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Systematic reduction in participation

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Systematic Reduction in Participation:

A Study of an Employee Withdrawal Behavior

by

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Preface and Acknowledgements

Public policy with regard to addressing the national shortage of nurses has focused on two solutions: increased recruitment into the profession, and retention of nurses active in the profession. Due to a shortage of potential recruits, retention is receiving greater attention than recruitment as a solution by national health care groups. Public focus on retention relies heavily upon the models and results from turnover research. Unfortunately, there exist certain methodological and conceptual limitations within popular turnover models which may limit their effectiveness in addressing the shortage. Chapter One discusses two such problems. One problem relates to the complexity that turnover models have achieved. They have become too complex for practical application. Several highly predictive models described in Chapter 1 require tracking twenty or more variables.

Another problem of turnover research has been the relatively low level power of predictability. Despite their complexity, these models rarely achieve a degree of predictability beyond 20%. This may not be due so much to selection of inappropriate predictive factors, as it might be to selection of inappropriate outcome variables. Chapter one concludes with the proposition that better outcome variable selection might be achieved by employing a group of withdrawal behaviors, than by focusing on turnover alone.

A second withdrawal behavior is introduced: ie., systematic reduction in participation (SRP). This is the phenomenon whereby an employee may begin a job working at full time, and later reduces scheduled work hours to some fraction of that amount. Since there has been no prior exploration of SRP in the literature, Chapter Two reviews the field of research dealing with absenteeism and turnover. From this review one notes that there is a single group of factors which consistently relate to both, turnover and absenteeism. These findings arise from separate research traditions. Factor lists from both traditions overlap considerably. One further notes that no research has yet combined any group of withdrawal behaviors into a single outcome (withdrawal) behavior. It is this anomaly which is addressed by the research reported in subsequent chapters.

The research conducted for this report addresses two broad objectives. The first is to explore the nature of a relatively unstudied phenomenon, systematic reduction in participation, in relation to other withdrawal behaviors. The second is to develop a withdrawal model similar to, but more useful than, prevailing turnover models. Finally, implications for further research are discussed.

The author wishes to gratefully acknowledge all of those who made it possible to complete the objectives which this dissertation represents. First to my wife and research partner, Sidney, I owe the greatest amount of gratitude.

This, for her painstaking efforts to collect data, to proof-read numerous written drafts, and to keep up the spirits of the primary investigator. It is possible that by the end of this study, she may have become equally capable of defending it as well as the primary investigator.

Deep gratitude is felt toward Dr. Virginia Cleland, who guided, nurtured, and academically nursed me toward professional achievement.

The author extends heartfelt thanks to Charles and Florence Wise, whose moral and financial support were critically important to aiding in completion of all academic objectives. They may have exceeded their own expectations as parents.

Finally, thanks is extended to the executives, staffer-planners, and data analysts at each of the five study hospitals. Every hospital had at least one person who always seemed to know what was going on throughout his or her institution: much like Radar O'Reilly in the movie "Mash."

Systematic Reduction in Participation:

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Abstract

The relationship between job factors and turnover has been studied extensively. However, little is understood regarding how the same job factors interact with the decision-making process to lead to other withdrawal choices, eg. absenteeism, decreased performance, etc. The current study was created to explore relationships between several job factors and three withdrawal behaviors: absenteeism, turnover, and systematic reduction in participation (SRP). Systematic reduction in participation is the phenomenon whereby an employee begins a job, working at full time, and subsequently reduces scheduled work hours to some fraction of that amount.

Mobley's "Intermediate Linkages" turnover model was modified for use in this research model. It was expanded to include a variety of withdrawal behaviors as outcomes, instead of turnover alone. This study attempted to discover 1) the incidence of SRP in the population of bedside, registered nurses; and 2) the relationship between turnover and SRP in a predictive withdrawal model.

The research design consisted of a five-year retrospective examination of a cohort of registered nurses at five western hospitals. Four hundred and four full time registered nurses' work schedules were scanned for five

years from their date of hire. Absenteeism, SRP, and turnover data were collected. Data were analyzed using multivariate logistic regression.

It was found that SRP occurred in all hospitals, and that its incidence varied from 47% to 110% of the incidence for turnover. Systematic reduction in participation was associated with longer average lengths of service. Both turnover and SRP were predicted by employment at specific hospitals, by assignment to day shift, and by assignment to maternal and child service areas. Although many nurses exhibited both SRP and turnover, multivariate tests of relationships between the two failed to show that SRP functions as a predictor of turnover.

The author concludes by proposing a theory of employee withdrawal, and compares this with Mobley's turnover model. Implications for clinical application of findings and future research are discussed.

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CHAPTER ONE

THE RELATIONSHIP BETWEEN THE NURSING SHORTAGE AND EMPLOYEE WITHDRAWAL BEHAVIORS

Introduction

The current nursing shortage has once again become a focus of national interest. The profile of shortage, its causes, and means for resolution, is complex. In 1988 the Secretary for the Department of Health and Human Services established the Commission on Nursing to study and make recommendations regarding public policy on the shortage. The Commission's findings and recommendations suggested that national policy must direct efforts toward recruiting initiates into the profession more rapidly, modifying the nature of demand for nurses, and working to maintain high levels of participation by nurses in the work place (Department of Health and Human Resources [DHHS], 1988). For reasons discussed later retention, rather than recruitment, receives the greatest attention in the Commission's findings.

Since public policy is to be directed toward nurse retention, it is important to examine the state of current science available to guide programs directed toward nurse retention. Following a discussion of the nursing shortage, "retention science" will be critically appraised. There are problems with the state of retention (or turnover) science.

The discussion concludes by exploring solutions to these problems. This involves methodological changes and shifts in perspective.

The Shortage

Nurse shortage may be defined as a discrepancy between supply and demand, measured in one of many possible ways. Public perception of need may be used as one measure of demand. The nursing profession may apply care quality standards to criteria for yet another definition of demand. An economic or market perspective may be used to measure demand as well.

In 1988 the Department of Health and Human Services' Commission on Nursing chose a definition of shortage based on an economic model related to institutional demand (DHHS, 1988). Their definition was worded as follows: "A market disequilibrium between RN supply and RN demand in which the quantity of RN's demanded exceeds the supply that is forthcoming at the prevailing wage."(p.II-1) The Commission operationalized the measurement of this concept as RN vacancy rates reported by the nation's health care institutions.

Shortage may exist at different levels along a hierarchy. One may envision shortage occurring at the levels of the individual (work role), work group, organization, region, or the nation. One would expect that widespread shortage conditions at any lower level will be

reflected at the next higher level of the hierarchy. With a few notable exceptions, organizational and regional nurse shortage is sufficiently widespread that a national shortage may be said to exist (AHA, 1988; ANA, 1987, DHHS, 1988).

Registered nurse vacancy rates have increased from a national level of 6.3% in 1985 to 13.6% in 1987 (Health Resources and Services Administration [HRSA], 1988). In December, 1986, only 17.6% of hospitals reported to the American Hospital Association that they had no RN vacancies. This despite the fact that, nationally, there has been a recent decline in hospital beds, more nurses employed in hospitals, and a high participation of nurses in the work force. This shortage varies from region to region, and extends to all service sectors (DHHS, 1988). Three changing trends in health care are blamed for the relative imbalance between supply of, and demand for, nurses.

First, the number of nurses per patient day has increased. The AHA (1987) reports that in 1972, hospitals employed an average of 50 nurses per 100 patients. By 1986, this ratio increased to 91 nurses per 100 patients. This has been partially due to shifting of health care functions from non-nurses to nurses. It has also been due to increased acuity of illness of patients since the prospective payment system shortened all patients' hospital stays.

Secondly, institutional reactions to prospective

payment in the early 1980s, affected the way nursing shortage affected bedside care. Fearing impending economic hardship, many hospitals began trimming health care staff, including many nursing positions (ANA, 1987). As a result nurses often were faced with increasing workloads created from an artifact of austere personnel budgets. Nurses often felt as though a shortage existed even when vacancy rates were low (Prescott, 1987).

Finally, shifting demographic patterns have affected supply-demand characteristics in the nursing workforce. Between the end of the 1970s and the mid-1980s, the supply of nurses increased at a rate faster than that of the general population (Prescott, 1987). This trend has begun to reverse. Nursing school admissions have declined steadily since 1983. Two causes are cited in the literature.

One cause is attributed to declining birth rates, the population of college age women is shrinking. This has led to increased competition by many professions for recruits. Secondly, young women are becoming drawn toward professions previously restricted to men (AHA, 1987). Nursing has lost much of its competitive advantage because its public image is that of high personal risk, poor wages, high stress, and bad work schedules (Buerhaus, 1987). The decline in available nurse recruits plus an increasing population of aging health care consumers, lead many to believe that the

current shortage will intensify.

Solutions to the Shortage

Recruitment

Since the nursing shortages of post WW-II, each new cycle has been met by aggressive recruitment efforts (Buerhaus, 1987; Friss, 1988). Each time the market has responded with relatively effective programs. Examples include regional increases in nurses' wages, aggressive advertising, and Federal financial assistance programs. But, Buerhaus (1987) asserts that the current shortage is different. What makes this so are: 1) the shrinking pool of college age women, and 2) an extraordinary acceleration of market demand.

National hospital and nursing organizations have urged the federal government once again to help finance a national recruitment effort (AHA, 1988; ANA, 1987). Both groups agree that wages and working conditions must improve to increase the attractiveness of the profession. Each recommends marketing the profession to non-traditional students, such as men and women considering second careers. Both agree that reliance on recruitment to solve the shortage will be short-sighted. Retention programs are also needed to address the shortage, both for the short and long term.

Retention

Retention and Turnover

There are a variety of perspectives from which one may view nurse retention. As with shortage, one may view retention in terms of a hierarchy. Retention may occur at the individual level, the work group, the organization, or the profession.

Turnover is a term representing the inability to retain nurses at any particular level. Retention and turnover are customarily treated as two sides of the same coin. In general terms turnover may be defined as "the degree of individual movement across the membership boundary of a social system" (Price, 1977, p.4). Most often the focus for turnover is at the level of an employing Institution. Hence, a more restrictive definition is invoked. In this case turnover is "the cessation of membership in an organization by an individual who received monetary compensation from the organization" (Mobley, 1982, p. 10).

Turnover's Role in Shortage

A great many authorities have asserted that nursing turnover is a significant contributor, if not itself a cause, of nurse shortage (American Hospital Association [AHA], 1987; Decker, Moore, & Sullivan, 1982; Friss, 1988; Huey & Hartley, 1988; Logsden & Beghin, 1988). Since shortage conditions may occur at a variety of different levels (from work unit to organization or nation), the

manner in which turnover lends to such conditions is multidimensional as well.

Turnover is likely to cause shortage under several conditions:

-when leaving a position results in a nurse leaving the profession;

-when the result of turnover patterns cause maldistribution of nurses among institutions; and

-when a delay occurs between the last day of work on one job, and the first full day of work on the next (productivity gap).

When Turnover Results in Leaving the Profession

Sigardson (1982) asserts that the reason a national nursing shortage has developed is because nurses are leaving the bedside. She cites a fact that 40% of eligible RNs are no longer practicing in their profession. However, Prescott and Bowen (1987) reported in their study, that the majority of nurses who left positions in one hospital soon returned to similar positions in another. Often they are re-employed within the same market area. This pattern of job switching is described as a "revolving door" of nurse employment. Prescott and Bowen assert that turnover is probably not as large a contributor to national shortage as the numbers would suggest. However, it is conceded that turnover may well contribute to institutional shortages if the revolving door of employment fails create accessions at the same rate

as separations. Prescott and Bowen's (1987) findings have been corroborated by other researchers as well (Aiken & Mullinix, 1987; DHHS, 1986; Weisman, Alexander, & Chase, 1981).

When Maldistribution Results

As implied by the research cited above, turnover may result in maldistribution of nurses among hospitals. Some institutions and regions are bound to be more competitive than others in attracting nurses away from other settings.

When a Productivity Gap Occurs

Should any delay occur between leaving one job and fully functioning in a new one, then for that time period a nurse is functionally absent from the work force. To the extent that there are many nurses switching jobs, and the accumulated interruption in productivity is substantial, the contribution to local and regional shortage may be considerable. Despite the high reported rates of nursing turnover and documentation of maldistribution of nurses among economic regions, there have been no studies exploring this phenomenon. This, despite the plausibility that such a gap in employment exists.

The Commission's Recommendations

In 1988, the Secretary's Commission on Nursing published 16 recommendations to the Secretary of Health and

Human Services (DHHS, 1988). In its Final Report changes were recommended in the system for delivery of health care which would make nursing more satisfying to practitioners. The Commission believed that conditions capable of persuading nurses to stay in the profession longer, might also serve to recruit others into nursing. Although some of the Commission's recommendations supported recruitment and reduction of demand, most were directed toward retention.

In the Final Report (DHHS, 1988), it was recommended that staffing levels and support services for nurses be improved (recommendation 1). Technology should be harnessed to make nurses' efforts more effective (recommendation 3). Nurses' economic contribution to institutions should be identified and acknowledged (recommendation 4). Nurses' salaries and health care reimbursement should reflect the degree of training and performance exemplified by practitioners (recommendations 5 and 6). Nurses' autonomy and leadership capability should be encouraged and publicly acknowledged (recommendations 7 through 9). Public policy should help promote a positive image of the profession (recommendation 13). Research should be conducted by the government studying the relationship between competing formulae for nurse compensation and practice which optimize nurse supply and health care quality (recommendation 15).

These recommendations formed a convergence of many years of retention-oriented national nursing surveys, of

opinion essays in nursing literature, and of turnover research involving nurses. Some surveys have explored reasons why nurses leave institutions and nursing (Kramer & Baker, 1971; McCloskey, 1974; Prescott & Bowen, 1987; Sigardson, 1982; Wandelt, 1981). Others have explored why nurses stay (American Academy of Nursing, 1983; Huey & Hartley, 1988; Prescott & Bowen, 1987; Scherer, 1988). Survey results call for the same constellation of job satisfiers addressed by the Secretary's Commission.

Turnover Science

Since a significant portion of public policy is to be directed toward retention, it is useful to review the "state of the science" related to this topic. One might thereby determine how useful that science will be in guiding retention activities.

Over the past two decades nurses have been a popular professional group for study by sociologists, industrial psychologists, and nurse researchers (Hinshaw & Atwood, 1984; Mobley, 1982; Price, 1977). A number of competing models of turnover have emerged from numerous attempts to formulate a theory of turnover (Mowday, Porter, & Steers, 1982; Mobley, 1982; Price, 1977). Figure 1-1 depicts a simplified form that captures essential features of the models which predominate.

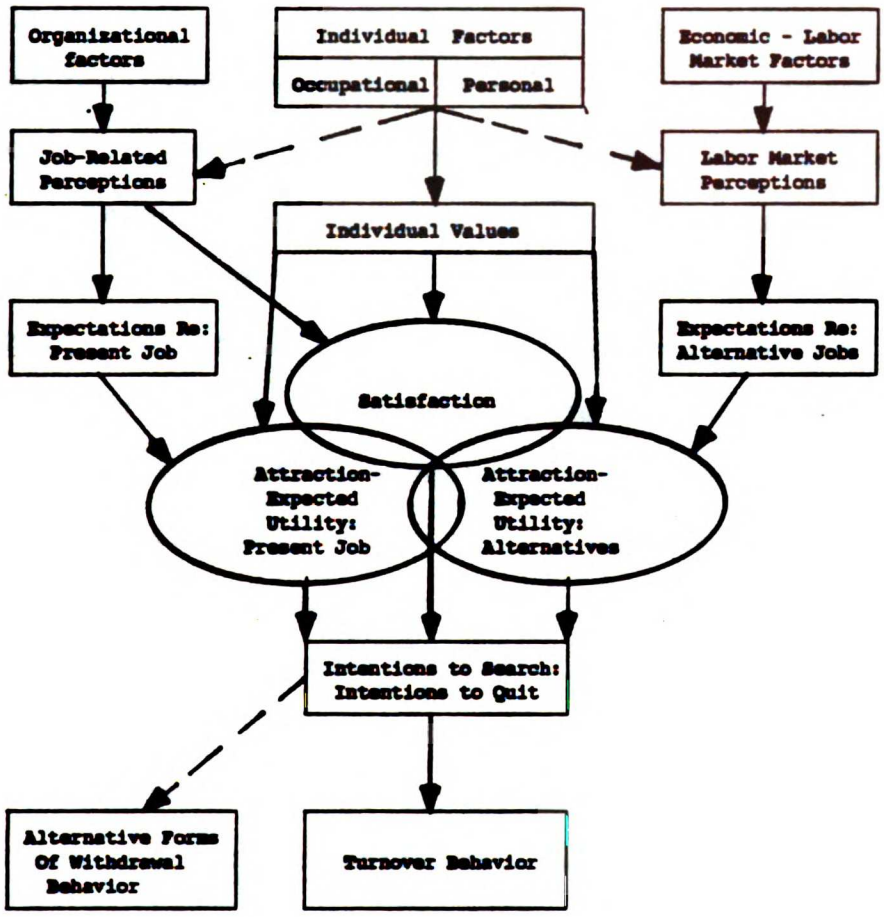

Figure 1-1. Illustration of a predominant model of turnover (Adapted from Mobley, 1982)

There are three categories of factors which ultimately shape the way an employee regards his or her job. These are organizational, individual, and market-related factors. Organizational factors include organizational size, personnel policies, reward structures, social climate, and job roles. Individual factors include personality, values structure, personal demographics, and attitudes toward the job. Market-related factors are all those social and economic factors which lie outside the organization and the individual, but which exert some force on both.

Within this model, a mismatch occurs between employee expectations, personal values and his or her experience on the job. An affective reaction (dissatisfaction) reduces or blocks development of commitment to the organization. Intent or desire to leave follows, and depending upon external influences and a person's perception of alternate job opportunities, termination may result.

Most retention strategies, and indeed the Secretary's Commission report, are based on findings from turnover research. However, these research findings present certain difficulties for widespread application in the health care industry.

Turnover Models' Limitations

Job satisfaction as a Predictor

Recent reviews of turnover research (Hinshaw & Atwood,

1984; Mobley, 1982; Price, 1977) confirm that job satisfaction consistently demonstrates a negative correlation with turnover. However, the correlation is customarily low, and occasionally not statistically significant. It is considered to be an intervening variable between personal and situational variables, on the one hand, and intent to leave on the other (Cotton & Tuttle, 1986; Hinshaw & Atwood, 1984; Mobley, 1982).

Models' Predictability

The problem with current turnover theory is that with few exceptions, turnover research has failed to demonstrate a predictive power much greater than 17% (Cotton & Tuttle, 1986; Hinshaw & Atwood, 1984; Mobley, 1982). Up to 10 different variables are usually required to approach this level of prediction. Consequently, one wonders whether the theory is sufficiently well developed in order to justify its application to entire populations of workers.

The highest level of predictability was achieved by Prestholdt, Lane, and Mathews (1987) using multiple linear regression . Their model differed from those of predecessors by deviating from unidimensional measures of employees' work attitudes. They asked subjects to rate their expectations of achieving job satisfaction under two conditions: if they were to stay, and if they were to leave. They were thus able to predict 32% of explained variance in turnover. It is worth mentioning, however, that most of the

variance was explained by demographic factors alone.

The study by Prestholdt et al. notwithstanding, turnover research fails to offer compelling evidence for prediction. One potential contributor to the problem may be in restricted use of statistical techniques. The predominant statistical method applied to turnover models has been a variety of multiple linear regression methods. Noting that the outcome variable is dichotomous (turnover= 1, 0), one wonders why some form of logistic regression has not been applied to the models. This statistical technique was designed specifically for prediction with dichotomous outcomes. It corrects for the instability of results when ordinary multiple regression is performed with dichotomous dependent variables.

Another possible contributor to the relative lack of progress in improved predictive turnover designs may involve incomplete turnover models. Attention now turns toward other employee withdrawal behaviors which may compete with turnover to cause shortage symptoms.

Possibility of Incomplete Models

Employee Withdrawal from the Work Place

One must question whether turnover alone (failure to retain) is sufficient to account for reduction of nurses' participation in the work force. Consider the case of Nursing's unique work schedule options. In nursing one may

elect to work full time, any specified number of shifts per week (of various time lengths), or merely "on call.[1]" A nurse who begins employment at one level, often may freely choose to decrease his or her level of participation later.

When an employee regularly decreases attendance behavior at a job, might this not create a shortage condition within the work group? For example, if two full time nurses choose to reduce their employment status to half time, it effectively creates one total vacancy. No one has terminated; and no turnover has occurred. No studies have been published exploring this phenomenon, despite widespread belief by nursing executives of its common occurrence.

Also, what about unscheduled attendance reduction, such as absenteeism? In a recent pilot study of turnover in a 350 bed hospital it was found that absenteeism among RNs in one year amounted to 3850 shifts of total absence (Wise, 1989). This amounted to 15.4 full time equivalents-- all of whom required daily replacement. The effect of absenteeism at that hospital was to create 15 vacancies in addition to those brought about by terminations.

Turnover is only one form of employee withdrawal behavior. Scheduled and unscheduled reduction in hours worked are two others. If either of these withdrawal

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[1]. The writer has discovered several California hospitals wherein the number of full time nurses was between only 20% and 40% of the total nurse workforce.

behaviors are pervasive, then their impact upon overall shortage might be substantial. Their effects as confounding variables in nurse turnover studies would be substantial as well.

Turnover models tend to regard one outcome, turnover, as the result of certain predictor variables. The extent to which other withdrawal behaviors compete for expression in response to the same predictor variables, will decrease the likelihood that turnover is observed. The result of restricting inquiry to a single withdrawal condition might be to weaken an otherwise good predictive behavioral model. Indeed, the model may predict the constellation of employee withdrawal behaviors, better than it does turnover alone.

Although there are a great many studies exploring turnover alone, there have been relatively few which attempt to position absenteeism in some relationship to turnover. Several such studies are mentioned below.

Keller (1984) found absenteeism to precede turnover consistently enough to qualify as a significant predictor variable. Waters and Roach (1971) found that the same predictors of absenteeism, predicted turnover as well. Rosse (1988) discovered patterns existing between multiple episodes of lateness and subsequent absenteeism. These multiple absences led, in turn, to turnover. He concluded that there is evidence for a behavioral progression from lateness to absence to turnover. Sheridan (1985) found

evidence that declining job performance, absenteeism, and turnover are "discontinuous behavioral outcomes" arising from similar job conditions.

Larson and Fukami's (1985) perspective resembled that of Sheridan (1985). They, too, wondered whether absenteeism might be a behavioral alternative to turnover among disaffected employees. They found that a low "desire to remain" [in one's present job] interacted with subjects' perception of "ease of finding a better job" to predict absenteeism.

Anecdotal accounts reported by researchers suggest that faced with unsatisfying work conditions, many nurses perceive termination as an unacceptable choice (Mobley, 1982; Mowday, et al., 1982). They may fear that a position with another hospital might prove less satisfying than the one being endured at the moment. Some may feel as though they are economic prisoners of a job; because their tenure permits a pay scale higher than they might expect from a new employer. For such employees absenteeism, reducing scheduled hours, or decreased performance may be more acceptable options.

Discussion

There exists sufficient evidence to suggest that when an employee is confronted with a mix of environmental factors which reduce one's desire to remain at a job, he or she may entertain a variety of behavioral alternatives in

response. A number of organizational, personal, and market-related factors may interact to steer the individual toward one or more withdrawal behaviors. In order to predict which behavioral response an individual may choose depends upon knowing much about the person perceptions, thoughts, and feelings. A partial list may include the following:

1) the nurse's personal values
2) the degree of disaffectation with the current job
3) knowledge of alternative jobs
4) knowledge of behavioral options available
5) motivation toward choosing one or another behavioral response.

It is difficult to predict one particular withdrawal behavior among those available to individuals. Evidence for this lies in the inability of scientists over three decades to determine a reliable study model to predict either absenteeism or turnover with any substantial degree of success. No research has attempted to test whether a turnover or absenteeism model predicts the occurrence of <u>at least one</u> of several withdrawal behaviors (wherein more than one behavior is considered as a single, grouped cluster of behaviors). Such a study needs to be undertaken in order to see whether existing models are adequate to predict that withdrawal occurs to a greater (turnover) or lesser (absenteeism) degree.

