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ROLE CONFLICT AND ROLE AMBIGUITY AMONG PHARMACISTS
AND TECHNICIANS OF UNIVERSITY OR MEDICAL SCHOOL-
AFFILIATED HOSPITALS

THE UNIVERSITY OF ARIZONA

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**ROLE CONFLICT AND ROLE AMBIGUITY
AMONG PHARMACISTS AND TECHNICIANS OF
UNIVERSITY OR MEDICAL SCHOOL-AFFILIATED HOSPITALS**

by

Randall Lewis Hart

**A Thesis Submitted to the Faculty of the
DEPARTMENT OF PHARMACY PRACTICE
In Partial Fulfillment of the Requirements
For the Degree of
MASTER OF SCIENCE
WITH A MAJOR IN PHARMACY
In the Graduate College
THE UNIVERSITY OF ARIZONA**

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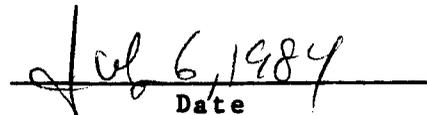


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ABSTRACT

A survey of pharmacists and technicians employed at university or medical school-affiliated hospitals was undertaken to determine their perceptions of the technician role, role conflict and role ambiguity levels, and demographic information. The response rate was 64.3%. Pharmacists and technicians differed on 21 of 26 role perception statements. Pharmacists and technicians did not suffer unduly from role conflict or ambiguity. Technicians receiving formal training experienced lower role ambiguity than those informally trained. Role conflict was lower in technicians receiving assignments from one vs. more than one person. No correlations were found between role conflict and role ambiguity and the variables: staff size, turnover, and years worked as pharmacist or technician. Role ambiguity decreased with increased tenure on the job. Role ambiguity scores were higher for pharmacists than technicians. This study's findings suggest a need for further exploration into role conflict and ambiguity, and into role perceptions held by pharmacists and technicians.

CHAPTER 1

INTRODUCTION

Many changes have occurred in hospital pharmacy practice over the last 20-30 years. As evidenced by two national surveys performed only three years apart, the number and scope of hospital pharmacy services have continually increased. In 1975, Stolar found that 28% of hospitals had at least some of their beds on unit-dose systems, 30% had a complete or partial I.V. admixture program, and less than 10% had both. In contrast, the 1978 survey, also by Stolar, reported an increase in all three categories. Nearly half of all hospitals had at least some beds on unit-dose distribution, 51% had a partial or complete I.V. admixture program, and almost one-fourth had both complete unit-dose and I.V. admixture services. The number of hospitals offering 24-hour pharmacy services was also up, from 6% in 1975 to 12% in 1978.

During this same period, pharmacy has wrestled with an identity crisis regarding its role and what it has to offer. Works such as the Millis report (The American Association of Colleges of Pharmacy, 1975), and those of other pharmacy leaders, have identified a need to adapt pharmacy to a changing world in order to insure its survival as a

profession. Pharmacy's orientation has begun to slowly shift from a product emphasis to that of an information and service emphasis. Colleges of pharmacy have begun to adapt their curriculum to produce graduates more capable of functioning in clinical, patient oriented practices. An example of this change would be the increased numbers of schools offering the Pharm.D. degree as their entry level degree. Brodie (1982) reported that ten schools offered the Pharm.D. as their first professional degree, and 27 others offered it as a postbaccalaureate degree.

These changes in levels of hospital pharmacy services combined with ever-broadening clinical practice areas, have lead to an increased need for manpower. These needs and fiscal constraints have lead to increased use of non-professionals to assume technical functions. In a national survey of hospital pharmacies (Stolar,1982), approximately 75% employed technicians.

The increased use of technicians has lead to a flood of articles dealing with this subject matter. Articles have appeared addressing the aspect of technician training (Phaff,1969; Stewart and Lantos, 1970; Bootman and Tangrea, 1976; Ameer and Johnson,1977; Shoup, 1971; Jeffrey and Gallina, 1970; Idsvoog,1978). National organizations have commissioned reports such as that of the Task Force on Roles of the Practitioner of Pharmacy and the Sub-professional in

Pharmacy (1969) in attempts to define those functions technicians may perform. The American Society of Hospital Pharmacists (ASHP) issued a Statement on Supportive Personnel in Hospital Pharmacy (1970), which called for the defining of roles for, and the development of training programs for technicians.

While many articles have focused on the competencies or functions of this new "mixed" work force, attempts at examining their attitudes and perceptions have been limited. Sumner et al. (1971a) examined technician attitudes on certain elements of professionalization such as required formal training, formation of technician organizations, licensure, and working without supervision. They found that more than 75% of those surveyed favored required training, one-half favored organizations, and an overwhelming majority favored licensure if certain requirements were met. Those technicians favoring organizations were also found to be those favoring working without supervision.

Teplitsky (1970) categorized chief pharmacists by hospital bed size and then compared their attitudes on such aspects as the need for technicians, what type of training they should receive, and what educational background a technician should possess. Responses varied across hospital bed size, with small (up to 99 beds) hospitals presenting the most negative viewpoints.

Sumner et al. (1971b) compared attitudes towards supervision, training, and licensure on the part of chief pharmacists and technicians themselves. They found significant differences in attitude about the need for direct supervision and the desirability of licensure. Technicians indicated less desire for supervision and a greater desire for licensure than did the directors. Curiously, most directors indicated that "technicians were able to and actually did some work without the pharmacist being present" (p.27), yet the majority also felt the technician should do most of his work with supervision.

Walker et al. (1980) measured certain perceptions and expectations held by directors for their technicians. Items measured included either personal characteristics such as maturity, loyalty, or outspokenness; or knowledge and ability requirements for various tasks. With the notable exception of outspokenness, the director's expectations exceeded their perceptions of their technicians. The authors proposed several possible reasons for differences found; including the chance that expectations may have been unreasonable, or that they may not have been adequately communicated to the technicians. They hypothesized that standardized formal training might help in reconciling expectations with perceptions.

Statement of Problem

These few articles, while important, have focused on the perceptions and expectations of directors of pharmacy towards pharmacy technicians. There exists a need to examine the perceptions of the technician's role held by the rank and file pharmacy workers, that is, the staff pharmacist and the technician. Studies exploring these role perceptions have yet to be reported in the literature. Even the limited surveys previously cited point out the lack of consensus which may exist as to the role of the technician. One cannot assume that the numerous editorials and position papers written by pharmacy leaders on the role of the technician actually reflect the real perceptions held by the pharmacy work force.

Studies in the pharmacy literature examining role conflict and role ambiguity among pharmacists or technicians have been limited. Both articles have dealt with educational and practice setting effects on role conflict and role ambiguity levels of young pharmacists. There is a need to examine role conflict and role ambiguity among pharmacists and technicians and to explore the relationship of environmental and organizational factors to their levels.

Significance of the Problem

We all form attitudes and opinions as to how persons occupying different positions in society should behave. For

example, the word "father" creates a mental picture of what that person is and how he acts or reacts in different situations. The words student, professor, priest, and soldier, all conjure up images in our minds as to how these individuals should behave. Many roles, such as that of father or priest, are well established, and though minor differences exist in individual perceptions of those roles, society-wide consensus exists as to their major characteristics. Newer, rapidly changing, or less well established roles, such as those of the pharmacist or pharmacy technician may not enjoy a societal consensus. This possible lack of consensus is important to identify due to the dysfunctional consequences it may create. Role theory states that role expectations do not remain hidden, but are communicated either directly or indirectly between individuals in order to induce behavioral conformity (Gross et al., 1958). This means that each member of society attempts to influence the behavior of all others he comes into contact with in an effort to make them conform to his expectations. When a consensus exists as to a given role, these "sent" expectations will all be compatible and compliance with all of them possible. If a role consensus does not exist, individuals may hold different expectations for a role, and their attempts to influence behavior may be incompatible. A person may find himself in a situation where two persons expect him to behave in two totally

different ways. An example might be that of a technician who has two pharmacists telling him how to perform a task, each with a different method, and both expecting him to do it their way. A person might be expected to perform under a situation where someone's expectations for his behavior are in direct conflict with his own personal "code of ethics" or expectations. An example would be that of a pharmacist who genuinely believes that technicians should not be used, yet finds himself employed at an institution which relies heavily on their use. A person may find himself faced with many legitimate and seemingly compatible expectations, so many in fact that it is impossible to completely satisfy them all. An example might be that of a pharmacist who occupies not only that role, but one of husband, father, student, etc. All the expectations are legitimate, but time constraints prohibit the individual from totally satisfying them all. These three situations are all referred to as role conflicts (Kahn et al., 1964). Another aspect of role expectations, other than their use to alter behavior, is that taken as a whole they define what a particular role is. When role expectations are vague or incomplete, a situation known as role ambiguity may occur. The individual does not know what he is supposed to do, or may not know what the results of his actions will be. An example would be a technician without any training or job orientation expected

to step in and "do the job". He doesn't know what he's supposed to do, how he's going to do it, and what will happen when he does it. Another example might be a clinical pharmacist who has no idea about how he is being evaluated, or has no guidelines as to what constitutes his position. Is it direct patient care, student teaching, or research which is the most important, or some combination of all three?

The reason for concern about role conflict and role ambiguity stems from their relationship to many negative factors. Role conflict and/or role ambiguity have been associated with: increased job tension (Kahn et al., 1964), increased employee turnover (Rizzo, House, and Lirtzman, 1970; Lyons, 1971), decreased job satisfaction (Green and Organ, 1973; Beehr, 1976; Kahn et al., 1964; Lyons, 1971; Rizzo et al., 1970), decreased performance (Schuler, 1975), anxiety (Tosi, 1971; Brief and Aldag, 1976), decreased self-esteem (Kahn et al., 1964; House and Rizzo, 1972; Beehr, 1976), increased propensity to leave (Rizzo, House, and Lirtzman, 1970; Lyons, 1971; House and Rizzo, 1972; Brief and Aldag, 1976; Schuler, Aldag, and Brief, 1977), decreased satisfaction with supervision (Szilagyi, Sims, and Keller, 1976) and increased termination of employment (Brief and Aldag, 1976; Schuler, Aldag, and Brief, 1977; Lyons, 1971). When one examines the consequences of these factors, one can

see why eliminating or reducing their occurrence would be beneficial. For example, increased employee turnover means increased expenditures for recruiting, selecting, training, and integrating new employees to replace those lost. Decreased performance, in days of strict fiscal constraint, means less work will be performed by employees than they are capable of.

Explorations into role conflict and role ambiguity in pharmacy have been limited to two articles. A 1978 study by Curtis, Hammel, Heinen, and Johnson looked at education and practice factors and their effects on stress and strain among young pharmacists. They classified the educational backgrounds and practice settings of pharmacists according to the relative amounts of patient and professional orientation they possessed. They hypothesized that persons whose educational backgrounds matched well with their practice setting on those two orientations would experience lower stress levels than those whose education and practice settings did not match. For example, a person possessing an educational background low in patient orientation would experience less stress if working in a practice setting which was low in patient orientation. Conversely, if placed into a setting high in patient orientation, that person would be expected to experience higher stress levels. They used role conflict and role ambiguity as measures of stress,

which they felt would in turn be related to levels of strain. Strain was measured using tests for anxiety, depression, job dissatisfaction, and life dissatisfaction. They found that the degree of agreement between education and practice did not predict stress and strain levels, but that practice setting alone did. Practice settings deemed high in both patient and professional orientation were associated with lower levels of anxiety, depression, and role ambiguity. Conversely, settings rated low on these two criteria were associated with higher scores on all three items. Job and life satisfaction were also a function of patient or professional orientation.

A 1979 study by Hammel, Curtis, and Heinen explored job and life satisfaction, and role conflict and role ambiguity among young pharmacists. Fifty-four percent experienced role conflict and 95% were subjected to role ambiguity at least some of the time.

In summary, role conflict and role ambiguity, two constructs associated with several negative outcomes in organizational settings, may result when a lack of consensus, or role dissensus exists. Studies examining role conflict or role ambiguity have been limited to young pharmacy practitioners. Studies examining the role perceptions of pharmacists and technicians for the technicians' role have yet to be reported in the literature.

Statement of Purpose of this Study

The purpose of this study is to compare perceptions held by pharmacists and technicians on certain aspects of the technicians' role, and to determine if a consensus exists as to that role. It is also intended to measure role conflict and role ambiguity levels among pharmacists and technicians, and to determine if levels are dependent upon certain environmental or demographic characteristics. It is hoped that by identifying those characteristics which contribute to role conflict and role ambiguity, one might be able to reduce levels of both traits in pharmacists and technicians.

Objectives

This study will determine current perceptions held by pharmacists and technicians for certain aspects of the technicians' role. It will also determine levels of role conflict and role ambiguity among the sample. It will encompass four study areas:

Demographics

Eight objectives will be determined: 1) the age distribution of pharmacists and technicians; 2) the amount of time employed at a given institution; 3) the amount of time employed as a pharmacist or technician; 4) the numbers of pharmacists and technicians employed at the institutions

surveyed; 5) the educational levels attained by subjects; 6) the type of training received (formal vs. informal); 7) the number of immediate supervisors to which a technician is held responsible (one vs. more than one); 8) the amount of turnover experienced by the study institutions in the last twelve calendar months, expressed as a percentage of staff size.

Role Perceptions

The perceptions held by pharmacists and technicians for certain aspects of the technicians' role will be measured and compared to determine whether significant differences exist between the two groups.

Role Conflict and Role Ambiguity

Two objectives will be determined: 1) the levels of role conflict and role ambiguity among pharmacists; 2) the levels of role conflict and role ambiguity among technicians.

Hypothesis Testing

The hypothesis testing procedure will be conducted on items from the three previous study areas. The following hypotheses will be tested:

Hypothesis 1. Levels of role conflict and role ambiguity will be positively correlated with organizational size as measured by staff size.

