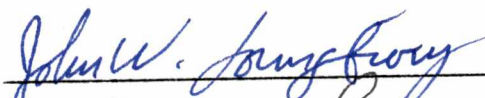
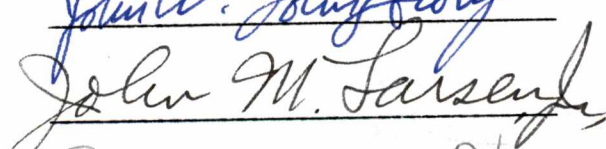
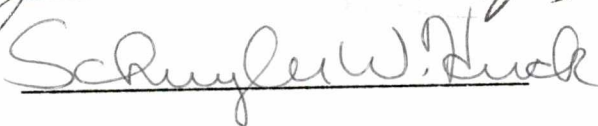


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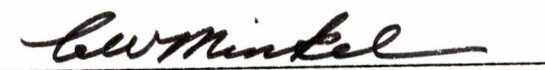
I am submitting herewith a dissertation written by Michael T. Roberson entitled "Hours of Work, Attitudes, and Well-being: The Relationship Between Work Schedule and the Quality of Life." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Industrial and Organizational Psychology.


Eric D. Sundstrom, Major Professor

We have read this dissertation
and recommend its acceptance:

Accepted for the Council:


Vice Provost
and Dean of The Graduate School

HOURS OF WORK, ATTITUDES, AND WELL-BEING:
THE RELATIONSHIP BETWEEN WORK SCHEDULE
AND THE QUALITY OF LIFE

A Dissertation
Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville

Michael T. Roberson
March 1986

DEDICATION

Throughout my educational career, my wife, Kathy, has been a constant source of support and encouragement. She has been a confidant, friend, shoulder on which to lean, and advisor. Without her, achievement of this professional goal would have been substantially more difficult, and it would have been much less meaningful. I wish to convey to her my love and gratitude for all that she has done, and I dedicate this dissertation to her.

ACKNOWLEDGMENTS

First, I would like to convey my sincere thanks to Dr. Eric D. Sundstrom. His guidance, support, and friendship have benefited me both academically and personally over the years that I have known him. For going far beyond what could be expected of a major professor, both for my Master's and doctorate work, I would like to express my deep appreciation.

I would like to thank to Dr. John W. Lounsbury. In addition to serving on my graduate committee, Dr. Lounsbury taught two of the most intense and rewarding courses of my graduate career. I continue to appreciate and benefit from the background which he assisted me in developing.

Thanks are also due to Dr. John M. Larsen. Dr. Larsen was the first member of the faculty I met when I came to The University of Tennessee, and he quickly became a valued advisor. I am grateful for all of his efforts.

I wish to thank Dr. Schuyler W. Huck for his service on both my thesis and dissertation committees and also for the excitement he brought to the courses he taught. I will be forever grateful for the sound background he provided me as a result of having been his student. Throughout my graduate career, Dr. Huck has communicated his sincere interest in my development and has served as a great source of encouragement.

I am appreciative of my parents and parents-in-law who have provided encouragement and support throughout my graduate studies. I

thank my students, who have challenged me, who have taught me, and who have inspired me to continue to grow professionally. Finally, I am thankful for my two beautiful daughters, Angela and Ashley, who have helped me keep my perspective on what is really important and because of whom accomplishment of this professional goal has even more personal value.

ABSTRACT

This study examined five research questions on the relationship between hours of work and the quality of life, including attitudes about work, nonwork, and life satisfaction, as well as perceptions of stress, tension, fatigue, and interference between work and nonwork. A total of 520 nursing employees at a university hospital in the southeastern United States participated. Data were gathered over a 13-and-a-half month period from employees working four different work schedule formats. Included were a traditional, eight-hour, seven day on, two day off schedule; a 12-hour, seven day on, seven day off schedule; a 12-hour, 2-3 day on, 2-3 day off schedule; and a modified eight-hour schedule, within which employees were off for three days every other weekend. Twenty-two variables, measuring a variety of indications of quality of life, were analyzed. Among workers changing from an eight-hour work schedule to a 12-hour, "compressed" workweek, improvements in a variety of work and nonwork variables were noted immediately after the change; however, most of the positive effects had disappeared 13 months later. Of the four work schedules, a 12-hour, seven day on, seven day off schedule was found to be associated with the most positive perceptions of quality of life. In examining the relationship between work hour satisfaction and quality of life variables, interference between the job and nonwork activities demonstrated the strongest association. A five variable regression model was formed, accounting for 54 percent of the variability in work hour satisfaction. When quality of life variables were regressed on life

satisfaction, five variables explained 65 percent of the variation. Personal satisfaction (a measure of satisfaction with the variety and accomplishment in one's life) and satisfaction with free time activities demonstrated the strongest association with the way people felt about their lives as a whole. Work hour satisfaction also displayed a substantial relationship with life satisfaction ($r^2 = .31$). Finally, "direct" measures of the impact of work on nonwork revealed substantial perceived interference between the job and both free time activities and family life. Many respondents felt that they had less free time than needed, although they expressed satisfaction with the way they currently spent their available free time. Many participants indicated at least some sleep disruption, a common side effect of working other than traditional eight hour per day, five day per week, daylight work schedules. A model describing the impact of work hours on work and nonwork attitudes was proposed.

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CHAPTER I

INTRODUCTION

For years, social scientists have devoted intense study to the investigation of the relationship between job satisfaction and many other variables. In fact, the preoccupation with research topics involving job satisfaction has been so extensive that many other important areas of potential investigation have been overlooked entirely or have received considerably less attention than they deserved.

However, recent research has begun to focus on broader impacts of organizations on individual employees, under the concept of quality of employee life. This term "quality of life" includes not only job satisfaction but also includes indications of well-being (e.g., life satisfaction, stress) and the connection of the job with "nonwork" activities. Nonwork describes all activities not directly involved in work performed to earn a living, such as leisure activities done for fun or relaxation, household chores, child care, volunteer work, commuting to and from work, and sleep. While "nonwork" is a clumsy term, it has come to be used because it seems to be the best means of describing the variety of activities involved.

Purpose of the Present Study

The purpose of the present study was to identify, within a given research setting, relationships among work schedule, work and nonwork variables, and overall well-being. Of particular interest was the

search for possible association between one crucial work variable, work schedule, and a variety of variables reflecting the quality of life on and off the job.

The Relationship Between Work and Nonwork

Within this relatively new work-nonwork research domain, the most basic issue confronting researchers is to better understand the nature of the relationship, if any, between work and nonwork. Thus far, four hypotheses attempting to explain the work-nonwork relationship have been proposed.

Hypotheses for the Work-Nonwork Relationship

The segmentation hypothesis could be considered the null hypothesis, and this premise holds that work and nonwork are distinct, separate, and little or no interrelationship exists. Under this hypothesis, enunciated by Dubin (1956, 1958, 1973), attitudes and/or activities in which workers engage on the job would not be associated, either positively or negatively, with attitudes and/or activities off the job. Dubin contended that each segment of a worker's life existed independent of other segments, with no psychological linkage existing between work and nonwork.

The first alternative hypothesis is the spillover hypothesis, suggested by Wilensky (1960). This hypothesis states that attitudes and/or activities in which workers engage on the job affect those off the job in a positive fashion (i.e., what happens on the job is likely to be similar to what happens off the job). Although not a widely

held view, it is also possible that off-the-job attitudes and activities could positively affect those on the job.

The second alternative hypothesis, also mentioned by Wilensky, is the compensation hypothesis. Under this hypothesis, attitudes and/or activities in which workers engage on the job vary inversely with those off the job or vice versa. Individuals are said to balance their life activities, for instance, by engaging in nonwork activities which are quite different from their work activities.

The third alternative hypothesis is the reciprocity hypothesis. This hypothesis is similar to both the spillover and compensation hypotheses in that it states that work and nonwork are related. The reciprocity differs from the other two in that work and nonwork are said to mutually affect each other and the direction of the relationship (i.e., positive or negative) is not specified.