First, a better understanding is needed as to the

nature of, and relationships between, withdrawal phenomena. Absenteeism and turnover have been studied alone and in relationship to each other; but other significant withdrawal behaviors have not. One such withdrawal behavior, pervasive in the nursing profession, is systematic reduction in participation (SRP). This is a phenomenon whereby one begins a job at full time, and later reduces scheduled hours to some fraction of the original commitment.

Purpose of the Study

It is the purpose of the research reported below to explore systematic reduction in participation (SRP) in relation to other, better understood withdrawal behaviors. The aim is to gain a better understanding about the prevalence of, relationship between SRP and other withdrawal behaviors. This research is exploratory in nature. It serves as a prelude to understanding the conditions under which one might choose one withdrawal behavior over another.

As a preliminary study of the phenomenon of SRP, only data which is purely objective will be gathered and analyzed. Although important constituents of the proposed withdrawal model, subjective measures of nurses attitudes or feelings were not used in the present study design. The purpose for this was twofold. First, it is believed that initial exploration of SRP ought to focus on simple relationships among behaviors. The introduction of "softer" attitudinal measures might increase the uncertainty of how

findings might be interpreted. Second, many successful regression models predicting turnover have shown that objective measures, such as demographics, may account for the largest amount of explained variance alone (Prestholdt et al., 1987).

There currently exist no studies of systematic reduction in participation. For this reason, Chapter Two is devoted entirely to a review of literature pertinent to this behavior's nearest behavioral neighbors, turnover and absenteeism. The assumption is that an understanding of research traditions involving other withdrawal phenomena may direct one to the most efficacious methods for studying SRP.

The theory driving the current research is very similar to that described above, and attributed to Mobley et al. (1971). Figure 1-2 compares the Mobley Model with that underlying the current study. In both theories, job satisfaction and propensity to withdraw are determined by three factor dimensions: organizational factors, personal-demographic factors, and job market factors. The major difference appears at the point of deciding, consciously or unconsciously, which form of withdrawal to choose in response to unsatisfactory perceptions of the job.

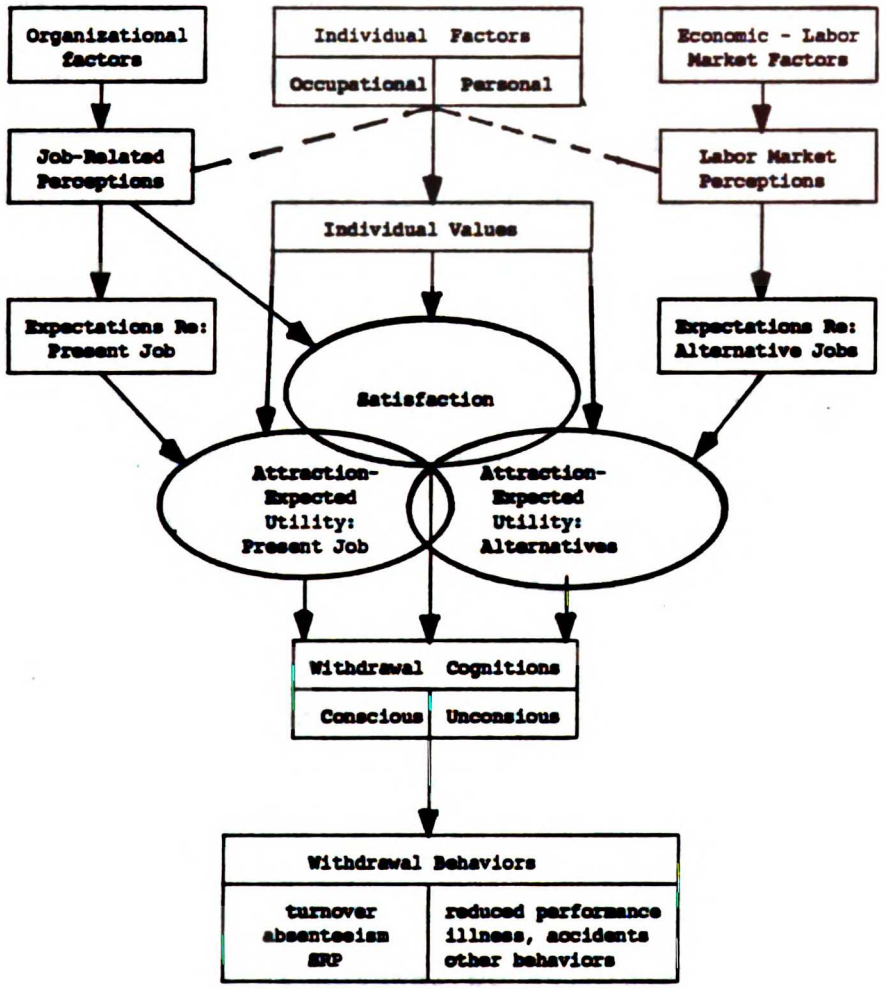

Figure 1-2. Withdrawal model guiding the author's research.

Instead of "Intent to terminate," "Intention to withdraw" is substituted. Instead of terminating, the person exhibits one or more of a constellation of withdrawal behaviors. Thus a "turnover model" becomes a "withdrawal model."

It is assumed that causal relationships exist between phenomenological categories depicted in both models (Figures 1-1 and 1-2). Is it also assumed that the causal direction of factors is in descending order, as depicted in the figures.

It is asserted that behavioral manifestations of withdrawal (absenteeism, SRP, turnover) are similar, differing only in the degree of withdrawal. It is assumed that all three choices are available to any employee, and that the selection of one or more of these will be determined by a combination of all factors depicted in the withdrawal model.

Hypotheses

This research attempts to illuminate the relationships between these three withdrawal behaviors and their antecedents. Since absenteeism has been consistently shown to predict turnover in regression models, Hypothesis One attempts to test whether the same predictive relationship exists between absenteeism and SRP.

Hypothesis One: Absenteeism is positively related to both SRP and Turnover.

Absenteeism is theorized to emerge as the prelude to more permanent withdrawal: either complete (turnover), or partial (SRP). Such a relationship has been found in prior research, relating absenteeism and turnover, and shall be discussed in Chapter Two.

Hypothesis Two: There is no difference in the amount of variance explained whether SRP is used either as a categorical or continuous variable.

It is theorized that the employee motivated to withdraw will choose exactly the level of withdrawal which satisfies a constellation of immediate needs. Since this study avoids any attempt to measure those personal needs, there is not likely to be any reliable relationship between the predictive factors chosen for the study and the amount of SRP which occurs. Thus, one would expect no appreciable reduction in model variance if SRP were entered as a random variable (expressed as the amount of SRP), or as a dichotomous variable.

Hypothesis Three: Within a population of nurses: a) tenure is positively related to SRP, and b) negatively related to turnover.

It is reasoned that as a person's tenure increases, one becomes more thoroughly entrenched in the social network of an organization. Pay levels and political power may achieve levels which might not be immediately possible in another job and another organization. The opportunity costs involved in terminating are likely to increase as tenure increases. This belief is tested by Hypothesis Three.

Hypothesis Four: There is no linear relationship between SRP and turnover.

It is believed that within the withdrawal model that SRP and Turnover (and possibly others) are discontinuous withdrawal behaviors resulting from similar antecedents. They exist as two analogous behaviors competing with one another for expression. If this is true, then it is unlikely that one would predict the other. The limitation of this hypothesis is that they might covary, and a serial relationship may well exist.

Summary

To the extent that symptoms of shortage occur in every region of the country, the nursing shortage is real. There

is a consensus among leaders in national health care organizations, that solutions to the shortage must involve interventions aimed at both, recruitment and retention. Chapter One has identified shortcomings in the theoretical base from which many retention program designs have been formulated.[2]

The writer's thesis is that an assessment of shortage attributed to non-participation in the work force, must deal with a broader range of withdrawal behaviors than turnover alone. Although research provides evidence that there are certain parallels between determinants of turnover and absenteeism, patterns of determination also differ between the two. Thus, a program successful at reducing one withdrawal behavior may or may not have the same effect upon the others. Unless all are being tracked one cannot be certain.

Systematic reduction in worked hours by nurses is a phenomenon known to nursing administrators, but one which has not been researched by organizational scientists. If it is a pervasive phenomenon, it should be studied alongside absenteeism and turnover. The fact that part time employment seems to be taking on an increasing role in

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[2] Despite these theoretical shortcomings, these programs may still be effective; because the strategies may simultaneously decrease all three types of withdrawal discussed above. The retention recommendations prescribed by most national health care organizations may turn out to be sufficiently robust to make up for theoretical deficiencies.

nursing department employment profiles, suggests that the phenomenon needs to be explored. The study undertaken for this paper addresses this need.

CHAPTER TWO

LITERATURE REVIEW

Introduction

Systematic reduction in participation (SRP) is a phenomenon whereby an employee begins a job at one level of participation (eg. full time), and subsequently reduces the number of scheduled hours of work permanently. It has never been included in studies of employee withdrawal behavior; and the author found no mention of it in related literature. However, a great deal has been written about other forms of withdrawal. Turnover has received the greatest amount of attention, absenteeism second, and decreased performance considerably less. This review describes and critiques some of the most recent studies of employee withdrawal. Special emphasis is placed upon the case of nurses.

The evolution of methodology for withdrawal behavior study will be described first. This is accomplished via a summary of previous literature reviews. A discussion of the most current withdrawal research follows. Because turnover has received the bulk of scientific attention over the years, most of the discussion will center on this behavior. The chapter will then deal with the smaller body of research involving absenteeism. Concluding remarks will address needs for further research.

Background

Brayfield and Crockett

Scientific study of employee withdrawal behaviors began during World War II. In 1955 Brayfield and Crockett published the first literature review on the topic of "employee attitudes and employee performance." In this review they described 30 published and unpublished studies of employee morale and withdrawal behavior. Some of the research consisted of master's theses as well. The authors infer that the bivariate model of job satisfaction and withdrawal evolved from an intuitively-based belief that the two were naturally connected. Outcome measures (withdrawal) were variously identified as decreased work performance, absenteeism, accidents, tardiness, and turnover. From this larger list of outcome variables, turnover garnered the greatest degree of attention in discussions by the reviewers.

Brayfield and Crockett (1955) found that much of the research found negative correlations between worker morale and withdrawal behavior. Some of the research did not. What troubled the reviewers was the level of inconsistency in quality of research design and reporting. They cited problems with operationalization of concepts, such as morale. Subject selection and description were often not mentioned. Objective measures were frequently not used. If they were used at all, discussion of their validity and

reliability were absent.

Statistical analysis consisted solely of descriptive accounts and product-moment correlations (Brayfield & Crockett, 1955).

Brayfield and Crockett concluded that there were two major deficiencies in contemporary research on morale and employee withdrawal. First, concept clarification was inadequate. Operationalization in the form of objective measures, was deemed necessary for quantification of each variable under study. Second, statistical conclusion validity was generally inadequate. The authors exhorted researchers to produce evidence supporting the reliability and validity of measures employed in research designs.

Porter and Steers

Porter and Steers (1973) confirmed the persistent relationship between job satisfaction and withdrawal behavior, most notably turnover. They, too, were troubled by inconsistent findings in job satisfaction's ability to predict the phenomenon. This, despite the increased use of standardized measures of job satisfaction. They determined that the use of simple designs and low-order, univariate statistics was partially responsible for inconsistency in study results from contemporary and earlier research. Porter and Steers noted that often, one variable worked just as well as the next in predicting withdrawal. When multivariate regression analysis was applied to such models, the

explanatory value of many highly intercorrelated variables suddenly diminished. For example, job satisfaction consistently correlates negatively with withdrawal behaviors. But when this variable is included in a regression model with "intent to leave," its direct effects on turnover often disappears.

Porter and Steers (1973) concluded that employee withdrawal behavior appears to be too complex a phenomenon to be adequately addressed in simple research designs. They called for research models of a more comprehensive nature, ie. ones which employ multiple regression techniques and a broader range of independent variables. Although their review included reference to studies which simultaneously explored turnover and absenteeism, their discussion focused solely on turnover.

Price

Price (1977) addressed several criticisms voiced by Brayfield and Crockett (1955), Porter and Steers (1973), and others. He criticized contemporary researchers for lack of conceptual clarity in their research on turnover. With reference to the history of research on employee withdrawal, he produced the first codification of concepts. Price constructed and tested a predictive model of turnover using multivariate design and techniques of multiple regression (see Figure 2-1). He also developed and tested several instruments measuring variables within his predictive model.

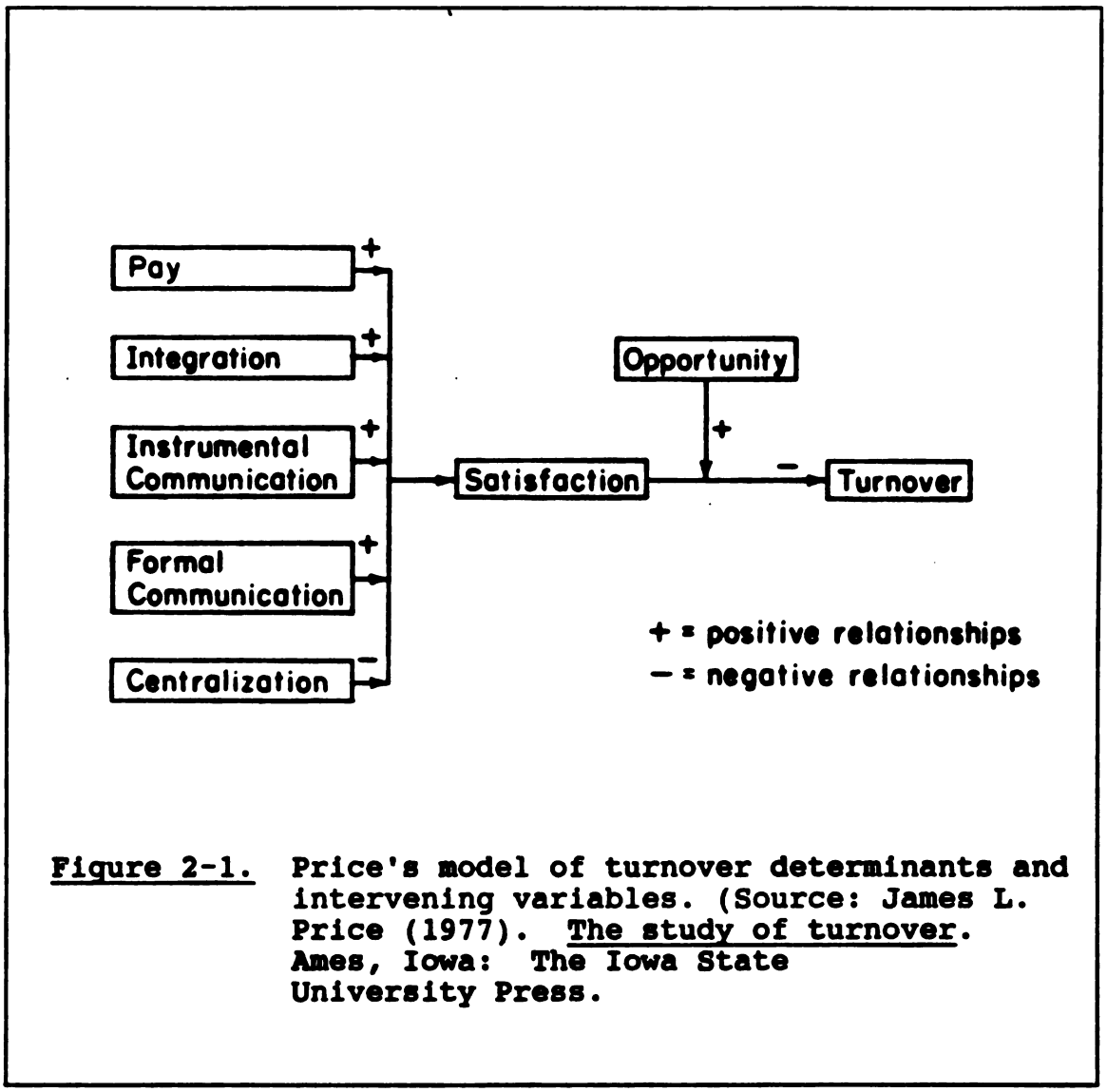

Figure 2-1. Price's model of turnover determinants and intervening variables. (Source: James L. Price (1977). The study of turnover. Ames, Iowa: The Iowa State University Press.

Price's model postulates that there are a constellation of "primary determinants" which act upon, and result in, an affective reaction toward the job (satisfaction). Job satisfaction (or its lack) leads to cognitive intentions to leave (or stay). These withdrawal cognitions subsequently lead to termination. The "Price Model" of turnover has been tested by Price and many others.

Mobley, Griffeth, Hand, and Meglino

Mobley et al. (1979) reviewed research on employee withdrawal and asserted that Price's model was incomplete. They reasoned that prior research indicated a model of many more stages of "intermediate linkage" between primary determinants and turnover (see Figure 2-2). Price had postulated satisfaction and

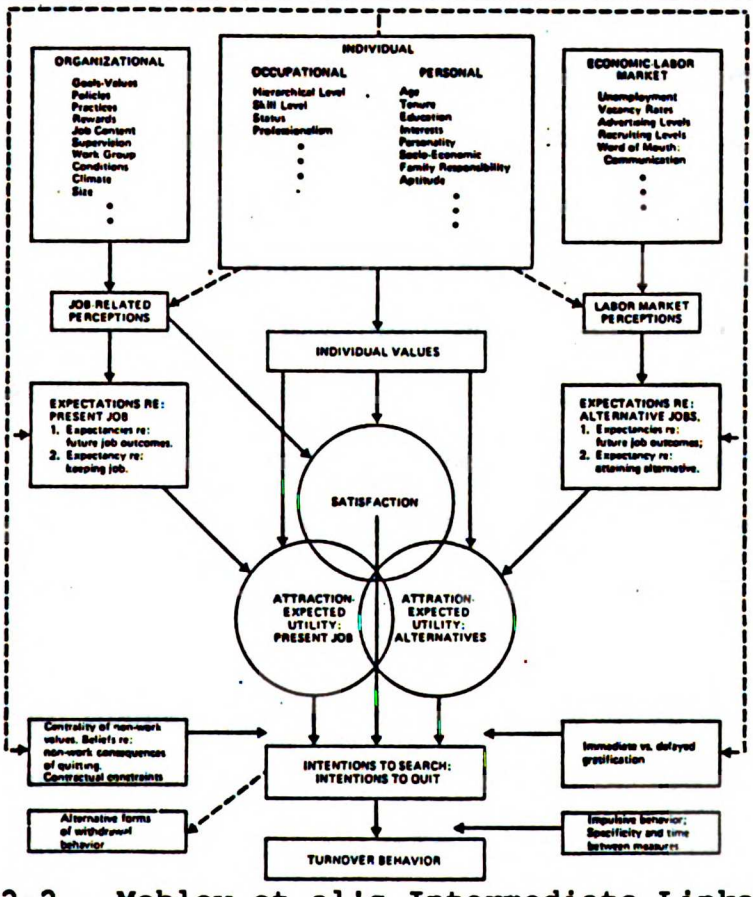

Figure 2-2. Mobley et al's Intermediate Linkages Model (Source: W. Mobley, R. Griffeth, H. Hand, and Meglino (1979). A review and conceptual analysis of the employee turnover process. Psychological Bulletin. 86(3), 493-522

withdrawal cognitions in his model; Mobley et al. added individual values and comparisons of present reality with future expectations. In addition, they theorized that there are a host of interacting variables which modify the chain of primary steps leading to turnover behavior.

In their review of the literature, Mobley et al.(1979) noted that a number of research designs employed multivariate models which resembled that of Price (1977). They noted that a wide variety of variables was employed. Demographic variables such as employee tenure and age consistently (and negatively) related to turnover. Job satisfaction was often studied along with other intervening variables, such as organizational commitment[3], in testing expanded versions of Price's model. Mobley et. al (1979) noted that despite the many studies utilizing many variable combinations, the predictive power of most designs rarely exceeded 24% of total variance in turnover. They attributed this to two principle factors.

The first problem they cited was the same identified by Brayfield and Crockett (1955) and Price (1977), ie. lack of conceptual clarity. As an example they criticized use of "organizational commitment" in many designs. They remarked

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[3].Organizational commitment is often defined as the following: an employee's belief in, and acceptance of, the organization's goals and values; a willingness to exert effort on behalf of the organization; and a desire to maintain membership within the organization (Mowday, Porter, & Steers, 1982, p.27).

that commitment is customarily measured by asking subjects about intentions to remain within the organization. How well, they ask, does this discriminate between commitment and "intent to leave?" "Intent to leave" is frequently measured as a separate variable within the same research model.

The second problem Mobley et al. (1979) identified was an inadequate understanding of antecedents to the variables employed in multivariate models. How, for example, does the time between measurement of predictor variables, and actual turnover, enter into the equation? Often variables like satisfaction are measured as a present disposition toward a job. How does such a disposition affect future expectations toward the same or alternate jobs?

Mobley et al. (1979) concluded that more work is needed to clarify the concepts employed with predictive models. They stressed the need to eliminate serious overlaps between concepts assumed to be distinct from one another. Also, they recommended exploration of antecedents for concepts thought to be central to the process of employee withdrawal.

Although "alternative forms" of employee withdrawal are mentioned in the model proposed by Mobley et al. (1979), their literature review makes very little mention of studies which measured them. Indeed, the authors comment about their uncertainty regarding the relationship between turnover and the other forms of withdrawal (p.518).

Meta-Analytical Reviews

Cotton and Tuttle (1986) performed a meta-analysis of turnover research in an effort to summarize hundreds of research reports exploring turnover conducted during past decades. Their aim was to "quantitatively" analyze the research which they believe are only dealt with qualitatively, by standard literature reviews. Of some 26 independent variables commonly included in turnover models, they endeavored to identify which ones demonstrated consistent predictive effects. They used a formula for grading the strength of factor effects from individual research studies. They then performed regression analysis of study results, as though they were raw data from a single study. The statistical observations were composite data from individual studies, combined with groups of similar data from other research.

Cotton and Tuttle (1986) found factors with "highly reliable" correlates in each of three different categories: external factors, work-related factors, and personal characteristics of employees. These correlates are listed below.

External factors strongly (and negatively) related to turnover:

lack of perceived alternate job opportunities
presence of a union
the prevailing unemployment rate.

Work-related factors strongly related to turnover (all negatively related):

pay
overall job satisfaction
satisfaction with supervision
satisfaction with the work itself
satisfaction with co-workers
promotion
role clarity
organizational commitment.

Personal characteristics negatively related to turnover:

age
tenure
number of dependents
met expectations.

Personal characteristics relating positively to turnover:

education
history of turnover behavior
behavioral intentions to quit.

Most of Cotton and Tuttle's (1986) findings supported those found in qualitative reviews by others. In addition, Cotton and Tuttle noted that organizational commitment showed sufficient strength as to be included in standard turnover models. It is wise to note that this meta-analysis did not distinguish between factor relationships arising from simple correlational analysis, and those arising from multivariate regression study designs. Thus, the "highly reliable negative relationships" between various satisfaction measures found in correlational studies, disappear when reviews are confined to regression studies.

Reviews by most authors during the 1980s fail to mention any other withdrawal behavior besides turnover (Cotton & Tuttle, 1986; Muchinsky & Tuttle; 1982; Hinshaw & Atwood, 1984). One exception to this trend is the meta-analytic review by Scott and Taylor (1985).

Scott and Taylor

Scott and Taylor (1985) compared the findings of 23 studies of job satisfaction and absenteeism. After correcting for sample sizes they assigned weights to correlations reported in individual studies. They compared results among studies which defined absenteeism according to frequency of absence, and those which defined it as duration. Frequency of absence measures the total number of episodes a person is absent. No account is taken of total days or shifts missed from work. Conversely, duration of absence disregards the number of episodes of absence and is merely the sum of hours or days missed. Scott and Taylor discovered a negative correlation between all measures of satisfaction and frequency of absence averaging r=.18. Duration proved to be only half as useful either as an outcome variable or as a predictor of turnover. Two conclusions were supported by their analysis. First, job satisfaction is a stable (negative) predictor of absenteeism; and second, frequency of absence is a more sensitive measure than duration. Note, too, that Scott and

Taylor focused upon correlational, and not regression study designs.

Summary

Research in the area of employee withdrawal has proceeded from its early roots in management science, which was initiated during this century. However, most of this research was not published until post-World War II. Although Brayfield and Crockett (1955) included reviews of withdrawal behaviors besides turnover alone, most reviews since then identify relatively few studies focusing on subjects besides turnover. To date, only turnover garners the distinction of being ensconced within a widely recognized conceptual model.