Hypothesis 2. Levels of role ambiguity experienced will be lower in those technicians receiving formal training as opposed to informal or on-the-job training.

Hypothesis 3. There will be a negative correlation between tenure on the present job and role conflict and role ambiguity levels.

Hypothesis 4. Levels of role conflict and role ambiguity will be negatively correlated with the amount of time spent working in the capacity of either pharmacist or technician.

Hypothesis 5. Technicians receiving assignments from more than one person will experience higher levels of role conflict and role ambiguity than those assigned by only one individual.

Hypothesis 6. Pharmacists will experience greater levels of role ambiguity than technicians as measured by mean scores obtained.

Hypothesis 7. Technicians will experience greater levels of role conflict than pharmacists as measured by mean scores obtained.

Hypothesis 8. There will be a positive correlation between role ambiguity scores obtained and levels of employee turnover in the study institutions.

Definitions

University or medical school-affiliated hospital refers to an acute care medical or surgical hospital associated with either a state-owned university or private medical college, whose primary function is as a teaching facility for medical students, as listed by the Association of American Medical Colleges (1980).

Hospital Pharmacist refers to a registered pharmacist employed as a pharmacist within a hospital.

Pharmacy Technician refers to an individual working in a hospital who satisfies the following criteria as defined by Stolar (1981):

Someone who, under the supervision of a licensed pharmacist, assists in the "non-judgmental aspects of preparing and dispensing medications. Such duties include, but are not limited to: maintaining patient records; setting up, packaging, and labeling medication doses; filling and dispensing routing orders for stock supplies for patient-care areas; maintaining drug inventories; adding drugs to parenteral fluids; and similar manipulations. The duties of pharmacy technician do not include those usually performed by secretaries, clerks, typists, delivery personnel, or medication administration technicians. (p.1133)

Role Set refers to all those individuals who exist in the environment of an individual, who may or may not attempt to influence that person's behavior either directly or indirectly.

Sent Role refers to those perceptions and expectations communicated either directly or indirectly by

members of a person's role set to that individual in order to induce behavioral conformity.

Role Conflict refers to a situation in which an individual is faced with two or more sets of pressures or expectations, such that compliance with one set makes compliance with another difficult.

Role Ambiguity refers to a situation in which an individual is presented with pressures or expectations which are unclear, ill-defined, or incomplete, such that he is unsure of what his behavior should be, or what will result from his actions.

CHAPTER 2

RELATED LITERATURE AND RESEARCH

This review of the literature will briefly discuss the major concepts of role theory, specifically as they relate to role conflict and role ambiguity. Following that will be a review of research dealing with certain aspects of role conflict and role ambiguity; namely, their relationship to job satisfaction, tension, anxiety, propensity to leave, self-esteem, performance, termination of employment, and satisfaction with supervision. This will be followed by a review of pharmacy literature dealing with role definition, role conflict, and role ambiguity.

Role Theory

Role theory is a complex set of concepts and hypotheses developed over the last century by researchers in anthropology, sociology, and social psychology. These different orientations have resulted in many subtle and complex variations in key terms. This review will concentrate on those concepts shared by the three disciplines, and while noting their differences in perspective, will ignore those minor semantic differences.

An example of the complexity of role theory can be seen in the definition of the word itself, which according to Gross, Mason, and McEachern (1958) may be placed into three main categories. The first category includes definitions incorporating "normative cultural patterns". In this philosophy, a role consists of those "behavioral standards" or expectations ascribed by society for a person occupying a particular status, that is, a role is what the person should do when occupying a given position.

The second category treats role as "an individual's definition of his situation with reference to his and others' social positions" (Gross et al., p.13). That is, a person's role is behavior which seems appropriate to him on a situational basis depending on the demands and expectations of others in his group (Sargent, 1951).

The third category deals with role as the actual "behavior of actors occupying social positions" (Gross et al., p.14). How the person actually performs, rather than how he is supposed to perform in a given situation becomes his role.

These definitions have their origins in the three previously named academic disciplines. The first deals with role from an anthropological reference point. It uses concepts of normative behavior in a cultural setting to define role. The second definition emphasizes the interactional

point of view common to sociology. The third has a behavioral emphasis and had its origin in social psychology.

Despite these differences in origin, Gross, Mason, and McEachern (1958) state, "three basic ideas which appear in most of the conceptualizations considered, if not in the definitions themselves, are that individuals: 1) in social locations (2) behave (3) with reference to expectations."(p.17) Of major importance to those interested with role conflict or role ambiguity aspects of role theory are the behavioral and expectation components.

Role expectations according to Sarbin (1968) are comprised of the "rights and privileges, the duties and obligations, of any occupant of a social position in relation to persons occupying other positions in the social structure."(p.497) He views this concept as a bridge between social structure and role behavior.

According to Kahn et al. (1964) a person's role set, or those persons to whom his position relates, develop beliefs and attitudes about what he should or should not do as part of his role. The role expectations held by a role set member "reflect that member's conception of the person's office and of his abilities."(p.14)

Gross, Mason, and McEachern (1958) view expectations as evaluative standards applied to the incumbent of a position, and denote how that person should behave. They dis-

cussed two dimensions of expectations, that of direction and intensity. Direction implies that expectations can be described as either for or against something. Intensity describes whether an action for an incumbent is something he absolutely must, preferably should, or may or may not do.

These expectations do not remain hidden, but are communicated either directly or indirectly to the focal person. These sent role expectations are intended to induce conformity to the role sender's expectations. According to Gross, Mason, and McEachern (1958), these behavioral expectations are society's means of inducing conformity by appealing to the focal person's sense of what actions will result in either gratification or deprivation. These sent roles do not always correspond however to the focal person's received role, or his perceptions and cognition of what was sent, and it is the received role which motivates and directs his behavior.(p.65)

This brings up the problem of clarity of role expectations. According to Sarbin (1968), unclear expectations may result in inappropriate role enactments leading to ineffective and dissatisfying social interactions. He defines clarity of role expectations as the "difference between the optimal amount of information needed about role expectations and the amount actually available to a person."(p.503) Sarbin classified unclarity of role expectations into three

types. The first type involved expectations which were uncertain, vague, or indefinite. The second type involved a lack of consensus, or role dissensus. This referred to a lack of agreement among occupants of complimentary roles as to role expectations held for the focal person. The third type of unclarity resulted from an incongruity between the focal person's own expectations of his role and those expectations held by others. The sending of these unclear or incongruent expectations from members of a person's role set to that person may result in that person experiencing either role conflict or role ambiguity.

Role Conflict

Role conflict is a broad concept applied by role theorists to describe several different situations. In his review of role theory, Sarbin (1968) used the term to define a situation in which a person finds himself in two or more positions requiring contradictory role enactments. Sarbin divided role conflicts into two main groups: inter-role conflicts and intra-role conflicts. Inter-role conflicts involved situations in which a person occupied multiple positions having incompatible role expectations. An example he used was that of the "man in the middle" such as a foreman in industry. Another example would be a situation in which a person is a member of two sub-cultures, but not fully accepted by either. Intra-role conflicts involved a

situation in which contradictory expectations were held by two or more relevant groups for a single position. It might also describe a situation in which one group held simultaneously contradictory expectations for one role. Sarbin cited Komarovsky's (1946) study of college girls to illustrate this situation. The girls were simultaneously urged by their parents to make good grades in order to be admitted to college, while also being urged to pay more attention to their personal appearance and social lives.

Kahn et al.(1964) used the term "sent role conflict" and defined it as "the simultaneous occurrence of two or more sets of pressures such that compliance with one would make difficult compliance with the others."(p.19) The term "pressure" in their definition denoted attempts by others to cause behavioral changes in a person, in order to bring his performance into line with their role expectations for him. It was through these pressures or role forces that the person experienced psychological conflict. They categorized conflict into several types; namely, intra-sender, inter-sender, inter-role, and person-role conflicts.

Intra-sender conflict referred to the situation where a single member of a person's role set had conflicting expectations for his performance. An example would be where a person was expected by someone to accomplish a task

requiring him to go outside "normal channels", while simultaneously forbidding him to do so.

The second type, or inter-sender conflict, resulted when pressures from a role sender were in opposition to pressures applied from one or more other senders. An example would be that of a foreman urged by his superiors to more closely supervise the workers under him, while his subordinates exerted pressure on him for less supervision.

The third type of conflict, or inter-role conflict, referred to a situation where membership in multiple groups resulted in conflicting expectations being placed upon a person. An example of this would be the conflict resulting when a person's role as a worker, with its demands for longer hours and take-home work, clashed with his expected role as a husband or father.

The fourth and final type of conflict, or person-role conflict, occurred when pressures were exerted on someone by his role set which went against his own needs and values. An example would be where pressure was exerted on someone to "bend the rules" and do something which went against his code of ethics.

Kahn et al. (1964) also suggested another complex role conflict type referred to as "role overload". In this scenario various role senders exerted pressures which were all legitimate and apparently compatible, yet could not be

accomplished within given time limits. This forced the person to prioritize the expectations and perform some while holding off on others. If it was impossible to deny any of the pressures, he might find himself unable to cope, and might be taxed beyond his abilities.

Gross, Mason, and McEachern (1958) divided role conflict situations into two main types. They used the term "intra-role conflict" to describe a situation where others held differing expectations for a person's performance in a single position. For their study of school superintendents this conflict denoted the expectations held by teachers vs. those held by school board members for the superintendent's performance. Inter-role conflict denoted the situation where others held different expectations for a person as an occupant of two or more positions, and the person felt they were incompatible expectations.

The same authors also discussed certain aspects and limitations which exist regarding the treatment of role conflict. According to them, some researchers defined conflict according to incompatible expectations perceived by the observer, while others defined it from the actor's perceptions of incompatible expectations. In simpler terms this means that for some, the focal person must be cognizant of conflict for it to really exist, for others this is not a necessary condition. Others specified that the actor must

occupy two or more social positions in order to be exposed to conflict. A third differentiation was that some felt expectations must be legitimate ones for them to generate conflict. In their analysis of role conflict they chose to measure only the actor's perception of it, placed no limitations on the legitimacy of expectations, and analyzed expectations in regards to occupancy of single positions as well as multiple ones.

Role Ambiguity

In contrast to role conflict in which a person receives incompatible expectations for performance, role ambiguity is used to describe the situation which occurs when incomplete expectations are sent. Role ambiguity was described by Kahn et al. (1964) as a "direct function of the discrepancy between the information available to the person and that which is required for adequate performance of his role."(p.73) They divided ambiguity into two concepts; objective ambiguity, which described conditions of the environment, and experienced ambiguity, which described a state of the person. Objective ambiguity dealt with the amount of information available to the person within an organization. Information might exist and simply not be communicated, or it might simply not exist. An example of non-existent information would be that of the future predictability of events. As an event moves farther into the future its

predictability decreases. Information may exist, but may be communicated only to certain members of an organization. This objective ambiguity might give rise to subjective or experienced ambiguity, depending on the state of the individual. The principle of role ambiguity depends upon the needs, values, and aspirations held in common by the population. People need to know, for example, what rights, duties, and responsibilities they have. They need to know the consequences of their actions. Certain needs exist universally; the need for safety, security, love, recognition, achievement, and money are found in all of us. Though the strength of these needs varies in the same person over time, they are sufficiently widespread to allow for a meaningful analysis.

Outcomes Associated with Role Conflict or Role Ambiguity

Researchers in role analysis have identified relationships between role conflict and/or role ambiguity and certain adverse conditions within organizations. Among those things associated are: decreased job satisfaction, increased tension, increased anxiety, propensity to leave the organization, decreased self-esteem, decreased performance, termination of employment, and dissatisfaction with supervision.

Job Satisfaction

Kahn et al. (1964) in their intensive study of seven industrial organizations found that dissatisfaction with the job tended to increase under high degrees of either role conflict or role ambiguity. Role ambiguity's effects on job satisfaction depended upon whether it arose from ambiguous performance expectations or from a lack of information about how others viewed the person's performance. Only ambiguity about performance expectations lead to dissatisfaction.

Rizzo, House, and Lirtzman (1970) measured role conflict and role ambiguity among managerial, research, engineering, and technical employees in a large manufacturing company. They used a thirty item instrument with 15 items devoted to each factor. The authors found a negative correlation between role conflict and role ambiguity and job satisfaction, particularly on those measures concerned with need fulfillment. Of the two, role ambiguity yielded the higher correlations.

Lyon (1971) surveyed 156 staff registered nurses in a large community hospital in order to determine the relationship between role clarity (the inverse of role ambiguity) and job satisfaction. The person's need for clarity was also included as an intervening variable. Need for clarity appeared to mediate the relationship between role clarity and job satisfaction. Nurses high in need for clarity

experienced significantly greater correlations between clarity and job satisfaction than did those deemed low in need for clarity. Those nurses rated low in need for clarity yielded non-significant correlations between role clarity and job satisfaction.

House and Rizzo (1972) administered a survey to 35 percent of managerial, professional, and technical employees in a large equipment manufacturing company. They used role conflict and role ambiguity both as dependent and as intervening variables. Satisfaction measures included need fulfillment in the areas of job security, self-fulfillment, autonomy, pay, promotion, social environment, ego (self-esteem and recognition), adequacy of authority, and benefits. Role ambiguity was significantly ($p \leq 0.01$) related to all satisfaction facets. Role conflict was significantly related to job security, recognition, social environment, and adequacy of authority. The authors also attempted, by holding the role variables constant, to determine the degree to which variations in the two role variables caused variations in the relationships between leadership behavior or formal organizational practices and satisfaction. They found that role ambiguity accounted for 30 to 75 percent of the magnitude of zero-order correlation between supportive leadership behavior and satisfaction. Role conflict did not

appear to function as an intervening variable where satisfaction was concerned.