The four hypotheses are summarized in Table 1. As indicated, H_0 is mutually exclusive from H_1 , H_2 , and H_3 because H_0 indicates that there is no relationship between work and nonwork, while the three rival hypotheses each state that some relationship does exist. H_1 and H_2 are mutually exclusive from each other because they propose opposite directions for the existing relationship. H_3 is a combination of H_1 and H_2 , with the additional caveat that work and nonwork mutually affect each other. Should the conditions for H_3 be satisfied, then the conditions for either H_1 or H_2 would have been satisfied (which one depending on the direction of the relationship). However, should the conditions for H_2 or H_3 be satisfied, the reciprocity requirement for H_3 might or might not have been met.

TABLE 1
SUMMARY OF THE FOUR HYPOTHESES CONCERNING
THE RELATIONSHIP BETWEEN WORK AND NONWORK

Nature of the Relationship	Direction of the Relationship		
	Positive	Negative	Irrelevant (no relationship)
Neither variable affects the other	--	--	Segmentation (H ₀)
One variable affects the other	Spillover (H ₁)	Compensation (H ₂)	--
The variables mutually affect each other	Reciprocity ^a (H ₃)	Reciprocity ^b (H ₃)	--

^a The requirements for the spillover hypothesis are also met.

^b The requirements for the compensation hypothesis are also met.

Staines (1980) differentiated several different "relationships" which may exist between characteristics of or attitudes toward work and nonwork. Some researchers have operationalized the two concepts in such a way that only reactions to work and nonwork were considered (i.e., satisfaction with work activities, satisfaction with nonwork activities). Others have focused on the nature and/or frequency of the activities in which people are engaged during work, as opposed to nonwork, hours. Yet other researchers have looked for differences in worker attitudes and preferences, related to the nature of the work that is performed. Due to the fact that the findings might not be the same for attitudes, activities, and the type of work performed, researchers must not be misled that there is only one relationship between work and nonwork to be examined. Instead, there are numerous such relationships which must be studied separately. A summary of some of the relevant literature will help illuminate what we have learned about these relationships.

Kornhauser (1965) found that mental health was related to the level of job held in the organization, with jobs requiring a higher level of skill, responsibility, and resulting in higher pay being associated with greater mental health. Meissner (1971) found that when job constraints (i.e., the degree of discretion over the time, space, function, and coordination of work) were such that workers had little discretion on the job, there was an association with lower participation in voluntary social organizations.

Rousseau (1978) compared work and nonwork along six dimensions,

taken or adapted from Hackman and Oldham's (1974) Job Diagnostic Survey (e.g., task identity, skill variety, feedback from people). Findings indicated that there were positive associations between work and nonwork dimensions, with matching dimensions yielding noticeably stronger relationships. Rousseau noted that since the work and nonwork measures were so similar, the obtained correlations might be spurious due to correlated error (i.e., method variance).

Some authors have broadened their focus and have attempted to evaluate overall satisfaction of workers with their lives and to look for relationships among work and nonwork variables and life satisfaction. London, Crandall, and Seals (1977), in a national survey of 1,297 adults, found that the maximum intercorrelation among job and leisure items accounted for only eight percent of total variation, low enough to support the segmentation hypothesis. Both work and leisure items were found to be related with life satisfaction, with the two groups explaining 25 percent of the variance. While this relationship is not remarkable, when the sample is separated based on demographic characteristics of the respondents, stronger associations were found. The greatest relationships were found among college graduates, for whom job satisfaction items taken together explained 29 percent of life satisfaction variance and leisure items collectively accounted for 21 percent. Despite these findings, for most of the demographic breakdowns sparse relationships were noted. Given that 19 separate subgroup analyses and one overall analysis were conducted, the possibility that one or more of the relatively strong relationships may be based on chance must be considered. In addition, the bulk of these

data speaks to a relatively weak relationship between life satisfaction and both job and leisure satisfactions.

Chacko (1983) used the frequency of change in product moment (FCP) technique in an attempt to understand the causal relationships underlying job and life satisfaction. Results indicated a greater influence of job satisfaction on life satisfaction than vice versa. One confusing point concerning this research effort was that the author repeatedly referred to life and nonwork satisfactions as if they were synonymous. Life satisfaction was operationalized by eight bipolar adjectives relating to feelings about the respondent's present life. Thus, Chacko's findings actually provide evidence that satisfaction with part of one's life are at least partially causal of satisfaction with one's life as a whole -- a finding which is quite predictable.

Near, Smith, Rice, and Hunt (1984) studied the relationships among job, nonwork, and life satisfaction. These authors found support for each of their three hypotheses. First, nonwork satisfaction explained more variation in life satisfaction than did job satisfaction. Second, nonwork-related variables (i.e., satisfaction and conditions) taken together accounted for more life satisfaction variation than work-related variables. Finally, job and nonwork satisfaction were more strongly associated with life satisfaction than were working conditions or living conditions. Once again, the issue of method variance is involved; satisfactions were more highly correlated than are other aspects of work and nonwork. It is not known whether the relationship found is true or spurious.

There is only one work-nonwork relationship which has been found to be negative. The amount of physical effort exerted on and off the job have been found to be negatively related, such that the greater the effort that is expected in one aspect of employees' lives, the less effort is likely to be expended in the other aspect (Karasek, 1976).

While no final conclusions are possible, existing evidence speaks in favor of a positive association between work and nonwork satisfactions, which would provide support for the spillover hypothesis. Further, some characteristics of work appear to be related with general mental health and well-being. Three separate reviews of the work and nonwork literature may provide the interested reader with an additional perspective on available research findings (Kabanoff, 1980; Staines, 1980; Near, Rice, and Hunt, 1980).

Several authors have examined overall well-being among employees. Rainwater (1974) looked at work and family life as they relate to personal well-being and concluded that individuals attempt to secure well-being through "validating activities" (i.e., activities that cause the individual to feel like an important member of society and meet his or her basic personal needs). Rainwater believed that people could engage in the needed validating activities at home or on the job.

Andrews and Withey (1976) attempted to assess individuals' perceptions concerning the quality of their lives, in a comprehensive fashion. The authors looked at both global measures of well-being as well as specific measures of such concerns as jobs, community, family, self, and government. The development of these measures, as well as

the identification of differences in well-being among various sub-groups within the population, has been quite valuable.

Quinn and Staines (1979) reported on two different surveys of the quality of employment life in America. The purpose of the surveys was to assess the implications of work on the lives of individual employees and on society in general. Specific areas assessed included work and family, work and leisure, job security and mobility, and supervision and participation.

Hours of Work

While understanding the relationships among work and nonwork variables is important, a concern which is even more relevant for managers is to understand the impact of certain job characteristics (resulting from organizational policies and decisions) on the quality of employees' lives both on and off the job. In addition to being desirable from the employees' point of view, enhancing the quality of life could be expected to help the organization become more competitive in attracting qualified new employees and in retaining valuable current employees. It is also possible that some of the quality of life variables (e.g., job-related tension and stress) may be related to employee productivity.

An outstanding example of an organizational variable that has the potential to dramatically impact the quality of employee life is the scheduling of work hours. While some organizational decisions and policies may affect quality of life, their impact is not immediate or direct. Hours of work, on the other hand, directly influence the

timing, number, and quality of hours spent away from the workplace. For this reason, understanding the connection between working hours and the quality of life is important in its own right, as well as providing an opportunity to study a direct impact of work on nonwork in a specific, practical context.

Historical Background

The length of the average workweek in the United States has declined sharply over the past century, from an average of 72 hours in the 1860's to 42 hours in 1940. Little change has been observed since that time (Heneman, Schwab, Fossum, & Dyer, 1983). During the years of rapid reduction in the hours worked by persons in this country, the cost of extra nonwork time afforded workers was offset largely by increases in employee productivity. Much of these productivity gains was caused by technological improvements. As a result, the typical worker was able to work fewer hours without experiencing reductions in "real take-home pay" (i.e., income after taxes and adjusted for inflation). In fact, real take-home pay increased steadily despite the dramatic cutback in hours worked by the average American.

With the average workweek presently at approximately 42 hours, almost half of what it was a century ago, neither workers nor management has shown much strong interest in seeking further reductions. For workers, further shortening of the workweek would cause them to sustain cuts in real take-home pay, because technological advances are no longer enough to offset such a reduction. For management, a trimming of hours would mean having to hire, train, and manage a greater

number of employees, increasing staffing costs and presenting managers with new problems posed by a larger workforce.