Review of Research

Since the greatest volume of research has focused solely on turnover, this topic will be reviewed before that of other withdrawal phenomena. In addition to multivariate tests of conceptual turnover models, many attitude surveys of nurses have been conducted. Often many turnover causes, identified by descriptive surveys, fail to correspond with those identified in regression studies. Therefore, both types of research are reviewed below. This section begins with attitude surveys of nurses staying or leaving. Research focusing on absenteeism follows that of turnover.

Turnover

Introduction

There is more than one way to discover the cause of human behavior. For example, one can ask persons who engage in the behavior under question to describe motivating factors which cause it. Such studies take the form of attitude surveys or interviews. Another method is to observe persons engaged in the behavior under question and compare them to similar persons not engaged in that behavior. One then speculates upon those factors which predict or cause the behavior in question. Such is the case of predictive research which tests hypothesized correlates of turnover and makes statistical inferences regarding their relationship. If both of these methodologies provide valid information, one would expect them to yield similar (or at least compatible) answers to questions of causality.

Turnover Surveys

Over the past two decades, nurses have been surveyed by various researchers regarding job satisfaction and dissatisfaction. The objective of these surveys has been to discover why nurses leave the profession, or their current jobs. Table 2-1 lists the surveys reviewed.

Table 2-1. Surveys of Nurses Regarding Causes for Turnover

AUTHOR(S)	N=	Rank-Ordered Issues or Dissatisfiers
Nurses Who Leave the Profession:		
Kramer & Baker (1971)	63	Job stress, Low organizational commitment to quality care, opportunity for advancement
Hallas (1980)	1210	Increased paperwork, poor staffing, decreased patient contact
Sigardson (1982)	60	Long hours, poor staffing, poor treatment from MD's & management, low pay & benefits
Gaertner (1984)	964	Bad hours and schedules, young children at home
Nurses Who Change Jobs		
Saleh, Lee & Prien (1965)	300	Family, Leaving town, nature of the work, lack of promotion, poor supervision & human relations
McCloskey (1974)	94	No flexible schedules, work benefits, intellectually-stimulating environ., increased self-esteem
Decker, Moore, & Sullivan (1982)	620	Management support, family, bad hours or shifts, salary, not feeling appreciated
Prescott & Bowen (1987)	200	High workload, poor staffing, less time with patients, no flexible schedules, no respect from nursing administration
General Surveys of Work Dissatisfaction		
Seybolt & Walker (1980)	225	Lack of career & promotion opportunity, poor communication with administration
Huey & Hartley (1988)	3500	Management support, poor staffing, low pay, no child care facilities
Helmer & McKnight (1988)	429	No flexible staffing & scheduling, administrative support, other work benefits

There are two non-work reasons frequently cited for quitting jobs: family commitments and relocation. Work-related reasons for quitting a job and quitting the profession are similar. Inadequate staffing and heavy workloads, inflexible work schedules, and poor relationships with management dominate the list of dissatisfiers. Conclusions by most survey authors agree that nursing administrators might ameliorate turnover and dropout rates by improving communication with their nurse constituency, and by increasing involvement of nurses in determining reward structures.

With few exceptions, most of the surveys reviewed have consisted of small samples. Only Hallas (1980), Decker, Moore, and Sullivan (1982), Gaertner (1984), and Huey and Hartley (1988) surveyed more than 500 nurses. Of the few who reported the percent of return from subjects, none reported greater than 35% response rates. Despite low numbers of respondents, low frequencies of questionnaire returns, and obvious convenience sampling, little attempt was made to establish whether samples were representative of the population under study.

In virtually every survey, no mention was made of attempts to establish the integrity of survey instruments. Respondents to surveys are frequently limited in their ability to express themselves by the items chosen for the survey. If the topic is job satisfaction, how can the

reader know whether a survey covered a sufficient range of items to adequately express the respondent's true attitude toward work? How well were survey items written? Were any items ambiguous or vague? None of these questions can be answered from the text of these reports. The fact that most of the surveys found similar patterns of dissatisfiers, suggests that recurring themes cited above may have some degree of validity.

Tests of Predictive Models

Prior to the 1970s, virtually all studies of turnover or absenteeism consisted of bivariate models. In the early 1970s Porter and Steers (1973) called for multivariate methodology so that the study of relationships could progress toward predictive (regression) models. Since then bivariate study designs have given way to multivariate designs employing regression techniques. However, a few bivariate, correlational studies continue to reach publication (Seybolt, Pavett, & Walker, 1978; Taylor & Covaleski, 1985; Vecchio, 1985).

Correlational Studies

Although still representing a relative minority of study designs during this decade, simple correlational studies nonetheless persist. These have attempted to discover new correlates worthy of consideration in the turnover phenomenon. Friss (1982) dissected job

satisfaction into seven different subscales and correlated these with three different withdrawal intention measures. She found only "overall job satisfaction" to correlate strongly with "propensity to leave." Taunton, Krampitz, and Woods (1989a,b) wanted to measure the impact of leadership style, patterns of power and influence upon job satisfaction and retention behavior. They found that perceptions of managers' power within an organization correlated positively with "intent to stay," but not with retention. Taunton et al. found that leader styles fostering decentralized decision-making correlated negatively, both with "intent to stay" and actual retention.

Multivariate studies

Path analysis has been the most frequent application of correlation to multivariate studies. In this methodology, researchers use a series of comparative correlations between independent variables in order to rationalize direction of causation. The result of this method is a series of causal steps in the phenomenon of turnover.

Michaels and Spector (1982) conducted a path analysis using many variables included in Mobley's (1979) turnover model (see Figure 2-2). Organizational commitment was added to the Mobley model, following the trend of recent turnover research. Their sample consisted of 112 mental health professionals in a single facility. Michaels and Spector employed the following twelve variables in their model:

1. Pre-employment expectations
2. Job characteristics (Job Diagnostic Survey)
3. Leader style
4. Age
5. Salary
6. Tenure
7. Job level (supervisory vs non-supervisory)
8. Alternative job opportunities
9. Organizational commitment
10. Total job satisfaction
11. Intent to leave
12. Turnover

Through this process of multiple correlations they found support for causal ordering in the same manner as Mobley's (1979) model. The first four variables listed above, predicted job satisfaction and organizational commitment. Both job satisfaction and organizational commitment predicted intention to quit, which in turn, predicted turnover. Neither salary, tenure, nor job level produced significant correlations.

Curry, Wakefield, Price, and Mueller (1986) studied survey responses from 508 nursing department employees. They found similar support for the Mobley model employing 18 variables. Only four of these were included in Michaels and Spector's (1982) model. Listed below are additional variables employed by Curry et al. in their path analysis:

Job centralization (of decision-making)
Job Routinization
Instrumental communication (about their job and performance)
Promotion opportunity
Organizational size
Distributive justice
Integration (social, within the work group)
education
kinship responsibility

What strikes the attention of the reader is the "laundry list" of variables included in each of the two path analysis studies. Even so, one notes that there are still variables included in the Mobley (1979) model which are missing from both of the studies. Stumpf and Hartman (1984) and Williams and Hazer (1986) produced correlational studies with similar results using 10 additional variables in addition to those listed above. When so many variables are included in a study, chance may intervene as a cause of findings of statistical significance (Nunnaly, 1978). However, when findings among such studies agree, attribution of statistical significance to chance is less probable. Examples include: the consistent positive relationship between "intent to leave" and turnover; between job satisfaction and intent to leave; and between organizational commitment and intent to leave.

Conflicting findings have occurred regarding the relationship of many of the primary variables. Michaels and Spector found no relationship between salary or tenure and job satisfaction. Curry et al. (1986) did find relationships among all three. Three researchers (Bateman & Strasser, 1984; Bluedorn, 1982; Williams & Hazer, 1986) found job satisfaction antecedent to, and a determinant of, organizational commitment. Three others (Curry et al., 1986; Michaels & Spector, 1982; Stumpf & Hartman, 1984) found no causal relationship between them.

One problem with studies of a strictly correlational nature, is the dependence of results upon assumptions vital to statistical inference. Correlational analysis relies upon bivariate normality among each set of paired variables (Neter, Wasserman, & Kutner, 1985; Nunnaly, 1978). If the response distributions of correlated variables have unequal shape, resulting correlations will be lower than if the distributional shapes matched (Nunnaly, 1978). If response ranges are restricted or numbers of subjects are severely limited, the resulting correlations may not be generalizable to the entire population. None of the studies reviewed address the adequacy with which these assumptions were met.

Correlations indicate that a linear relationship exists between sets of variables. Although the ostensible use of path analysis is to explore possible causal relationships, true causation cannot be established by this method (Nunnaly, 1978).

Multivariate Regression Studies

Linear regression poses several advantages over correlational studies. First, only the dependent variable needs to satisfy assumptions of normal distribution, equality of variance along the range of responses, and normal error distribution (Neter et al., 1985). In addition to fewer assumptional problems, regression allows one to compare the relative effects of multiple predictor

variables as each contributes to explanation of outcome variance. Studies involving regression to test predictive models of turnover have predominated during this decade. Table 2-2 lists the authors, subjects, number of model variables and regression models which contributed significantly to model variance.

The greatest amount of explained variance in turnover was obtained by Terborg and Lee (1984) in a study of 65 stores. Dividing each store's employees into management and sales groups, they found up to 60% of turnover was explained for sales persons at a second testing. This highly successful model found demographic variables to be the best predictors. Other variables included "organizational climate," job availability, and store size. The second highest prediction model was also one which used the work group as the unit of study. Prescott (1986) studied 69 nursing units in several hospitals. Out of 14 different variables, she found 9 variables which explained 42% of the variance in turnover for each unit. Eight of the variables were organizational or job characteristics. Only one attitudinal variable entered the equation, ie. group satisfaction (estimated by the head nurse).

Table 2-2. Studies of Turnover Employing Multiple Regression

Studies Using the Individual as Unit of Measure

Author	Subjects	# of Indep. Var's	Findings
Arnold & Feldman (1982)	654 Acctg Profes-sionals	10	model R2=.19: age, job sat, org. commit tenure,intent to search.
Bluedorn (1982)	n=? Ins. Co. emp's	17	model R2=.22: direct effects= age,oppor-tunity,routiniz., intent to leave.
Caldwell& O'Reilly (1985)	108 MBA grad's	5	model R2=.27: met expectations,persnl sources of info,use-fulness model R2=.19:met expectations,formal sources of info,use-fulness.
Curry et Al.(1985)	841 hosp. empl's	16	model R2= .13 & .15 in divided samples model=int. to leave org. commitmnt, profes-sisonalism, integration
Hinshaw & Atwood (1987)	1597 nursing dept. empl's	14	model R2=.02(BSN) =.06(Dipl) (all variables)
Jackson et al. (1986)	248 teachers	23	model R2=n.s.
Keller (1984)	190 mfg empl's	15	model R2=.34 model=low performance absenteeism, health LOC # of kids,job stress, intent to leave.
Lee & Mowday (1987)	445 Finan-cial empl's	17	model R2=.05 model=intent to leave, alt. job opp's
Mowday et al. (1984)	258 patient care empl's	6	patient care model R2=.2 model=intent to stay, org. commit,ease of finding a new job,
	285 clerical employees		clerical model R2=.12 model=intent to leave intent to search

(Table 2-2 continued)

Author	Subjects	# of Indep. Var's	Findings
Pooyan et al. (1988)	253 nurses	16	model R2=.38 model=overall satis., age,marital status, performance constraint full time vs P.T.
Prest-holdt et al. (1987)	942 nurses	11	model R2=.32; model= intention to leave, attitude toward leaving
Price & Mueller (1981)	1101 nurses	17	model R2=.17; model= intent to stay, opportunity,general tn
Sheridan (1985)	84 new empl's, pt. care 271 senior empl's	4	model R2=.21 (new empl's model=absenteeism,group cohesion model R2=.14 (senior emp model=absenteeism, job tension
Stumpf & Dawley (1981)	596 Bank Tlrs	8	model R2=27; model= tenure,difference record, age,absen-teeism, sex,promo-tional increases
Weisman et al.	1259 nurses	20	model R2=.08, .10; model intent to leave,tenure
	Studies Using Groups as Unit of Measure		
Prescott (1986)	69 nursing units	14	model R2=.42; model= proportion of nurses in first position, HM est of staff's job sat. staff-to-pt. ratio, day shift status, wrkng conditions, proport.FT, staff-to-pt ration, noc shift, primary nursing
Spencer (1986)	111 hospitals	17	model R2=.13; model= wage rate,fringes, unemploymt rate, # of grievances, minority employmt, # beds in hosp,# beds in county, # of employee voice mechanisms
Terborg & Lee (1984)	65 stores	4+	model R2 for 4 groups of sales managers= .25, .18, .34, .60 model= Org.climate,job availability demogra-phics,store size

Most studies used the individual as the focus of interest. The range of explained variance in the predictive models was 2% and 6% (Hinshaw & Atwood, 1987) to 38% (Pooyan, Eberhardt, & Szigeti, 1988). In studies using "intent to leave" as a variable, most of the researchers found it to be the strongest predictor. Six other variables consistently entered models significantly:

-opportunity for alternative jobs (Bluedorn, 1982; Lee & Mowday, 1987; Mowday et al., 1984; Price & Mueller, 1981),

-age (Arnold & Feldman, 1982; Bluedorn, 1982; Pooyan et al, 1988; Stumpf & Dawley, 1981)

-absenteeism (Keller, 1984; Sheridan, 1985; Stumpf & Dawley, 1981)

-organizational commitment (Arnold & Feldman, 1982; Curry et al., 1985; Mowday et. al., 1984)

-tenure (Arnold and Feldman, 1982; Stumpf & Dawley; Weisman et al, 1981)

-job satisfaction (Arnold & Feldman, 1982; Pooyan et al., 1988).

It is impossible to determine the relative value of many of the six variables above, since many of the studies containing one do not contain others. The frequency of reported significance for any one variable, eg. absenteeism, is largely a factor of the number of studies including this as one of the variables. Too few studies provide too little overlap of other studies' variable list to get a clear idea of which predictors do the best job of predicting turnover.

Four other problems exist with regard to the

multivariate studies reviewed. They are: multicollinearity, conceptual definitions, measurement error, and statistical assumptions surrounding dependent variables.

Multicollinearity

Most of the studies printed correlation matrices among all variables in the models. Most of the matrices showed large numbers of variables with intercorrelations in excess of r=.5. For example, Pooyan et al. (1988) reported 6 of 17 independent variables correlating r=.50 or more. When two independent variables are intercorrelated, their separate effects upon the dependent variable are hidden within the nature of their relationship (Neter et al., 1985).

Occasionally, multicollinearity may lead to contradictory findings. For example, it is possible for two variables, together, to account for significant effects in a regression model; but individually, they may fail to achieve significant "t-values."

The order in which two intercorrelated variables are entered into the regression may dramatically change the nature of the resulting parameters. Six such intercorrelated variables would complicate interpretation of the results even more. Only one of the studies (Keller, 1984) identified multicollinearity as a limitation to interpretation of results. None of the others did, although virtually all indicated evidence of intercorrelations among variables. In one study not publishing a correlation

matrix, authors assured the reader that in this 20-variable analysis, multicollinearity was "not a problem" (Weisman, Alexander & Chase, 1981).

Conceptual Definitions

The following are 14 of 18 independent variables included in the regression analysis by Bluedorn (1982):

Promotion opportunity
Centralization
Formalization
Instrumental communication
equity
routinization
member integration
environmental opportunity
environmental opportunities foregone
potential role conflict
job satisfaction
organizational commitment
job search
intent to leave

With so many related job characteristics such as "centralization," "formalization," "equity," "member integration," "potential role conflict," and "instrumental communication," the potential for conceptual overlap instruments appears great. It would be of interest to know whether among the variables listed above, fourteen distinctly different concepts were being tested.

Curry et al. (1985) note that in assessing organizational commitment, the subject is often asked about intentions to remain with the organization. It is unclear how much conceptual overlap is actually occurring between this variable and "intent to leave/stay" with which it is

regressed.

Other questions remain regarding conceptual clarity and distinction. One is whether familiar wording between instruments contaminates responses to subsequent measures. This is of particular concern, since so many of the social category variables are similar to one another. Also, a great many individual variables were single-item measures made up by the researchers with no effort to establish reliability or validity. None of these issues was addressed in the studies reviewed.

Measurement Error

Reliability coefficients are customarily reported for each measurement tool involving more than one test item. The reason for this is that reliability indicates the degree to which test items are appropriately grouped to account for unique factors. This error must be considered when interpreting statistics generated through regression. A low reliability within a test instrument effectively increases the amount of random error, thus weakening the power of the study. Cohen and Cohen (1983) even suggest that the sign of parameter coefficients can change direction when unreliable measures are used. The effects of large measurement errors (Cronbach alphas <.70) are compounded when several of the instruments exhibit low measurement reliability. Eighteen studies indicated the following data regarding instrument

reliability:

No data given:	Prescott, 1986; Prestholdt et al., 1987; Terborg & Lee, 1984; Weisman et al., 1981
Ranges extending above and below alpha=.8	Curry et al, 1985; Hinshaw & Atwood, 1987; Taunton et al., 1989)
3 or more scales below alpha=.8	Jackson et al., 1986; Keller, 1984; Price & Mueller, 1981
2 scales below alpha=.8	Bluedorn, 1982; Lee & Mowday, 1987
1 Scale below alpha=.8	Mowday et al., 1984; Pooyan et al., 1988; Spencer, 1986
All scales at alpha=.8 or greater	Arnold & Feldman, 1982; Caldwell & O'Reilly, 1985; Sheridan, 1985

Statistical Assumptions

Regression analysis requires at least three assumptions: normal distribution of dependent variable responses, equal variances over the range of responses, and a normally-distributed error. As an outcome variable, turnover is dichotomous. Therefore, regression is inappropriate because the dependent variable is bounded by the values 0 and 1, while the estimates of the regression model is not (Anderson, 1980). Also, error terms cannot be normally distributed since they, too, can only take on dichotomous values. Since the response curve of a dichotomous outcome variable is S-shaped, outcome probability estimates near the center of the curve will be

linear. Problems occur when outcome estimates fall within the curved portion near high and low ends of the curve. Unfortunately, turnover studies tend to produce outcomes falling closer to the low end of response curves; therefore interpretations of inference may include systematic bias.

Linear logistic regression transforms dichotomous outcome variables in a fashion which solves both problems (Anderson, 1980; Neter et al., 1985). However, only one of the eighteen regression studies reviewed takes account of these assumption violations, or uses linear logistic regression (Lee & Mowday, 1987).

Summary

Multivariate studies employing regression analysis have become the predominate methodology for exploring and predicting turnover. The number of independent variables employed in studies ranges from 5 to 20, causing difficulty in interpreting dissimilar results from multiple research reports. However, a few variables repeatedly appear in studies and show remarkable consistency of prediction for turnover. Intent to leave/stay shows the greatest consistency and power, followed by alternate job opportunities, age, absenteeism, organizational commitment, tenure, and job satisfaction.

In addition to difficulties in assigning relative value to each of the many variables emerging as predictors of

turnover, four other methodological problems exist. The first is multicollinearity, which is rarely addressed by researchers. Second, is a problem of conceptual vagueness, and overlap in the operationalization of many variables. Third, is a failure to acknowledge the effects of measurement error upon statistical inference. Finally, little attention appears to have been given to normality assumptions when applying regression to a dichotomous dependent variable.

Absenteeism

Introduction

Although interest in employee absenteeism has spanned the same period of time as turnover (Brayfield and Crockett, 1955), far less attention has been given to this phenomenon. Early reviews of withdrawal behavior cited relatively few studies of absenteeism and lateness (Brayfield & Crockett, 1955; Porter & Steers, 1973). More recent reviews have avoided the phenomena entirely, focusing solely on turnover (Mobley, et al., 1979; Price, 1977).

In 1977, Muchinsky wrote the first literature review devoted to absenteeism. It was noted that, although research findings were mixed, job satisfaction generally shows an inverse relationship with absenteeism.

More recently, Scott and Taylor (1985) discovered in a meta-analytic review that previous inconsistent findings in the relationship between satisfaction and absenteeism were

due to use of different measures of the two variables. They noted in particular that unreliable satisfaction measures led to a great deal of inconsistency in research findings. Also, they found that much more inconsistency was removed when frequency of absence was used instead of duration.

This review examines more recent studies which explore the relationship between variables other than satisfaction and absenteeism, and between absenteeism and turnover. Nine studies were uncovered and are listed in Table 2-3.

In all the research cited, frequency of absence has demonstrated superiority, both as an outcome, and as a predictor variable. The trend in recent research has turned toward dependence upon frequency as the preferred variable to represent absenteeism (Blau & Boal, 1987). Compared to duration of absence, frequency is a more stable and powerful covariate in studying withdrawal phenomena.

Four of the studies explored predictors of absenteeism or lateness. The remainder studied absence or lateness' effects in predicting turnover. Although four studies included nurses in their subject pool, only one (Larson & Fukami, 1985) studied nurses alone.

Table 2-3. Studies of Absenteeism and Lateness

Authors	Subjects	Independent Var's	Dependent Var's	Statistical Methods
Barhyte, et al., (1987)	8 Nursing Units	experim vs control formalization participation task dimension indexes (3)	formalization absenteeism sick time vacation time	ANOVA regression
Clegg (1983)	406 blue collar	demographics (6) job satisfaction org. commitment	lateness unexc'd absence excused absence turnover	correlation
Eisen-berger, Hunting-ton, Hutchin-son, & Sowa (1986)	71 high school teachers	perceived org. support exchange ideology	absenteeism	regression
Kanfer, Crosby, Brandt (1988)	201 hi-tech empl's	performance tenure grps (3) demographics attendance	turnover	ANOVA regression discriminant-analysis
Keller (1984)	190 mfg empl's	performance absenteeism satisfaction cohesiveness health locus of control competitiveness stress intent to leave demographics	turnover	regression
Larson, Fukami (1985)	104 blue collar 132 nurses	desire to remain ease of movement	excused absence unexcused absence lateness	regression
Rosse (1988)	63 hosp empl'	lateness absence	turnover	correlation
Sheridan (1985)	526 nursing dept empl's	job tension cohesion performance absenteeism	turnover	regression stochastic distribution
Stumpf, Dawley (1981)	596 bank tellers	demographics (4) absenteeism performance (3)	vol turnover invol turnover	regression

Determinants of Absence

Barhyte et al. (1987) attempted to test whether nursing unit organizational structure affected unit job attendance rates among other factors. Their quasi-experimental design studied four experimental nursing units who changed to decentralized unit governance, and four control units. At three successive time intervals, measures were taken of formalization of tasks, sick days, absent days, and leave of absence days. Analysis of variance showed no significant difference at any interval for the three withdrawal measures. Regression analysis of the withdrawal behaviors was performed on the independent variables measured for each member of the 8 units (n=95). The researchers found that participation in decision-making explained a large amount of variance in total sick days and absent days. The study was weakened by low numbers of subjects, low instrument reliabilities (alphas as low as .54), and use of duration rather than frequency measures for absence.

Clegg studied blue collar workers (n=406) in an effort to test the differential effects of job satisfaction and organizational commitment on lateness, excused and unexcused absence, and turnover. He found correlational evidence that organizational commitment was related negatively with turnover. Job satisfaction related negatively to lateness and absence. Absence was related positively with turnover. No information was given with regard to instrument

reliabilities; and regression was not performed.

Eisenberger et al. (1986) tested an instrument of their own design which measured the degree to which employees feel supported by the organization. They studied 71 high school teachers to discover whether perceived organizational support and exchange ideology interacted to affect absenteeism. They found that support and its interaction effects with exchange ideology explained 11% of variance in absenteeism. Their ability to explain so little variance in absenteeism may have been due to the omission of other key predictor variables (eg. job satisfaction, performance, etc).

Larson and Fukami (1985) studied two groups of subjects: blue collar workers (n=104) and nurses (n=132). They explored the differential effects of desire to remain with an organization, and perceived ease of movement among jobs. The two groups of subjects were similar in that desire to remain, ease of movement, and their interaction all significantly predicted excused absenteeism. Blue collar model variance was 11% and the nurse sample was 13%. None of the variables explained unexcused absenteeism; and ease of movement was the only predictor of lateness in the blue collar sample. As with Eisenberger et al.'s (1986) study, many key predictors were omitted from the study model.