Green and Organ (1973) attempted to determine the relationship between role accuracy, or whether the person correctly perceives what others expect, and satisfaction. The authors created four models of the paths by which role accuracy could lead to satisfaction. They found that although role accuracy did not necessarily lead to satisfaction, it was a pre-requisite for role compliance. Role compliance caused effective performance and lead to rewards, both of which resulted in increased satisfaction.

Miles (1975) attempted to determine whether a causal relationship existed between role conflict or role ambiguity and job satisfaction. The author surveyed nine governmental research and development agencies at two intervals, four months apart. The author found a causal relationship between role conflict and job satisfaction, but was unable to determine its' direction. That is, decreased job satisfaction may have resulted from role conflict, or decreased job satisfaction may have reinforced feelings of role conflict. Role ambiguity was found to have both a causal relationship to satisfaction, and a definite direction, with role ambiguity leading to decreased satisfaction.

Johnson and Stinson (1975) looked at the intervening effects of need for achievement and need for independence on

the relationship of role conflict and role ambiguity with job satisfaction. The authors found that both role conflict and role ambiguity were negatively related to job satisfaction. For inter-sender role conflict, the relationship with satisfaction was more negative for those with both high need for achievement and high need for independence than for those low in those characteristics. The relationship between task ambiguity and satisfaction was more negative for those high in need for achievement than for those low in that need.

Miles and Petty (1975) looked at the need for clarity as an intervening variable in the relationship between role clarity and job satisfaction among supervisory and non-supervisory employees in nine governmental agencies. They found that increased role clarity (which is analogous to reduced role ambiguity) resulted in increased job satisfaction. The supervisory and non-supervisory personnel were dichotomized into those with either high or low need for clarity. Neither employee type showed differences in their clarity and satisfaction relationships based upon need for clarity levels.

Tosi (1971) found that role conflict was negatively and significantly related to job satisfaction, but that role ambiguity was not.

Schuler (1975) looked at the relationship between role conflict and role ambiguity and job satisfaction at different organizational levels. He divided employees of a large manufacturing firm into three levels; higher level, which were upper level managers and professionals; middle level, which included middle-level managers and entry-level professionals; and lower level, which included clerical workers, tradesmen, technicians, and lower skilled blue-collared maintenance men. Schuler surmised that at higher levels of an organization, role ambiguity would be the more negatively related to job satisfaction than would be role conflict. Conversely, at low levels role conflict would be more negatively related than would be role ambiguity. Those at middle levels were expected to experience intermediate levels of correlations for role conflict and role ambiguity with satisfaction. Schuler's reasoning was that at higher levels the increased autonomy and power enabled an individual to circumvent sources of conflict. At lower levels, tasks or roles were more well-defined and ambiguity was less of a problem, but the power to avoid role conflicts was lacking. The hypothesized relationship of organizational levels and job satisfaction held true for those at high and low levels, but was inconclusive for those in the middle group.

Brief and Aldag (1976) attempted to determine the effects of higher order need strength (HONS) on the relationships between role conflict or role ambiguity and job satisfaction. They tested the moderating effects of HONS by dividing their sample into those high or low in that characteristic. No significant differences were found between the two groups. Role conflict was found to be negatively and significantly related to satisfaction with the job.

Beehr (1976) looked at the stress of role ambiguity and its relationship to four psychological strains; among them job satisfaction. In his study, situational rather than personal moderators of the relationship were examined. The specific hypotheses tested were that role ambiguity would be more strongly related to job satisfaction among people in non-cohesive groups than among cohesive groups, among those with unsupportive supervisors than supportive supervisors, and among people in non-autonomous roles than those in autonomous roles. He found that role ambiguity was significantly related to dissatisfaction with the job. Group cohesiveness moderated the relationship but in the opposite direction predicted. The author explained this paradox as a situation where the cohesiveness of the group allowed persons to externalize the blame for ambiguity, rather than allowing it to impact of their self-esteem. This externalization was reflected in job dissatisfaction. Supervisor

support was unrelated as a moderator between the stress and strains. Autonomy was significantly related to job dissatisfaction with highly autonomous roles yielding lower levels of job dissatisfaction than did non-autonomous roles.

Szilagyi, Sims, and Keller (1976) attempted to determine the relationship between locus of control, role conflict, role ambiguity, and job satisfaction. Job satisfaction facets included satisfaction with pay, with the work itself, with supervision, and with co-workers. Their sample included personnel from two organizations, a university medical center, and a manufacturing firm. The authors wanted to see which of the three variables, role ambiguity, role conflict, or locus of control contributed greatest to the variance of the satisfaction variables. They also wanted to examine the relationships of role conflict and role ambiguity at various organizational levels. They found that the two role variables accounted for far greater variance in the satisfaction variables than did locus of control, with the contribution of each varying across organizational levels. At lower levels, role conflict was the more important of the two in terms of its relationship with satisfaction. As one progressed upward through the organization, role ambiguity gradually assumed the more important role. Data from the entire sample showed a significant relationship between both role conflict and role ambiguity

and the satisfaction variables. Both role conflict and role ambiguity were negatively related to satisfaction with work, pay, supervision, and co-workers.

Schuler and Aldag (1977) surveyed over 1500 employees in four different organizations, applying measures of role conflict, role ambiguity, and job satisfaction. They found that role conflict and role ambiguity were uniformly negatively and significantly related to all facets of satisfaction in all but one sample, where most of the correlations were non-significant.

Tension

Kahn et al. (1964) in their industrial study found that high levels of role conflict were related to increased tension associated with various aspects of a job. Under conditions of high role conflict a person tended to worry about, or become bothered by conditions and events in his work life, much more so than when experiencing low conflict. Role ambiguity, particularly of the type associated with the lack of feedback information from others about one's performance was also found to increase emotional tension.

Lyons (1971) studied role clarity among nurses and found that role clarity and tension were negatively related regardless of whether the individual was judged high or low in need for clarity.

Miles and Petty (1975) found that job tension was inversely related to role clarity. Those non-supervisory personnel with high need for clarity showed a greater negative relationship between clarity and tension than did those low in need for clarity. For supervisory personnel, there was no significant difference in the clarity/tension relationship with respect to need for clarity.

Tosi (1971) also found a positive and significant relationship between role conflict and tension. Role ambiguity was not found to significantly relate to job tension.

Brief and Aldag (1976) found significant positive relationships between role conflict and role ambiguity and job tension, independent of higher order need strength of the individual.

Schuler, Aldag, and Brief (1977) found that role conflict and role ambiguity were significantly related to increased tension.

Anxiety

Kahn et al. (1964) found that acute anxiety often accompanied high levels of role conflict. Accompanying anxiety were decreased self-esteem, confusion, and indecision often to a debilitating extent.

Rizzo, House, and Lirtzman (1970) also found weak positive correlations between both role conflict and role

ambiguity and anxiety, with role ambiguity showing the greater correlation.

House and Rizzo (1972) found significant correlations between all facets of measured anxiety and role conflict. Role ambiguity was significantly related only to the general fatigue and uneasiness components of anxiety.

Tosi (1971) found a positive and significant correlation between role conflict and anxiety. Role ambiguity was not related significantly to anxiety.

Brief and Aldag (1976) found a significantly positive correlation between both role conflict and role ambiguity and anxiety/stress measures. This relationship was independent of higher order need strength, with no difference between high and low HONS groups.

Schuler, Aldag, and Brief (1977) likewise found positive correlations between role conflict and ambiguity and anxiety/stress.

Propensity to Leave

Rizzo, House, and Lirtzman (1970) found weak positive correlations between both role conflict and role ambiguity for propensity to leave the organization.

Lyons (1971) found that nurses classified as having a high need for clarity had a significant correlation between propensity to leave and both role variables. Those with low

need for clarity exhibited non-significant correlations for propensity to leave.

House and Rizzo (1972) found positive significant relationships between both of their propensity to leave scales and role ambiguity. Role conflict was not significantly related.

Brief and Aldag (1976) found that role conflict and role ambiguity were both positively related to propensity to leave. Higher order need strength did not moderate those relationships.

Schuler, Aldag, and Brief (1977) found that role conflict and role ambiguity were positively correlated with propensity to leave in both sample groups in which they were measured, though the relationship achieved significance in only one group.

Self-Esteem

Kahn et al. (1964) found that increased role conflict was often associated with lowered self-esteem. Role ambiguity was associated with a sense of futility and a loss of self-confidence.

House and Rizzo (1972) used self-esteem as a facet of satisfaction and found it to be significantly and negatively related to both role conflict and role ambiguity.

Beehr (1976) found that role ambiguity was associated with lowered self-esteem ($p=0.01$). Group cohesiveness had a

significant effect on the self-esteem/role ambiguity relationship, with those in highly cohesive groups experiencing a less negative relationship than those in low cohesiveness groups.

Performance

Kahn et al. (1964) while not directly measuring role conflict's or role ambiguity's effects on job performance found that increased role conflict was often associated with confusion and indecision to a debilitating (their word) degree.

Green and Organ (1973) found that role clarity lead to proper role compliance, resulting in effective performance. Effective performance and the rewards it brought about lead to increased job satisfaction.

Tosi (1971) measured the relationship between role conflict or role ambiguity and effectiveness on the job. Neither conflict nor ambiguity were significantly related to effectiveness.

Schuler (1975) examined the effects of role conflict and role ambiguity on performance at different organizational levels. He found that role conflict and role ambiguity had negative effects on performance at lower and middle levels, but did not appear to effect performance at higher levels.

Brief and Aldag (1976) found that role ambiguity was negatively related to performance rating by supervisors, and that this relationship was not mediated by higher order need strength.

Szilagyi, Sims, and Keller (1976) found a significant negative relationship between role conflict and performance among members of one of two groups.

Shuler, Aldag, and Brief (1977) found the relationship of role conflict and role ambiguity with performance to be inconsistent. They collected performance data on only three of their six sample groups. Of these, two showed significant negative relationships between role ambiguity and performance, the third did not.

Termination of Employment

Brief and Aldag (1976) found that role ambiguity was positively and significantly related to termination of employment, as measured by turnover figures during a six month period among their sample group.

Schuler, Aldag, and Brief (1977) found role ambiguity to be positively related to termination of employment in one of two measured sample groups. Role conflict was positively related to search behavior.

Lyons (1971) found that voluntary turnover was significantly negatively correlated with role clarity. Those nurses classified as having a high need for clarity had

correlations significantly greater than those classified as being low in need for clarity.

Satisfaction with Supervision

Miles (1975) found that both role conflict and role ambiguity were causally related to unfavorable attitudes for role senders. The direction of causality could only be inferred for role ambiguity's relationship.

Brief and Aldag (1976) found that role conflict was significantly negatively related to satisfaction with supervision, and that the relationship was not moderated by higher order need strengths.

Szilagyi, Sims, and Keller (1976) found that both role conflict and role ambiguity were negatively related to satisfaction with supervision.

Summary

While the findings of researchers of role conflict and role ambiguity are not always consistent, and the correlations obtained between the role variables and specific outcomes relatively small, their findings lend support to the treatment of both role conflict and role ambiguity as negative factors, which should be avoided or eliminated within organizations.

Pharmacy Literature on Technicians

Interest and debate on the need for, functions of, required competencies of, and training requirements of technicians in hospital pharmacy has been a major topic in pharmacy literature for many years. In 1969 a workshop was sponsored by the American Society of Hospital Pharmacists (ASHP), attended by hospital pharmacists and members of the American Association of Colleges of Pharmacy (AACP) and other organizations, in an attempt to define the need for, the use of, and the education and training needs of the sub-professional in hospital pharmacy. The participants split into six workshop sessions and attempted to delineate professional vs. non-professional pharmacy activities and to recommend educational and training guidelines. The six areas included: administration; drug distribution; bulk compounding; packaging and labeling; control procedures; communication, education, and research.

Also in 1969, a task force was appointed by four organizations, ASHP, AACP, NARD (National Association of Retail Druggists), and APhA (American Pharmaceutical Association), to delineate the roles of the pharmacist and sub-professional in pharmacy practice. Tasks were assigned the designations of N, P, or N/P depending upon whether a non-pharmacist could perform the function, a pharmacist must perform the function, or whether the pharmacist must main-

tain a personal control over the function, though it could be performed by a non-pharmacist.

The growing use of supportive personnel prompted the ASHP to release a "Statement on Supportive Personnel in Hospital Pharmacy" in 1970, which made observations and recommendations concerning the functions and responsibilities, training requirements, and standardization of nomenclature of supportive personnel in hospital pharmacy. It called for ASHP and AACP to work together to define standard nomenclature and levels of supportive personnel, to develop hospital-based training programs with the idea of exploring the use of academic institutions as training facilities, and to work together to define the roles of, and training requirements for, supportive personnel in hospital pharmacy.

In 1976, ASHP released a set of training guidelines for hospital supportive personnel. It outlined the criteria for acceptance into a training program, trainee evaluation, program format, and program content.

Following the training guideline, ASHP released a competency standard (1978) which outlined the minimum competencies expected of technicians in hospital pharmacy. The guidelines were constructed with the idea that any technician capable of satisfying the competencies would be able to perform satisfactorily in any hospital or related facility after a reasonable period of orientation.

These articles attempted to define the technicians' role from an organizational point of view. Articles dealing with the actual attitudes and opinions of pharmacists and technicians towards the use of, or role of, technicians have been limited. Sumner et. al. (1971a) examined technician attitudes on certain elements of professionalization. Items measured included desire for formal training requirements, formation of technician organizations, licensure, and working without supervision. They found that more than 75 percent of those surveyed favored required training, about one-half favored the formation of technician organizations, and an overwhelming majority (70 out of 86) favored licensure if certain requirements were met. Slightly less than half of the technicians favored working without supervision, with those in favor also being most in favor of forming organizations.