Having apparently reached a stable workweek length, with which management and workers are reasonably content, some organizations have sought to find innovative ways to arrange the hours employees work, primarily in an attempt to make work schedules more compatible with the life styles and preferences of their employees, while at the same time meeting the staffing needs of the organization. Any schedule, other than full-time, day work, eight hours per day, five days per week, with traditional lunch periods and breaks, is considered an alternative schedule. The major types of alternative work schedules which have been studied are compressed workweeks, the most common form of which is the "4/40" schedule (i.e., working 40 hours in four days instead of the customary five days, resulting in a ten hour work day); flexible working hours (also called flextime); shift work; and part-time work schedules. Figure 1 includes the major work hour innovations that have been considered by organizations. Relevant literature concerning these types of alternative work hours arrangements will now be reviewed.

Compressed Workweeks

Glueck (1979) defines a compressed workweek as the scheduling of the normal workweek (commonly 40 hours) in less than five days. While the most popular format for the compressed workweek is the 4/40 schedule, any number of other arrangements is possible, particularly in organizations whose business is 24 hours per day and seven days per

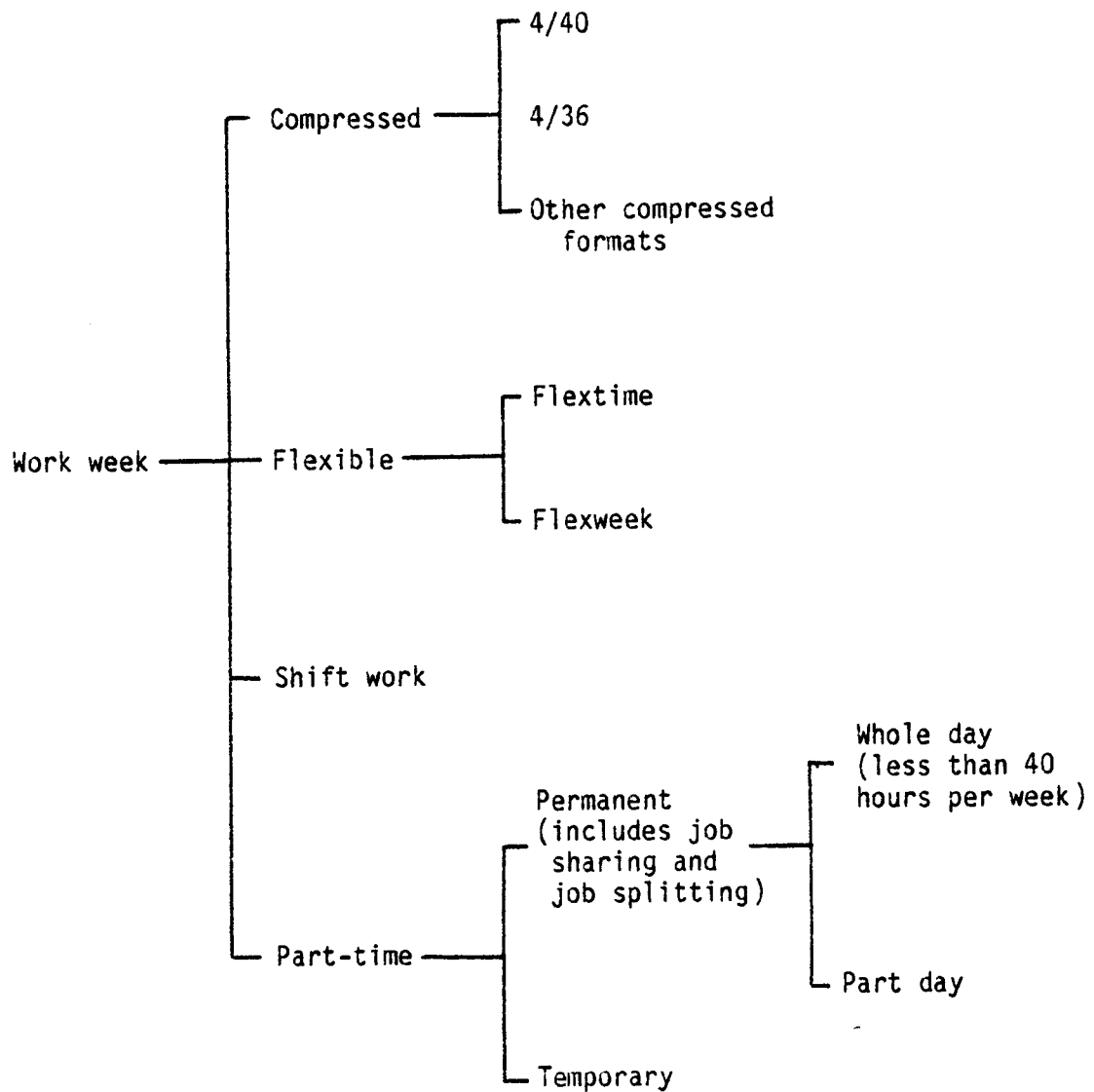


Figure 1. Summary of Major Alternative Work Schedule Formats

week. Therefore, compressed workweeks should be looked upon as a generic concept, for which the 4/40 schedule is merely one prominent example.

Views of the desirability of compressed workweeks have been mixed -- both among practitioners and in the scientific literature. Glueck (1979) has summarized the alleged advantages and disadvantages of compressed workweeks. Supposed advantages are as follows:¹

1. Increased leisure for employees. (Actually, there is not more time, but there are more blocks of nonwork discretionary time.)
2. Reduced commuting time and expense for employees.
3. Reduced absenteeism.
4. Improved performance.

Skeptics of compressed work schedules cite the following potential disadvantages:

1. Increased employee fatigue.
2. Diminished feasibility of utilizing overtime when business needs dictate an increase in the number of total employee hours worked.
3. Greater likelihood that workers will "moonlight" during their off days, increasing fatigue, as well as other (at least

¹Some of these suggested advantages, as well as the disadvantages espoused by opponents, may actually be scientifically indefensible. They are given here to acquaint the reader with the diversity and conflicts that exist in the assumptions many practitioners make concerning possible results of work scheduling. Empirical results of studies will be presented on the pages to follow.

perceived) problems for the organization.

4. Greater dissatisfaction among workers who find that the compressed workweek disrupts their personal lives (e.g., married persons with small children).
5. Serves merely as a "stepping stone" to a shortened workweek, which will increase labor costs for the organization dramatically.

Research conducted to evaluate the success of compressed workweek formats has yielded results that are, at best, preliminary and inclusive. Much of the past work that has been done in this area is based on anecdotal evidence or opinion surveys resulting in few conclusions that can be soundly documented. Past research, of both an experimental and nonexperimental nature, will be reviewed.

The lack of experimental rigor in many of the early compressed workweek studies is exemplified by what was possibly the first substantial work done on this subject, conducted by Poor and Steele (1970). Questionnaires were sent to the chief executives of 27 firms which were using the 4/40 compressed work schedule format. While five firms discontinued the experimental work hours format, the other two firms reported general satisfaction with the innovation. There were no hard data collected, nor were there available any specific employee reactions.

Steward and Larsen (1971) examined absenteeism, productivity, and labor cost per unit over a three month period following a change to a compressed schedule in a production operation. Productivity and labor costs were improved slightly, while absenteeism fluctuated sharply.

Gannon and Reece (1971) studied a conversion to 4/40 among engineering technicians and found wide variability in the reactions of participants to the new schedule. In addition, employee job satisfaction increased immediately after the change to 4/40, but later decreased.