Absence as Determinant of Turnover

All five of the studies employing absence as one of the independent variables to predict turnover found support for the significantly positive relationship between these two variables. However, each study uncovered interesting differential data regarding how absence interacts with other variables to help determine turnover.

Keller studied manufacturing employees (n=190) and found that six variables accounted for 34% of the variance in turnover. The strongest predictor was job performance (R2=.11). Frequency of absence was second, explaining 8% of the total variance. What is surprising is the relatively low degree of explained variance exhibited by "intent to leave" (R2=.03) when combined in a regression model which includes performance and absence. This study was weakened by the fact that 4 of the 9 measures had reliability coefficients less than .80.

Similarly, Stumpf and Dawley (1981) found that measures of employee performance ranked as the highest predictors for turnover in their regression model (n=596 bank tellers). They combined demographic factors, absenteeism, and performance in a model which used both voluntary and involuntary turnover as outcomes. Performance, tenure, and age were the top three predictors for voluntary and involuntary turnover. A smaller, but significant effect overall, was exhibited by absenteeism. Absenteeism

displayed a stronger effect upon involuntary turnover than voluntary. This study also omitted key variables from its design. One might have expected the researchers to include "intent to leave," organizational commitment, or satisfaction.

Kanfer et al. (1988) found that the ability of absenteeism and job performance to predict turnover, differed among tenure groups in a "hi-tech" manufacturing facility. Only the tenure group of between 6 and 12 months of service exhibited a significant degree of turnover predictability from these variables. The tenure groups of less than 6 months, and greater than 12 months, could not be predicted as effectively.

Discriminant analysis in Kanfer et al.'s (1988) predicted stayers' and leavers' group membership correctly: 68% for tenure groups of less than 6 months, 82% for 6-12 months, and 91% for greater than 12 months. The study suffered because of its sampling method. Only eighty of the respondents were actually current employees of the company. The remaining 201 were former employees who were identified by current employees as persons who had left voluntarily. The potential for systematic bias in subject selection seems particularly high, and interpretation of results particularly tenuous.

Sheridan's (1985) study of 526 nursing department employees broke new ground in the study of employee

withdrawal behavior. By applying stochastic analysis and algebraic transformations to absenteeism, job performance, and turnover, he found evidence that the three variables may be discontinuous behaviors of the same withdrawal phenomenon. For the first time, Sheridan produced evidence which might explain other researchers' inability to isolate consistent predictors of turnover. If turnover were only part of a more global phenomenon, then reliable predictors of the global phenomenon might only occasionally predict that portion which is turnover. In his paper, Sheridan (1985) concluded that the global phenomenon of withdrawal may be a complex of behaviors (ie. performance, absenteeism, and turnover) which are temporally linked to one another. Although his study employed a large number of subjects and his measurement tools were adequately reliable, his list of predictor variables numbered only four. Intent to leave, organizational commitment, and job satisfaction were not included in his model.

Rosse (1988) also found evidence to support Sheridan's (1985) conclusions. He studied records of lateness, absenteeism, and turnover of 63 hospital employees. Correlations were found among the three variables that provided support for the hypothesis that these three behaviors may be progressive phases of the same withdrawal phenomenon. Lateness occurring twice within one week seemed to correlate significantly with subsequent absenteeism.

Absenteeism twice within one week correlated with turnover. However, lateness did not generally predict turnover. It is disappointing that Rosse (1988) included so few subjects in a study model which was no more invasive than scouring a hospital's personnel department records. Also, more information could have been obtained through application of more powerful statistical methods than correlation and descriptive statistics.

Summary

Studies which explore potential causes of absenteeism find reliable predictors among the same as those related to turnover. Job satisfaction, job stress, organizational commitment, age, and tenure, all predict absenteeism.

Absenteeism consistently correlates positively with turnover. It consistently serves as a strong predictor variable when included in regression models for turnover. Recent research even suggests that absenteeism and turnover may be part of a single withdrawal phenomenon.

Research of lateness and absenteeism has been reported far less frequently than that devoted exclusively to turnover. This was true since researchers first drew attention to absenteeism in the 1940s (Brayfield and Crockett, 1954). It remains true in the 1980s.

Besides being fewer in number than turnover, absenteeism studies have failed to keep pace by including comprehensive groups of predictor variables in their design.

Often, studies of absenteeism fail to employ multivariate regression techniques. Thus, less information is provided from available data.

Discussion

Recent research of absenteeism and lateness has generally uncovered the following trends. First, the same determinants of turnover predict both lateness and absenteeism. Second, the relationship between absenteeism and turnover may be more complex than merely one of covariance. These behaviors, and several others, may all participate as parts of a more global phenomenon of employee withdrawal. Whether such a global phenomenon exists, and how many behaviors are included, is not yet clear from existing research.

Most contemporary withdrawal research employs multivariate designs and higher-order statistical analysis. A few exploratory studies continue to limit their design to correlational analysis. These studies fail to exploit all of the potential information available from a researcher's data. Continued emphasis is needed on multivariate design in studies of all forms of employee withdrawal.

Design weaknesses have plagued many of the research designs reported above. These weaknesses threaten the validity of inferences drawn from the data. Turnover research suffers from at least four potentially damaging

issues. First, the strength of much multivariate turnover research is weakened by unresolved issues of multicollinearity. Second, measurement error has often been problematic. Unreliable measurement instruments continue to be widely employed. Third, there is evidence of substantial overlapping of concepts among separate measures used within a single study. The affects of this overlap upon model validity has not been adequately addressed. Finally, the use of linear regression may not be appropriate when applied to dichotomous dependent variables such as turnover. Future research involving turnover should explore transformations of this dependent variable which allow statistical assumptions to remain inviolate.

Research involving withdrawal behaviors other than turnover, have been relatively few in number (eg. absenteeism, reduced performance, etc). Their design weaknesses have been different from those troubling turnover research. Their primary weakness arises from employing too few variables in study models. With the exception of one study (Keller, 1984), most absenteeism and lateness research has employed fewer than six independent variables.

There has been one study design deficiency common to both turnover and absenteeism research. Each often fails to incorporate variables of high explanatory power which researchers in studies of alternative withdrawal behavior have uncovered. For example, several absenteeism studies

found performance to predict the highest degree of variance in withdrawal behaviors. Performance has rarely been included in turnover research. Intent to leave is turnover's strongest predictor; and yet it is rarely included in absenteeism research. What makes this an important issue is the evidence that turnover and other forms of withdrawal may be subcategories of a larger withdrawal phenomenon.

Results of multivariate research, although varying across studies, have produced a list of consistently occurring variables which relate to both turnover and absenteeism. The following lists some of the more prominent variables:

opportunity for alternative jobs
age
absenteeism
organizational commitment
tenure
job satisfaction

Surveys of nurse job satisfaction or reasons for leaving a job produce overlapping lists of factors across samples. Variables from such surveys which consistently affect employee withdrawal behavior are listed below:

family commitments
relocation
Inadequate staffing
heavy workloads
inflexible work schedules
poor relationships with management

The two lists are not the same. How are administrators, who must apply scarce resources toward

retention programs, to reconcile these differences when they make program decisions? What would help administrators most would be a convergence of the two research traditions, providing a common set of findings suitable for addressing all probable causes of employee withdrawal.

Employee satisfaction surveys fail to tap factors which may unconsciously act upon the employee to determine that attitude. It is the affect or attitude which presumably affects work performance, tardiness, absenteeism, or the decision to quit. Multivariate predictive studies of turnover and absenteeism have the ability to tap a greater number of factors which may operate outside the consciousness of the subject. They include potential variables which <u>might</u> contribute toward causing withdrawal behaviors, and then draw inferences as to their effects. Since inferential studies include so many more indirect factors related to turnover than merely job satisfaction, it is understandable that the lists of predictors may differ from the two methodologies.

Nonetheless, results of satisfaction surveys support some, if not all of the findings of multivariate study models. Job and organizational characteristics both contribute to satisfaction in either methodology. And these serve as important intermediary factors in multivariate research.

Conclusion

Public policy regarding the current nursing shortage has prescribed that attention be given to programs aimed at nurse retention. Scientific study of employee withdrawal has a fifty year history, and many important insights into the phenomenon have emerged from the literature. It is this body of knowledge which must guide planners and administrators of retention programs if they are to achieve program goals. This paper reviewed, compared, and critiqued some of the most recent research.

Significant weaknesses and strengths were found among the results of reports published during the 1980's. With regard to statistical methodologies, there is much to recommend a multivariate approach to research design. Variables which consistently appear to act as predictors in all forms of withdrawal study design need to be combined in studies of any one form of withdrawal. The phenomena of withdrawal are complex and the study design need to reflect this fact of life.

Since dependent variables in withdrawal research are often dichotomous (turnover and SRP in particular), techniques such as logistic regression, discriminant analysis, or analysis of covariance might be more appropriate than linear regression or bivariate correlations.

Finally, there is a need for more research combining a

variety of withdrawal behaviors within a common study design. Too little is understood regarding the interaction of intrinsic or extrinsic variables upon employees' choices between competing forms of withdrawal.

CHAPTER THREE

RESEARCH METHODOLOGY

Introduction

Past research concerning withdrawal behavior has often focused solely on one withdrawal behavior or another eg. turnover, absenteeism, lateness, or reduced performance. There is little understanding regarding how they may interact or compete for expression within the mind of an individual employee. Furthermore, there is known to exist one withdrawal behavior that has never been studied within the context of employee withdrawal. That behavior is systematic reduction in participation (SRP). It is the act of beginning employment at one level of participation, and later reducing the number of scheduled hours permanently.

The research described below explores relationships among several withdrawal behaviors, including SRP. The two others are turnover (voluntary termination) and absenteeism (any unscheduled absence). Systematic reduction in participation is studied first, as a behavioral analogue to turnover; and finally, as turnover's behavioral antecedent.

Design

The basic design was that of a retrospective cohort study of bedside registered nurses in acute care hospitals. The cohort consisted of all full-time registered nurses hired during the calendar years, 1983 and 1984. There exists a body of evidence to suggest that full time nurses

respond differently to job role expectations than part-time nurses (Pooyan et al., 1988; Prescott, 1986; Prestholdt et al., 1987; Price & Mueller, 1981). For this reason, the subject selection was restricted to full time nurses.

Each nurse's work schedule was tracked for five years from the date of hire. Five years was chosen because most voluntary turnover behavior occurs within the first 60 months of employment (Sheridan & Abelson, 1983).

It was theorized that choices between turnover and SRP might be affected by the length of time a nurse worked at an institution (tenure). As a nurse develops stronger social, emotional, and economic ties to an organization, the choice to leave may seem more undesirable than merely reducing one's participation to part-time or casual work (Price & Mueller, 1981). In addition, because few studies in the past have examined the effect of time over so long a period, a need was perceived for such an exploration.

Methodological Considerations

Model Stability

The theoretical model chosen for this study is an adaptation of that by Mobley et. al (1982). Figure 3-1a illustrates a simplified Mobley model alongside that of the author (Figure 3-1b).

THE MOBLEY MODEL (of turnover)

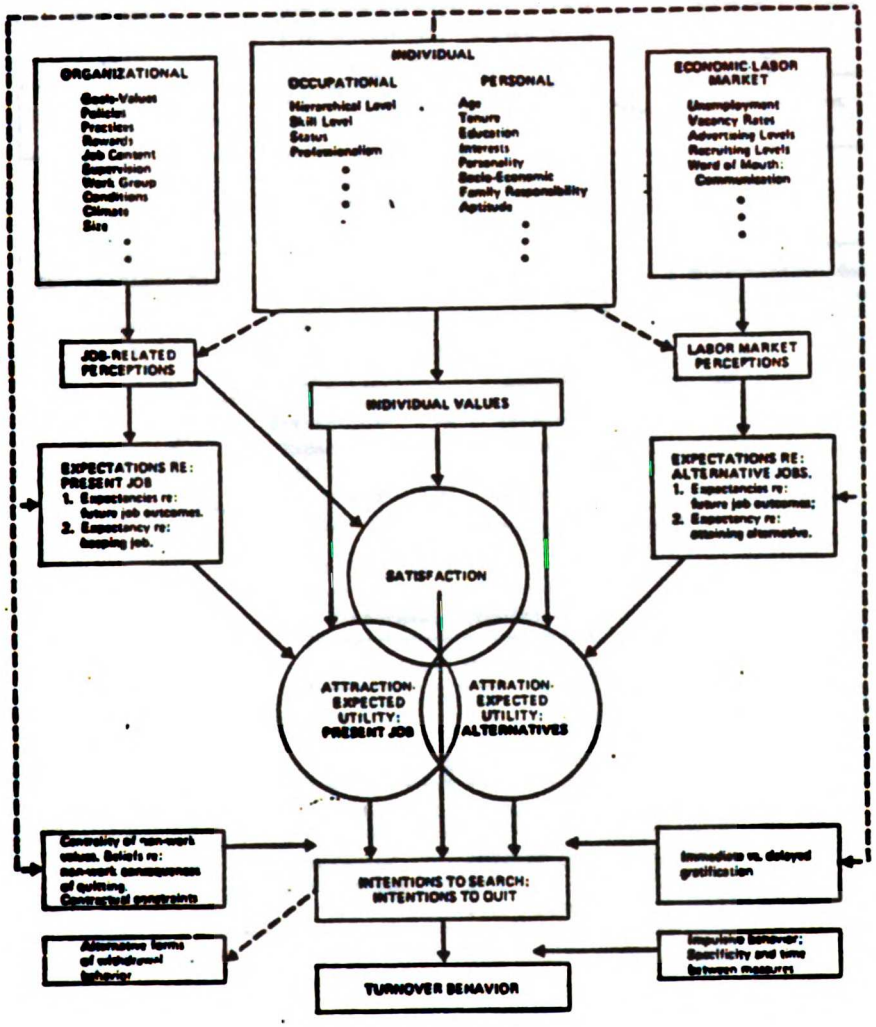

Figure 3-1a. Comparison of the turnover model (Mobley et al., 1979), and the author's withdrawal model.

AUTHOR'S MODEL

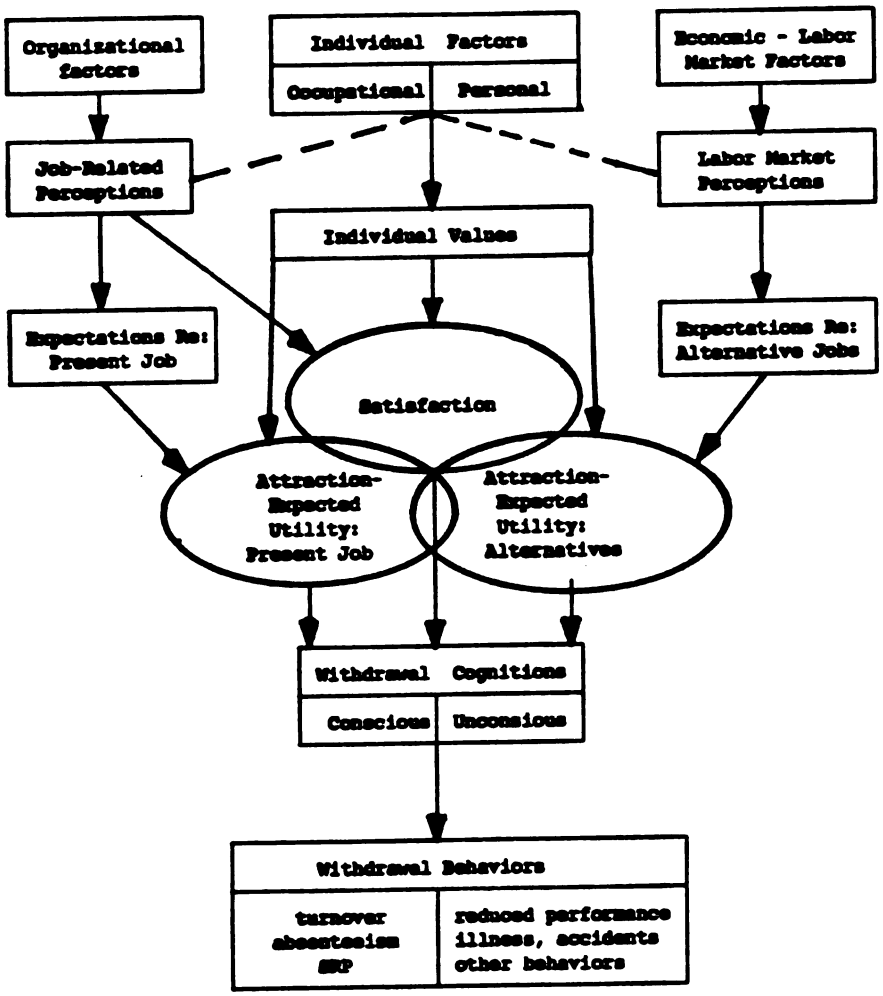

Figure 3-1b. Comparison of the turnover model (Mobley et al., 1979), and the author's withdrawal model.

One is immediately aware of the absence in these diagrams of the indirect effects which personality, individual attitudes, and values may exert at each intermediate stage (see Figure 3-1a). These effects have been eliminated from the study model in order to focus on direct effects only.

There is an assumption in Mobley's model which implies that turnover can be meaningfully studied in isolation from "other withdrawal behaviors." Mobley's model proposes that the cognitive-affective response to satisfaction, causes one to consider termination alone. This event also occurs prior to contemplation of "alternative forms of withdrawal."

In contrast, the incumbent model asserts that the cognitive-affective factors cause one to consider a wider range of possible responses. Possible responses include psychological as well as behavioral. They may be conscious or unconscious in form. This range is limited solely by one's imagination and experience. The question for researchers may not be <u>which</u> behavioral response an employee chooses, but whether <u>any</u> behavior will be chosen.

This research is the first of its kind to compare two potentially competing outcome variables, SRP and turnover. The manner in which SRP data will behave in a regression model is unknown. For this reason it was seems advisable to maximize the intrinsic stability of the study model by two factor selection criteria.

The first criterion specifies that factors chosen for inclusion would be those which can be most easily validated. This would lead to the exclusion of attitudinal and affective variables, such as "individual values," "job satisfaction," "job and labor-market perceptions," and expectations regarding present or future jobs. The resulting model would be smaller than many prior withdrawal models, and as such, might lose predictive power. For this reason, a second criterion was employed to compensate for the power loss.

Criterion two stipulated that each factor have an historically significant relationship with turnover and absenteeism in prior research. Thus, the final list of factors (independent variables) were demographics. They included gender, age, job experience, organization, unit, and shift. Additional independent variables which fit the two selection criteria were tenure and absenteeism.

Another rationale for relying heavily upon demographic variables, is that many turnover models tested by others have demonstrated that demographics alone, account for a great deal of explained variance in turnover. For example, Arnold and Feldman (1982) found that demographic and tenure variables accounted for 59% of their model's explained variance (see Table 3-1). This finding was duplicated by Terborg and Lee (1984), and Prescott (1986).

Table 3-1

Percent of Explained R^2 Contributed Exclusively by Demographic Variables in Three Turnover Studies

Study Authors	Total R^2	Demographics R^2	% of Total R
Arnold & Feldman (1982) (age, marital status, gender, # of children)	.44	.26	59%
Terborg & Lee (1984) [4 sets of subjects] (age, education, tenure, time in present assignment, ability)	.25 / .18 .34 / .60	.10 / .08 .21 / .34	40% / 44% 62% / 57%
Prescott (1986) (proportion of nurses in 1st position, patient ratio on day shift, proportion staff working full time, patient ratio on night shift, primary nursing)	.42	.27	64%

Variable Selection

Gender

Gender has not been widely employed in turnover research involving nurses. Since males account for only 3% to 6% of nurses, they are customarily dropped from most study designs (Cotton & Tuttle, 1986; Mobley, 1982). Although this factor only weakly fulfilled criterion 2 (above), it fit criterion 1 very well. It was also believed that the model would benefit from use of gender as a control

variable.

Age

Age was chosen because it fit both criteria completely. Age is easy to determine, and it consistently correlates negatively with both, turnover and absenteeism (Cotton & Tuttle, 1986; Mobley et al., 1979); Muchinsky & Tuttle, 1979; Pooyan et al., 1988; Price & Mueller, 1982; Spencer & Steers, 1981).

Hospital

Since there were five hospitals involved, it was determined that the study would benefit by use of "organization" as a control variable. In this way, each institution's uniqueness could be evaluated, and controlled for.

This study is itself unique in this respect. Of eleven prior studies utilizing two or more sites, none controlled for unique differences among organizations in regression analyses (Abelson, 1987; Curry et al., 1985; Hinshaw et al., 1987; Larson & Fukami, 1985; Mowday et al., 1984; Prestholdt et al., 1987; Price & Mueller, 1981; Sheridan, 1985; Spencer, 1986; Wakefield et al, 1988; Weisman et al, 1981). This is not to imply that organizational variables have been absent from research models. In a few studies, organizational variables, shared by one or more

institutions, were employed (Curry et al, 1985; Spencer, 1986; Wakefield, 1988). In two studies, separate analyses were conducted between two institutions, and the results were compared in descriptive fashion (Larson & Fukami, 1985; Weisman et al, 1981).

Service Unit

Several researchers have attempted to discover the effects of work in one or another specialty care unit (Hinshaw et al., 1987; Weisman et al., 1981). Hinshaw et al. (1987) found the effects of service unit varied depending upon the educational preparation of nurses. They found that critical care assignment correlated positively with "professional job satisfaction," which negatively affected "anticipated turnover." On the other hand, diploma graduates' assignment to obstetrics units was associated with increased "professional job satisfaction." Weisman et al. (1981) found the rate of turnover to be up to two times higher in certain kinds of units in five hospitals (medicine and rehabilitation-neurology), than in others (surgery and gynecology). In this study it was decided to control for, and examine the effects of three kinds of service: medical-surgical, maternal and child, and critical care.

Shift

A few studies have also controlled for differences in

shift assignment. Weisman et al. (1981) studied the effect of either being assigned to a rotating or a fixed shift. They found a non-significant negative relationship between working on rotations and turnover.

Both, Hinshaw et al. (1987) and Prescott (1986) chose days, evenings, and nights as a three-shift category. Hinshaw et al. found different shifts to correlate positively with "professional job satisfaction" (and negatively with turnover), depending upon educational preparation and unit specialty. Night shift correlated positively with job satisfaction among baccalaureate-prepared nurses, and evening shift with critical-care nurses. Prescott did not directly study shift assignments, but instead used shift-relative nurse-patient ratios. She found staff patient ratios on nights to be positively related to turnover, and day shift ratios to be negatively related.

Because there is evidence for differential effects of shift, and because very little is understood about such relationships, this variable was chosen for the current study. The three-shift design of Hinshaw was adopted, because its presence is ubiquitous among hospitals.

Job Experience

Two studies were found which suggested that there may be a connection between differences in job experience and

withdrawal behaviors (Price & Mueller, 1981; Weisman et al., 1981). This variable was selected because it was verifiable, and it was believed necessary for a control.

Tenure

Tenure consistently correlates negatively with turnover (Cotton & Tuttle, 1985; Mobley et al, 1979; Muchinsky & Tuttle, 1979). In addition to its ease of verification and consistent relationship to withdrawal behaviors, it was thought that tenure plays a differential role in the choice between SRP and Turnover.

Absenteeism

Absenteeism is the only other withdrawal behavior besides turnover to receive much research attention (Cotton & Tuttle, 1985; Muchinsky & Tuttle, 1982; Porter & Steers, 1973). Occasionally, absenteeism has been studied as an outcome behavior, apart from turnover. At other times, it has been studied as an antecedent to turnover (Muchinsky & Tuttle, 1982; Porter & Steers, 1973). Porter and Steers (1973) noted that absenteeism and turnover share similar predictive elements. Examples include job satisfaction, satisfaction with supervision, job autonomy, tenure, size of work group, age, family size, and satisfaction with pay and promotion. This finding led them to recommend testing combinations of withdrawal behaviors in predictive models.

So far, no consensus has developed among researchers as to whether absenteeism should be treated as an outcome or predictor variable in the withdrawal phenomenon.

In the present study absenteeism is treated as an antecedent to both turnover and SRP. Although it may exist as a behavioral analogue to both, it has consistently accounted for relatively high amounts of explained variance in regression models for turnover. This study asks the question: " If absenteeism acts as a predictive factor for turnover, does it do likewise for any other withdrawal behavior, ie. SRP?"