Teplitsky (1970) surveyed the chief pharmacists of 400 general medical and surgical hospitals on their attitudes on such aspects as the need for technicians, what type of training they should receive, and what type of educational background they should possess. The directors were first categorized according to hospital bed size, and then compared on their responses. Directors of small hospitals (up to 99 beds) were consistently more negative in their viewpoint of technicians, while those in larger hospitals seemed

more positive. Overall, 89 percent felt there was a need for technicians, 91 percent felt technicians should meet certain educational requirements, and 73 percent felt that technicians should receive formalized training.

Sumner et al. (1971b) compared attitudes towards supervision, training, and licensure on the part of chief pharmacists and technicians themselves. They found significant differences in attitude about the need for direct supervision and the desirability of licensure. Technicians indicated less desire for supervision and a greater desire for licensure than did directors. No significant differences were obtained between directors and technicians on the subject of training, with the majority of both groups in favor of specific training courses.

Walker et al. (1980) measured certain perceptions and expectations held by chief pharmacists for their technicians. The sample included all chief pharmacists in the Veterans Administration hospital system. Items measured included either personal characteristics such as maturity, loyalty, promptness, or outspokenness; or knowledge and ability requirements for various tasks. In all items but one, outspokenness, the director's expectations exceeded their perceptions of their technicians. The authors proposed several possible reasons for the differences found; including the chance that expectations may not have been

adequately communicated by the directors to the technicians. They hypothesized that standardized formal training might help in reconciling expectations with perceptions.

Pharmacy Literature on
Role Conflict and Role Ambiguity

Only two studies concerned with either role conflict or role ambiguity have been published in the pharmacy literature. The first, a 1979 study by Curtis, Hammel, Heinen, and Johnson, looked at education and practice factors and their effects on stress and strain among young pharmacists. They classified the educational backgrounds and practice settings of pharmacists according to the relative amounts of patient and professional orientation they possessed. They hypothesized that those persons whose educational backgrounds matched well with their practice settings on those two orientations would experience lower levels of stress than those individuals whose education and practice settings did not. For example, a person possessing an educational background low in patient orientation would experience less stress if working in a practice setting which was also low in patient orientation. Conversely, if placed into a practice setting high in patient orientation, that person would be expected to experience higher stress levels. They used role conflict and role ambiguity as measures of stress, which they felt would be in turn related to levels of

strain. Strain was measured using tests for anxiety, depression, job dissatisfaction, and life dissatisfaction. They found that the degree of agreement between education and practice setting did not predict stress or strain levels, but that practice setting alone did. Practice settings deemed high in both patient and professional orientation were associated with lower levels of anxiety, depression, and role ambiguity. Conversely, settings rated low on those criteria were associated with higher scores on all three items. Job and life satisfaction were also a function of patient or professional orientation.

A 1979 article by Hammel, Curtis, and Heinen using the same data explored job and life satisfaction, role conflict, and role ambiguity among pharmacists. Fifty-four percent experienced role conflict and 95 percent were subjected to role ambiguity at least some of the time, and 60 percent fairly often to often.

These two articles, based upon the same research were both well written. The research and analysis of data were well conceived, however the method used for categorizing educational orientation is open to concern. One can not be certain that the perceptions of faculty regarding the relative orientations of their institutions were realistic. The assignment process also disallowed "ties", possibly creating an artificially wide variation in responses. One possible

solution, that of comparing practitioner responses to the same assignment questions with those of the faculty members was not performed; the authors maintaining that practice effects and the passage of time would make comparison invalid. The authors might have examined curricula content of the various schools to determine whether faculty assessments were accurate. The authors might also have questioned students currently enrolled in the selected institutions as to their school's orientation and compared the results to those obtained from faculty.

CHAPTER 3

METHODOLOGY

The purpose of this research was to identify perceptions held by pharmacists and technicians for certain aspects of the technician's role and to compare those two viewpoints for consensus. It was also intended to measure levels of role conflict and role ambiguity among pharmacists and technicians, and to determine if certain factors might be related to those levels.

The Sample

The sample population consisted of pharmacists and technicians employed at university or medical school-affiliated hospitals in the United States. This population was chosen because it was discreet and well definable, and because the author felt these hospitals would tend to utilize technicians to a greater extent than the norm. A list of the institutions was obtained using the AAMC Directory of American Medical Education (AAMC,1980), and the COTH Directory (Council of Teaching Hospitals, 1978). Letters (Appendix A) were sent to all directors of pharmacy requesting the names and mailing addresses of all pharmacists and technicians under their employ. They were also requested to supply information on the degree of employee turnover,

defined as the number of persons leaving their department within the last twelve calendar months.

Out of 87 directors contacted, twenty-four responses were received. Of these, only 10 contained the requested information, the remaining were either requests for further information or declinations to participate. All non-responding directors and those who declined to participate were then contacted by phone after which they either agreed to provide the requested information, agreed to distribute surveys under an arranged randomization scheme, or declined to participate. Those who declined to participate did provide information as to the size and make-up of their staffs. Based upon the total populations of each group a decision was made to take a random sample of each population. The random sample size was determined using the formula suggested by Krejcie and Morgan (1970) and the following equation:

$$S = X^2P(1-P)/(d^2(N-1) + X^2P(1-P))$$

where S is the required sample size, X^2 is the table value of chi-square for 1 degree of freedom at the desired confidence level, N is the population size, P is the population proportion (assumed to be 0.5), and d is the degree of accuracy expressed as a proportion (0.05). The resulting calculations using this formula yielded a sample of 331 pharmacists and 325 technicians. Based upon prior research

involving mailed surveys of pharmacists and technicians (Noel, 1978; Sumner, 1971b), an approximate response rate of 60% was anticipated. These approximations coupled with fiscal constraints lead to an upward sample size adjustment to include 500 pharmacists and 500 technicians. The pharmacists and technicians were identified for randomization in two ways. For some of the population, names and individual mailing addresses were available. For those hospitals whose directors planned to distribute the surveys, numbers were assigned to each pharmacist and technician on the staffs. The required numbers of pharmacists and technicians were then drawn using a table of random numbers.

Design of the Study

The study consisted of two survey mailings and two reminder post-card mailings using the method advocated by Berdie and Anderson (1974). The first mailing occurred on August 5, 1983 when a questionnaire (appendix A) and a cover letter (appendix A) were sent to each pharmacist included in the sample. The same cover letter and a questionnaire identical to the pharmacist's with the exception of the last page, which requested different demographic information (appendix A), was sent to all sample technicians. One week later, on August 12, 1983 a reminder post-card (appendix A) was sent to all members on the sample. One month after the first survey mailing, September 5, 1983, a second question-

naire with a revised cover letter (appendix A) were sent to those who had not yet responded, as determined by an overt identifier number on each survey. Finally, one week later, on Sept. 12, 1983, another reminder post-card (appendix A) was mailed to those non-respondents. Those persons for whom names and addresses were available received all correspondence directly. Institutions where directors chose to distribute the surveys received a bundle of envelopes containing questionnaires and cover letters addressed simply to "RPh #" or "Tech #" and instructions on how they were to be distributed (appendix A). A return deadline of October 5, 1983 was arbitrarily set by the investigator after which returned questionnaires were not included in the pooled survey data. All responses were entered into computer files on "floppy disks" utilizing Word Star@ programming.

The Statistical Package for the Social Sciences (SPSS) (Nie et al., 1975) was used for all data analysis. Demographic objectives were determined using descriptive analyses such as frequency distributions, measures of central tendency, and standard deviation. Role perceptions held by pharmacists and technicians were compared using the Student t-Test, as were levels of role conflict and role ambiguity in the two groups.

Hypotheses one, three, four, and eight were tested by computing correlation coefficients for organizational size,

tenure on the job, time worked as a pharmacist or technician, and staff turnover with role conflict and role ambiguity scores.

Hypothesis two was tested by computing mean scores on the role conflict and role ambiguity scales for those technicians receiving formal training and comparing them to mean scores of those technicians receiving only informal training using the Student t-Test.

Hypothesis five was tested by computing mean scores on the role conflict and role ambiguity scales for those technicians receiving assignments from one individual and those receiving assignments from more than one individual and comparing the two groups using the Student t-Test to determine if significant differences existed between the two groups.

Hypotheses six and seven were tested by computing mean scores of pharmacists and technicians on the role conflict and role ambiguity scales and comparing the two groups using the Student t-Test to determine if significant differences existed between the two groups and if they were in the predicted directions.

Design of the Survey Instrument

The survey instrument (Appendix A) was a questionnaire, its design based in part upon the formulated study objectives, but also utilizing an existing instrument

developed by Rizzo, House, and Lirtzman (1970) for the measurement of role conflict and role ambiguity. The first twenty-six questions were intended to measure the perceptions of pharmacists and technicians on certain aspects of the technician's role, such as training, supervision, competency, and working relationships. The first six questions in this group dealt specifically with the respondents hospital, and the rest with hospital pharmacy in general. The next fourteen questions comprised the role conflict and ambiguity measures, with six devoted to role ambiguity and eight to role conflict. These scales are by far the most widely used by researchers in the field of role theory and have been tested repeatedly for validity and reliability. The original authors tested their instruments using the Kuder-Richardson statistic with Spearman-Brown corrections for internal consistency and found a coefficient of approximately 0.8. Another author (Breugh, 1980) tested the role ambiguity scale developed from the original instrument and determined a Cronbach alpha value of 0.86, indicating a relatively high degree of reliability. The remainder of the questions on the survey instrument dealt with demographic data on the individual respondents such as age, education, sex, and practice areas.

The instrument was prepared and printed at the University of Arizona. All mailing was also done from the University.

Pretest of the Instrument

The survey instrument was pretested at two Tucson, Arizona hospitals in an effort to determine the readability and clearness of questions, reliability of the role conflict and ambiguity scales, and to aid in response rate prediction.

An overall response rate of 64.7% was obtained using a single questionnaire handout and a single reminder follow-up; with one institution returning 50% and the other 83% of all surveys. In both hospitals the surveys were distributed to the subjects mailboxes at work rather than being mailed to their home addresses. The author felt the 83% response to be inflated due to the fact that subjects at that institution were personally acquainted with the author, and that the 50% rate was more realistic. It was felt that the use of an additional survey mailing and follow-up reminder would boost response into the predicted range of approximately 60%.

The reliability of the role conflict and role ambiguity scales were calculated using Cronbach's alpha statistic. The alpha for the role conflict scale was 0.77 and for

the role ambiguity scale 0.78 indicating a reasonable degree of reliability for both scales.

Based upon comments made, and inconsistencies in responses on some of the statements, certain statement responses were simplified in the demographic section of the questionnaire.

Validity

The instrument was presented to graduate students and faculty at the College of Pharmacy, University of Arizona in order to determine face validity. The role conflict and role ambiguity scales had been analyzed for construct validity by Schuler, Aldag, and Brief (1977).

Response Bias

The possibility of response bias existed at two points in this study; at the director(hospital) level, and at the individual subject level. Bias at the hospital level was analyzed by comparing mean values for hospital bed size, percent occupancy, and total personnel of those hospitals in the total population vs. those sampled and those responding. This information was obtained using the American Hospital Association Guide (1980). Bias at the respondent level was difficult to determine due to the lack of demographic information available on those individuals. An attempt was made to examine whether any trends or differences existed between

early and late responders. This was done by comparing mean values on the demographic variables: age, tenure at the present job, and time spent working as a pharmacist or technician, for the first and last thirds of the respondents. In all these cases comparisons were made to insure that the means were not significantly different for responders and non-responders, indicating possible response bias.

Assumptions

Two assumptions were made in this study. It was assumed that the survey respondents were representative of pharmacists and technicians employed in university or medical school-affiliated hospitals in the United States. It was also assumed that turnover and staff figures provided by survey institutions were accurate.

Limitations

This study had four limitations. The first was that the survey population was limited to pharmacists and technicians employed at U.S. university or medical school-affiliated hospitals. Pharmacists and technicians working at other sites were not included. The second limitation was that no attempt was made to determine the truthfulness of response, therefore prejudicial or false responses could not be judged. Thirdly, the conclusions reached apply only to the study population as defined, and only for the time

period covered by the study. Finally, the number of technicians responding was fewer than the calculated sample size needed to insure that their responses were representative of the total population.

CHAPTER 4

RESULTS

The overall response rate was 64.3%; with 643 usable questionnaires returned out of 1000 mailed. Of these, 352 were pharmacists (70.4% response) and 291 were technicians (58.2% response). Two additional surveys were received after the October 5, 1983 deadline and were not included in the data pool. Eighteen surveys were returned as undeliverable. Eight surveys were returned as unusable; two because the respondents were no longer employed as pharmacists; the others due to incompleteness.

An examination of return rates by institutions showed that eight hospitals had return rates of 0%. In all probability the 114 subjects involved were never surveyed and so cannot be included as non-responders. If these individuals and those previously mentioned are excluded from the survey population an adjusted response rate of 74.2% is obtained.

Response Bias

An analysis was performed to detect possible response bias. This study had two possible areas of bias; at the director or institutional level, and at the subject level.

Testing at the institutional level was done by comparing the sample means vs. population means for the

variables: hospital bedsize, occupancy rates, and personnel. The responding hospitals were likewise compared to the total population on the same three variables. The data for these variables was obtained from the American Hospital Association's Guide (1980). Comparisons were made using the Student t-Test. The results are shown in Table 1. Out of six variables compared none were significantly different at the 0.05 level. The means for the population were all greater than that of either those sampled or those responding but the t-Tests indicated that the means were within sampling error range with 95% confidence.

Bias at the subject level was examined by comparing early and late responders on the variables: age, years worked as either pharmacist or technician, and years worked at the present job. The questionnaires had been entered into the data pool according to when they were returned to the investigator. The first one third returned were designated as early responders. The last one-third received were then designated as late responders. The Student t-Test was used for all comparisons. This analysis was based on the the idea of a response bias continuum. That is, differences between early and late responders might predict even greater differences in the non-responder group and give an estimate of bias (Babbie, 1973). The results of the t-Tests for the demographic variables are in Table 3.