Nord and Costigan (1973) conducted the first substantial study of compressed work schedules. Theirs was a longitudinal study with the first measurement taken six weeks after a change from 5/40 to 4/38.² Another measurement was taken 13 weeks after the change, and the final one was taken one year after conversion. Participants were employees in a highly automated plant of a pharmaceutical firm. Work was primarily machine paced and largely involved monitoring operating machinery. Of approximately 200 employees, 131 responded to the first questionnaire, 126 to the second, and 111 to the final administration, yielding 59 participants who responded to all three questionnaire administrations. The average age of respondents was late 40's. Dependent variables included measures of attitudes toward the change, attitudes toward family life, number of hours of sleep, and body weight. Reactions to the four-day schedule were highly positive and consistent across time, with four out of five workers indicating that they preferred the new work format over the old. No significant differences were found by age, sex, marital status, or number of children living at home. (However, all of these demographic variables except

²Under the compressed schedule, employees worked four nine-and-a-half hour days.

sex were artificially dichotomized, which may have resulted in an inability to detect any truly significant differences.) Results reflected a decline in employee absenteeism immediately after the change. In addition, one year after the change, workers reported averaging approximately 20 minutes less sleep per day than prior to the initiation of the compressed schedule (i.e., from 7.05 hours per night to 6.72 hours). Workers saw more changes in their home life immediately after the change (six weeks) than after 13 weeks and one year, with women indicating more favorable changes than men. However, over time more changes in the job itself were perceived by the employees. Although studied, no significant changes in body weight were found to be associated with the work hour changes. A limitation to the generalizability of Nord and Costigan's study is the fact that the schedule manipulation was not only a rearrangement, but also a two-hour reduction in the workweek. Provided that take-home pay was not adversely affected (the authors do not address this point), it would be difficult to imagine employees not having some favorable reaction to working fewer hours, regardless of whether a compression of the workweek is part of the change or not.

Macut (1974) reported the results of a pilot study conducted by Bureau of Labor Statistics investigating the impact of compressed work schedules on economic variables such as turnover, absenteeism, and the amount of overtime required. The findings revealed a reduction in absenteeism, while little change in pay, benefits, and weekly hours were observed. Results concerning overtime were mixed, with a great deal of inter-organizational variability.

Ivancevich (1974) conducted a study of the effects of conversion to a 4/40 schedule in a manufacturing facility, using a pretest-posttest control group design. The first measurement was taken one month prior to the change, the second measurement was three months after the change, and the final measurement was 12 months after the change. The author hypothesized that the change to a compressed schedule would be accompanied by positive changes in job satisfaction, anxiety-stress, absenteeism, and performance. Results of the study indicated a significant, but small, improvement in overall job satisfaction, with several facets of job satisfaction (personal worth, social affiliation, job security, and pay) also showing significant improvements. There was a significant, but again small, improvement in anxiety-stress. Significant changes were found in overall performance, rate of production, and effectiveness as a team member. No significant change in unexcused absences was noted.

Hodge and Tellier (1975) surveyed a total of 223 employees in 24 companies 12 to 39 months (a median of 19 months) after their organization's conversion to a 4/40 work schedule. Employees were found to be satisfied with the revised workweek, with those people on the same job the longest reporting the highest levels of satisfaction.

Calvasina and Boxx (1975) studied productivity in two plants in the apparel industry, comparing performance the year before a change from 5/40 to 4/38 with that of the year the change occurred. The authors found that productivity levels were maintained for all but the older employees.

Goodale and Aagaard (1975) gathered the reactions of 474 employees in the accounting division of a large multinational corporation to a 4/38 workweek under which the off days changed from week-to-week. Most of the employees surveyed had worked the revised schedule for six months to a year. The questionnaire consisted of 63 items, of which 22 were directed at potential effects of the schedule on work-related outcomes (e.g., fatigue, productivity, tardiness), 30 items were aimed at uncovering nonwork effects (e.g., ease of shopping, social life, personal spending), and 11 items were designed to assess overall satisfaction with the schedule. In addition, supervisors completed a questionnaire concerning the performance of their respective units. Due to the fact that conversion to 4/38 had occurred prior to the initiation of the study, the authors used the retrospective method described by Hellriegel (1972), by which participants were asked to respond based upon their "perceptions" of how their present behavior compared with that prior to conversion. (The authors acknowledged that faulty memory and perceptual bias could cause the results of such a questionnaire study to be misleading.) Findings concerning the work-related consequences of the change reflected very little substantiation of employer concerns about moonlighting (only 1.7 percent of participants reported moonlighting); however, with the rotating days off schedule, it would be more difficult for workers to obtain a second job, even if they wanted one. Approximately one-fourth of the participants indicated that absenteeism was reduced. On the negative side, many workers found the jobs to more tiring and employees were less willing to work overtime. Positive changes were noted with

regard to knowledge of other workers' duties and to overall job satisfaction. Concerning the impact of the compressed workweek on non-work activities, despite no change in total weekly hours worked, 65 percent felt that they had more leisure time and 63 percent said that they were making better use of the time. Shopping was considered to be easier and a majority believed that their marriage and general social lives had improved. One-third reported an increase in personal spending, partially explained by a 32 percent increase in the average employee's expenditures at the coffee and doughnut concession. Overall, almost 80 percent favored continuing the four-day work schedule. Interestingly, however, over twice as many respondents expressed the belief that the organization benefited by the new work schedule more than did the employees (73 percent to 31 percent). In analyzing the responses by demographic items, males reported a more positive effect on their activity patterns and their lives in general than did females, although men indicated a greater difficulty in adjusting their personal budget to the new workweek. Younger workers were consistently more favorable in their appraisal of changes associated with conversion than were older workers, and employees with the lowest incomes were more positive than those with middle or high incomes. Interestingly, despite overwhelming support for continuation of the four-day week among workers, a majority of supervisory personnel felt that the schedule format had a detrimental effect on their work area and otherwise made the supervisor's job more difficult. No significant changes were found in the objective productivity data which were examined.

Gorney and Maertín (1975) sent questionnaires to 210 nurses in 60 short term stay hospitals which had adopted a 4/40 schedule. The authors found that performance did not change and satisfaction among workers increased.

Ivancevich and Lyon (1977) conducted a follow-up of the earlier Ivancevich (1974) study and compared the impact of a compressed work-week on two experimental groups, with one equivalently sized group serving as a control group. The control group and one experimental group were studied over a 25-month period, with measurements taken one month before and three, 12, and 24 months after a conversion to a 4/40 schedule. The remaining experimental group was studied over a 13-month period with measurements taken only one month before and 12 months after the change occurred. The instruments used were identical to those Ivancevich used in his 1974 study. In examining the 13-month interval, the authors found strong support for the conclusions reached earlier by Ivancevich. However, the 25-month interval revealed only one significant difference (i.e., pretest versus posttest) out of the 14 variables under investigation. Table 2 gives the results of the two studies in detail and shows the great congruency of the two studies using the same time interval, but the striking dissimilarity of results obtained between the 13-month and 25-month intervals. These findings suggest that many of the positive effects of conversion to compressed work schedules might be temporary in nature.

Fottler (1977) conducted an interview study of employee acceptance of a 4/40 schedule in the nutrition and food service department within a hospital. Forty-eight workers were questioned seven months

TABLE 2
COMPARISON OF RESULTS OF TWO EXPERIMENTAL STUDIES
OF THE IMPACT OF A 4/40 WORK SCHEDULE
ON WORK AND NONWORK VARIABLES

	13-month interval		25-month interval
	Ivancevich, 1974	Ivancevich and Lyon, 1977	Ivancevich and Lyon, 1977
Job satisfaction facets			
Self-actualization			
Autonomy		*	
Personal worth	*	*	*
Social affiliation	*		
Job security	*	*	
Pay	*	*	
Overall satisfaction	*	*	
Anxiety-stress	*	*	
Unexcused absences			
Job performance criteria			
Quality of production			
Quantity of production	*	*	
Effectiveness as a team member	*	*	
Knowledge of job			
Overall performance	*	*	

Note. A "*" represents a statistically significant t , $p < .05$, for the difference between the pretest and the posttest.

after the schedule change, one month after an employee vote was taken by management to determine whether the revised schedule would be retained. Nine variables were examined as possible predictors of employees' votes: age, years of service, sex, marital status, (included whether employee has dependents or not), occupation, perceived physical change in status and responsibility. Only three of the variables proved to yield a significant difference in the proportion of employees voting for continuance, those being perceived physical demands (more of those who reported lower demands favored continuance) and perceived change in status and responsibility (more of those who reported increases favored continuance). However, there seem to be at least three potential explanations as to why only three of the variables hypothesized to have a relationship with employee reactions to a four-day workweek actually did so. First, with a sample size of only 48 employees, the study lacked sufficient statistical power to detect some meaningful effects. Second, and compounding the problem of low statistical power, the author used a .01 probability level, which is more stringent than the .05 level used by most other authors. Third, several of the variables were artificially broken into categories in such a way as to camouflage some meaningful differences. Thus, the results of this study permit very few conclusions.