Turnover

Identifying which manifestation of turnover should be included in tallying turnover statistics has been a problem. Attempts have been made to isolate "controllable" instances of termination. After all, it is only for these instances of turnover that useful interventions can be planned. For example, if a nurse quits because her husband is moving across country, this cause of turnover is not considered controllable by management. On the other hand, the nurse quitting because she felt unmotivated by her work situation, might be controllable.

The problem in making such discrimination for research purposes, is that the distinctions are not often clear. Cotton and Tuttle (1985) note that most scientists limit the

measure of behaviors to "voluntary" turnover. It is believed that among voluntary terminations, one will capture virtually all of the cases which might conceivably be under the control of management. Mobley et al. (1979) note the difficulty that researchers have in deciding whether or not a particular behavior is voluntary or involuntary. They observe, for example, that some regard pregnancy as involuntary, and others do not.

On the surface it would seem logical to classify terminations on the basis of exit interviews. However, Lefkowitz and Katz (1969) uncovered evidence which casts doubt upon the validity of information shared during exit interviews. They speculated that employees often fail to behave candidly at such interviews out of a fear of "burning bridges."

The inability to validly discriminate between, and control for withdrawal behavior with different causes, weakens the predictive model. The effect is an increase in "noise" or error measurement, and reduction of explained variance. Nonetheless, it was believed that any attempt to validly discriminate among causes of turnover (or SRP) would prove fruitless. For this reason no attempt was made to distinguish between causes of employee termination. All cases of termination were treated equally.

Turnover was measured as the event of terminating employment with the hospital. Transfers within each

institution would not be considered as a turnover event.

The following is a summary of independent and dependent variables chosen for the study:

Independent Variables

1) Gender
2) Hospital
3) Age at date of hire
4) Experience (whether the nurse was a new graduate or had held at least one other nursing job)
5) Unit (type of service on which the nurse worked prior to withdrawal or at 5 years)
6) Shift (shift normally worked at the time of withdrawal or at 5 years)
7) Absenteeism (measured as the comparison from a baseline measure to immediately prior to withdrawal or 5 years)
8) Tenure (measured as the number of months from the date of hire to either withdrawal or 5 years)

Dependent Variables

9) turnover (episode of terminating employment)
10) SRP (first episode of reducing scheduled hours of work to some permanent level below that at which the nurse began employment)

Measures

The measurement of age, gender, and hospital was relatively straight forward, and could be determined from human resources departments. However, a choice was needed whether to select unit and shift at the time of hire, or immediately prior to a withdrawal event (or 5 years' employment). It was determined that since factors leading to choice of withdrawal behavior may depend in part upon these two factors, the unit and shift closest to the event was chosen.

The categorical independent variables, hospital (HOSP), unit (UNIT), and shift (SHIFT) were dummy-coded, because all contained more than two categories. The five hospitals were dummy-coded as HOSP1, HOSP2, HOSP3, and HOSP4 with hospital 5 as the reference category.

Unit was classified into three categories: 1 = medical-surgical units; 2 = maternal and child units; and 3 = critical care units. All units were assigned one of these classifications. Units classified as "1" or "2" were then dummy-coded as MEDSRG (1,0), and MATCHLD (1,0), respectively-- critical care ("3") served as the reference group.

Shift was divided into three categories, according to whether the subject spent a majority of time working during either 0700 - 1500 hours, 1500 - 2300 hours, or 2300 - 0700 hours. Day shift (DAYS) and evening shift (EVES) were

dummy-coded with night shift as the reference level. An illustration of the coding for all variables using the SAS format can be found in the Appendix (p. 173).

Neophyte nurses customarily approach their first job with different job expectations than experienced nurses. Experienced nurses are more likely to feel confident in the nursing role, and maintain a more global perspective of the job market. To control for these differences nurses were to be classified as either new graduates, or experienced to the extent of having had at least one prior hospital employer (EXPER=1,0). This information was derived from human resource information, and from reports by hospital staffing supervisors.

Absenteeism was measured as the change in number of unscheduled absences from a baseline within months number six and eight of employment, to two months preceding the first occurrence of a withdrawal event. In the past, most research has merely chosen the frequency of absenteeism at one point, ie. the period immediately preceding withdrawal. This fails to take into account each subject's individual proclivity for absenteeism. By employing a change score, this research controlled for such variations among subjects. In other words, one who was traditionally prone to call in sick needed to increase his or her frequency in order to show evidence of a relationship between absence and withdrawal.

The period chosen for baseline absence rate coincides with the end of most hospitals' probationary period. It was anticipated that by this time absenteeism would have stabilized. No attempt was made to distinguish between "excused" or "unexcused" absence. Previous research has found "frequency" of absenteeism to be a superior predictor of turnover (Scott & Taylor, 1985). Therefore, frequency of absence, rather than duration, was chosen for analysis.

Tenure was measured as the number of months elapsing from the date of hire, to the first event of SRP, termination, or 5 years' employment.

Systematic reduction in participation (SRP) was marked as the first day of the first week during which one's schedule reflected a permanent reduction in work hours. This was to be measured in tenths of one full time equivalent (FTE). If a person returned to the same (or higher) level of participation at any time within the 5 year study period, the person was deemed <u>not</u> to have reduced participation (SRP). The amount to which a person decreased participation at this first juncture was also recorded. Absenteeism associated with this event, was that which immediately preceded the <u>first</u> incidence of SRP.

Other market area and organizational data were gathered in order to interpret any differences in the above measures which occurred between institutions. This included hospital bed size (total staffed beds-- currently and in 1983),

market area "ease of finding employment," and the existence of nursing schools or nearby hospitals. This data was gathered via semi-structured interviews with directors or assistant directors of nursing from each institution.

Multivariate techniques were to be applied to assess relationships between data, all of which were obtained from secondary sources.

Subjects

Registered nurses hired at full time during the 24 months of 1983 and 1984 were chosen for study. "Full time" was determined to occupy a range of 32 to 40 hours per week (.8 to 1.0 FTE). Only nurses hired for bedside care were selected. Individual work schedules for all subjects were examined for 5 years from the date of hire. The study began with 649 subjects at five hospitals in northern California. By the time of baseline absence measures (ie. between 6 and 8 months' employment), greater than one third had either quit or reduced their levels of participation below .8 FTE. The remaining 404 subjects were chosen for analysis.

The first subject chosen was hired in January, 1983; and the last subject's 5-year anniversary was in December, 1989. Thus, complete work schedules were needed for 7 consecutive years at each institution.

A convenience sample of institutions was used in the study. This was decided, because of two factors limiting participation by candidate organizations. First, it was not

expected that many hospitals would retain so many years' work schedules. Secondly, it was anticipated that many hospitals' human resources departments would object to sharing personnel data with an outside agent.

Vice presidents or directors of nursing services were invited to participate via query letters. Copies of the research protocol were included with each invitation to participate. A copy of the query letter in included in the Appendix (p. 167).

Each participating hospital was subsequently visited by a two-person research team. Subjects were chosen from staffing and human resource records of new-hires for the years 1983-1984. In order to remain a viable subject for study, each nurse needed to remain at full time levels through the eighth month of employment. This was necessary in order to establish baseline absenteeism. Thus, a significant number of potential subjects would drop out of the study either due to early termination, or early SRP. Schedules for each remaining subject were then studied for 5 years or until termination. At each event (first SRP, termination, or 5 years' employment), prior two-month schedules were examined in order to count the associated absenteeism. Absenteeism scores were determined by subtracting the number of absences prior to the event from the baseline number.

Procedure

Most data relating to absenteeism, turnover, and SRP were collected from monthly staffing sheets stored by each hospital. In some cases the staffing sheets were kept within staffing offices, and in others they were stored in warehouses. Schedules were nearly always available for in-patient units. Since operating room and emergency room schedules were often not saved by the central staffing offices, subjects assigned to these units were not included. Every unit was assigned one of three classifications: medical-surgical units, maternal and child care, and critical care. Pediatric intensive care was classified as critical care instead of maternal and child. One the other hand, labor and delivery was classified as maternal and child, rather than critical care.

Shifts were assigned according to the shift on which most time was spent working during 7 - 3, 3 - 11, or 11 - 7 periods. Hence, one who worked 12-hour shifts from 11 pm to 11 am, would be classified as "nights" ("3"). One working from 3 pm to 3 am would be classified as "eves" ("2"). The shift worked, as well as the unit worked, was that on which the person remained at the time of termination, SRP, or 5-years. When nurses transferred to other units, they tended to remain within the same category (Med/surg, Mat/child, etc.). However, shift changes were extremely common.

Subjects were selected at each hospital according to

the most readily available source of information. Most hospitals were unable to generate a list of nurses hired full-time for the years 1983 and 1984. Lists of new-hires for such hospitals were generated by scanning monthly staffing schedules for nurses appearing for the first time, and whose schedules included codes for orientation days. The date of hire was determined either from specific notation on schedules, or from the first day of orientation. Care was needed to ensure that newly-orienting nurses were not merely transferring from other departments.[4] Potential subjects' initial work schedules were then examined to determine full-time participation (scheduling at least 64 hours per two-week period). From the list of those hired during the two years for selection, and who began working at the level of .8 FTE or higher, further screening was required.

Each nurse's monthly schedule was examined between the sixth and eighth month of employment. If a nurse had quit or reduced scheduled days below 8 days per 2 weeks (or 64 hours), that subjects was dropped from the study. The specific level of work at six months (.8 to 1.0 FTE) was used as the baseline measure of participation for subsequent

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[4]This process was tedious. It required examining every unit and shift schedule for the preceding month for appearance of these names. Had hospital human resources information systems been computerized, and information available in a relational database, this process would not have been so tedious. Only Hospital 1 had such a database.

identification of SRP events. For the remaining subjects (n=404), baseline absenteeism was determined.

Unscheduled absence was counted for the entire period between the beginning of month six and end of month eight. Absences were identified by specific codes at each hospital. In every institution it was easy to determine whether absences had been pre-scheduled or not. In a very few cases (<5%), changes had been made illegibly, so staffing personnel were asked to give a "best guess" estimate of the nature of such events. When a code or notation was included, indicating that the absence was requested by the institution, absences were not counted. Only frequency of absence was to be used in the analysis. Several days of unscheduled absence counted as only one episode, if the days were consecutive.

Each nurse's work schedule was then traced for 5 years from the date of hire. At any point during which the number of scheduled work shifts decreased by at least 8 hours per two-wekk period, a potential SRP date was established. The first day of the week in which the reduced number of hours was detected was chosen as this date. In order to verify that this event qualified as an SRP, every subsequent schedule until 5 years or termination must have indicated at least this same degree of reduction. The amount of SRP was calculated as the difference between baseline rates of participation, and the newly-established rate. Although

nurses might further reduce scheduled hours, only the first instance was used for statistical analysis. Termination dates were identified by specific entries on schedules as the last day worked.

Absenteeism associated with SRP and termination was determined after the date for these events was identified. Eight weeks of schedules were examined for each person prior to withdrawal events. The number of absences was totalled. This total was then compared to the baseline absenteeism figure, and entered into regression procedures.

Experiential levels were determined in a variety of ways. If staffing personnel recalled individual subjects' work histories, this would determine whether the subject constituted a new graduate or experienced nurse (0,1 respectively). In hospitals which always granted new graduates a 6-week orientation, and experienced nurses much less, this was used to determined experiential level. These determinations were cross-validated with other correlating factors, such as the fact that at one hospital no new graduates are hired to work in the intensive care unit.

Tenure was calculated by subtracting the date of withdrawal event from the date of hire. Age was calculated by subtracting the date of hire from date of birth.

Assumptions

The research reported below assumes that all withdrawal

behaviors will be manifested more or less equally, when a large sample is chosen for study. The research attempts to identify statistically significant relationships between two behaviors, ie. turnover and SRP. It does so by employing a group of demographic and behavioral factors which have consistently demonstrated linear relationships with turnover in past withdrawal studies. One objective was to cast some light on SRP as a withdrawal behavior. Another was to discover whether it might be fruitful to study employee withdrawal as a single, global phenomenon.

Hypotheses and Statistical Plan

Hypothesis One: Absenteeism is positively related to both SRP and Turnover.

In order to discover how SRP functions in relation to turnover, two parallel logistic regression models were tested. Figure 3-2 shows the two models. This research hypothesis would be accepted if both regression models demonstrated statistically significant model variance at the .05 level, and if absenteeism correlated positively with both turnover and SRP. Correlations would be accepted at the .05 level as well. The order of variable entry in this and subsequent regression models follows a hierarchy wherein least controllable factors are entered first.

Model Number One:

TRM=SEX + AGE + HOSP + EXPER + UNIT + SHIFT + FRQABS + TRMTEN

Model Number Two:

SRP=SEX + AGE+ HOSP + EXPER + UNIT + SHIFT +FRQABS + SRPTEN

Where:

TRM= subject terminated employment (1=yes, 0=no)

SRP= subject SRP'ed (1= yes, 0=no)

SEX= gender (1=female, 0=male)

AGE= age (date of hire minus date of birth)

HOSP= subject's institution (1 through 5)

EXPER= experiential level (1=2nd nursing position, 0=new graduate)

UNIT= unit assignment at the latter of each event: SRP, Termination, or 5-years from date of hire. Units were divided into three categories: 1=medical/surgical, 2=maternal and child. 3=critical care (ICU, CCU, Emergency Room)

SHIFT= shift assignment at the time of withdrawal or five years from the date of hire; shifts-- 1=day shift (nurse worked >50% of time during (0700-1500 hours), 2=evening shift (1500-2300 hours), 3=night shift (2300-0700 hours.

FRQABS= change score of from baseline two-month absence (frequency, not duration) to period preceding one of the three events discussed above.

TRMTEN= number of months elapsed between date of hire and date of termination

SRPTEN= number of months elapsed between date of hire and date of SRP.

Figure 3-2. Parallel logistic regression models for turnover and SRP: testing Hypothesis One.

Hypothesis Two: There is no difference in the amount of variance explained if SRP is used either as a categorical or continuous variable.

Since the phenomenon of SRP has never been previously studied, there was no way to know whether it might be more fruitful to use SRP as a categorical variable (as with turnover), or as quantitative (as with absenteeism). In order to answer this question, parallel regression models were tested using the same regressors on SRP in each condition (see Figure 3-3). Linear regression was employed for the quantitative state, and logistic regression for the categorical. This hypothesis would be deemed supported if both models demonstrated statistical significance at the .05 level.

Model Three:

AMTSRP=SEX + AGE + HOSP + EXPER + UNIT + SHIFT + FRQABS + SRPTEN

Model Four:

SRP=SEX + AGE + HOSP + EXPER + UNIT + SHIFT + FRQABS + SRPTEN

Where:

AMTSRP=difference in tenths of 1.0 FTE between the level at baseline and the first event of SRP

Figure 3-3. Linear and logistic regression models for comparing model effects using quantitative and categorical forms of the dependent variable (SRP): testing Hypothesis Two.

Hypothesis Three: Within a population of nurses: a) tenure is positively related to SRP, and b) negatively related to turnover.

This hypothesis examines the differential effects of time (tenure) upon these two withdrawal behaviors. In particular, it has been postulated that SRP is more likely to occur as an employee's length of service increases. The belief is that as a person extends his or her relationship with an institution, the person becomes more socially, psychologically, and economically dependent upon the work group, work role, or the employer. This leads to one experiencing a stronger motivation toward remaining a part of the organization, and more likely to select alternative forms of withdrawal.

A model was designed which treated termination and SRP as two opposite conditions: terminated only, and reduced schedules (SRP) only. The resulting model would then discriminate between these two pure events. One result of this was the elimination of all cases wherein a person either did both, SRP and termination (TRM), or neither one. They were coded thus: terminated only (TRMVSRP=1), and SRP only (TRMVSRP=0) (see Figure 3-4). This reduced subject size was then entered into a logistic regression. In this manner all factors which would demonstrate predictive significance, would act as discriminating factors between these two withdrawal conditions. Hypothesis Three would be

accepted under the following conditions: tenure is a significant factor at the .05 level; and the sign of the coefficient would be negative.

Model Five:

TRMVSRP=SEX + AGE + HOSP + EXPER + UNIT + SHIFT + FRQABS + TENURE

Where:

TRMVSRP= termination only= 1, or SRP only=0

TENURE= tenure measured at either of the two events

Figure 3-4. Logistic regression model testing the differential effects of time (tenure) upon choices to withdraw completely (turnover), or partially (SRP): a test of Hypothesis Three.

Hypothesis Four: There is no linear relationship between SRP and turnover.

The author has theorized that SRP and turnover are analogous withdrawal behaviors which compete for expression in response to similar antecedent factors. One would expect the two to occur relatively independently, although the act of reducing participation does not preclude subsequent termination. Nonetheless, once it has been demonstrated

that SRP and turnover are associated with the same antecedent factors (as in Hypothesis One), it would be instructive to note the degree to which the two may exhibit independence from one another in a potentially causal relationship.

For this reason a final logistic regression model was developed which included SRP as an independent variable within the form of Model 1 (Figure 3-2). Figure 3-5 illustrates this full model. The research hypothesis number four will be accepted if SRP fails to contribute to the model Chi-square at the .05 level.

Model Six:

TRM=SEX + AGE + HOSP + EXPER + UNIT + SHIFT + FRQABS + TRMTEN + SRP

Where:

All variables are measured as in previous models

Figure 3-5. Logistic regression model including SRP as an independent variable: testing Hypothesis Four.

Organizational demographics beyond the designation of each institution were not included in regression models, as they would contribute redundancy. The intent was to keep

regression models relatively simple. Also, no factors were eliminated from any of the models, despite their relative lack of statistical significance. It was decided that each was an important control variable even if not a predictive one.

Missing Data

Data were missing for birthdays from Hospitals 4 and 5. Since the average age for all subjects was 28.2 years, this value was inserted wherever a missing birthdate occurred. Frequency of absence data were missing for approximately 30 subjects from Hospital 1. Just as with the variable AGE, the average absence frequency, 0 shifts, was substituted whenever this statistic was missing.

Limitations

The primary source of error was inherent in sample selection. Not only were hospitals volunteers, they represented hospitals with a penchant for retaining very old employee records. Since the incidence of SRP could not be predicted, it was not known how many subjects were needed in order to attain sufficient statistical power to adequately test the research hypotheses. Four hospitals of sufficient size to produce at least 800 potential subjects (new-hires during the two years for selection) was thought necessary in order to produce at least 100 subjects who might manifest each of the behaviors, ie. SRP, turnover, and neither one.

This study achieved the goal of 100 subjects without the necessity of beginning with 800 subjects. Two hundred and twenty-eight persons terminated, 161 reduced participation (SRP), and 98 did neither.

The substitution of average values for missing data increases the amount of error in the regression. The ability to account for model variance in these variables is reduced, and this may have the effect of increasing the likelihood of a type II error.

Due to a lack of prior research evidence, it was impossible to accurately predict how many might actually exhibit SRP, or whether selecting the first episode of SRP was more useful than some later SRP event (eg. selecting the event producing the greatest drop in participation).

Finally, many of the schedules and personnel records included interpretive symbols whose application could not be reliably determined. The extent to which this may have introduced error undoubtedly varied from hospital to hospital (less than 2% of cases in any one hospital); and the magnitude of the effect cannot be determined.

Summary

This study was designed to explore a group of questions regarding the relationships between three withdrawal behaviors. It was intended to help discover whether SRP functions as an independent, behavioral analogue to turnover; or merely as an antecedent in the behavioral chain

of events leading to termination.

The design was set to avoid several criticisms of prior withdrawal behavior research. Rather than focusing solely on one single withdrawal behavior, three were studied together (absenteeism, SRP, and turnover). Models were developed to incorporate factors which consistently demonstrate predictive power when used separately in studies of absenteeism and turnover. Objective measures were used to avoid problems of validity inherent when seeking to measure attitudes or affective states. Logistic regression was used in place of linear regression whenever the dependent variable was categorical. Chapter Four describes the results of data analysis.

CHAPTER FOUR

RESULTS OF THE RESEARCH

Introduction

This chapter discusses statistical outcomes emanating from the study described above. Topics proceed as follows: 1) descriptive statistics of subjects and institutions; and 2) evidence supporting the four study hypotheses.

Descriptive Statistics

Correlations

Cross correlations among variables used in regression procedures can be seen in Table 4-1. The highest correlations occurred between variables TENURE and TRM (r= -.58). Most other correlations fell between r=.08 and r=.20.

Table 4-1

Cross Correlations Between Factors Used in Regression Models

	SEX	YRSOLD	EXPER	FRQABS	TENURE	SRP	TRM
SEX	1.00000 0.0000	-0.03993 0.4235	0.01350 0.7867	-0.04335 0.3848	0.03022 0.5447	0.02374 0.6342	0.00547 0.9128
YRSOLD	-0.03993 0.4235	1.00000 0.0000	0.03719 0.4560	0.08871 0.0749	0.03533 0.4789	-0.12911 0.0094	-0.06172 0.2158
EXPER	0.01350 0.7867	0.03719 0.4560	1.00000 0.0000	0.00074 0.9881	0.07276 0.1443	-0.02897 0.5615	0.02546 0.6098
FRQABS	-0.04335 0.3848	0.08871 0.0749	0.00074 0.9881	1.00000 0.0000	-0.20699 0.0001	-0.13949 0.0050	0.13622 0.0061
TENURE	0.03022 0.5447	0.03533 0.4789	0.07276 0.1443	-0.20699 0.0001	1.00000 0.0000	-0.16751 0.0007	-0.57606 0.0001
SRP	0.02374 0.6342	-0.12911 0.0094	-0.02897 0.5615	-0.13949 0.0050	-0.16751 0.0007	1.00000 0.0000	-0.09187 0.0651
TRM	0.00547 0.9128	-0.06172 0.2158	0.02546 0.6098	0.13622 0.0061	-0.57606 0.0001	-0.09187 0.0651	1.00000 0.0000

Gender failed to correlate with any other variable, but remained in the study models as a control variable. Although the correlation was negative between age and both, SRP and turnover, the correlation was only significant for SRP. A problem with collection of age data which may have affected these results is discussed below. Experience (EXPER) demonstrated no significant correlation with the two outcome variables. As expected, tenure correlated negatively with both, SRP and turnover. The lack of significant correlation between SRP and turnover was predicted.

Not anticipated was the similar, but opposite relationship between absenteeism and the two dependent variables. The correlation was negative with SRP, and positive with termination. This relationship held true in later regression analyses.

Hospitals

Five hospitals chose to participate in the study. All were acute care hospitals, and all had staffing records available since January of 1983. Table 4-2 compares the five hospitals along several demographic dimensions. Hospitals 1 and 5 were university teaching hospitals, Hospitals 2 and 4 were "community" hospitals, and Hospital 3 was a county general hospital. All participant hospitals are located in northern California. The bed size ranged from 125 beds at Hospital 3 to 500 beds at Hospital 1.

Hospitals 1 and 4 underwent a decrease in the number of staffed beds over the years from 1983 to the end of 1989. The others experienced a gradual rise in census.

Table 4-2

Comparison of Participant Hospital's Demographics

Hospital	# of Staffed Beds (1983)	# of Staffed Beds (1990)	Hospital Ownership
1	500+	400	university
2	150	200	"community"
3	125	170	county
4	300	220	"community"
5	400	470	university

Table 4-3 compares organizational characteristics related to the turnover model of Mobley et al (1979), and the proposed withdrawal model. All hospital officials reported their job markets to consist of too many jobs for too few applicants. Only during 1983-84 were hospitals turning away job applicants.

Table 4-3

Comparison of Organizational and Market Characteristics Among Participating Hospitals

HOSP	Experienced Major Downsizing in 1983-84	Provision of Benefits to Part-time Staff Nurses	Existence of Position Controls Affecting SRP	Easy/Hard Job Market for Nurses Seeking Employment
1	yes	proportional+ full medical	none	easy
2	yes	proportional+ buy own medical	none	easy
3	no	proportional+ partial medical	strict controls	easy
4	yes	proportional+ partial medical	position controls	easy
5	no	proportional+ partial medical	loose pos. controls	easy

With the onset of Medicare prospective payment (DRG's), most hospitals engaged in some form of "down-sizing." In anticipation of reduced patient census and tighter reimbursement, hospitals reduced the number of nursing positions. Some closed entire units in anticipation of economic hard times. Beginning in 1985, all of the study hospitals began expansion of their operating budgets, when it became apparent that the impact of DRG's would not be as dire as expected. Since that time, most of the institutions have hired virtually any reasonable candidate to fill positions. Hospital 3 has traditionally attracted older recruits, and has retained them longer.