There were no significant differences at the 0.05 level between the early and late responders on the three demographic variables.

Table 1. Student t-Test for significant difference in means between entire population and selected sample on number of beds, percent occupancy, and number of employees.

	<u>Population</u>		<u>Sample</u>		df	t
	Mean	S.D.	Mean	S.D.		
Number of Beds	621.7	334.6	599.0	309.8	146	.42
Percent Occupancy	80.4	8.6	79.0	8.2	146	.97
Number of Employees	2652.3	1545	2440.6	1385.6	132	.83

Note: An F test was performed to determine if the pooled or separate variance estimates were more appropriate. The F was not significant at the .05 level so the pooled variance estimate was used.

Table 2. Student t-Test for significant differences between means for the total population and the responding institutions on hospital bedsize, percent occupancy, and number of employees.

	<u>Population</u>		<u>Responders</u>		df	t
	Mean	S.D.	Mean	S.D.		
Number of Beds	621.7	334.6	588.1	255.8	136	.67
Percent Occupancy	80.3	8.6	79.6	7.8	136	.54
Number of Employees	2652.3	1545.0	2402.0	1131.3	122	1.04

Note: F was significant for bedsize and number of employees at the .05 level so separate variance estimates were used.

Table 3. Student t-Tests for significant differences between means of early and late responders on age, years worked as a pharmacist or technician, and years at present job.

	<u>Early Responder</u>		<u>Late Responder</u>		df	t
	Mean	S.D.	Mean	S.D.		
Age (years)	30.3	7.3	30.9	8.1	401	.76
Years worked as Pharmacist or Technician	6.5	5.6	6.4	6.3	409	.25
Years at Present Job	3.9	3.5	4.0	4.2	408	.24

Note: An F test was performed to determine whether the pooled or separate variance estimates were more appropriate. The F was significant at the .05 level for years at present job so the separate variance estimate as used; for the other two it was not significant so the pooled estimate was used.

Instrument Reliability

The reliability of the role conflict and role ambiguity scales were determined by computing Cronbach alpha reliability coefficients. The coefficient for the eight item role conflict scale was 0.78, for the six item role ambiguity scale it was 0.79. Deletion of any single item from either scale would not have improved reliability.

Demographic Information

Responses to survey questions about individual respondents is summarized in this section.

The age of responding pharmacists ranged from 22 to 65 years with a mean of 31.8 years. Technicians tended to be younger with a range of 20 to 62 years and a mean of 29.3 years. A summary of age of respondents by group is shown in Table 4.

The years employed as a pharmacist and in the present position are summarized in Table 5. The same information for technicians is reported in Table 6. The means and standard deviations for both groups are in Table 7.

Table 4. Age of Responding Pharmacists and Technicians by Groups.

	<u>Pharmacists</u>		<u>Technicians</u>	
	Number	Percent	Number	Percent
Less than 20 yrs	--	----	4	1.4%
20 to 29 yrs	159	45.2%	171	58.8%
30 to 39 yrs	128	36.3%	84	28.9%
40 to 49 yrs	31	8.8%	15	5.1%
50 to 59 yrs	13	3.7%	5	1.7%
60 and over	2	0.6%	2	0.7%
Missing	19	5.4%	10	3.4%
Totals	<u>352</u>	<u>100.0%</u>	<u>291</u>	<u>100.0%</u>

Table 5. Years worked as a pharmacist and in present position.

	<u>As a Pharmacist</u>		<u>At Present Position</u>	
	Number	Percent	Number	Percent
Less than 1 yr.	37	10.5%	73	20.7%
1 to 5 yrs	134	38.1%	202	57.2%
5 to 10 yrs	89	25.3%	41	11.6%
10 to 15 yrs	38	10.8%	16	4.5%
15 to 20 yrs	17	4.8%	6	1.7%
20 yrs or more	25	7.1%	1	0.3%
Missing	12	3.4%	14	4.0%
Total	<u>352</u>	<u>100.0%</u>	<u>352</u>	<u>100.0%</u>

Table 6. Years worked as a technician and in the present position.

	<u>As a Technician</u>		<u>At Present Position</u>	
	Number	Percent	Number	Percent
Less than 1 yr	35	12.0%	66	22.7%
1 to 5 yrs	148	50.9%	166	57.0%
5 to 10 yrs	67	23.0%	32	11.0%
10 to 15 yrs	24	8.2%	14	4.8%
15 to 20 yrs	8	2.8%	3	1.0%
20 or more yrs	1	0.3%	2	0.7%
Missing	8	2.8%	8	2.8%
Totals	<u>291</u>	<u>100.0%</u>	<u>291</u>	<u>100.0%</u>

Table 7. Means and Standard Deviations for time worked as pharmacist or technician and at present position for both groups.

	<u>Years as Pharmacist or Technician</u>		<u>Years at Present Position</u>	
	Mean	S.D.	Mean	S.D.
Pharmacists	7.6	7.0	3.9	3.7
Technicians	5.2	4.2	3.9	3.7

The total number of pharmacists and technicians was summed for each institution to yield a staff size figure. The mean staff size reported was 60 with a range of 19 to 163. The number of pharmacists averaged 32.2 with a range of 8 to 107. The number of technicians averaged 27.9 with a range of 0 to 90.

The highest degree attained by pharmacists and technicians is summarized in Table 8. Many technicians indicated completion of some college courses or that they were working toward a degree. These persons did not indicate whether a high school diploma or G.E.D. certificate had been earned and so could not be assigned to either group. The technician classed as other had a foreign pharmacy degree which could not be classified as B.S. or B.A.

Technician training was nearly equally divided between formal training (50.9%) and on-the-job training (49.1%). A majority of technicians (59.4%) had not been required to pass a competency test to perform their current jobs. An overwhelming majority of technicians received their work assignments from more than one person (80%) as opposed to one person (20%). A significant number of technicians reported that they supervised the work of other technicians (28.6%), though many of these subjects stated the supervision was during training periods only.

Table 8. Highest Educational Degree Attained by Respondents

<u>Degree</u>	<u>Pharmacists</u>		<u>Technicians</u>	
	Number	Percent	Number	Percent
High School	---	---	114	39.2%
G.E.D.	---	---	11	3.8%
A.A./A.S.	---	---	45	15.5%
B.A./B.S.	233	66.0%	67	23.0%
M.S.	31	8.8%	2	0.7%
Ph.D.	2	0.6%	---	---
Pharm.D.	66	18.7%	---	---
Some College	---	---	35	12.0%
Other	---	---	1	0.3%
Missing	20	5.9%	16	5.5%
Totals	352	100.0%	291	100.0%

The amount of turnover experienced by the sample institutions; defined as the number of persons leaving a pharmacy department within the last 12 calendar months, was obtained by three methods. The initial director contact contained a request for that information. Non-responding directors were asked to provide the same information when contacted by telephone. Finally, a stamped, self-addressed post-card was mailed with the survey packets to each hospital where the director was doing the distributing. With fifty-one hospitals reporting, the percentages ranged from a low of 0% to a high of 80%, with a mean value of 9.3%.

The breakdown of responding pharmacists and technicians by sex is summarized in Table 9.

Table 10 shows the breakdown of respondent pharmacists and technicians by practice area. There were many respondents working on a rotating schedule through more than one area so multiple classifications had to be created. There were also those designated as "Other" due to the nature of their practices. Example of these individuals would be narcotic inventory technicians or drug information pharmacists.

Table 9. Sex of responding pharmacists and technicians.

	<u>Pharmacists</u>		<u>Technicians</u>	
	Number	Percent	Number	Percent
Male	191	54.3%	82	28.2%
Female	146	41.4%	201	69.1%
Missing	15	4.3%	8	2.7%
Total	<u>352</u>	<u>100.0%</u>	<u>291</u>	<u>100.0%</u>

Table 10. Practice areas of respondents.

<u>Area</u>	<u>Pharmacists</u>		<u>Technicians</u>	
	Number	Percent	Number	Percent
Inpatient	201	57.1%	183	62.9%
Outpatient	30	8.5%	25	8.6%
Patient Care	55	15.6%	24	8.2%
Satellite	10	2.8%	15	5.2%
Administration	6	1.7%	1	0.3%
Inpatient/Outpatient	11	3.1%	7	2.4%
Manufacturing	3	0.9%	11	3.8%
All of the Above	8	2.3%	8	2.7%
Other	12	3.4%	6	2.1%
Missing	16	4.5%	11	3.8%
Total	<u>352</u>	<u>100.0%</u>	<u>291</u>	<u>100.0%</u>

Role Perceptions

The perceptions held by pharmacists and technicians for certain aspects of the technician's role were examined by statements 1 through 26 of the survey questionnaire. The respondents were asked to indicate their attitudes on the statements using a seven point Likert scale ranging from strongly disagree (1) to strongly agree (7). To simplify the discussion of these results, the statements have been roughly divided into four categories; statements dealing with supervision, work relationship, training, and functions. These divisions are based solely on the author's judgment and are not the result of statistical analysis. Tables 11 through 14 show the results of Student t-Tests performed to determine if significant differences existed between the mean responses of pharmacists and technicians on those 26 items.

Table 11. Student t-Tests for significant differences of response means between pharmacists and technicians on the role perception statements concerning supervision.

Statement	<u>Pharmacists</u>		<u>Technicians</u>		df	t
	Mean	S.D.	Mean	S.D.		
1. Technicians in my hospital are too closely supervised.	2.87	1.33	3.51	1.57	634	5.61***
6. Technicians in my hospital are not supervised closely enough.	4.00	1.72	3.07	1.64	629	6.87***
10. Technicians must work under constant supervision by a pharmacist.	4.09	1.97	2.81	1.85	636	8.40***
20. The only supervision required for a technician is the amount the responsible pharmacist feels is necessary.	3.58	1.81	5.20	1.77	631	11.28***

(7-point Likert scale 1=Strongly disagree 7=Strongly agree)
 *** p<.001

Table 12. Student t-Test for significant differences of response means between pharmacists and technicians on the role perception statements concerning work relationship.

Statement	<u>Pharmacists</u>		<u>Technicians</u>		df	t
	Mean	S.D.	Mean	S.D.		
2.The working relationship between pharmacists and technicians in my hospital is good.	4.94	1.37	4.62	1.73	633	2.64**
4.Technicians in my hospital feel free to offer suggestions to pharmacists on ways to accomplish tasks.	4.98	1.49	4.58	1.97	633	2.86**
5.Pharmacists and technicians in my hospital work together as a team to accomplish tasks.	4.98	1.46	4.58	1.81	634	3.04**
12.Technicians are granted the status and respect that is due them.	3.96	1.53	2.61	1.69	635	10.6***
26.Technicians should be encouraged to offer helpful suggestions to pharmacists on ways to accomplish tasks.	6.16	1.04	6.51	1.02	637	4.2***

(7-Point Likert Scale 1=Strongly Disagree 7=Strongly Agree)

** p<.01

***p<.001

Table 13. Student t-Test for significant differences of response means between pharmacists and technicians on the role perception statements concerning training.

Statement	<u>Pharmacists</u>		<u>Technicians</u>		df	t
	Mean	S.D.	Mean	S.D.		
3. Technicians in my hospital are adequately trained to perform their jobs.	4.63	1.65	4.74	1.90	633	.81 NS
8. National certification should be granted technicians after they exhibit certain proficiencies.	4.97	1.80	6.28	1.40	634	10.0***
13. Technicians should receive some type of formal training.	6.12	1.28	5.89	1.52	638	2.11*
19. On-the-job training is an adequate method for the training of technicians.	3.41	1.73	4.38	2.00	638	6.55***
24. Technicians could best be trained through community college programs.	4.24	1.79	4.23	1.95	633	.06 NS

(7-point Likert scale 1=Strongly disagree 7=Strongly agree)

* p<.05

*** p<.001

NS non-significant

Table 14. Student t-Test for significant differences of response means between pharmacists and technicians on the role perception statements concerning functions.

Statement	<u>Pharmacists</u>		<u>Technicians</u>		df	t
	Mean	S.D.	Mean	S.D.		
7. Technicians now perform as many functions as they should.	4.26	1.78	4.61	2.10	637	2.30*
9. Technicians are capable of maintaining narcotic delivery systems.	4.88	2.0	6.12	1.47	635	8.82***
11. Technicians are capable of filling unit-dose medication bins.	6.47	1.05	6.66	1.02	636	2.35*
14. Technicians should be allowed to dispense non-judgmental, non-therapeutic drug information without pharmacist supervision.	3.44	2.15	4.60	2.05	639	6.95***
15. Technicians, not pharmacists, should fill unit-dose medication bins.	5.93	1.67	5.17	1.90	636	5.36***
16. Technicians are not being utilized in hospital pharmacy as much as they could be.	4.65	1.82	4.62	2.04	635	.23 NS
17. Technicians are capable of maintaining floor stock medication inventories.	6.26	1.13	6.31	1.17	636	.50 NS

(7-point Likert scale 1=Strongly disagree 7=Strongly agree)

* p<.05 *** p<.001 NS non-significant

Table 14 Continued

Statement	<u>Pharmacists</u>		<u>Technicians</u>		df	t
	Mean	S.D.	Mean	S.D.		
18. Technicians are capable of checking unit-dose medication bins.	3.84	2.20	5.63	1.78	633	11.1***
21. Technicians are capable of properly preparing I.V. admixtures.	5.86	1.48	6.35	1.18	634	4.48***
22. Technicians are capable of dispensing drug information over the phone under the supervision of a pharmacist.	3.21	1.98	5.40	1.89	636	14.2***
23. Technicians, not pharmacists, should check unit-dose medication bins.	2.97	2.02	3.93	2.01	633	6.0***
25. Technicians should perform all non-judgmental technical activities within the pharmacy.	5.04	1.68	4.90	1.81	635	.97 NS

(7-point Likert scale 1=Strongly disagree 7=Strongly agree)
 *** p<.001
 NS non-significant

Role Conflict and Role Ambiguity

Role conflict and role ambiguity scores were computed on responding pharmacists and technicians. These scores were numerical averages determined by adding the respondent's scores on each scale item and dividing by the number of items in the scale. The role ambiguity scale included statement numbers: 27, 28, 30, 32, 35, 39. The role conflict scale included statement numbers: 29, 31, 33, 34, 36, 37, 38, 40. Responses on the role ambiguity items were reversed prior to tabulating scores. The levels of role conflict and role ambiguity for pharmacists and technicians are shown in Table 15.