Breaugh (1983) surveyed 671 hourly workers in order to learn their reactions and preferences for various work schedules. Workers were asked to indicate whether they would prefer to work a 7-day rotating schedule or a 12-hour fixed schedule. As hypothesized, it

was found that employees who had previously worked the 12-hour schedule were significantly more favorable toward that format than were employees who had not worked a compressed schedule. Participants who had worked the 12-hour schedule expressed that such a schedule would be less fatiguing, provide a more regular sleep pattern, provide more quality discretionary time, and would result in a savings in commuting time and expense as opposed to the 7-day rotating schedule. As can be seen, this study lends weak evidence at best, due to the fact that only assumptions and reactions were gathered. The one prominent finding was that having worked a particular schedule may cause workers to be less suspicious and apprehensive about working it, as could be expected.

Latack and Foster (1985) studied 84 computer operations personnel 18 months after they had converted from a traditional 5/40 work schedule to a 3/38 schedule. The authors found workers still strongly favoring the compressed format and found that the most favorable reactions came from employees who had participated in the decision to convert to 3/38, whose jobs were enriched by the change, and who possessed strong higher order needs. Objective data showed reductions in use of sick leave, overtime, and personal leave time.

In summary, studies of compressed workweeks have yielded mixed, sometimes conflicting, results. Given the variety of research designs (some of which could hardly be considered adequate due to their anecdotal and impressionistic nature), variety of types of employees, and variety of organizational settings, these differences in results are not surprising. One of the major questions left unanswered is whether

any of the positive results associated with compressed workweeks in some of the studies are permanent or temporary in nature. The evidence from Ivancevich and Lyon (1977), the only experimental study reviewed which would allow the permanence of effects to be evaluated, suggests that many reported benefits of compressed workweeks may be relatively short-lived.

While the two Ivancevich studies provide an experimental evaluation of compressed schedules over time, the variables assessed are quite narrow in their focus: facets of job satisfaction, job performance criteria, anxiety-stress, and absence rates. With the exception of anxiety-stress, there are no variables dealing with nonwork or employee well-being. There exists a need for further research focusing on the broader impacts of compressed work schedules (as well as other alternative work hour formats) on a broad spectrum of variables, in an attempt to better understand the relationships involved more clearly.

Shift Work Schedules

Shift work schedules, schedules which involve working other than traditional daylight hours (e.g., 3 p.m. to 11 p.m., 11 p.m. to 7 a.m.), have been used by a variety of organizations for many years. These schedules provide a number of benefits for the organization, the primary one of which is better utilization of existing buildings and equipment. For some service organizations, the nature of their business dictates that shifts must be used, because of the necessity of being open when customer needs are present (e.g., hospitals). While

such schedules may be desirable, or even necessary, from the employer's point of view, research has consistently shown that these schedules are associated with a variety of serious problems for employees.

In an early look at the topic, Pigors and Pigors (1944) noted some of the problems with shift work and suggested that employees should adjust their routines to fit their schedules. These authors went on to say, however, that " . . . few workers have enough imagination and will-power to do this" (p. 35).

Over the years, much more has been understood about the challenges employees experience when they work shifts. Problems associated with working other than a traditional day shift schedule have been many. Physical problems include sleep disruption (Bryden and Holdstock, 1973) and difficulties in eating patterns and digestion (Mott, Mann, McLoughlin, and Warwick, 1965). Social problems include reduced contact with friends (Blakelock, 1960), membership in fewer social organizations (Mott et al.), and a higher divorce rate (Wyatt and Marriott, 1953). Employment issues investigated have revealed that production levels vary by individual, with some workers producing more on the day shift and others producing more on another shift (Pratibha and Ganesh, 1977).

Frost and Jamal (1979) found that shift workers scored lower on work need fulfillment and overall mental health, and these employees were less likely to expect to work for their present employer for at least two years. Zedeck, Jackson, and Summers (1983) reported that

satisfaction with shift was strongly associated with overall job satisfaction ($r = .42$), satisfaction with time available for social activities ($r = .44$), and family activities ($r = .50$). These same variables were also related to intention to leave the organization, such that those individuals who were least satisfied reported the strongest intention to find other employment.

Staines and Pleck (1984) found that employees who work non-standard hours of the day (i.e., shifts) found more time for housework but experienced more conflicts between the job and family life than did day workers. Among participants who worked nonstandard days of the week (i.e., weekends, variable days), poorer quality of family life was reported, including less time spent with children.

Frese and Okonek (1984) studied 261 former German shiftworkers in an attempt to learn why they left their jobs. Among participants who stated that they left due to health reasons, more health complaints were noted, workers were less skilled, had been unemployed less often, and in many cases were told to quit shiftwork by their physicians. The researchers suggest that future shiftwork research should differentiate between workers who left for health reasons, as opposed to other reasons, in order to avoid underestimating the effects on these employees.

Jackson, Zedeck, and Summers (1985) surveyed 95 couples in order to study emotional and family life interference related to shift work. They found that emotional interference, indicated by symptoms of physical health, psychological mood, and behavioral adjustment, was related to family life outcomes. Structural interference, or factors

in the personal or work life of the individual which may be disruptive (e.g., dissimilarity of work schedules between self and partner), was not found to be related to the quality of family life. Reported quality of family life did not successfully predict intention to leave the job.

Peterson (1985) failed to find support for hypothesized differences among shifts in nurses' attitudes concerning intergroup tension, overall satisfaction, and other factors. The author suggested that while substantial evidence exists concerning the health and social problems associated with shiftwork, employee attitudes are not necessarily as negative as might have been believed. Much more variance in attitudes was found to be related to the organizational unit to which workers belonged than to the shift they worked. Peterson concluded that employee reactions to shiftwork may be related to factors such as the social system in which the work is performed, such that when shiftwork is the norm (e.g., among nurses), employee difficulties may be minimized. For a complete review of the shiftwork literature, the reader should see Dunham (1977).

Flexible Working Hours

A flexible working hours schedule is one which permits the worker, within limits established by the employer, to decide what time to begin and end work. The most common format is one which calls for the specification of "core" hours when all employees must be present. These hours help insure that needed communication among workers will be possible each day. Before and after the core hours there are the

flexible bands of hours, during which employees can exercise discretion as to when they begin working. For example, the earliest allowable starting time might be at 6:00 a.m. and the latest starting time at 10:00 a.m., resulting in core hours of 10:00 a.m. until 3:00 p.m. (assuming an hour for lunch). Consequently, employees would be permitted to work from 6:00 a.m. to 3:00 p.m., 10:00 a.m. to 7:00 p.m., or anywhere in between. Some organizations institute policies which specify how employees decide when to work and place restrictions on how those choices may be varied, in order to insure adequate coverage for departments when needed. The supposed advantage of flexible hours for the organization is that by allowing employees to tailor their work schedules to their own needs and preferences, the organization may be able to attract and retain more qualified and motivated employees than would be possible under a rigid work schedule. (For a more thorough discussion of possible advantages and disadvantages of flexible working hours, see Golembiewski, Hilles, and Kagno, 1974.)

Golembiewski, Hilles, and Kagno (1974) studied employee and manager reactions to a flextime intervention, collecting data before the change, six months after the change, and again one year after the new schedule went into effect. Their findings indicated strong support for the flexible working hours arrangement at six months and again at one year, among both workers and managers. In addition, overtime was reduced and absenteeism declined substantially after the change. The authors concluded that the expected results of the intervention had been obtained but cautioned that these results may be, at least in

part, attributable to characteristics of the organization studied and not entirely due to the intervention itself.

Holley, Armenakis, and Feild (1976), using a posttest only design, assessed employee reactions to flextime at six and ten months after conversion from a traditional 8:00 a.m. to 5:00 p.m. schedule. The authors found that employees greatly preferred flexible working hours over the previous schedule, and a majority felt more favorable about their job, about the company, and about relationships with coworkers. Many employees felt that they were more productive after the change in schedule and most reported positive changes in their lives away from the job.