Most hospitals grant part-time nurses proportional job benefits according to the number of hours worked. Hospital 1 provides full medical coverage, even to nurses who work half time.

Hospitals 3, 4, and 5 limit the number of part-time positions available. Thus, in some instances the choice to quit is less problematic than the choice (or ability) to obtain a part-time appointment.

All five hospitals' administrative nurses believed their local job markets consist of too many jobs, and too few applicants. None believed that any nurse feared being unable to secure a good job in a variety of nearby institutions. All indicated that the majority of new hires come from the local area. All depend a great deal upon graduates from local nursing schools. The five hospitals had at least two nursing schools providing graduates to fill their vacancies. Despite this, they have expreienced difficulty filling vacancies.

Subjects

Initially, 649 registered nurses were hired among the five hospitals at full time (.8 to 1.0 full time equivalents [FTE]). By eight months from the date of hire 38% of the nurses had either terminated or reduced their level of scheduled participation to below .8 FTE. This attrtion rate held constant among all of the institutions. The remaining 404 nurses' work schedules were examined and analyzed.

The ages of subjects ranged from 21 to 48 years. The relative number of inexperienced new-hires at each hospital varied considerably (see Table 4-4). Males accounted for 6% of subjects. Hospital 4 refused to release dates of birth, so ages were unavailable for this group of subjects. Hospital 5 does not record or require disclosure of birthdates, so these subjects' ages were likewise unavailable.

Table 4-4
Subject Demographics

Hosp	N	Average Age (yrs)	# of New Grads	Male	Female
1	126	27	33	6	120
2	37	28	23	1	36
3	35	31	20	3	32
4	83	*	48	5	78
5	123	*	43	9	114

Unit and shift assignments varied for subjects among each of the hospitals. The shifts and units represented in Table 4-5 indicate the shift or unit on which each nurse was last working (at time of termination or 5 years from the date of hire).

Table 4-5
Units and Shifts Worked

Hosp	Shifts Worked			Units Worked		
	Days	Eves	Night	Med/Srg	Mat/Chld	Crit/Care
1	74	18	33	47	24	55
2	6	15	16	34	2	1
3	12	13	10	9	19	7
4	14	24	45	50	10	23
5	24	24	75	56	28	39

The comparison between Hospitals 1 and 5 presents some striking differences. By the time of withdrawal or 5 years, 74 of Hospital 1's cohort (56%) had moved to day shift (DAYS), thereby leaving 33 (26%) on nights. At the same time, Hospital 5 experienced nearly the reverse of this pattern: ie. 75 persons on nights (61%), and 24 (20%) on days. If one assumes that day shift is generally preferable to the majority of nurses, one might conclude that a larger portion of Hospital 1's nurses are achieving ideal shift assignments. These differences do not end with shift assignments.

Withdrawal Behaviors

Comparison of withdrawal behavior frequencies among hospitals yields corresponding differences as well (see Table 4-6). Hospital 1 experienced the highest ratio (and absolute count) of SRP incidence to termination; and Hospital 5 the lowest. Upon comparing the five-year turnover rate for these two hospitals, one can see that Hospital 1 sustained the second-lowest turnover rate (47%).[5] In contrast, Hospital 5 sustained the highest (67%).

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[5]To calculate the five-year turnover rate, one must add the number for TRMONLY to BOTH, and divide by the total count for the hospital row. For hospital 1 this would yield: 35+24 / 126 = .47. Hospital 5's rate would be 54+29 / 123 = .67.

Table 4-6
Withdrawal Behavior Frequencies

Hosp	Term Only	SRP only	Both	Neither
1	35	41	24	26
2	14	8	10	5
3	13	4	1	17
4	29	16	19	19
5	54	9	29	31
TOTALS	145	78	83	98

It is tempting to attribute these inter-organizational differences in turnover and shift assignment patterns to differences between Hospital 1 and 5's personnel policies. Hospital 5 reported position controls and proportionate benefit loss. In contrast, Hospital 1 had neither position controls nor loss of medical benefits. However, there is no evidence to support a causal connection between these patterns.

Two hundred twenty-eight nurses (56%) quit before their 5 year anniversary. Of those remaining, only 98 (56%) were working at their original level. The actual attrition rate is higher than reported in Table 4-6, since 38% of the original cohort were previously eliminated from the analysis.

Length of Service (Tenure)

Table 4-7 provides details of tenures at which withdrawal events took place for each hospital. The average length of service (ALOS) for all who terminated was 25.9 months. This is virtually identical to 25.6 months for

those who reduced participation (SRP). These two figures include subjects which did both, SRP and TRM. They also include subjects who both, reduced participation (SRP) and "remained 5 years." Breaking these groups down yielded a greater variation in longevity figures.

Those who terminated only (TRMONLY, N=145), and did not also SRP, remained an average of 23.3 months. Those who terminated after first reducing participation (BOTH, N=83), remained employed an average of 30.3 months. Those who reduced work levels (SRP), but remained employed (SRPONLY, N=78), did not begin their reduction in participation until 33.1 months from their date of hire.

Table 4-7

Tenure Data for Withdrawal Events

HOSP#	TOTAL TRM ALOS	TOTAL SRP ALOS	TRMONLY ALOS	SRPONLY ALOS	BOTH ALOS
1	28.0	29.7	24.0	35.8	33.9
2	25.7	22.5	19.5	29.7	34.3
3	27.6	39.2	28.8	46.8	11.2*
4	22.8	23.7	20.4	27.7	26.6
5	25.9	20.1	24.2	27.5	29.0
TOTAL:	25.9	25.6	23.3	33.1	30.3

Note: ALOS= Average Length of Service in Months
*= Only one person

A comparison was made of tenure (ALOS) between hospitals and the effects of SRP. Least squares means were compared as part of the general linear models procedure using SAS (SAS Institute, 1985). Withdrawal behaviors were categorized as TRMONLY, SRPONLY, and BOTH (0,1,2 respectively). No differences existed between hospitals. The effect of SRP was as dramatic as the numbers in Table 4-7 appear. "Termination only" demonstrated a lower average length of service than either of the conditions which included SRP ($p<.05$). There was no difference in ALOS between either, SRPONLY or BOTH.

Systematic reduction in participation tended to be progressive, as Table 4-8 illustrates. The 78 nurses who did not quit but scheduled fewer shifts (SRPONLY), further reduced their level of participation from 48.4 FTE to 43.9 FTE by the end of the study.[6] Once again differences emerged between Hospitals 1 and 5. Nurses at Hospital 1 tended to SRP at one time, and remain at this level (drop of 1.0 FTE). The decline in levels of participation among those who reduced from full-time (SRP) at Hospital 5 was four and one half times as great.

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[6] Persons who reduced work hours early in their employment, and subsequently returned to their original level of service were not counted as occurrences of SRP (to be "systematic", the change had to be permanent).

Table 4-8

Systematic Reduction in Participation Data For All Who Remained Employed for 60 Months

Hosp.	Total Remaining 60 months	Number Remaining NOT SRP	# FTE NOT SRP	Number Remaining SRPONLY	# FTE 1st SRP	# FTE Final SRP
1	67	26	22.3	41	25.8	24.8
2	13	5	3.3	8	3.7	3.6
3	21	17	16.7	4	2.2	1.8
4	35	19	16.4	16	10.5	8.5
5	40	31	28.9	9	6.2	5.2
Total	176	98	87.6	78	48.4	43.9

The five hospitals experienced an erosion of nursing resources, due entirely to SRP, equal to 62.6 FTE over the 5 year period (see Table 4-9). The amount of SRP varied widely among hospitals, as did the relationship between SRP and turnover (TRM). At Hospital 1 most SRP occurred independently of termination. The opposite was true at Hospital 5.

The average total amount by which nurses reduced scheduled hours (SRP) was .3 FTE. The average new-hire began work at a level of .9 FTE (36 hours per week). By the end of the study, the average person who had reduced his or her scheduled hours (SRP), was working at a level of .6 FTE.

Table 4-9

Total Erosion of Nursing Resources Due to SRP Alone

HOSP #	FTE LOSS SRP+TRM	FTE LOSS SRPONLY	TOTAL
1	6.8	18.0	24.8
2	9.5	2.8	12.3
3	1.8	1.5	3.3
4	6.6	5.2	11.8
5	9.9	.5	10.4
TOTAL:	34.6	28.0	62.6

Although these were average reductions in participatory levels, there were many individual differences among hospitals. The lowest incidence of SRP (Hospital 3, =5 persons) yielded the highest average reduction in participation (.66 FTE per person).[7]

In terms of nursing resource loss due to SRP, Hospital 1 appears to have fared worse than Hospital 5. Hospital 1 sustained over twice the loss of nursing resource than Hospital 5 due to SRP (25:10 FTE). Did this make up for Hospital 5's higher rate of total turnover? No, Hospital 5's advantage of 15 FTE did not make up for the loss of 24

[7]To calculate the average reduction per nurse at each hospital, one divides the total hospital reduction (Table 4-9), by the number of persons at the hospital who SRP'd only or did both (Table 4-6). Thus, for hospital 3 there was a total erosion of 3.3 FTE divided among 5 nurses = .66 FTE per nurse.

nurses from termination. In addition, the loss sustained by Hospital 1 was protracted over a longer period of time (Table 4-7).

Absenteeism

Absence, both in duration and frequency, tended to decrease slightly over time for employees who neither terminated nor reduced hours (SRP) (see Table 4-10). On the average, absenteeism increased for all who terminated; and especially so for those who terminated without having previously reduced work schedules. The event of having previously cut back on work (SRP) corresponded with longer average employment (Table 4-7).

Table 4-10

Absence Data (Averages) for Each Class of Withdrawal by Hospital

	All TRMs (n=228)		All SRPs (n=162)		NEITHER (n=98)		TRMONLY (n=145)		SRPONLY (n=78)		BOTH (n=83)	
HOSPS	DUR	FREQ	DUR	FREQ	DUR	FREQ	DUR	FREQ	DUR	FREQ	DUR	FREQ
1	.7	.9	-.3	-.5	0	0	1.1	1.4	.9	.9	.8	.4
2	2.0	.1	.1	-.2	-1.6	-.8	3.1	-.1	1.2	.3	-.5	-.3
3	1.1	.6	1.6	1.4	.6	.5	1.4	.8	2.5	2.0	-5.0	-3.0
4	1.0	.4	1.6	.6	-.7	-.5	1.7	.7	.1	.2	2.8	.9
5	.2	.3	-.1	-.1	-.3	-.1	.6	.6	1.6	.9	-1.1	-.7
TOTAL	.7	.5	.3	-.05	-.3	-.15	1.3	.8	.01	-.2	.4	.02

Note: DUR = absence duration (change from baseline)
FRQ = absence frequency

Had only Hospitals 1 and 4, or Hospitals 2,3, and 5 been studied; the results of absenteeism's relationship to SRP and tenure would have been different. Hospitals 1 and 4 demonstrated an average increase in absenteeism (frequency) for all who remained at the same level of participation for 5 years. Hospitals 2,3, and 5's decrease in absence over time dominated the 5-hospital average. At Hospitals 2,3, and 5 there was an increase in absenteeism related to both SRP and TRM as hypothesized. However, the amount of decrease in absenteeism associated with SRP at Hospitals 1 and 4 was sufficient to weight the 5-hospital average for SRP in the negative direction. These findings illustrate how important it is to control for institutional uniqueness in studying employee work role behaviors.

A Statistical Anomaly With "Tenure"

Early in the data analysis it became apparent that there was an assumptional violation occurring with regard to the variable, TENURE. Since the study used a cohort design, subjects were selected with tenures fixed at t=0; and although incidents of withdrawal behavior may have occurred randomly during the 5 year study period, tenures for comparison groups (those who do neither) is fixed at 60 months. Tenure is random for withdrawal incidents, but fixed for all others. Hypothesis One provides an example of the problem in using tenure as a variable in certain analyses.

Evidence to test Hypothesis One was to be gained by regressing variables, including tenure, upon SRP and TRM (termination) separately. In both cases occurrences of SRP or TRM were compared to occurrences of doing neither (remaining employed 5 years). Tenure for those remaining 5 years must always be longer than those for either SRP or TRM. The finding that tenure's predictive capacity overwhelms the effects of other variables, and that the sign of its coefficient is negative, should not be unexpected. Unfortunately, it does not provide useful information.

The only hypothesis entertained in this study which can make use of tenure as a variable, is Hypothesis Three. At issue is whether tenure is useful for distinguishing between the likelihoods of SRP (only) or TRM (only) occurring. In this case tenure remains unrestricted for both events (within the range of 8 to 60 months).

For the reasons above, reported findings for all regression models except that for Hypothesis Three omit tenure as a factor. To do so would mislead one in the interpretation of support for Hypotheses One, Two, and Four.

Evidence Supporting the Four Study Hypotheses

Hypothesis One

Hypothesis One was tested by regressing the same model variables upon TRM (termination) and SRP. Logistic regression was employed, as both dependent variables are

dichotomous. The research question asked whether factors which predicted turnover (TRM) predict SRP as well. The results of the two regressions are presented in Figure 4-1. Model Chi-squares were 43.22 and 44.76 respectively; and they were each significant at $p<.05$ with 12 degrees of freedom.

Model 1: TRM=SEX + YRSOLD + [HOSP] + EXPER + [UNIT] + [SHIFT] + FRQABS

-2 LOG LIKELIHOOD FOR MODEL CONTAINING INTERCEPT ONLY= 553.86

MODEL CHI-SQUARE= 41.43 WITH 12 D.F. (SCORE STAT.) P=0.0000
CONVERGENCE IN 5 ITERATIONS WITH 0 STEP HALVINGS R= 0.186
MAX ABSOLUTE DERIVATIVE=0.2908D-09. -2 LOG L= 510.64
MODEL CHI-SQUARE= 43.22 WITH 12 D.F. (-2 LOG L.R.) P=0.0000

VARIABLE	BETA	STD. ERROR	CHI-SQUARE	P	R
INTERCEPT	1.60102797	1.04648157	2.34	0.1260	
SEX	0.33140769	0.50566037	0.43	0.5122	0.000
YRSOLD	-0.04210325	0.03153589	1.78	0.1818	0.000
HOSP1	-0.74186602	0.29191599	6.46	0.0110	-0.090
HOSP2	-0.27485867	0.43180053	0.41	0.5244	0.000
HOSP3	-0.65179524	0.43469780	2.25	0.1338	-0.021
HOSP4	-0.46312609	0.31430198	2.17	0.1406	-0.018
EXPER	0.28188301	0.23484171	1.44	0.2300	0.000
MEDSRG	0.42261145	0.26314315	2.58	0.1083	0.032
MATCHLD	-0.50429650	0.31321441	2.59	0.1074	-0.033
DAYS	-0.71524372	0.27422880	6.80	0.0091	-0.093
EVES	-0.50990151	0.28008232	3.31	0.0687	-0.049
FRQABS	0.16060763	0.05589372	8.26	0.0041	0.106

Model 2: SRP=SEX + YRSOLD + [HOSP] + EXPER + [UNIT] + [SHIFT] + FRQABS

-2 LOG LIKELIHOOD FOR MODEL CONTAINING INTERCEPT ONLY= 544.12

MODEL CHI-SQUARE= 41.80 WITH 12 D.F. (SCORE STAT.) P=0.0000
CONVERGENCE IN 5 ITERATIONS WITH 0 STEP HALVINGS R= 0.195
MAX ABSOLUTE DERIVATIVE=0.2398D-04. -2 LOG L= 499.35
MODEL CHI-SQUARE= 44.76 WITH 12 D.F. (-2 LOG L.R.) P=0.0000

VARIABLE	BETA	STD. ERROR	CHI-SQUARE	P	R
INTERCEPT	0.35535625	1.09238593	0.11	0.7450	
SEX	-0.10816235	0.50905018	0.05	0.8317	0.000
YRSOLD	-0.04452300	0.03324861	1.79	0.1805	0.000
HOSP1	1.05292395	0.30128359	12.21	0.0005	0.137
HOSP2	0.79244237	0.41304144	3.68	0.0550	0.056
HOSP3	-1.13265096	0.55662700	4.14	0.0419	-0.063
HOSP4	0.52048478	0.31423892	2.74	0.0977	0.037
EXPER	-0.11800086	0.23757584	0.25	0.6194	0.000
MEDSRG	0.11078286	0.26813317	0.17	0.6795	0.000
MATCHLD	0.76399079	0.32882223	5.40	0.0202	0.079
DAYS	-0.27499327	0.28207303	0.95	0.3296	0.000
EVES	0.47705049	0.28268772	2.85	0.0915	0.039
FRQABS	-0.11681553	0.05570924	4.40	0.0360	-0.066

Figure 4-1. Logistic regression of the identical variables on turnover (TRM) and SRP.

The relationships among demographic variables, and absence behavior were similar as well. In a separate procedure each variable was added to the model in step-wise fashion (Table 4-11). HOSP, UNIT, and SHIFT caused similar Chi-square contributions (albeit, not all statistically significant). The coefficients for absenteeism were opposite between SRP and TRM regressions. Declining absenteeism was associated with SRP, and increasing absenteeism with TRM. Hypothesis One was thus, not accepted.

Table 4-11

Change in Chi Square for Factors Regressed on TRM and SRP

VARIABLES	Progressive Chi-square TRM	Change in Chi-square TRM	Progressive Chi-square SRP	Change in Chi-square SRP
SEX	.01	.01	.23	.23
SEX, YRSOLD	1.54	1.53	7.34	7.11*
SEX, YRSOLD, [HOSP] (1-4)	17.96	16.43##	27.07	19.96##
SEX, YRSOLD, [HOSP], EXPER	18.92	.96	27.96	.89
SEX, YRSOLD , [HOSP], EXPER, [UNIT]	26.16	7.24	33.98	6.02
SEX, YRSOLD, [HOSP], EXPER, [UNIT], [SHIFT]	34.53	8.36#	40.21	6.23
SEX, YRSOLD, [HOSP], EXPER, [UNIT], [SHIFT], FRQABS	43.22	8.69*	44.76	4.55*

Note: * = Chi-square with 1 d.f. significant at p<.05
= Chi-square with 3 d.f. significant at p<.05
= Chi-square with 5 d.f. significant at p<.05

Other subtle differences exist among findings for SRP and TRM regressions. An examination of individual factors in each regression, points to different relationships among institution, shift, and unit with regard to withdrawal behavior.

Termination likelihood was decreased by employment at Hospital 1 with a coefficient of -.74 (Hospital 5 = reference category). The likelihood for termination was also diminished by assignment to day shift with the coefficient of -.72 (nights = reference category). The fact that evenings (EVES) nearly achieved significance (p=.0687), reinforces the assumption that the reference shift, NIGHTS, is the least desirable of the three.

Systematic reduction in participation (SRP) was more likely to be predicted by employment at Hospital 1, and significantly less likely at Hospital 3. Employment at Hospitals 2 and 4 was also more likely than the reference hospital (5) to see SRP selected as a withdrawal behavior; these findings failed to achieve statistical significance. There was also a positive relationship between selection of maternal-child service units and SRP incidence (critical care = reference category). These findings illustrate the value of controlling for shift and service in addition to institutional uniqueness.

Hypothesis Two

Hypothesis two questioned whether it made any difference if SRP was employed as a dichotomous or quantitative variable. Linear regression was used to test the same variables as those used for Hypothesis One upon the quantity of SRP (AMTSRP) which occurred at the first SRP event (see Figure 4-2).

Both regressions produced model variances which were significant at the .05 level. As such, Hypothesis Two is supported. However, logistic regression results do not directly describe the difference between model and error sums of squares (as linear regression does). It's model Chi-square difference only indirectly approximates this difference.

Using SRP as a quantitative variable causes different factors to emerge as significant in the prediction of outcomes. As a categorical variable SRP is predicted by, hospital (both positive and negative), service specialty (positive), and absence (negative). As a quantitative variable, AMTSRP is predicted by gender (males), Hospital 2 (positive), and day shift.

Model 3:

(log)SRP=SEX + YRSOLD + [HOSP] + EXPER + [UNIT] + [SHIFT] + FRQABS

-2 LOG LIKELIHOOD FOR MODEL CONTAINING INTERCEPT ONLY= 544.12

MODEL CHI-SQUARE= 41.80 WITH 12 D.F. (SCORE STAT.) P=0.0000
CONVERGENCE IN 5 ITERATIONS WITH 0 STEP HALVINGS R= 0.195
MAX ABSOLUTE DERIVATIVE=0.2398D-04. -2 LOG L= 499.35
MODEL CHI-SQUARE= 44.76 WITH 12 D.F. (-2 LOG L.R.) P=0.0000

VARIABLE	BETA	STD. ERROR	CHI-SQUARE	P	R
INTERCEPT	0.35535625	1.09238593	0.11	0.7450	
SEX	-0.10816235	0.50905018	0.05	0.8317	0.000
YRSOLD	-0.04452300	0.03324861	1.79	0.1805	0.000
HOSP1	1.05292395	0.30128359	12.21	0.0005	0.137
HOSP2	0.79244237	0.41304144	3.68	0.0550	0.056
HOSP3	-1.13265096	0.55662700	4.14	0.0419	-0.063
HOSP4	0.52048478	0.31423892	2.74	0.0977	0.037
EXPER	-0.11800086	0.23757584	0.25	0.6194	0.000
MEDSRG	0.11078286	0.26813317	0.17	0.6795	0.000
MATCHLD	0.76399079	0.32882223	5.40	0.0202	0.079
DAYS	-0.27499327	0.28207303	0.95	0.3296	0.000
EVES	0.47705049	0.28268772	2.85	0.0915	0.039
FRQABS	-0.11681553	0.05570924	4.40	0.0360	-0.066

Model 4: (Linear Regression)

AMTSRP=SEX + YRSOLD + [HOSP] + EXPER + [UNIT] + [SHIFT] + FRQABS

ANALYSIS OF VARIANCE

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>
MODEL	12	148.57062	12.38155162	3.198	0.000
ERROR	149	576.80410	3.87116843		
C TOTAL	161	725.38272			

ROOT MSE	1.967529	R-SQUARE	0.2048
DEP MEAN	2.938272	ADJ R-SQ	0.1408
C.V.	66.9621		

PARAMETER ESTIMATES

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR H0: PARAMETER=0	PROB > |T|	TYPE I SS	TOLERANCE
INTERCEP	1	4.37939541	1.76235585	2.485	0.0141	1398.61728	.
SEX	1	-1.80254399	0.82120903	-2.195	0.0297	2.93294646	0.85707713
YRSOLD	1	-0.02192602	0.05186101	-0.423	0.6731	0.97526513	0.90416677
HOSP1	1	-0.60982652	0.44438685	-1.372	0.1720	11.94829473	0.50367408
HOSP2	1	1.95567619	0.58608313	3.337	0.0011	82.55766892	0.67196864
HOSP3	1	0.57008876	0.96787980	0.589	0.5567	5.05224786	0.85279485
HOSP4	1	-0.61119305	0.48044020	-1.272	0.2053	5.64311248	0.61123277
EXPER	1	0.22212465	0.35033768	0.634	0.5270	3.32221938	0.79083093
MEDSRG	1	0.71307339	0.40464003	1.762	0.0801	0.46672890	0.88413631
MATCHLD	1	0.71724356	0.46170102	1.553	0.1224	10.01520420	0.62435290
DAYS	1	0.91742377	0.43222787	2.123	0.0354	14.34785363	0.60625735
EVES	1	0.35763545	0.39732471	0.900	0.3695	3.02450177	0.74447498
FRQABS	1	0.02046204	0.07443047	0.275	0.7838	0.29257593	0.92725003

Figure 4-2.

Regression models testing Hypothesis Two.

Hypothesis Three

Two conditions were necessary to accept Hypothesis Three. First, it was postulated that length of tenure would discriminate between the likelihood of turnover (TRM) or SRP. Second, the hypothesis stated that the sign of the coefficient for tenure would be negative (for the condition of TRM=1). Since there were many cases wherein turnover and SRP both occurred, the two behaviors were coded in a manner that eliminated overlapping cases. A new variable was created which treated TRMONLY as "1" and SRPONLY as "0." This variable (TRMVSRP) was the dependent variable in a logistic regression. This regression included the aforementioned demographics, absenteeism, and tenure (see Figure 4-3).