Table 15. Role conflict and role ambiguity scores of responding pharmacists and technicians.

	<u>Role Conflict</u>		<u>Role Ambiguity</u>	
	<u>RPh</u>	<u>Tech</u>	<u>RPh</u>	<u>Tech</u>
Mean	4.029	3.936	2.958	2.611
Standard Deviation	1.096	1.288	1.105	1.113
Minimum	1.25	1.000	1.000	1.000
Maximum	6.625	7.000	6.000	6.500
Total Valid Cases	342	274	347	282

Note: Respondents leaving one or more items blank on a particular scale were not included in the data analysis. (7-point Likert Scale 1=low level of role conflict or ambiguity, 7= high level of role conflict or ambiguity.)

Hypothesis Testing

The instrument was designed to collect data that would test the hypotheses stated in Chapter 1. All hypotheses were evaluated for rejection at the .05 significance level.

Hypothesis 1

The null form of Hypothesis 1 was that there would be no correlation between levels of role conflict and role ambiguity and organizational size as measured by staff size. In order to test this hypothesis a Pearson correlation coefficient was calculated for the relationship between organizational size and computed role conflict and role ambiguity scores of the respondents. The correlation coefficient r for the role conflict/staff size relationship was .0385 (df=614). The r for the role ambiguity/staff size relationship was .0389 (df=627). Neither correlation was significant at the .05 level. As an added test for a possible relationship, a Student t -Test was performed to compare role conflict and role ambiguity scores of persons from small vs. large staffs. Based on the distribution of subjects, hospitals with staffs smaller than 40 (small) were compared to hospitals with staffs greater than 120 (large). The t value obtained for the role conflict comparison was $-.76$, df=225. The t value for the role ambiguity comparison was -1.01 , df=232. Neither value was significant at the

required level of .05. Based on both tests, the null hypothesis could not be rejected.

Hypothesis 2

The null form of Hypothesis 2 was that there would be no difference in levels of role ambiguity experienced by technicians receiving formal vs. informal or on-the-job training. To test this hypothesis a Student t-Test was performed to see if a significant difference existed between means on the role ambiguity scale between technicians receiving formal and those receiving informal training. The mean role ambiguity score for technicians receiving formal training was 2.47 (S.D.=1.08), while those receiving on-the-job training averaged 2.79 (S.D.=1.13). The t value with 272 degrees of freedom was -2.4, $p < .05$. The null hypothesis was rejected because the mean role ambiguity scores were significantly lower for technicians receiving formal training than for those receiving on-the-job training.

Hypothesis 3

The null form of hypothesis 3 was that there would be no correlation between tenure on the present job and levels of role conflict or role ambiguity. This hypothesis was tested by performing a Pearson correlation between respondents tenure on present job and levels of role conflict and role ambiguity. The r for the role ambiguity/tenure

relationship was $-.0302$ ($df=627$), for the role conflict /tenure relationship it was $-.0557$ ($df=614$). Neither coefficient was significant at the $.05$ level. An examination of the data revealed that most respondents were clustered around the lower end of the tenure scale, rather than being evenly distributed, making a correlation difficult to prove. In both the pharmacist and technician groups those persons working from 1 to 5 years comprised roughly 60 percent of respondents, leaving approximately 20 percent of respondents with less tenure and 20 percent with more. A Student t-test was performed between those two segments of respondents to see if differences existed between mean scores on the role conflict and role ambiguity scales. The mean role conflict score for those with less than 1 year of tenure was 3.98 (S.D.=1.2), and for those with greater than 5 years tenure 3.93 (S.D.=1.2). The t value with 243 degrees of freedom was .30 which was non-significant. The mean role ambiguity score for the low tenure group was 3.1 (S.D.=1.1), for the high tenure group the mean was 2.64 (S.D.=1.2). The t value with 244 degrees of freedom was 3.13 and was significant at the $.01$ level, indicating that those with greater tenure experienced lower levels of role ambiguity. The null hypothesis could not be rejected for the tenure/role conflict relationship, but could be for the tenure/ role ambiguity relationship.

Hypothesis 4

The null form of this hypothesis was that there was no correlation between number of years spent working as a pharmacist or technician and levels of role conflict or role ambiguity. This hypothesis was tested by performing Pearson correlations between years worked as pharmacist or technician and scores obtained on the role conflict and role ambiguity scales. The Pearson r for the role ambiguity/years worked relationship was $-.0153$ ($df=627$). The r for the role conflict/years worked relationship was $-.0305$ ($df=614$). Neither coefficient was significant at the .05 level. Analysis of the data showed that subjects tended to cluster around the low end of the scale for years worked. Over 75 percent had worked less than 10 years as pharmacists or technicians. It was felt that a comparison of those subjects with little experience (less than 1 year), vs. those with extensive experience (greater than 10 years) might expose a relationship if it existed. Student t -tests were performed to compare means for these two groups on the role conflict and role ambiguity scales. The t value for the role conflict score comparison was $-.78$ ($df=179$) which was not significant. The t value for the low vs. high years worked/role ambiguity comparison was 1.47 ($df=177$), which was also not significant. Therefore the null hypothesis could not be rejected.

Hypothesis 5

The null form of hypothesis 5 was that levels of role conflict and role ambiguity would not be significantly different between technicians receiving assignments from one person and those receiving assignments from more than one person. This hypothesis was tested by performing Student t-Tests to determine if significant differences existed between the mean role ambiguity or role conflict scores of the two groups. The mean role ambiguity score for those receiving assignments from one person was 2.43 (S.D.=1.1), for those receiving assignments from more than one it was 2.65 (S.D.=1.1). The t value obtained when comparing role ambiguity scores of the two groups was -1.28, $df=269, p>.05$, so that part of the hypothesis could not be rejected. The mean role conflict score for those technicians receiving assignments from one person was 3.35 (S.D.=1.3); for those receiving tasks from more than one person it was 4.09 (S.D.=1.25). The role conflict comparison resulted in a t value of -3.7, $df=262, p<.0001$. This means that the role conflict portion of the null hypothesis could be rejected because role conflict levels were significantly lower in the group of technicians receiving assignments from only one person vs. more than one.

Hypothesis 6

The null form of this hypothesis was that there would be no significant difference between levels of role ambiguity experienced by pharmacist and technicians. This hypothesis was tested by performing a Student t-Test on the means of pharmacists and technicians for the role ambiguity scale. The mean role ambiguity score for pharmacists was 2.96 (S.D.=1.1) vs. 2.61 (S.D.=1.1) for the technicians. The t value obtained was 3.90, $df=627$, $p<.001$ indicating that the null hypothesis should be rejected. The levels of role ambiguity were significantly higher among pharmacists than technicians.

Hypothesis 7

The null form of this hypothesis was that no significant difference would exist between mean scores for pharmacists and technicians on the role conflict scale. The mean role conflict score for pharmacists was 4.03 (S.D.=1.1). The mean score for technicians was 3.94 (S.D.=1.3). The hypothesis was tested by performing a Student t-Test on the mean scores of both groups. The t value with 614 degrees of freedom was .97 which was not significant. Therefore the null hypothesis could not be rejected.

Hypothesis 8

The null form of this hypothesis was that there would be no significant correlation between role ambiguity scores and level of turnover in the respondent's institution. To test this hypothesis, a Pearson r was calculated for the relationship between role ambiguity scores and turnover percentage as previously defined. The r value obtained was .0299 ($df=627$) and was not significant at the .05 level. As an added test for a relationship, a Student t -Test was performed to compare mean scores on the role ambiguity scale for subjects from institutions with low turnover vs. those with high turnover. Based upon natural breaks in the data, those from institutions with less than 10 percent turnover were compared to those from institutions with greater than 30 percent turnover. The t value obtained was $-.69$, $df=216$, which was not significant. The null hypothesis could not be rejected.

CHAPTER 5

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

This study was a mail survey to determine role perceptions held by pharmacists and technicians working in university or medical school-affiliated hospitals on the technician's role. It was also intended to measure levels of role conflict and role ambiguity in those groups and to relate those levels to certain environmental or demographic characteristics.

This chapter summarizes the results, draws some conclusions, and makes recommendations for action based on those results. It also makes suggestions for future research.

Discussion

Response Rate

A high response rate is always desirable in a mail survey. It lends credence to the results and decreases the likelihood that non-response bias exists. This survey questionnaire was designed to be short and easy to complete. The topic was one of interest to those surveyed, over 86% of all pharmacists responding worked with technicians.

The study design necessary to perform this study involved an additional point of possible non-response. It required that many of the directors of pharmacy be active participants in the distribution process. About one-third of all participants were contacted directly by mail, the other two-thirds were contacted via the director or his agent. This dual process made coordinating the reminder post-card followups and second survey mailings difficult.

Despite these handicaps, a 64.3% return rate was achieved. As stated in Chapter 4, eight institutions were not heard from. Of these only one had few enough (2) subjects that chance alone could be expected to be responsible. Those hospitals accounted for 114 of those not responding. Excluding those individuals, along with those surveys returned as undeliverable or past deadline would raise the overall response rate to 74.2%. There were also at least two institutions at which subjects received only one survey mailing rather than the two. All in all, the response rate was very close to that predicted by the researcher, 64.3% vs. 60%.

The response rate by group, that is pharmacists and technicians, was different. Pharmacists reached 70.4%, exceeding the predicted rate. Technicians were under-represented in the responding groups at only 58.2%.

The number of technicians responding was less than that calculated as necessary for a representable sample.

Response Bias

The lower the response rate, the greater the chance that non-response bias exists. The adjusted survey return rate left 25.8% of subjects unaccounted for. The analysis in Chapter 4 indicated that the sampled institutions, and those responding, were not significantly different from the total population on various demographic characteristics. At the subject level, little difference was found between early and late responders on demographic characteristics, and no trends were evident.

One cannot say with certainty that non-response bias does not exist, but there is also no evidence indicating that it does.

Reliability

The reliability of an instrument must be insured in order to minimize errors of measurement and to insure consistency. The Cronbach's alpha statistic measures internal consistency of scale items. Role conflict and role ambiguity were the two constructs measured through the use of multiple item scales. The alpha coefficient calculated for role conflict was 0.78, for role ambiguity it was 0.79,

indicating that measurement error could be expected to play a small part in variations of response.

Validity

Face validity of the survey instrument was examined by presenting the questionnaire to graduate students and faculty of the College of Pharmacy, University of Arizona, for comment and criticism. Construct validity of the role conflict and role ambiguity scales had been examined previously by Schuler, Aldag, and Brief (1977), who found consistent support for their continued use based on their relationship to other attitudinal and behavioral variables.

Demographics

Profiles of the study population were obtained for such variables as age, sex, number of years worked as pharmacist or technician, number of years at present position, highest degree attained, practice area, and training received by technicians.

Pharmacy technicians tended to be younger and more often female than did pharmacists. This may reflect the status of the technician at this time. A pharmacy technician job is not looked upon by most as a "career" position and usually represents a transitional situation in life. The preponderance of females may also indicate a large number of individuals working for a secondary source of

family income. Surprisingly, there were a considerable number, approximately 11% who had worked ten years or more as technicians. Thirty-nine percent of technicians had a high school diploma as their highest degree attained, however, over 38% also had associates or baccalaureate degrees. These college degree holders, along with those currently pursuing degrees represent persons working in a field other than the one for which they are prepared. This high percentage also serves to underscore the idea that the job of pharmacy technician does not represent a career choice.

Pharmacists on the other hand were a little older, and more evenly distributed between the sexes. The predominate entry level degree is still the baccalaureate (66% responding), with less than 20% possessing a Pharm.D. Only 9.4% of those responding had advanced degrees. A majority of pharmacists, 56.7 percent, considered themselves to hold staff positions, 18.7 percent indicated supervisory status, 17 percent occupied clinical positions, and 2.5 percent were in administration. For both pharmacists and technicians, the predominate practice area was the inpatient pharmacy, with 57.1 percent of pharmacists and 62.9 percent of technicians. Only 15.6 percent of pharmacists and 8.2 percent of technicians considered their practice areas as patient care areas.

Training of technicians was pretty evenly split between formal training (lectures, texts, labs, etc.) and informal or on-the-job training, with 47.8 percent formally trained and 49.5 percent trained on-the-job. A surprising statistic was the number of technicians working who had not been tested for competency prior to performing their jobs. Fifty-seven percent were not tested as opposed to 39 percent who were. A overwhelming majority of technicians reported that work assignments were received from more than one individual. Many technicians, 27.5 percent, reported that they supervised the work of other technicians. This question was probably too vague. Many technicians reported that they supervised others only during training periods, the high percentage indicating a supervisory role may be inflated by such individuals.

Role Perceptions

The responses of pharmacists and technicians to each of the first 26 questionnaire statements were compared using the Student t-Test to determine if significant differences existed between the two groups.

Table 11 shows the pharmacist and technician responses to the four statements concerning supervision. The means were all significantly different at the $p < .001$ level. Technicians indicated a lower need for supervision of their activities than did pharmacists. Neither group felt

strongly either way on the hospital specific statements on supervision; that is, whether technicians were either too closely supervised, or not supervised closely enough. A surprising outcome was the response to the statement: "The only supervision required for a technician is the amount the responsible pharmacist feels is necessary." Technicians were significantly more agreeable to the statement. This may have been due to the wording of the statement, or it could show them yielding more professional latitude to the pharmacists than they were willing to confer on themselves.