Whereas the two studies of flextime discussed thus far used small samples (i.e., less than 60 participants in each case) and focused primarily on attitudes, Schein, Maurer, and Novak (1977) studied the impact of flexible working hours on the productivity of 246 clerical employees. Results failed to provide definite conclusions, as subgroups within the experiment yielded conflicting findings. The authors could only conclude that flexible hours had no negative influence on productivity, despite the fact that for this group of employees and with the measures of productivity used, no gains were noted.

Hicks and Klimoski (1981) found that employees converting to a flexible work schedule did not show improvements in work satisfaction measures, as had been found in previous studies. However, workers did report a greater feeling of being in control in the work setting, easier travel and parking, and more chances for leisure activities.

Ralston, Anthony, and Gustafson (1985) investigated the possibility that the effects of flextime are related to the degree to which physical resources are limited. Analysis of covariance was performed, taking into account differences in demographic factors. The authors found that shared use of limited physical resources acted as a mediating variable between the use of a flexible work schedule and productivity. In other words, when workers must share a limited physical resource (e.g., a computer system), productivity may often increase with the advent of a flexible working hours policy due to the fact that better utilization is obtained by using the resource over a longer span of time.

While an extensive review of flextime literature is beyond the scope of the present study, the reader may refer to Golembiewski and Proehl (1978) for a more thorough discussion of research findings. These authors pointed out the serious limitations of many of the studies which had been conducted and suggested that more investigation should take place. While attitudinal measures have consistently reflected worker preferences for flexible working hours, "hard" measures such as productivity and absenteeism have not been as stable. Nonetheless, the authors state that flextime may be a relatively low-cost intervention which does provide at least some benefits for the organization.

In one study that spans the various hours of work topics discussed thus far, Staines and Pleck (1984) investigated the relationship between family life and what the authors defined as "nonstandard work schedules." These nonstandard schedules included weekend work,

shiftwork, and variable days. Results indicated that employees working weekends and variable days reported less time with their families and higher levels of interference between their job and family life. Shiftworkers found more time for housework, but experienced more interference between their job and family life.

Context of the Present Study

The present study represents an attempt to satisfy the need for a clearer understanding of the relationship among hours of work, attitudes concerning work and nonwork, and well-being (i.e., the quality of life). It examined the connections between work schedules and quality of life for a group of nursing employees at a university hospital. When the study began, three separate work schedule formats existed. Six months later, a fourth schedule was implemented. It was possible to survey a limited group of participants before and after they changed work schedules and to survey intact groups of employees working different work schedules. Random assignment to groups was not possible.

Research Questions

Five specific research questions were investigated. Each question addressed some aspect of the relationship between working hours and the quality of life. For purposes of this study, quality of life was operationally defined by 22 variables which attempted to assess the extent to which participants reported satisfaction with various

aspects of their work and nonwork lives, perceived minimal interference between the job and off-the-job activities, and did not experience dysfunctional levels of stress, tension, and fatigue. (A complete description of the variables will be presented in the next chapter.)

1. What changes in quality of life variables would accompany a change from a "traditional" work schedule to a compressed work schedule for nursing employees?
2. For nursing employees working in existing intact groups, which one of four work schedule formats is associated with the most positive results in terms of the quality of life?
3. To what extent are specific quality of life variables related to satisfaction with the hours one works?
4. To what extent are work and nonwork variables related to overall life satisfaction?
5. Based on "direct" measures of the impact of work on nonwork (i.e., measures which have participants directly report their perceptions of connections between work and nonwork), is there evidence that work impacts the quality on nonwork life?

CHAPTER II

METHOD

Design

The present study involved the administration of a questionnaire at three different times and was a repeated measures design, with a pretest and two posttest measurements for a subset of participants, working in an intact group, who experienced a change in work schedule. Simultaneously, measurements were gathered from participants not involved in the schedule change, resulting in multiple measurements from these individuals over time. Figure 2 illustrates the design, giving the times of measurement and groups involved. Further explanation of the rationale for and uses of the data collected will be given in the "Procedure" section.

Participants and Setting

Participants were 520 employees at a university hospital in a medium-sized city in the southeastern United States. Intact groups within the hospital were selected for inclusion in the study in an attempt to obtain sufficient numbers of participants from each of the various work schedule formats utilized at the hospital. All persons within those intact groups, called "units," were invited to participate. The overall return rate of the questionnaire for the third administration was 71 percent. Ninety-three percent of respondents were female. Responses to other demographic items were collected

	Measurement 1	Intervention	Measurement 2	Measurement 3
Time	(Start)	(+2 Weeks)	(+10 Weeks)	(+13 1/2 Months)
	Experimental group (<u>n</u> = 50)	Change to a compressed work schedule	Experimental group (<u>n</u> = 46)	Experimental group (<u>n</u> = 53)
	Comparison groups (<u>n</u> = 175)		Comparison groups (<u>n</u> = 78)	Comparison groups (<u>n</u> = 273)

Figure 2. Experimental Design of the Present Study

categorically: the modal amount of time with this organization was 2 - 3 years, with 64 percent having 3 or fewer years of service; age was bimodal, with 37 percent in both the 25 or less and 26 - 35 categories; 54 percent were married and 28 percent were single; 50 percent had no children, 15 percent had one child, and 16 percent had two children; 50 percent had at least a bachelor's degree level of education. In brief, participants were mostly female, young, well-educated, and had worked less than four years for the organization. Within the single organizational unit for which a change in work schedule was studied (Research Question 1), the return rate was 94 percent at the time of the first measurement, 91 percent at the second measurement, and 74 percent at the third measurement.

Because one of the research questions investigated involved a comparison among employees in intact groups working four different schedule formats, it is important to note any preexisting differences among participants related to the schedule they work. Table 3 contains information describing participants for each schedule, based on six relevant demographic variables. In addition to the percentages within each category by schedule, the table includes the results of χ^2 tests for among schedule differences. Differences were observed on sex, marital status, number of children, and educational level, with number of children and educational level being associated with the greatest differences by schedule. (As will be described in the next chapter, the four demographic variables yielding significant differences ($p < .05$) were used as covariates within the analysis of results for the second research question which involves investigating differences in

TABLE 3
COMPARISON OF PARTICIPANTS BY SCHEDULE WORKED

CATEGORY	Percent by Schedule				χ^2
	1	2	3	4	
<u>Sex</u>					9.7*
Male	92	88	97	98	
Female	8	12	3	2	
<u>Tenure</u>					23.2
1 year or less	17	33	33	30	
2 - 3 years	42	27	40	35	
4 - 5 years	19	13	11	8	
6 - 10 years	15	18	10	12	
11 - 15 years	5	4	3	6	
16 or more years	2	5	3	9	
<u>Age</u>					20.5
25 or less	45	31	51	31	
26 - 35	31	38	37	36	
36 - 45	7	15	7	15	
46 - 55	12	13	3	11	
56 - 65	5	3	2	7	
66 or more	0	0	0	0	
<u>Marital Status</u>					18.5*
Single	22	33	40	19	
Married	57	47	51	58	
Divorced	16	17	9	15	
Widowed	5	3	0	8	
<u>Number of Children</u>					35.0**
None	52	56	69	33	
1	15	10	17	18	
2	15	15	9	26	
3	9	6	4	11	
4	7	4	0	5	
5 or more	2	9	1	7	

TABLE 3 (Continued)

CATEGORY	Percent by Schedule				χ^2
	1	2	3	4	
Education					23.2**
1 - 12 grade	11	10	4	15	
High School diploma	19	16	4	29	
Some College, Business, or Technical School	34	29	38	28	
Bachelor's degree	36	45	54	28	

* $p < .05$ ** $p < .01$

quality of life measures related to schedule worked. A discussion of the limitations which these observed differences place on the interpretation of the present study are discussed in the final chapter.)