Figure 4-3 shows the results of this regression. The overall model Chi-square was 69.44 with 13 degrees of freedom, and significant at $p<.05$. Tenure was a significant factor ($p<.05$), and the coefficient for this factor was negative. Hypothesis Three was accepted.

Model 5:

TRMVSRP=SEX + YRSOLD + [HOSP] + EXPER + [UNIT] + [SHIFT] + FRQABS
+ TENURE

-2 LOG LIKELIHOOD FOR MODEL CONTAINING INTERCEPT ONLY= 292.87

MODEL CHI-SQUARE= 61.46 WITH 13 D.F. (SCORE STAT.) P=0.0000.
CONVERGENCE IN 6 ITERATIONS WITH 0 STEP HALVINGS R= 0.385.
MAX ABSOLUTE DERIVATIVE=0.1630D-08. -2 LOG L= 223.43.
MODEL CHI-SQUARE= 69.44 WITH 13 D.F. (-2 LOG L.R.) P=0.0 .

VARIABLE	BETA	STD. ERROR	CHI-SQUARE	P	R
INTERCEPT	2.90888783	1.73116387	2.82	0.0929	
SEX	0.58288313	0.76645757	0.58	0.4470	0.000
YRSOLD	-0.01396533	0.04817369	0.08	0.7719	0.000
HOSP1	-2.16188493	0.51614627	17.54	0.0000	-0.230
HOSP2	-1.30049547	0.63200564	4.23	0.0396	-0.087
HOSP3	0.51351891	0.77660144	0.44	0.5085	0.000
HOSP4	-1.22669049	0.52253294	5.51	0.0189	-0.109
EXPER	0.71539561	0.38083211	3.53	0.0603	0.072
MEDSRG	0.17678856	0.42044738	0.18	0.6741	0.000
MATCHLD	-1.25265905	0.52059124	5.79	0.0161	-0.114
DAYS	-0.09863817	0.44296809	0.05	0.8238	0.000
EVES	-1.19218499	0.43619604	7.47	0.0063	-0.137
FRQABS	0.12866670	0.07868056	2.67	0.1020	0.048
TENURE	-0.04488764	0.01183726	14.38	0.0001	-0.206

Figure 4-3.

Regression models testing Hypothesis Three.

Other factors contributed to the difference in occurrence between the exclusive events of termination and SRP. Termination was more likely than SRP to occur at the reference hospital (Hospital 5), than at any of the other hospitals except Hospital 3. Assignment to evening shift and maternal-child services was associated with preferential choice of SRP over termination. If one adds the combined effects of hospital, service, and shift together, the resulting amount of explained variance in this regression is a Chi-square >40. This is nearly three times the predictive

effect of tenure.

Another finding is the possibility that the predictability of choice between termination (only) and SRP (only) may be greater, than predictability of either turnover or SRP alone. As a proportion of total error, the model Chi-square for TRMVSRP is 69/293, or .24. This can be compared to 43/554 (.08) for TRM, and 45/544 (.08) for SRP.

Hypothesis Four

The author's withdrawal theory postulates that SRP and Turnover are behavioral analogues competing for expression. If SRP were merely antecedent to turnover, one would expect it to behave as a predictive factor for turnover when placed in a turnover regression model. When such a model was tested (Model 6, Figure 4-4), SRP added a Chi-square of 1.53, 1 degree of freedom, $p>.05$. Although Hypothesis Four was accepted, there are limitations to interpreting this finding as proof of the theorized relationship between turnover and SRP. For instance, had there been a large, non-causal intercorrelation between turnover and SRP, SRP may well have appeared as a predictive factor. However, the correlation between these two factors was -.09 ($p>.05$), and thus, not an issue (see correlations, Figure 4-1).

Model 6:

TRM=SEX + YRSOLD + [HOSP] + EXPER + [UNIT] + [SHIFT] + FRQABS + SRP

-2 LOG LIKELIHOOD FOR MODEL CONTAINING INTERCEPT ONLY= 553.86

MODEL CHI-SQUARE= 42.80 WITH 13 D.F. (SCORE STAT.) P=0.0000.
CONVERGENCE IN 5 ITERATIONS WITH 0 STEP HALVINGS R= 0.184.
MAX ABSOLUTE DERIVATIVE=0.4898D-09. -2 LOG L= 509.11.
MODEL CHI-SQUARE= 44.75 WITH 13 D.F. (-2 LOG L.R.) P=0.0000.

DEPENDENT VARIABLE: TRM

VARIABLE	BETA	STD. ERROR	CHI-SQUARE	P	R
INTERCEPT	1.76773124	1.05670250	2.80	0.0944	
SEX	0.32116430	0.50477579	0.40	0.5246	0.000
YRSOLD	-0.04486448	0.03169240	2.00	0.1569	-0.003
HOSP1	-0.67820359	0.29659365	5.23	0.0222	-0.076
HOSP2	-0.23194748	0.43402719	0.29	0.5931	0.000
HOSP3	-0.70555455	0.43712923	2.61	0.1065	-0.033
HOSP4	-0.43454934	0.31613571	1.89	0.1693	0.000
EXPER	0.27528721	0.23537068	1.37	0.2422	0.000
MEDSRG	0.43400323	0.26416109	2.70	0.1004	0.036
MATCHLD	-0.46253924	0.31562582	2.15	0.1428	-0.016
DAYS	-0.73534261	0.27551730	7.12	0.0076	-0.096
EVES	-0.48057225	0.28136280	2.92	0.0876	-0.041
FRQABS	0.15336206	0.05625721	7.43	0.0064	0.099
SRP	-0.28066591	0.22678490	1.53	0.2159	0.000

Figure 4-4.

Regression models testing Hypothesis Four.

Summary

Results of studying 404 registered nurses at five hospitals yielded findings which supported three of the four research hypotheses. Demographic and behavioral factors which provided statistical predictive power for turnover, demonstrated similar relationships with systematic reduction in participation (SRP).

Employing SRP as a quantitative variable in a linear regression model functioned similarly to SRP as a

dichotomous variable in logistic regression. It was impossible to determine whether one form of SRP functioned better than the other, since different regression procedures were used. Both results demonstrated statistically adequate models, but the outcome statistics were of incomparable forms.

Evidence was found that tenure bears a different relationship between turnover and SRP. Shorter tenure corresponds with turnover, and longer tenure with SRP.

The theory that turnover and SRP are behavioral analogues received support from the test of Hypothesis Four. SRP failed to perform as a significant predictor of turnover. This, despite the fact that SRP often preceded later events of turnover among some subjects.

More important from a practical standpoint were the effects of different hospitals, service units, and shifts. Patterns of withdrawal behaviors, loss of human resources, absenteeism, and average lengths of service varied among hospitals in ways which formed a picture of each hospital's uniqueness. These patterns raised questions about the relationship between personnel policies (and other institutional qualities) which control human resource stability.

Assignment to any shift other than nights, and to maternal and child service units were associated with lower rates of withdrawal. These findings have implications for

exploration as to how job roles and the job environment might affect or control employee withdrawal. These issues will be addressed again in Chapter 5.

CHAPTER FIVE

RESEARCH IMPLICATIONS

Introduction

The study reported above produced evidence supporting findings of earlier research involving absenteeism and turnover. It has shed light upon the incidence and prevalence of a withdrawal behavior (SRP) which has previously received little or no attention. These findings will be discussed within the framework of a withdrawal theory which resembles, is based upon, and competes with turnover theory.

Study's Relationship to Prior Research

Demographics as Predictor Variables

The literature review discovered that very often, demographics alone can produce an impressive amount of predictive variance in regression analyses involving turnover. This study found the same to hold true. The combination of gender, age, hospital, experience, unit, and shift provided 80% of the model Chi-square for TRM and 90% for SRP. Unfortunately, these findings may not be useful to administrators who would apply these study findings to retention strategies. Only by discriminatory hiring practices could a hospital control these demographics. Studies are needed which include factors readily controlled by management. Listed below are examples of factors which

serve this end:

1) factors related to specific hospital employment policies or benefits;
2) job characteristics, such as factors indexing patient care workloads;
3) nurses' attitudes toward leadership, job role expectations (and their fulfillment), ability to choose the most desirable shifts or units;
4) concordance between personal and work-related values, and the degree to which the organization accommodates these values.

Age as a Predictor

Age has often demonstrated a significant, negative relationship with both behaviors (Muchinsky, 1977). This study found no significant effect of age upon either turnover or SRP. The fact that age data were missing for nearly half of the subjects (Hospitals 3 and 4), may have affected this finding.[8] It would be useful to include age

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[8]To measure the impact of decisions made to fit dummy values for missing ages, two regressions were performed and the results may be found in the Appendix (p. 174). In first regression, age was eliminated as a factor; and in the second, dummy values were deleted from missing age data (and half of the subjects). In the first case (age eliminated) the model Chi-square diminished by 1.83, which did not weakened the model. In the second case (reducing the sample by 206 nurses) age produces a unique Chi-square of 2.13 (P>.05); but the model suffers a loss of total Chi-square of 40 percent. The results suggest that the importance of retaining age in the model is of secondary importance to retaining sample size.

as an independent variable in future research, only if more complete data were forthcoming.

Absenteeism as a Predictor

Previous studies which compare absenteeism to turnover have found a statistically significant, positive relationship between absenteeism and turnover. The same finding emerged from this research.

Past research has demonstrated that frequency of absenteeism functions more consistently as a significant predictor variable than duration of absence. An additional set of regressions was performed comparing the predictive value of frequency of absence (FRQABS) to duration (DURABS) in this sample. The regression statistics are included in the Appendix (p. 175). Both forms of absenteeism provided results which were statistically significant. The magnitude of Chi-square contribution was greater for frequency, than for duration.

Although absenteeism proved a significant predictor of SRP, the relationship was in the opposite direction from that of turnover (TRM: Hypothesis One, Figure 4-1). Researchers have accounted for the positive relationship between absenteeism and turnover by speculating upon two possible dynamics. First, they theorize that employee's anticipating termination, may want to use up benefitted absent time before they lose it by quitting. Second, they

suggest, this absent time may be directed toward job hunting activities (Mobley, 1982).

Using this same logic, one might speculate that absenteeism declines as one anticipates SRP, because one wishes to continue to accrue absence benefits while the rate of accrual is higher. Also, if the person is about to SRP because he or she needs more "personal" time away from the job, knowledge that a permanent solution is imminent, may reduce the motivation to "call in sick."

The most significant finding is the differential nature of absenteeism's correlations with SRP and turnover. This difference (and that involving tenure in the next section) sheds light upon the decision-making process which chooses one behavior or another. Although not enough evidence to define that process, this finding provides a basis for further questions to be tested. There is more to be said regarding this finding in the section entitled, "Whither a Theory of Employee Withdrawal."

A pattern which characterizes the effect of time on absenteeism is this: as nurses' job tenure increases, there is a tendency to reduce the frequency of absence. This was <u>not</u> characteristic of employees at the county hospital (Hospital 3), but it was especially true at Hospitals 2,4, and 5. This pattern has implications for other research involving absenteeism, when a substantial lapse in time takes place between factor measures. One needs to consider

whether this pattern of absence reduction has implications for outcomes of absenteeism-based studies.

Tenure as a Predictor

One of this study's design limitations was the inability to include tenure in all of the regression models. In cross-sectional studies, tenure fulfills the assumptional requirement of randomness, and customarily correlates inversely with turnover. This study failed to provide support for such a relationship.

Yet, there still is evidence that tenure may have been a determinant in this subject population's decision to choose among withdrawal behaviors. There was evidence for a differential effect of tenure on subjects choosing between termination and SRP. Longer tenures were associated with the choice of SRP, and shorter tenures with termination (Hypothesis Three).

Much as in the case of absenteeism, tenure plays a role in discriminating between choices to withdraw partially (SRP), or completely (TRM). Even more light has been shed on the decision-making process involved in employee withdrawal.

Study Design

Study Length

Most studies are cross-sectional and measure effects of predictor variables upon absenteeism or turnover within 12 months of initial factor measurement (Cotton & Tuttle, 1986;

Porter & Steers, 1973; Muchinsky 7 Tuttle, 1979). Since the majority of instances of turnover typically occur within the first year or two of employment, studies of relatively short duration (e.g. one year) capture essential features of this behavior. However, this study has shown that the average job tenure before SRP occurs, is much later (average tenure for SRPONLY=33 months). Had the present study been confined to two years from the date of hire, data would have been harvested before peak SRP activity occurred.

For cross-sectional studies, the duration of time elapsing between data collection and outcome measurement would be less critical. A cross-section of employees at the beginning of a time period would include subjects whose job tenure was randomly distributed over range of years. Consideration must be given to the finding that, during any time period, SRP is likely to occur only one fourth as often as termination. Thus, if the time period selected is suitable to find 40 cases of turnover, only 10 cases of SRP might be expected. Extending the duration for data collection will increase the number of both behaviors proportionately.

Number of Sites

As discussed above, confining the study to Hospitals 1 and 4 (n=249), or Hospitals 2,3, and 5 (n=155), would have produced strikingly dissimilar results. This demonstrates

the extreme instability of withdrawal behavior patterns between institutions. There is no reason to believe that these five institutions exemplify the entire range of patterns. These findings confirm the imperative for multiple site comparison when industry-wide generalization is an objective.

A number of multi-site hospital studies have pooled findings without controlling for the uniqueness of each organization (Abelson, 1987; Currey et al., 1985; Mowday et al., 1984; Sheridan, 1985; Wakefield et al., 1988; Weisman et al., 1981). A few have identified organizational attributes which distinguish between a limited number of variables shared by more than one institution. For example, Prestholdt et al. (1987) distinguished between urban and rural hospitals. Prescott (1986) identified such organizational attributes as ratio of nurses to patients, proportion of full-time employees, and number of years of staff nurse experience. Such a separation of individual organizational attributes is sufficient to account for institutional differences only if all of the pertinent differences are selected. One could hardly be expected to know these criteria before a study is executed.

This study differs from its predecessors in that hospital uniqueness was controlled entirely within its design. There were broad differences among findings from various institutions. This underscores the neccesity for

identifying features, not only those which define each organization as unique, but those which exert unique effects upon employee behavioral outcomes.

From a practical standpoint, if one wishes to generalize this study's findings to another, a similar study of that institution must be done first. There is too much variability among organizations to blindly apply these findings. Once such a study is completed, comparison to these research findings might be fruitful.

Unit

This study confirmed the general finding of others (Prescott, 1986; Wakefield, et al., 1988; Weisman et al., 1981) that shift and unit of assignment can contribute significantly to behavioral outcomes.

The majority of subjects hired to any particular unit remained on that unit until termination or 5 years. Hospitals 4 and 5 varied from this rule more than the others. This was due to many organizational changes and construction of new wings. Unlike Hospital 1, which also had changes in construction, Hospitals 4 and 5 nurses drifted into different service specialties. Most Hospital 1 nurses merely moved into new quarters housing the same or similar specialties.

There was no consistent pattern of unit assignment among the hospitals. The university hospitals (1 and 5)

hired most nurses for medical/surgical and critical care units. The proportions assigned to each type of unit were not remarkably different. The community hospitals (2 and 4) hired mostly for medical/ surgical areas.

The county hospital (Hospital 3) found most nurses hired for, or gravitating to, maternal and child services. There may be some connection between this pattern of movement, the higher age range of new-hires, and/or the fact that most of this hospital's clientele are indigent. However, that such a connection exists, is speculative.

Shift

Whether experienced or inexperienced, most newly-hired nurses were initially assigned to night shift. By the end of employment, SRP event, or 5 years the proportions assigned to shifts began to vary (see Table 4-5). By the end of 5 years or a withdrawal event, the majority of Hospital 1's subjects worked the day shift. This was also true of Hospital 3, but to a lesser extent. Hospitals 2, 4, and 5 continued to find nurses predominantly on night shift at termination, SRP, or at 5 years.

The pattern of nurses moving to day shift, corresponded to the occurrence of relatively low turnover rates in Hospitals 1 and 3 (Table 5-1). To illustrate, Hospitals 1 and 3, with their higher incidence of day shift assignment lost the fewest subjects over the 5 year period (47% and 40%

respectively). Hospitals 2,4, and 5 with higher proportions of nurses remaining on evenings or nights sustained the highest losses (65%, 58%, and 67% respectively). This relationship does not mean that there is a causal relationship between the ability to gain a day shift position and retention. However, the questions raised by this pattern are relevant to those interested in designing retention programs.

Table 5-1.

Comparison of Rates for Day shift Assignment With the Percent of Nurses Quitting During the 5-Year Study

Hospital	Day Shift Proportion	5 year term. Proportion
1	59%	47%
2	16%	65%
3	32%	40%
4	17%	58%
5	20%	67%

Turnover

It is no surprise that the "wastage rate" for nurses during a five year period ranged from 40% to 67% (Table 5-1). Yearly turnover rates are often reported between 10% to 40% in American hospitals (American Hospital Association, 1987; Buerhaus, 1987; Wise, 1990). One must conclude,

however, that there must be something wrong, either with the way the nursing job is designed, or with the way hospitals are managed, to cause up to two-thirds of the employees to leave within five years. The loss of nursing resources due to SRP (62.5 FTE) compounds the this loss of resources due to turnover (205 FTEs).

Significance of SRP as a Behavioral Variable

To justify spending time and effort chasing down another employee behavior to study, one must determine whether the stakes are high enough in order to continue. Prior to this study there was no documented evidence that SRP involved an economically important source of resource loss. The findings suggest that further exploration of SRP is warranted.

In the beginning 404 subjects accounted for approximately 364 full time equivalents (FTE) of nurse participation. Initially, each nurse worked an average 36 hours a week or .9 FTE. The information contained in Table 4-9 (Chapter Four) indicates that the total reduction in participation for all subjects was 62.6 FTE (not including terminations). The average nurse who reduced shifts (SRP), dropped to .6 FTE, or a .3 FTE difference. This erosion of nursing resources amounts to over 17% of the original amount of participation among all subjects. The loss was not

insignificant.

The incidence and pattern of SRP varied from one institution to another. For example, the smallest hospital (Hospital 2) sustained a greater resource loss to SRP, than one which was over three times as large (Hospital 5) (Table 4-8). Yet, the largest hospital (Hospital 1) sustained the greatest overall loss to SRP.

Differing patterns of loss resulting from termination or SRP among hospitals corresponded with differences in personnel policies. Hospital 1 had the most liberal policy toward reducing work schedules, and the smallest loss of benefits (Table 4-3). The corresponding proportion of SRPONLY to TRMONLY was large (41:35, respectively: Table 4-6). In contrast, Hospital 5 had position controls and fewer benefits for part-time work. Hospital 5 sustained a small ratio of SRPONLY to TRMONLY (9:54, respectively).

The correspondence of liberal position control and benefits policies, to higher incidence of SRP and longer job tenures, suggests that there may be some relationship between these policies and employee retention. One may imagine that the ease of ease of reducing participation might prevent the loss of nursing resources; but too little is known about those persons who fall back from full-time work (SRP). What if those who did tended to be poor performers, or uncommitted to organizational goals? Under this scenario, the hospital might have been better off had

such nurses quit entirely.

One notable pattern which emerges from this study's findings, is the relationship between longevity and SRP. In Table 4-7, the lengths of service (ALOS) for nurses who terminate after having cut back from full-time (SRP) once (BOTH), is 7 months longer than for those who terminate only (TRMONLY). It is not clear whether the choice to reduce participation actually delays termination, allows more time to shop for jobs more effectively, or whether there is any interaction at all.

Finally, it was demonstrated that similar statistical outcomes result regardless of whether SRP is coded as a dichotomous variable (such as termination), or as a quantitative one (such as absenteeism). Future studies must consider the consequences of both treatments. A logistical problem exists in attempting to choose which data point to measure as the appropriate SRP event. In this study the first event was the only one chosen. However, it was often the case that the same persons exhibited greater reductions in participation at later times.

Whither a Theory of Employee Withdrawal

Chapter One introduced the notion of a withdrawal theory. This theory was based upon the model of Mobley et al.(1979). Mobley's model postulates that organizational,

personal, and job market conditions interact as determinants of employees' choices to stay or leave (Figure 1-1). The author proposes that these same intrinsic and extrinsic forces affect a broader range of choice consideration than termination alone (Figure 1-2). If nurses become motivated to withdraw from the work setting, they will respond in one or more adaptive fashions. For example, a nurse may respond unconsciously. An unconscious decision not to withdraw may keep the person within the situation, but at reduced levels of performance. An unconscious decision to withdraw might result in the development of illness or conditions which ultimately remove him or her permanently from the environment.[9] In another instance the unconscious decision may result in encouraging a spouse to relocate for ostensibly good reasons.

On the other hand, the same nurse may exhibit a conscious response. The decision <u>not</u> to withdraw may be accompanied by some effort to change working conditions, or one's attitude toward them. A conscious decision to withdraw may entail partial withdrawal (absenteeism or SRP), or permanent withdrawal (leaving the institution or leaving

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[9]From this and many pilot studies conducted by the author, one finding seems to support the possibility that accidents may be associated with conscious or unconscious motivation to withdraw. In every hospital one of the most common, easily-identifiable phenomena has been absence due to job-related accidents. In the majority of cases absence of this kind eventually resulted in termination.

the profession).

Thus, each employee may respond either consciously or unconsciously. Little is understood regarding how unconscious decision-making transpires. Slightly more is known about how people decide consciously. The employee experiencing discomfort in a work environment, confronts two initial choices: to withdraw or not to withdraw (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964). Beyond the need to decide on one of these conditions, a complex decision-making process ensues which selects one or more behavioral options.

This study provided no evidence to support the existence of a "withdraw or not" juncture in the decisional process of an employee. Instead, it focused upon events which are postulated to follow this event.

Assuming the person has made a conscious or unconscious decision to withdraw, the person must choose one or more withdrawal modes to adopt. The fact that absenteeism increases immediately prior to turnover, suggests several possible intrapersonal dynamics at play. First is the possibility that absenteeism did not produce a satisfactory degree of withdrawal; and behavior subsequently escalated toward turnover. The same may be true for those who first reduced work hours, and later terminated (21% of the total sample). This supports the pattern of a progression of withdrawal culminating in turnover, such as that proposed by Rosse (1988). The fact which mitigates against the theory

of behavioral progression is Hypothesis 4's inability to demonstrate a linear relationship between SRP and turnover.

Hypothesis 3 provides the strongest support for the assertion that SRP and turnover function as independent, analogous behaviors competing for expression. The fact that increased tenure plays an important role in selection of this withdrawal mode, suggests that personal factors such as peer relationships, may act upon the decision process after withdrawal has been chosen. Personal values which may reduce the motivation to quit may be augmented by insecurity over loss of economic security, or political status enjoyed by "old-timers" in a work group.

The fact that some inherent quality unique to Hospitals 1 and 5 create so much difference in choice of termination versus SRP, supports Mobley et al.'s (1979) inclusion of organizational factors in their model. It points to the need for further studies which identify those organizational qualities that affect choices. This study identified personnel policies as one potential factor.

The findings that service unit and shift assignment acted simultaneously to affect the choice between turnover and SRP, as well as between withdrawing and not withdrawing, support another aspect of Mobley's turnover (and the author's withdrawal) model. These are job-related variables which affect perceptions about the job. These perceptions, in turn, affect both satisfaction and expectations regarding

the present job.

This study eliminated all variables involving perceptions, feelings, or values, in order to focus upon the unique relationship between SRP and turnover. Institution, unit, shift, and tenure have now been established as reliable predictors in the model which includes SRP. Now it may be prudent to replace more traditional, if somewhat less easily verifiable, measures like satisfaction back into the model for future research. It would also be useful to probe into the hypothesized decisional process which chooses between withdrawing or not withdrawing. This point in the behavioral process has received very little attention in prior research.

Discussion

The idea of a global theory of employee withdrawal has historical roots. Turnover and absenteeism research originated from a common source (Brayfield & Crockett, 1954). Early industrial researchers were attempting to find some connection between employee morale and employee performance and employee withdrawal. Reviewers of withdrawal research identify the existence of relationships between various withdrawal behaviors. They admit, however, that based upon prior research, the nature of these relationships is unknown (Cotton & Tuttle, 1986; Hinshaw & Atwood, 1984; Mobley et al., 1979; Muchinsky & Tuttle, 1982; Porter & Steers, 1973; Scott and Taylor, 1985).