Table 12 shows the results of the t-Tests between pharmacists and technicians responses to the five statements dealing with the working relationship between the two groups. The means for both groups on the first three questions, which were hospital specific, were neutral or better. Pharmacists tended to view their relationship with technicians more positively ($p < .01$) than did technicians. Neither group felt that technicians received the status and respect they deserved, with technicians responding much more negatively ($p < .001$) to the statement. Both groups responded very positively to the statement about technicians offering suggestions to pharmacists on ways to accomplish tasks.

The comparisons between pharmacist and technician responses to the statements concerning training are summarized in Table 13. Both groups felt positively, though not

very strongly, that technicians in their hospitals were adequately trained to perform their jobs. Technicians were very much in favor of national certification of technicians after certain proficiencies were exhibited (Mean=6.28, S.D.=1.4). Pharmacists could be classified as at least neutral or better on the same statement (Mean=4.97, S.D.=1.8). Neither group felt strongly that on-the-job training of technicians was an adequate method, with both means centering around the neutral point. Both pharmacists and technicians felt strongly that technicians should receive some type of formal training, with pharmacists being statistically ($p < .05$) more agreeable to the subject than technicians.

Table 14 summarizes the t-Test results on the statements dealing with technician functions and abilities. Technicians tended to be more agreeable than pharmacists on the ability of technicians to perform certain functions. Both groups felt technicians capable of filling unit-dose medication bins, properly preparing I.V. admixtures, maintaining floor stock medication inventories, and maintaining narcotic delivery systems, though significant differences existed between the two groups on several of those statements. Technicians responded positively to the statement: "Technicians are capable of checking unit-dose medication bins," but were less positive to the statement: "Techni-

cians, not pharmacists, should check unit-dose medication bins." Neither group responded favorably to the idea of technicians dispensing drug information without pharmacist supervision, and only technicians agreed that it was acceptable while supervised.

Out of 26 statements, 21 yielded t values which were significant at the .05 or less level. While the differences between means were small, with only eight differing by one whole unit and one by two units, taken in whole the results show widespread differences in opinion between the two groups on nearly every facet examined. What is also potentially important are those individuals who are at the extremes of response, those responding with 1's or 7's to the statements. Each statement had subjects from both groups who responded with a 1 or 7.

Role Conflict and Role Ambiguity

Role conflict and role ambiguity scores were calculated for pharmacists and technicians using scales developed by Rizzo, House, and Lirtzman (1970). These two scales are by far the most widely used by researchers in the field of role theory. Table 15 shows descriptive information on the scores of both groups. The greater the number on either scale the greater the level of either role conflict or role ambiguity experienced.

Comparisons to research done by others is difficult due to differences in scale intervals used, i.e. 5-point vs. 7-point, or to the use of a different instrument altogether. Such was the case of both pharmacy studies into role conflict or role ambiguity (Curtiss, Hammel, Heinen, and Johnson, 1978; Hammel, Curtiss, and Heinen, 1979). They used both a different instrument, and a 5-point scale making comparisons impossible.

Some examples of data obtained on other groups would be: middle/lower managers in a manufacturing firm, role conflict=4.02, role ambiguity=2.79 (Abdel-Halim, 1981); police patrol officers, role conflict=4.51, role ambiguity=5.48 (Bernardin, 1979); respiratory therapists, role conflict=4.67, role ambiguity=2.69 (Randolph and Posner, 1981); intensive care nurses, role conflict=3.92, role ambiguity=2.28 (Randolph and Posner, 1981); fire department lieutenants, role conflict=3.55, role ambiguity=5.46 (Frost, 1983). From these examples and from others in the literature it would appear that pharmacists and technicians are not unduly plagued by either role conflict or role ambiguity. What is important to remember is that there has not been an acceptable level determined for either role conflict or role ambiguity at which their relationship to negative outcomes disappears. One must also be concerned by those individuals at the extreme high ends of

both scales. At least one individual achieved a score of 7.0 on the role conflict scale, and another 6.5 on the role ambiguity scale.

Hypothesis Testing

Organizational Size

An attempt was made to correlate staff size with levels of role conflict and role ambiguity. It was expected that larger organizations would tend to be more complex. More individual expectations should lead to more conflicts for the individual. Diffusion of information and quality of communication were also expected to decrease with increased staff size. It was predicted that these problems would lead to increased levels of role conflict and role ambiguity. The predicted relationships were not found. It may be that the logic involved in this hypothesis was faulty. Staff size, as defined by the total number of pharmacists and technicians, may not reflect the number of individuals a person has daily contact with. It is possible for a large organization to exist of discreet sub-units (eg. satellites pharmacies) which in effect simplify the organization. Daily interactions of employees may be thus limited to a few individuals. A more realistic measure would be to somehow examine each individuals work environment and classify those according to membership size.

Technician Training

Technicians receiving specific formal training (lectures, texts, labs, etc.) were compared to those receiving only on-the-job training on the role ambiguity scale. The hypothesis was that receiving specific information about the job on what was expected, on how tasks were to be performed, and on the outcomes of performance, would decrease the amount of role ambiguity experienced by the individual. As expected, levels of role ambiguity were significantly lower for those receiving formalized training.

Tenure and Time Spent Working

Hypotheses 3 and 4 predicted lower levels of role conflict and role ambiguity with increased time spent working either at a particular job or in the capacity of pharmacist or technician. These hypotheses assumed that the individual would gradually learn his "role" and thus decrease role conflict and ambiguity. Role conflict would decrease because the individual would learn how to avoid or circumvent conflict situations. Role ambiguity would decrease because the individual would learn what was expected of him, and what the outcome of his actions would be. This theory has some support in the role theory literature. Fisher and Gitelson (1983) in their analysis of correlational literature involving role conflict and role ambiguity found a consistent and negative relationship between role

ambiguity and tenure. Their mean correlation calculated across all studies involving tenure was $-.13$. The expected correlations did not appear in this study, possibly due to the way the subjects were skewed toward the low end of the tenure and years worked scales. The t-Tests run to determine whether differences existed between low and high tenure or low and high years worked individuals yielded only one significant t value. Role ambiguity levels were lower for those with greater vs. lesser tenure. This finding is in agreement with the Fisher and Gitelson (1983) article. The fact that a similar relationship was not found between years worked as pharmacist or technician and role ambiguity might lead one to question whether a set pharmacist or technician role exists. That is, the role might vary from one position to the next, so that one would have to learn a new role with each new job.

Work Assignment

Receiving assignments from one superior as opposed to many should eliminate intra-role or inter-sender role conflicts by preventing multiple and incompatible role expectations from being sent. It should also reduce role ambiguity by improving communication, performance accountability, and feedback. Morris, Steers, and Koch (1979) found that span of subordination (i.e. the number of supervisors a subordinate reported to) to be significantly related to role

conflict and role ambiguity. In the case of role ambiguity, the total number of task initiators was the facet most strongly associated. The predicted relationship was found to exist only for the role conflict portion of the hypothesis, the role ambiguity relationship was non-significant. The fact that the role ambiguity relationship was not significant might be due to a lack of sensitivity of the instrument. Subjects were dichotomized into two groups, those who received assignments from one person and those who received assignments from more than one person. No attempt was made to identify total numbers of task initiators as was done in the cited article (Morris, Steers, and Koch, 1979). Had this been done, perhaps a similar relationship might have been found for role ambiguity.

Organizational Level

It was predicted in Hypotheses 6 and 7 that organizational level would be related to levels of role conflict and role ambiguity. That is, technicians were predicted to experience greater levels of role conflict than pharmacists because they were at a lower organizational level. They would be able to avoid ambiguity because their jobs were more technical and well defined, but would be more prone to role conflict because they lacked the power to avoid or resolve conflict situations. Pharmacists, operating at a higher organizational level, would have the power to avoid

conflicts but be more prone to ambiguity because their jobs were less structured and more autonomous. This logic was not supported by the study results. Pharmacists did suffer significantly higher levels of role ambiguity, but the expected reverse did not occur for role conflict levels. There was no significant difference between role conflict scores of pharmacists and technicians. Szilagyi and Sims (1976) who examined changes in role conflict and role ambiguity scores with changing organizational level found that role ambiguity scores did vary by level, but that role conflict scores did not. Their findings are supported by this study.

Turnover

Predicted correlations were not significant between turnover percentage and role ambiguity scores. Ambiguity scores were expected to be positively related to levels of turnover because increased turnover meant a greater number of role senders and a more complex organizational climate. Performance expectations and outcomes would be less predictable leading to increased role ambiguity. The proposed relationship was not significant for either population. This may reflect a faulty hypothesis or an insensitive measurement tool. Turnover at the departmental level may not necessarily reflect interaction at the individual level. A measurement of turnover at the individual level, such as

asking respondents to list the number of new individuals who have entered their work environments over a given time period, might be a more accurate tool for examining the hypothesized relationships.

Conclusions

This study has shown that pharmacists and technicians differ in their perceptions on such subjects as technician training, supervision, functional capabilities, and working relationships.

This study has shown that pharmacists and technicians, on the average, suffer low levels of role ambiguity (Mean <3) and intermediate levels of role conflict (Mean approx. 4). It has also showed that some individuals suffer from extremely high levels of both anomalies (7.0 for role conflict, 6.5 for role ambiguity).

This study found no significant correlations between role conflict and role ambiguity levels and the variables: staff size, turnover percentage, and years worked as either pharmacist or technician.

Role ambiguity appeared to decrease with increased tenure on the present job. Role conflict was not significantly related to increased job tenure.

Role ambiguity scores were found to be lower for technicians receiving formal training specifically for their

present job, than for those receiving only informal, on-the-job training.

Role conflict scores were significantly lower for technicians receiving assignments from one person vs. more than one person. Role ambiguity scores did not differ significantly between the two groups.

As predicted, role ambiguity scores were significantly higher for pharmacists than for technicians. The role conflict scores of technicians were not higher than those of pharmacists.

Recommendations

Based upon results obtained it is recommended that pharmacy managers develop formalized training programs for their technicians. It is also recommended that steps be taken at the institutional level to simplify organizational structure. That is, technicians should if possible be placed under the direction of a single pharmacist or supervisor in order to decrease possible role conflict situations. Pharmacy managers should be aware of the large variation in attitude about the role of the technician in pharmacy. It would be beneficial for the manager to examine the attitudes prevalent in his organization to identify possible problem areas. The manager should also attempt to select new employees who share attitudes compatible with the organizational climate he wishes to create.

Though the average levels of role conflict and role ambiguity among pharmacists and technicians are not unduly high they should still be of concern to the pharmacy manager. Like radiation, safe levels of role conflict and role ambiguity, below which they are no longer harmful, have yet to be determined. It is recommended that managers attempt to create an organizational climate less prone to role conflict and role ambiguity. Clear, concise, and consistent departmental goals and policies should exist and be well communicated. Performance expectations should be clear and feedback frequent. Formal channels for conflict resolution should exist and be known to all employees.

Further research is recommended at the institutional rather than national level. At the national level differences between pharmacists and technicians, while statistically significant, are of questionable practical significance. It is possible however, that within individual organizations extreme differences of opinion exist. These differences in expectations and perceptions will be communicated either directly or indirectly between members of that organization with the possible negative outcomes of decreased job satisfaction, increased turnover, decreased performance, decreased self-esteem, increased tension and anxiety, increased desire to leave, and decreased satisfaction with supervision.

More sensitive methods for the measurement of turnover and organizational size need to be developed to examine those variables at the level of the individual rather than the gross departmental level.

Future studies should also consider the moderating effects that personal differences have on role conflict and role ambiguity levels. Such factors as the individual's education, abilities, need for achievement, need for recognition, and need for autonomy have been shown to effect the strength of the relationship between the role constructs and their negative outcomes.

APPENDIX A

SURVEY INSTRUMENT AND CORRESPONDENCE



THE UNIVERSITY OF ARIZONA
TUCSON, ARIZONA 85721

COLLEGE OF PHARMACY
DEPARTMENT OF PHARMACY PRACTICE

Dear Director of Pharmacy:

I am conducting a nationwide survey of pharmacists and technicians in university or medical school-affiliated hospitals. In order for me to conduct this survey, I must ask for your assistance in obtaining the names and mailing addresses of all pharmacists and technicians in your department. I have chosen to use the following definition of technician for my research.

Someone who, under the supervision of a licensed pharmacist, assists in the "non-judgmental" aspects of preparing and dispensing medications. Such duties include, but are not limited to: maintaining patient records; setting up, packaging, and labeling medication doses; filling and dispensing routine orders for stock supplies for patient-care areas; maintaining drug inventories; adding drugs to parenteral fluids; and similar manipulations. The duties of pharmacy technicians do not include those usually performed by secretaries, clerks, typists, delivery personnel, or medication administration technicians. (Stolar, 1981).

In addition, I would like your estimate of the percentage of employee turnover within your department for the last twelve calendar months. Would you please take the time to help me by furnishing this information? For your convenience, I have enclosed a form to list the names and mailing addresses.

Your assistance in this project is essential to its success. I would like to thank you, in advance, for your assistance.

Sincerely,

A handwritten signature in cursive script, appearing to read "Randall L. Hart".

Randall L. Hart
Graduate Student

Enclosure



THE UNIVERSITY OF ARIZONA
TUCSON, ARIZONA 85721

COLLEGE OF PHARMACY
DEPARTMENT OF PHARMACY PRACTICE

22 July 1983

Dear :

Thank you very much for agreeing to distribute my surveys to your staff. To help refresh your memory, I am the person from Arizona doing the nationwide survey of pharmacists and technicians on the role of the technician.