Procedure

The questionnaire was administered on three separate occasions over a period of 58 weeks. Data were collected longitudinally for two reasons: to permit the effects of a change in work schedule in one organizational unit to be studied and, for all organizational units, to allow various relationships between and among variables to be examined over time. A change of schedule was planned for one organizational unit from a "traditional" nursing schedule (i.e., eight-hour work days, 7 days on, 2 days off) to a compressed work schedule (i.e., 12-hour work days, with only two or three days being worked consecutively before having two or three days off). Administration of questionnaires was planned such that a pretest and two posttest measures (one short-term and another more long-term) could be obtained for the nurses in the unit experiencing the change. The first survey was done two weeks prior to the work schedule change, the second survey was gathered two months after the change, and the third obtained 13 months after the change. Data were gathered from participants in units not changing schedules at the same times.

In order to gain acceptance of the supervisory staff, the author went to a meeting of all nursing supervisors and explained the purpose of the study and what assistance was needed from them. Shortly thereafter, the first round of questionnaires was distributed through the

Director of Nursing to each participant. Attached to each questionnaire was a cover letter, signed by the author, explaining the general purpose of the study, asking for their cooperation, and telling them where they could call should they have any questions. In order that the three administrations of the questionnaire could be matched, participants were asked to identify themselves in some way that they could remember and put on future questionnaires. (It was suggested that one way to remain anonymous and still identify oneself consistently to the researcher would be to use one's mother's maiden name.) Confidentiality of responses was guaranteed. Participants were instructed to place their completed questionnaire in the envelope provided, seal it, and give it to their supervisor, who would take it to the Nursing Office. The same distribution procedure was followed for each of the two remaining administrations of the questionnaire.

Description of Work Schedule Formats

Two of the five research questions for the present study involved comparisons of work schedule formats. The four schedule formats included in the present study will be described and will be referenced by the same labels that will be used throughout the rest of this report.

Schedule One was a traditional nursing schedule, similar to the one most commonly found in hospitals across the country (see Figure 3). This schedule involved working eight hours per day for seven straight days, having two days off, working six days, two off, seven days, then having a four day weekend. The need for such a schedule

Work Schedule	Days of the Week						
	M	Tu	W	Th	F	Sa	Su
Schedule 1	off	off	X	X	X	X	X
(traditional	X	X	off	off	X	X	X
8 hour)	X	X	X	off	off	X	X
	X	X	X	X	X	off	off
	off	off					
Schedule 2	X	X	X	X	X	X	X
(12 hour	off	off	off	off	off	off	off
7 day)	X	X	X	X	X	X	X
	off	off	off	off	off	off	off
Schedule 3	off	off	X	X	X	off	off
(12 hour	X	X	off	off	off	X	X
2-3 day)	off	off	X	X	X	off	off
	X	X	off	off	off	X	X
Schedule 4	X	off	X	X	X	off	off
(revised	off	X	X	X	X	X	X
8 hour)	X	off	X	X	X	off	off
	off	X	X	X	X	X	X

where "X" = days worked

Figure 3. Description of Work Schedules

was created by the 24 hour per day, seven day per week nature of hospital work, coupled with the desire to spread weekend work around so that no employee had to work every weekend. Each employee had two days off in each scheduling week (which ran Monday to Sunday), despite the fact that the arrangement of those days often involved working more than five consecutive days. The result was longer stretches of consecutive days than the five day workweek found in many business organizations and three out of four weekends worked.

Schedule Two was a compressed work schedule, wherein employees worked 12 hours per day, for seven straight days, then were off for the next seven days. While the work day was longer by four hours over Schedule One, and the number of consecutive days worked was still high, the possible perceived advantage of this schedule format was that employees were off work for an entire week, every other week. Thus, the number of weekends worked was only one out of two, a reduction over Schedule One.

Schedule Three, the conversion to which was the basis of the first research question, was similar to Schedule Two in that it was a compressed schedule consisting of 12 hour work days. The difference was that instead of working seven days and being off seven, employees would only work two or three days and then be off for two or three days. (The number of days was staggered because seven is not divisible by either two or three, and this was the only way to ensure every other weekend off.) The amount of weekend work was identical to Schedule Two (i.e., one of every two).

The final format, Schedule Four, was a variation of Schedule One.

This format also provides two off days within every scheduling week, but due to the fact that the workweek is considered to begin on Sunday, as opposed to Monday, employees can be off work on Saturday and Sunday and those off days are counted toward separate weeks. This format permits the possibility of employees being off for three days every other weekend. This possibility cannot be insured, because despite the fact that the schedule, as depicted in Figure 3, results in the appropriate number of work days in the scheduling week, it does result in less coverage on the weekends. Therefore, some compromises might have to be made based on staffing needs.

All participants working the same work schedule cannot be viewed as working under an identical work hours condition. Because each schedule requires that two or three shifts per day be staffed, the shift that participants work may be associated with variables of interest in the present study. However, because schedule and shift are confounded, to study shift and schedule simultaneously would require the division of responses into ten separate cells. It was decided that schedule alone would be considered in the analysis, in effect lumping any existing shift differences together within each work schedule. It should be noted that for each schedule studied, at least four separate organizational units working that schedule were included in the analysis, meaning that factors or events peculiar to a single unit would not have an overriding effect on results.

Variables

An attempt was made to select variables which would provide for a thorough investigation of work, nonwork, and quality of life issues while at the same time limiting the total number of variables to a workable level. Further, it was intended that this one group of variables would be used in analyses investigating each of the first four research questions. Variables included in the analysis consisted of two types of measurements: key individual items and composites formed from two or more items.

A description of key items may be found in Table 4. Items 1, 2, and 5 through 8 were taken or adapted from Quinn and Staines (1979). These items assess perceptions of the amount and quality of nonwork time and of the amount of interference between work and aspects of nonwork. Item 3 is a peer job performance measure which asks participants to evaluate the quality of nursing care provided by their coworkers. Item 4 is a measure of overall life satisfaction, suggested by Near, Rice, and Hunt (1978). Items 9 through 13 were taken from Andrews and Withey (1976) and measure how employees feel about different aspects of their nonwork lives. Item 14 was created using Andrews and Withey's response format (i.e., How do feel about . . . ?) and assesses satisfaction with work hours. Item 15, developed by the author, is a global job satisfaction measure.

A description of composites may be found in Table 5. Two items, called Intention to Leave Job, were used to measure the employees' desire to leave their present jobs. Kraut (1975) found that such

TABLE 4
DESCRIPTION OF KEY QUESTIONNAIRE ITEMS

Abbreviated Item ^a	Complete Questionnaire Item
1. Time with children (5)	On the average, on days when you <u>are</u> working, how much time do you spend playing with or taking care of the children?
2. Time for chores (5)	On the average, on days when you <u>are</u> working, how much time do spend taking care of (or doing) household chores?
3. Peers' work quality (5)	How would you describe the overall quality of patient care that is given by <u>other nurses</u> in your unit (your coworkers)?
4. Life satisfaction (5)	Taking everything into consideration, how satisfied are you with your life in general at the present time?
5. Satisfaction with free time (4)	All in all, how satisfied would you say you are with your <u>free time</u> activities?
6. Satisfaction with amount of free time (4)	How do you feel about the amount of time you have available for <u>free time</u> activities?
7. Job-family life interference (5)	How much interference is there between your job and your <u>family life</u> ?
8. Job free time interference (5)	How much interference is there between your job and your <u>free time</u> activities?

TABLE 4 (Continued)

Abbreviated Item ^a	Complete Questionnaire Item
9. Feeling about family life (7)	How do you feel about your own family life -- your husband/wife, your marriage, your children, if any?
10. Pressure (7)	How do feel about the amount of pressure you are under?
11. Sleep (7)	How do you feel about the amount of sleep you get?
12. Friendship and love (7)	How do feel about the amount of friendship and love in your life?
13. Housework (7)	How do you feel about your housework -- the work you need to do around your home?
14. Satisfaction with work hours (7)	How do you feel about the hours you work?
15. Job satisfaction (5)	Considering everthing about my job here at (name of the organization), I am very satisfied.

^aNumbers in parentheses after each item indicate the maximum possible value for that item.