It was suggested in Chapter One that development of turnover and absenteeism theories are at a standstill. It was speculated that this may be due to problems inherent in research designs, when they attempt to isolate and study one withdrawal behavior alone. Too often such studies fail to consider potentially confounding influences by other withdrawal behaviors which may have been alternatives to the one in question. A study of whether other behaviors act as confounders would be desirable. From a practical standpoint, one stands to learn more about a single behavioral phenomenon if it is studied against the backdrop of related behaviors. Combining as many similar behaviors as possible in one research design, will produce the greatest amount of information about each of them.

The failure to consider the influence of SRP in prior withdrawal study designs, may be partly responsible for the instability of findings from one study to the next. An additional source of instability was demonstrated by the strong effects of organizational differences upon outcomes. A cross-sectional study is needed to test the effects that inclusion or exclusion of SRP has when hospitals with differing incidence of this behavior are studied.

Summary of Limitations

Limitations of this study design and implementation

were mentioned in earlier chapters. The discussion which follows, reviews those limitations; and it addresses those arising from interpretation of study findings.

Earlier it was disclosed that a dilemma was posed by the absence of certain data points. All the birthdates were missing from Hospitals 4 and 5. Likewise, several dozen 5 year absenteeism data were missing from Hospital 1. As a result of assigning average values to each missing value, the true weight of age and absenteeism's effect upon withdrawal outcomes is uncertain. The 206 nurses whose age information was unavailable constitute a substantial number. It is sufficiently large as to prevent any valid conclusions from being drawn with respect to age's influence on the dependent variables.

The effect of coding absence cases with neutral values cannot be determined. Fewer data sets were affected by missing absence data than by age data. Future studies will help determine whether the relationships found in this study, persist between absenteeism and the dependent variables.

Sample selection by convenience, as was the current case, always limits the degree of confidence one has in generalizing the findings. Originally, 26 institutions were approached with an invitation to participate. Eleven responded with a willingness to receive the author. Five of these actually had all or most of the required data with

which to complete an adequate data collection. It is possible that these five hospitals were unique in other ways which might affect the nature of the data gathered.

Muchinsky and Tuttle (1979) and Mobley et al. (1979) have stated that too little is known regarding how different occupational groups respond to withdrawal model factors. This study examined the effects only on full-time staff nurses in acute care settings. It did not even include operating room nurses. This further limits the generalizability of the findings.

Previous studies have often failed to discriminate between voluntary and involuntary turnover. The same was true in this research. The result was undoubtedly a diminution in the power of statistical tests.

A limitation of this research was the modest scope of questions being tested. Relatively few relationships were under scrutiny. A great many important variables in earlier turnover research were omitted from this design. Absent were the attitudinal measures, job satisfaction, organizational commitment, and intent to leave (or search). It is these variables whose inclusion has been traditional in turnover or absenteeism studies. The omission of such variables limits the comparability of findings with those of other withdrawal research.

Finally, a potential limitation relates to the steady decrease in sample size over time. As time since date of

hire progressed, attrition of subjects occurred as a result of termination. By the end of 60 months the subject size had diminished to 176-- less than half of the original number. It is likely that as attrition occurred, the mix of remaining subjects changed in uncontrollable ways. There may have developed a concentration of persons with a low individual propensity to withdraw. It is not known how this affected the outcomes or how influences of this factor could be controlled.

As a consequence of the limitations discussed above, conclusions based on the results of this study are tentative. They will remain so, pending further study of these same phenomena.

Future Research

Now that baseline data exists regarding the prevalence and incidence of SRP, more elaborate studies are justified. There is evidence to justify testing combined forms of withdrawal behaviors which include SRP as one form. It would be useful to derive a scale for classifying withdrawal behaviors in a quantitative fashion.

Research which includes predictor variables controllable by hospitals, is needed to help guide practicing managers. A combination of withdrawal behaviors should be submitted to multivariate analysis using example factors from each of the three classes of withdrawal

antecedents: ie. organizational, personal, and market-related factors. These behaviors should be subjected to the many other attitudinal variables which have become the mainstay in turnover and absenteeism models. In addition to the organizational factors suggested earlier in "Demographics as Predictor Variables," one should consider adding the following variables to future research designs:

1) job satisfaction;
2) job market perceptions;
3) organizational commitment; and
4) attitudes toward leaving.

Since the variables mentioned above have been applied so often in past research, their inclusion in "withdrawal model" research would help compare results with more traditional research models.

Values are difficult to measure and validate in research involving humans. Nonetheless, it is believed that values toward the work role exert important effects upon choices to withdraw or not. Some attempt should be made to identify work values and their relationship to each of the withdrawal choices.

This study was limited to searching for "what is." It never asked "why?" And "why" is the question asked most often by nurse managers, as they try to adjust their leadership or management style to minimize employee withdrawal. A useful study design would randomly select

nurses who have exhibited each of the hypothesized withdrawal behaviors. Their reasons for decision-making would be gathered and categorized. Finally, patterns of reasons would be correlated with each of the withdrawal behaviors. This would address only those decisions which followed a conscious process.

The findings that day shift and maternal and child specialties seemed to mitigate against withdrawal of any kind raises questions about job design and work environments. Apparently workload, social or economic rewards were not equal on night shift or on medical-surgical and critical care wards. This suggests that hospitals might wish to study in what ways these shifts and units differ, so as to account for this imbalance.

In Chapter one various causes of nursing shortage were discussed. One which was not addressed by the present research was the productivity gap. "Productivity gap" is the name given to the loss of productive work which occurs between two events. Those events are: ceasing to work at one job, and achieving full productivity in the next. This gap may be extensive when an hiatus occurs between jobs. It may also be significant when development of full productivity in the next position requires a prolonged orientation or training. It would be useful to attempt to quantify the amount of productive loss that accumulates among a population of persons who switch jobs.

Conclusion

This paper has begun the discussion of a theory of withdrawal. It produced evidence that a previously unrecorded withdrawal behavior, occurs with sufficient frequency to account for substantial reduction in nursing resources. Additionally, it was discovered that this behavior, termed systematic reduction in participation, resembles turnover in several ways. It bears a similar relationship to a group of demographic variables. It also shares a significant, but opposite relationship, to absenteeism and job tenure.

The findings above provide evidence which challenge the continuing viability of withdrawal theories based solely upon one behavioral choice. Systematic reduction in participation does not appear to behave merely as an antecedent to turnover, as absenteeism does. If it exists as a behavioral analogue, then turnover studies might benefit from controlling for SRP's occurrence. The author recommends that turnover research become "withdrawal research," including a variety of withdrawal behaviors in each study design.

Little is understood regarding the process by which employees consciously and unconsciously adapt to their work environment. The illumination of systematic reduction in participation as a competing withdrawal behavior, may

provide a link between the various withdrawal forms studied previously. The perception of the concept of employee withdrawal remains shrouded in the fog of uncertainty. Further research of the kind recommended above is needed to clarify the image, so that its outline may become more distinct.

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APPENDIX
Letter of Invitation to Participate

And Research Protocol

Dear (V.P. of Patient Care Services),

I am conducting research for my doctoral dissertation which might be of substantive interest to hospital and nursing administrators. The title of my research is "Systematic Reduction in Participation (SRP): A Study of an Employee Withdrawal Behavior." The basis for my research methodology arose from a series of pilot studies conducted by me during 1988 and 1989.

Systematic reduction in participation (SRP) is the name I have given to the practice of bedside nurses who begin employment at "full-time," and subsequently reduce their level of participation to part-time or "casual" rates. In addition to determining the prevalence of this phenomenon, my research has two primary objectives:

1) to determine the relationship between absenteeism, personal and organizational demographics, and SRP; and

2) to explore the relationship between SRP and turnover.

Would you consider allowing me to use your hospital for this research? I am studying under Dr. Virginia Cleland at the University of California (UCSF). All of the data I need to collect (see data list below) will be obtained from secondary sources. That is, it will be collected from existent staffing and Human Resources hospital records.

The primary benefit to your hospital would be a comprehensive profile of existing nursing turnover, absenteeism, and systematic reduction in participation. This profile would be accompanied by a detailed record of the survival of all full time RNs hired at your institution during 1983 and 1984.

I have enclosed a copy of my data collection needs, an abbreviated version of my research protocol, and my curriculum vitae. Please let me know if you would allow me to be your research guest. Thank you for considering this request.

Sincerely,

Lowell C. Wise, RN
Doctoral Candidate
UCSF School of Nursing
208-345-5124

enc.: Data list, protocol, curriculum vitae
cc. Dr. Cleland (415-476-4250)

Research Protocol

TITLE: Systematic Reduction in Participation: A Study of an Employee Withdrawal Behavior

1. PURPOSE

The study intends to discover the profile and incidence of a phenomenon: scheduled reduction in work participation (SRP) by registered nurses. It also explores the relationship between SRP and other withdrawal behaviors, eg. turnover and absenteeism.

2. BACKGROUND.

The study arises from problems encountered in interpreting a large body of existing turnover research, which fails to provide consistent evidence for a valid predictive model of nurse withdrawal from work participation. The researcher's thesis is that turnover is only one of several competing withdrawal behaviors which nurses select in response to dissatisfying work experiences. Evidence from pilot studies conducted by the researcher suggest that the phenomenon of scheduled reduction in participation (SRP) is widespread, and worthy of investigation. Shortage measurement has been developed by the investigator, and will serve to enhance the study's descriptive statistical base.

3. OBJECTIVES

The study will explore the relationship between nurse turnover, and SRP. Baseline absenteeism incidence will be compared with incidence prior to SRP or turnover. Individual and organizational demographics will be combined with absenteeism into a discriminant model. Thus, those who manifest SRP, those who turn over, and those who do neither, would be identified using discriminant analysis. From this analysis a predictive statistical model will emerge.

4. DESCRIPTION OF STUDY METHODOLOGY.

a. In General. All data will be gathered from secondary sources under administrative control (personnel, payroll, staff scheduling records).

The study shall review attendance records of all direct-care RN's hired during the calendar years, 1983-1984. The subjects will include only full-time RN's (=, or > .8 FTE). No individual contact will take place between subjects and researcher, or between subjects and any written material employed by the researcher. From these records the profile of participation (and prevalence of withdrawal) will be charted.

Individual Demographics: demographics to be entered into regression models shall include the following:

1) Whether 1st or 2nd position (experiential measure)
2) Date of Hire (D.O.H.)
3) Unit (specialty)
4) Shift
5) Date of Termination (D.O.T.)

Organizational demographics:

RN shortage at each hospital-- addition of overtime,registry hours, and "shifts worked below target."
Vacancy rate for each year (1983-1989)
Yearly census data (from public records)
Average nursing hrs/patient day (HPPD)(from public records)
Turnover profile-- includes average length of service-leavers and yearly position turnover rates

b. Procedure: Data shall be collected by examining lists, computerized, or hard-copy records. This data will be entered into a database which can be accessed by statistical programs. The discriminant regression model will take the following form:

Turnover vs. SRP vs. no withdrawal= personal demographics + organizational demographics + absenteeism

Multiple regression will also be applied in the following fashion:

Turnover=personal demographics + organizational demographics + SRP + absenteeism

Results will be used to support or reject four research hypotheses (a dissertation proposal copy will be made available on request).

c. Measures:

Turnover shall be measured from Human Relations department records. Only "voluntary" turnover will be considered: ie. turnover which was initiated solely by the nurse, and not related to disease, retirement, layoff, or firing.

Absenteeism will be taken from staffing schedules. Baseline absenteeism will be the incidence of unscheduled absence occurring during the two months following the initial probationary period. Absenteeism preceding a withdrawal event will be the incidence during the two months preceding.

Systematic Reduction in Participation (SRP) shall also be measured from staffing schedules. Any permanent reduction in scheduled days' work of one day a pay period (.1 FTE) or more will count as an incidence of SRP.

Shortage will be measured by adding the number of hours or shifts of overtime, registry use, and shifts worked below target for each unit, and for the institution. Overtime totals for units will be obtained from Payroll records. Registry and shifts worked below target can be obtained from the Staffing Department.

Individual Demographics will be obtained from Human Resources records.

Institutional demographics will arise from two sources. Turnover, length-of-service-leavers, and vacancy data can come from Human Resources records for the entire nursing division. Hospital bed size, yearly census, and average nursing hours per patient day can be obtained from statistics published by the state of California.

d. Probable duration. Although data collected spans the years, 1983-1989, the actual time spent by the researcher physically collecting data shall be one week, more or less.

4. RISKS

No risks are anticipated to individual subjects. Individual data, entered into statistical calculations, will be reported only as numbers.

5. PROCEDURES TO MAINTAIN CONFIDENTIALITY

Although individual records will be used to obtain data for some aspects of data collection, no names or identifying numbers shall be included in any written report. Names of subjects shall not be discussed with supervisors or administration.

Data reported in publications will identify your hospital only as "a western general hospital."

6. RECORD SURVEYS

As mentioned above, records indicating participation levels of a cohort of nurses will be studied. Thus, individual work schedules will be scanned in order to determine attendance patterns. Individual data will become grouped data for statistical analysis. Specific demographic information from Human Resources files will be entered into statistical analysis as well. If many or most files are located in "hard copy" (as opposed to computerized), the researcher may wish to use his own research assistant to configure the data into a computer format. It is anticipated that virtually no hospital personnel time will be consumed.

7. CONFLICT OF INTEREST

The investigator is not an employee or consultant for your hospital. The investigator has never solicited a service or product contract with the Hospital.

8. CONSENT FORM

Since all of the data consists entirely of management information, individual consent from each of the subjects will not be needed. This is the opinion registered by the University of California Committee on Human Research. (March 15, 1990).

Research Data Collection:
"Systematic Reduction in Participation"

Short List of Data Points

1. For each RN hired during 1983-4 (from Human Resources & Nurse Staffing):

   Name (or ID number if schedules and terminations are also listed by ID number)
   Whether 1st or 2nd nursing job (experiential measure)
   Date of Hire
   Unit
   Shift
   Absenteeism incidence during two months following initial probationary period, and two months preceding withdrawal event. This, from staffing schedules from D.O.H. until 60 months later or termination
   Date of SRP (reduction in scheduled participation)
   Date of Termination (names from Human Resources of all RNs terminating during 1983-1989; so that one can screen for subjects from the cohort)

2. Organizational demographics (From Nurse Staffing Department); Total for entire Department of Nursing, 1989:

   Number of REGISTRY SHIFTS worked
   Number of OVERTIME SHIFTS
   Number of SHIFTS BELOW "TARGET"

3. Organizational demographics (From Human Resources) for each RN who terminated during calendar year, 1989:

   Name
   Date of Hire
   Date of Termination
   (necessary to establish length of service-leavers, average length of service, and median length of service)

4. Organizational demographics (From Human Resources) for the entire Department of Patient Care Services:

   Number of RN positions at beginning of each year 1983-1989; and the end of 1989.
   Vacancy rates at beginning of each year 1983-1989; and the end of 1989.

5. Organizational demographics: (From hospital statistics published in Sacramento)
   hospital bed size (staffed beds)
   average yearly census rate
   average nursing hours per patient day

SAS (Sas Institute, 1985) Program
for Illustrating Coding of Variables

```
 HOSPS0   SAS      A1  F 80  Trunc=80 Size=28 Line=0 Col=1 Alt=1
====>
      |...+....1....+....2....+....3....+....4....+....5....+....6....+....7.
    0 * * * Top of File * * *
    1 CMS FILEDEF TRY DISK HOSPS1 DATA A;
    2 DATA HOSPS1;
    3    INFILE TRY;
    4    INPUT SEX 1 HOSP 2 AGE 3-4 EXPER 5 UNIT 6 SHIFT 7 SRPTEN 8-9
    5    TRMTEN 10-11 SRP 12 TRM 13 AMTSRP 14 SDUR 15-16 SFRQ 17-18
    6    TDUR 19-20 TFRQ 21-22  YRDUR 23-24  YRFRQ 25-26;
    7 YRSOLD=0;
    8 IF AGE=. THEN YRSOLD=28.2;
    9 ELSE YRSOLD=AGE;
   10 HOSP1=0; IF HOSP=1 THEN HOSP1=1; ELSE HOSP1=0;
   11 HOSP2=0; IF HOSP=2 THEN HOSP2=1; ELSE HOSP2=0;
   12 HOSP3=0; IF HOSP=3 THEN HOSP3=1; ELSE HOSP3=0;
   13 HOSP4=0; IF HOSP=4 THEN HOSP4=1; ELSE HOSP4=0;
   14 MEDSRG=0; IF UNIT=1 THEN MEDSRG=1; ELSE MEDSRG=0;
   15 MATCHLD=0; IF UNIT=2 THEN MATCHLD=1; ELSE MATCHLD=0;
   16 DAYS=0; IF SHIFT=1 THEN DAYS=1;  ELSE DAYS=0;
   17 EVES=0; IF SHIFT=2 THEN EVES=1;  ELSE EVES=0;
   18 SRPONLY=0;  IF SRP-TRM=1 THEN SRPONLY=1;  ELSE SRPONLY=0;
   19 TRMONLY=0; IF TRM-SRP=1 THEN TRMONLY=1; ELSE TRMONLY=0;
   20 FRQABS=0; IF TRM=1 THEN FRQABS=TFRQ;
   21    ELSE IF SRPONLY=1 THEN FRQABS=SFRQ;
   22    ELSE FRQABS=YRFRQ;
   23 PROC LOGIST PCOR OUT=BETAS OUTP=PRED;
   24    MODEL TRM=SEX  AGE   HOSP1 HOSP2 HOSP3 HOSP4 EXPER MEDSRG
   25       MATCHLD DAYS EVES FRQABS;
   26    TITLE1 'TRM REGRESSION WITHOUT TENURE';
   27 PROC PRINT DATA=BETAS;
   28    TITLE 'PARAMETER ESTIMATES AND COVARIANCE MATRIX';
   29 * * * End of File * * *
```

Model With Age Variable Deleted

-2 LOG LIKELIHOOD FOR MODEL CONTAINING INTERCEPT ONLY= 553.86

MODEL CHI-SQUARE= 39.73 WITH 11 D.F. (SCORE STAT.) P=0.0000
CONVERGENCE IN 5 ITERATIONS WITH 0 STEP HALVINGS R= 0.187
MAX ABSOLUTE DERIVATIVE=0.2518D-10. -2 LOG L= 512.47
MODEL CHI-SQUARE= 41.39 WITH 11 D.F. (-2 LOG L.R.) P=0.0000

VARIABLE	BETA	STD. ERROR	CHI-SQUARE	P	R
INTERCEPT	0.39206269	0.52386327	0.56	0.4542	
SEX	0.36652435	0.50523946	0.53	0.4682	0.000
HOSP1	-0.70484123	0.29062737	5.88	0.0153	-0.084
HOSP2	-0.28791529	0.42803246	0.45	0.5012	0.000
HOSP3	-0.78281916	0.42142589	3.45	0.0632	-0.051
HOSP4	-0.47310585	0.31406486	2.27	0.1320	-0.022
EXPER	0.25080875	0.23305075	1.16	0.2818	0.000
MEDSRG	0.43798485	0.26258209	2.78	0.0953	0.038
MATCHLD	-0.50143337	0.31224277	2.58	0.1083	-0.032
DAYS	-0.69658459	0.27334310	6.49	0.0108	-0.090
EVES	-0.51899148	0.27967812	3.44	0.0635	-0.051
FRQABS	0.15541025	0.05591658	7.72	0.0054	0.102

Model with Dummy Values Deleted

-2 LOG LIKELIHOOD FOR MODEL CONTAINING INTERCEPT ONLY= 274.30

MODEL CHI-SQUARE= 24.47 WITH 10 D.F. (SCORE STAT.) P=0.0064
CONVERGENCE IN 5 ITERATIONS WITH 0 STEP HALVINGS R= 0.148
MAX ABSOLUTE DERIVATIVE=0.1985D-08. -2 LOG L= 248.30
MODEL CHI-SQUARE= 26.00 WITH 10 D.F. (-2 LOG L.R.) P=0.0037

VARIABLE	BETA	STD. ERROR	CHI-SQUARE	P	R
INTERCEPT	1.09787993	1.39144065	0.62	0.4301	
SEX	0.08223798	0.85184155	0.01	0.9231	0.000
AGE	-0.04767443	0.03245849	2.16	0.1419	-0.024
HOSP1	-0.29058098	0.46968383	0.38	0.5361	0.000
HOSP2	0.49863003	0.58595160	0.72	0.3948	0.000
HOSP3	.	.	.	.	.
HOSP4	.	.	.	.	.
EXPER	0.66785074	0.35626612	3.51	0.0608	0.074
MEDSRG	0.44863220	0.39594636	1.28	0.2572	0.000
MATCHLD	-0.44059496	0.46489405	0.90	0.3433	0.000
DAYS	-0.48572005	0.38550957	1.59	0.2077	0.000
EVES	-0.66747632	0.43980821	2.30	0.1291	-0.033
FRQABS	0.20662213	0.07212214	8.21	0.0042	0.150

Figure A-1. Comparison of the consequences of choosing one method for handling missing age data over another.

Model Employing Frequency of Absence (FRQABS)

-2 LOG LIKELIHOOD FOR MODEL CONTAINING INTERCEPT ONLY= 553.86

MODEL CHI-SQUARE= 41.43 WITH 12 D.F. (SCORE STAT.) P=0.0000
CONVERGENCE IN 5 ITERATIONS WITH 0 STEP HALVINGS R= 0.186
MAX ABSOLUTE DERIVATIVE=0.2908D-09. -2 LOG L= 510.64
MODEL CHI-SQUARE= 43.22 WITH 12 D.F. (-2 LOG L.R.) P=0.0000

VARIABLE	BETA	STD. ERROR	CHI-SQUARE	P	R
INTERCEPT	1.60102797	1.04648157	2.34	0.1260	
SEX	0.33140769	0.50566037	0.43	0.5122	0.000
YRSOLD	-0.04210325	0.03153589	1.78	0.1818	0.000
HOSP1	-0.74186602	0.29191599	6.46	0.0110	-0.090
HOSP2	-0.27485867	0.43180053	0.41	0.5244	0.000
HOSP3	-0.65179524	0.43469780	2.25	0.1338	-0.021
HOSP4	-0.46312609	0.31430198	2.17	0.1406	-0.018
EXPER	0.28188301	0.23484171	1.44	0.2300	0.000
MEDSRG	0.42261145	0.26314315	2.58	0.1083	0.032
MATCHLD	-0.50429650	0.31321441	2.59	0.1074	-0.033
DAYS	-0.71524372	0.27422880	6.80	0.0091	-0.093
EVES	-0.50990151	0.28008232	3.31	0.0687	-0.049
FRQABS	0.16060763	0.05589372	8.26	0.0041	0.106

Model Employing Duration of Absence (DURABS)

-2 LOG LIKELIHOOD FOR MODEL CONTAINING INTERCEPT ONLY= 553.86

MODEL CHI-SQUARE= 37.37 WITH 12 D.F. (SCORE STAT.) P=0.0002
CONVERGENCE IN 5 ITERATIONS WITH 0 STEP HALVINGS R= 0.166
MAX ABSOLUTE DERIVATIVE=0.5960D-08. -2 LOG L= 514.64
MODEL CHI-SQUARE= 39.22 WITH 12 D.F. (-2 LOG L.R.) P=0.0001

VARIABLE	BETA	STD. ERROR	CHI-SQUARE	P	R
INTERCEPT	1.57394484	1.03547699	2.31	0.1285	
SEX	0.31772565	0.49955803	0.40	0.5248	0.000
YRSOLD	-0.03972628	0.03122709	1.62	0.2033	0.000
HOSP1	-0.75820712	0.28950561	6.86	0.0088	-0.094
HOSP2	-0.34570010	0.43063074	0.64	0.4221	0.000
HOSP3	-0.66678466	0.43488238	2.35	0.1252	-0.025
HOSP4	-0.48330213	0.31366731	2.37	0.1234	-0.026
EXPER	0.27034897	0.23419127	1.33	0.2483	0.000
MEDSRG	0.39571888	0.26135640	2.29	0.1300	0.023
MATCHLD	-0.49670007	0.31211590	2.53	0.1115	-0.031
DAYS	-0.67189149	0.27263270	6.07	0.0137	-0.086
EVES	-0.50025115	0.27963380	3.20	0.0736	-0.047
DURABS	0.07246821	0.03518371	4.24	0.0394	0.064

Figure A-2. Comparison of frequency of absence (FRQABS) with duration of absence (DURABS) in a regression with termination (TRM)


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