I have randomly selected pharmacists and technicians from your hospital to participate. Please consult your departmental roster and give a pharmacist survey to pharmacist number(s) on the list. Please give a technician survey to technician number(s) on the list. You will note that each envelope I have sent you is marked with the appropriate designation and number to match the above named individuals. Please exclude pharmacy students, interns, and residents from selection. To facilitate my follow-up procedures, please retain a record of the list and those persons selected for at least two months.

Please feel free to impress on those selected that their participation is strictly voluntary. You might also suggest that they complete their surveys at home. I will be mailing you reminder postcards in one week. These will be marked with the appropriate numbers for distribution.

I have also enclosed a postcard on which I would appreciate an accurate estimate of your turnover for the last 12 calendar months, as defined by the percentage of persons who have left the department.

Once again, thank you for all your help; I really appreciate it. If you have any questions, do not hesitate to call either J. Lyle Bootman, Ph.D. (my committee chairman), or myself at 602/626-5730.

Sincerely,

A handwritten signature in cursive script that reads "Randy Hart".

Randy Hart, R.Ph.

RH/mar

Enclosures



THE UNIVERSITY OF ARIZONA
TUCSON, ARIZONA 85721

COLLEGE OF PHARMACY
DEPARTMENT OF PHARMACY PRACTICE

August 11, 1983

Dear :

I am enclosing the reminder postcards I mentioned in my letter of July 22nd. All persons who received surveys should also receive a postcard. The cards are all marked with pharmacist or technician numbers to facilitate distribution.

In two more weeks, I will be sending you duplicate surveys for those who have not yet responded. Hopefully, you will be receiving far fewer surveys to hand out.

If by chance all of your group respond, I'd like to take this opportunity to thank you for your time and effort in helping me with this project.

Sincerely,

A handwritten signature in black ink that reads "Randy Hart".

Randy Hart, R.Ph.

RH:dw

Enclosures



THE UNIVERSITY OF ARIZONA
TUCSON, ARIZONA 85721

COLLEGE OF PHARMACY
DEPARTMENT OF PHARMACY PRACTICE

August 24, 1983

Dear :

I am enclosing the second survey copies for those persons who have not responded to my questionnaire. All envelopes are marked with the appropriate title and number for ease of distribution. In about one week, I will be sending a final reminder postcard for the above people.

Thank you very much for your time; you've been very helpful and I appreciate it.

Sincerely,

A handwritten signature in black ink that reads "Randy Hart".

Randy Hart, R.Ph.

Enclosures



THE UNIVERSITY OF ARIZONA
TUCSON, ARIZONA 85721

COLLEGE OF PHARMACY
DEPARTMENT OF PHARMACY PRACTICE

September 20, 1983

Dear :

I am enclosing the final reminder postcards for the study on the technician's role. Again, all are appropriately marked for distribution to those persons who have not yet responded.

This is the last formal correspondence you will receive from me until the results are compiled and I mail copies to you and those who have requested them.

I would like to thank you once again for all your help in this project. Without your help, this study would not have been possible.

Sincerely,

A handwritten signature in cursive script, appearing to read "Randy Hart".

Randy Hart, R.Ph.

Enclosures

**SURVEY OF THE TECHNICIAN ROLE, ROLE CONFLICT
AND ROLE AMBIGUITY AMONG TECHNICIANS AND
PHARMACISTS OF UNIVERSITY OR MEDICAL
SCHOOL-AFFILIATED HOSPITALS**

Identifier No. _____

(1-3)

NOTE:

This identifier number will be used for accounting purposes only. Also, it will serve as a means by which I can return the results to you, should you desire. THE CONFIDENTIALITY OF ALL RESPONDENTS IS GUARANTEED.

The numbers in parentheses on the right are to facilitate key-punching efficiency. Please ignore them as you complete the questionnaire.

INSTRUCTIONS FOR COMPLETING THE QUESTIONNAIRE:

This questionnaire is designed to enable you to complete it in a minimum amount of time. Unless otherwise directed, please place a circle around the number that most closely describes your response to the question. Select only ONE answer unless the question is followed by the statement, "may be more than one response."

Please answer the following 6 statements as they apply to your hospital only.

	Strongly Disagree		Strongly Agree					
1. Technicians in my hospital are too closely supervised.	1	2	3	4	5	6	7	(4)
2. The working relationship between pharmacists and technicians in my hospital is good.	1	2	3	4	5	6	7	(5)
3. Technicians in my hospital are adequately trained to perform their jobs.	1	2	3	4	5	6	7	(6)
4. Technicians in my hospital feel free to offer suggestions to the pharmacists on ways to accomplish tasks.	1	2	3	4	5	6	7	(7)
5. Pharmacists and technicians in my hospital work together as a team to accomplish tasks.	1	2	3	4	5	6	7	(8)
6. Technicians in my hospital are not supervised closely enough.	1	2	3	4	5	6	7	(9)

Answer statements 7-26 as they apply to hospital pharmacy in general.

7. Technicians now perform as many functions as they should.	1	2	3	4	5	6	7	(10)
8. National certification should be granted technicians after they exhibit certain proficiencies.	1	2	3	4	5	6	7	(11)
9. Technicians are capable of maintaining narcotic delivery systems.	1	2	3	4	5	6	7	(12)
10. Technicians must work under constant supervision by a pharmacist.	1	2	3	4	5	6	7	(13)
11. Technicians are capable of filling unit-dose medication bins.	1	2	3	4	5	6	7	(14)

	Strongly Disagree							Strongly Agree	
	1	2	3	4	5	6	7		()
12. Technicians are granted the status and respect that is due them.	1	2	3	4	5	6	7		(15)
13. Technicians should receive some type of formal training.	1	2	3	4	5	6	7		(16)
14. Technicians should be allowed to dispense non-judgmental, non-therapeutic drug information without pharmacist supervision.	1	2	3	4	5	6	7		(17)
15. Technicians, not pharmacists, should fill unit-dose medication bins.	1	2	3	4	5	6	7		(18)
16. Technicians are not being utilized in hospital pharmacy as much as they could be.	1	2	3	4	5	6	7		(19)
17. Technicians are capable of maintaining floor stock medication inventories.	1	2	3	4	5	6	7		(20)
18. Technicians are capable of checking unit-dose medication bins.	1	2	3	4	5	6	7		(21)
19. On-the-job training is an adequate method for the training of technicians.	1	2	3	4	5	6	7		(22)
20. The only supervision required for a technician is the amount the responsible pharmacist feels is necessary.	1	2	3	4	5	6	7		(23)
21. Technicians are capable of properly preparing I.V. admixtures.	1	2	3	4	5	6	7		(24)
22. Technicians are capable of dispensing drug information over the telephone under the supervision of a pharmacist.	1	2	3	4	5	6	7		(25)
23. Technicians, not pharmacists, should check unit-dose medication bins.	1	2	3	4	5	6	7		(26)
24. Technicians could best be trained through community college programs.	1	2	3	4	5	6	7		(27)
25. Technicians should perform all non-judgmental, technical activities within the pharmacy.	1	2	3	4	5	6	7		(28)
26. Technicians should be encouraged to offer helpful suggestions to pharmacists on ways to accomplish tasks.	1	2	3	4	5	6	7		(29)

Please answer the remaining statements and questions as they apply to you and your job.

	Strongly Disagree	Strongly Agree	
27. I feel certain about how much authority I have.	1 2 3 4 5 6 7		(30)
28. Clear, planned goals and objectives exist for my job.	1 2 3 4 5 6 7		(31)
29. I have to do things that should be done differently.	1 2 3 4 5 6 7		(32)
30. I know that I have divided my time properly.	1 2 3 4 5 6 7		(33)
31. I receive an assignment without the manpower to complete it.	1 2 3 4 5 6 7		(34)
32. I know what my responsibilities are.	1 2 3 4 5 6 7		(35)
33. I have to buck a rule or policy in order to carry out an assignment.	1 2 3 4 5 6 7		(36)
34. I work with two or more groups who operate quite differently.	1 2 3 4 5 6 7		(37)
35. I know exactly what is expected of me.	1 2 3 4 5 6 7		(38)
36. I receive incompatible requests from two or more people.	1 2 3 4 5 6 7		(39)
37. I do things that are apt to be accepted by one person and not accepted by others.	1 2 3 4 5 6 7		(40)
38. I receive an assignment without adequate resources and materials to execute it.	1 2 3 4 5 6 7		(41)
39. Explanation is clear of what has to be done.	1 2 3 4 5 6 7		(42)
40. I work on unnecessary things.	1 2 3 4 5 6 7		(43)

41. What was your age at last birthday? _____ yrs. (44,45)
42. Sex Male _____ Female _____ (46)
43. What is your highest academic degree achieved? (Circle one only) (47)
- | | |
|--|------------------------------------|
| 1. High School Diploma | 4. B.A./B.S. |
| 2. General Education
Diploma (G.E.D.) | 5. Other (please specify)
_____ |
| 3. A.S./A.A. | |
44. Where do you spend the majority of your time? (48)
- | | |
|------------------------|------------------------------------|
| 1. Inpatient pharmacy | 4. Other (please specify)
_____ |
| 2. Outpatient pharmacy | |
| 3. Patient care area | |
45. How long have you worked at your present job? _____ yrs. (49,50)
46. How long have you worked as a pharmacy technician in any capacity? (51,52)
_____ yrs.
47. Technicians in your hospital routinely receive assignments from (53)
- | |
|-------------------------|
| 1. One person |
| 2. More than one person |
48. In addition to on-the-job training, did you receive any formal training (lectures, texts, labs, etc.) specifically for your current job? (54)
- Yes _____ No _____
49. Have you had to pass any competency tests to perform your current job? (55)
- Yes _____ No _____
50. Do you supervise the work of other technicians? (56)
- Yes _____ No _____
51. Do you desire a copy of the results of this study? (59)
- Yes _____ No _____

41. What was your age at last birthday? _____ yrs. (44,45)
42. Sex Male _____ Female _____ (46)
43. What is your highest academic degree achieved? (Circle one only) (47)
- | | |
|---------------|---------------------------|
| 1. B.S./B.Ph. | 4. Pharm.D. |
| 2. Masters | 5. Other (please specify) |
| 3. Ph.D. | _____ |
44. What is your primary practice setting? (48)
- | | |
|------------------------|---------------------------|
| 1. Inpatient pharmacy | 4. Other (please specify) |
| 2. Outpatient pharmacy | _____ |
| 3. Patient care area | |
45. How long have you worked at your present position? _____ yrs. (49,50)
46. How long have you worked as a pharmacist in any capacity? _____ yrs. (51,52)
47. Technicians in your hospital routinely receive assignments from (53)
- | |
|-------------------------|
| 1. One person |
| 2. More than one person |
48. What is your present position (Please circle only one) (57)
- | | |
|---|---------------------------|
| 1. Supervisor | 4. Other (please specify) |
| 2. Staff | |
| 3. Clinical (at least 50% of time in direct patient care or student teaching) | |
49. Do you routinely work with pharmacy technicians? (58)
- Yes _____ No _____
50. Do you desire a copy of the results of this study? (59)
- Yes _____ No _____



THE UNIVERSITY OF ARIZONA

TUCSON, ARIZONA 85721

COLLEGE OF PHARMACY
DEPARTMENT OF PHARMACY PRACTICE

Dear Colleague:

I am conducting a survey of attitudes on the role of the technician in hospital pharmacy. The population for this study includes all pharmacists and technicians employed in university or medical school-affiliated hospitals. For this reason, I am asking you to help me in my research by completing and returning the enclosed questionnaire. The success of this study depends on your participation.

Very little research has been done on the role of the pharmacy technician, and most of that research has measured the views of directors of pharmacy. That is why I'm interested in your views as pharmacists and technicians on certain aspects of the technicians' role and also on other aspects of your jobs. Completion of this questionnaire should take only minutes of your time, and the valuable information you give will help to increase our understanding of the similarities and differences which exist on the subject.

A WORD ON CONFIDENTIALITY

Please be assured that all information gathered through this process will be confidential. At NO time will questionnaires be identified by respondent or hospital. The identifier number used on the questionnaire will only be used to facilitate follow-up procedures and to prevent you from receiving bothersome reminder letters. After the questionnaires have been received, the key linking yourself and the identifier number will be destroyed in order to further insure your anonymity. I hope this confidentiality will encourage you to be frank and honest in your responses.

So, why not sit down with a hot cup of coffee and complete the survey as soon as you can? Please use the enclosed envelope for returning your survey.

Again, thank you for taking the time to help me out, and I'll be looking forward to hearing from you.

Sincerely,

A handwritten signature in cursive script that reads "Randall L. Hart".

Randall L. Hart, R.Ph.
Graduate Student

Enclosure

Dear Colleague:

I recently mailed you a questionnaire asking for your participation in an important survey.

If you have already returned the questionnaire, please consider this card a "Thank You" for your valuable help.

If you have not had a chance to return the completed form yet, could you do so as soon as possible? Your participation is vital to the success of my study.

Sincerely,



**Randall L. Hart, R.Ph.
Graduate Student**



THE UNIVERSITY OF ARIZONA
TUCSON, ARIZONA 85721

COLLEGE OF PHARMACY
DEPARTMENT OF PHARMACY PRACTICE

Dear Colleague:

I recently mailed you a questionnaire concerning your thoughts on the role of the technician in hospital pharmacy and on other aspects of your job. As my sample size is limited, your response is very important to the accuracy of my survey.

The survey will only take about 10 minutes of your time to complete, and you can return it in the enclosed envelope. If you've already done so, many thanks. If you have not yet had a chance to answer, I would be most grateful if you would do so now. Your response will be held in strict confidence, of course.

Just in case my original went astray in the mail or became otherwise lost or misplaced, I've enclosed another survey form and return envelope. I'll be waiting to hear from you!

Sincere thanks,

A handwritten signature in cursive script, appearing to read "Randall L. Hart".

Randall L. Hart, R.Ph.
Graduate Student

Enclosures

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