.0016</td>
<td>.0178</td>
</tr>
<tr>
<td>Facilities</td>
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<td>Sex</td>
<td>.0008</td>
<td>.0167</td>
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<tr>
<td>Facilities</td>
<td>57</td>
<td>18</td>
<td>Active military service</td>
<td>-.0001</td>
<td>-.0016</td>
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</tbody>
</table>

\[ R = .8177 \quad R^2 = .6686 \quad \text{(Significant at the .05 level)} \]