TABLE 5
DESCRIPTION OF COMPOSITE MEASURES

Variable Name	Description ^a
INTENTION TO LEAVE JOB	Reports of intention to leave the organization (2)
PERSONAL SATISFACTION	Feelings about personal life (3)
ENJOYMENT OF LIFE	Feelings about nonwork variety and enjoyment (3)
JOB TENSION	Reports of experiencing job-related tension (9)
STRESS SYMPTOMS	Common physiological symptoms of stress (6)
FATIGUE	Perceptions of job-related fatigue interfering with free time and family activities (2)
ORGANIZATIONAL COMMITMENT	Reports of commitment to the organization (4)

^aNumbers in parentheses indicate the number of items in the composite.

items are highly related to actual quitting by employees (i.e., employee turnover). Personal Satisfaction was formed using three items from Andrews and Withey (1976) and assesses employee feelings about their own personal lives. Three items, also from Andrews and Withey, were used to measure feelings about the amount of variety and enjoyment employees experience in their lives (Enjoyment of Life). Nine items (Job Tension) were used to assess the amount of job-related tension experienced by participants. These items were adapted by the author, based on the work of Kahn, Wolfe, Quinn, and Snoek (1964), and include common sources of tension associated with jobs in the health care field. Six commonly accepted stress symptoms, proposed by Patchen (1970), measured physiological manifestations of stress. Job Fatigue is a measure of the extent to which job related fatigue interferes with free time and family life activities and were developed by the author. The final composite, Organizational Commitment, used items from Mowday, Steers, and Porter (1979).

In forming the composites, responses to individual items were transformed into z scores, and the mean of the item z scores (for each participant) was computed and used as the composite variable. Internal consistency reliability estimates (Cronbach's α) for the composites, for each of the three times of measurement, are given in Table 6. A copy of the questionnaire may be found in the Appendix.

TABLE 6
ESTIMATES OF THE INTERNAL CONSISTENCY OF COMPOSITE VARIABLES
FOR EACH OF THE THREE ADMINISTRATIONS
OF THE QUESTIONNAIRE

Composite	Time 1		Time 2		Time 3	
	α	<u>n</u>	α	<u>n</u>	α	<u>n</u>
INTENTION TO LEAVE JOB	.89	247	.92	206	.86	340
PERSONAL SATISFACTION	.76	239	.67	200	.75	333
ENJOYMENT OF LIFE	.88	245	.86	203	.82	335
JOB TENSION	.74	223	.75	187	.73	318
STRESS SYMPTOMS	.69	244	.72	204	.72	335
FATIGUE	.86	242	.87	203	.89	330
ORGANIZATIONAL COMMITMENT	.71	245	.73	205	.65	332

CHAPTER III

RESULTS

Separate analyses of the data were performed to answer each of five research questions: (1) concomitants of a change in work schedule from a "traditional" nursing schedule to a compressed schedule were studied, (2) an attempt was made to identify which one of four work schedule formats was most associated with positive quality of life, (3) work and nonwork variables were examined for possible relationships with work hours satisfaction, (4) work and nonwork variables were studied for possible association with overall life satisfaction, and (5) direct measures of the impact of work on nonwork (i.e., examination of responses to measures which have participants report their perceptions of the quality of work as affected by work) were analyzed.

Analysis

Analyses of results for the first two of the five research questions were multivariate and examined a common group of criterion variables. For Research Question 1, the criterion variables were studied for possible effects of a schedule change from a traditional nursing schedule (i.e., eight-hour days) to a compressed schedule (i.e., 12-hour days). Research Question 2 called for the study of intact groups working four different work schedules, in an attempt to identify differences in the quality of life related to the schedule worked. For Research Question 3, the variables were regressed on satisfaction with

working hours in an attempt to find employees feel about the hours they work. Research Question 4 involved regressing the variables on life satisfaction in order to find the variables which demonstrated the strongest relationship with expressions of satisfaction with life as a whole. For Research Question 5, frequency of response to five questions was examined in an attempt to find direct evidence of the impact of work on the quality of life.

For research questions 2 through 4, two separate analyses were performed: one analysis with all relevant variables included and the other analysis with family related items excluded. The reason for this dual analysis is twofold. First, family items do not apply to all respondents, and their inclusion results in a much smaller sample due to the deletion of participants with missing scores (i.e., a reduction in the potential sample from 330 to 132). Second, to exclude those respondents who do not have spouses and/or children would limit the representativeness of the sample, causing the results to be reflective only of married persons with children. In order to gain the most from the existing data, it was decided that dual analyses would be performed, one with family items included and one without them. While these analyses cannot be viewed as independent, they are complimentary in the sense that they supply somewhat different perspectives on the same research questions.

Change in Work Schedule

Question: What effects would a change from a traditional work schedule to a compressed work schedule have on the quality of life for nursing employees?

Factors associated with a change in work schedule were examined. Only the responses of employees in the single departmental unit that experienced a change in work schedule were included. The design was a pretest-posttest design with two posttest measurements. The pretest data were collected two weeks prior to the conversion to a compressed work schedule. The first posttest measurement was taken two months after the change (to assess short-term results), with the final measurement conducted 13 months after the change (to evaluate more permanent results). The type of analysis used was a repeated measures analysis of variance (ANOVA).

Only participants who responded to all three questionnaire administrations were included in the present analysis. Although a total 53 participants from this organizational unit responded to at least one questionnaire, only 23 individuals responded to all three administrations. Factors contributing to missing data included new employees being hired during the course of the study, employees taking vacations at the time of one administration, and employees transferring or terminating their employment prior to the end of the study. Since the size of the sample obtained was only slightly larger than the number of dependent variables to be evaluated, multivariate tests were not

possible.³

Analysis of results was accomplished by conducting univariate analysis of variance (ANOVA) with repeated measurements. The repeated measures analysis included only the responses of participants who returned a questionnaire at each of the three times of measurement. A summary of these means, univariate F tests, significance levels, and the number of respondents for each variable are given in Table 7. (The item "time with children" was not included in this analysis due to the fact that only three people responded to that item.)

Significant differences in responses ($p < .05$) were found for 12 of the 21 criterion variables, with nine significant at the $p < .01$ level. Among the variables showing the greatest change were satisfaction with amount of free time, job-family life interference, and job-free time interference.

Examination of the means and post hoc tests reveals that for eight of 21 variables, there was a significant improvement in quality of life results from the pretest to the immediate posttest conducted eight weeks after the change in work schedule. However, none of these results was found to hold up over time, as no post hoc test found a significant improvement from the pretest to the 13 month posttest. In fact, tests on seven variables showed a statistically significant decline in quality of life from the eight week posttest to the 13 week posttest. This rebound phenomenon is consistent with the findings of

³According to Huck, Cormier, and Bounds (1974), the number of participants should be at least double the number of dependent variables in order to conduct multivariate analyses.

TABLE 7

SUMMARY OF REPEATED MEASURES ANALYSIS OF VARIANCE, MEANS, AND
POST HOC ANALYSES FOR QUALITY OF LIFE MEASURES TAKEN
BEFORE AND AFTER A CHANGE IN WORK SCHEDULE

Variable ^a	<u>n</u>	<u>F</u>	Repeated Measures Means by Time (Overall Means ^b by Time)		
			Pretest	2 month posttest	13 month posttest
Time for chores (5)	21	6.6**	2.6 ^a (2.6)	2.2 ^{ab} (2.2)	2.0 ^b (2.2)
Life satisfaction (5)	22	1.1 (ns)	3.3 (3.3)	3.6 (3.2)	3.5 (3.3)
Peers' work quality (5)	23	0.2 (ns)	3.7 (3.6)	3.7 (3.5)	3.6 (3.4)
Satisfaction with free time (4)	23	1.9 (ns)	3.0 (3.0)	3.4 (3.1)	3.1 (3.0)
Satisfaction with amount of free time (4)	22	11.9***	1.7 ^b (1.7)	2.5 ^a (2.3)	2.1 ^{ab} (2.2)

TABLE 7 (Continued)

Variable ^a	<u>n</u>	<u>F</u>	Repeated Measures Means by Time (Overall Means ^b by Time)		
			Pretest	2 month posttest	13 month posttest
Job-family life interference (5)	23	9.2***	2.9 ^{ab} (2.8)	3.5 ^a (3.2)	2.4 ^b (2.4)
Job-free time interference (5)	23	8.8***	2.7 ^b (2.8)	3.6 ^a (3.2)	2.8 ^b (2.8)
Feeling about family life (7)	16	3.8*	6.2 ^{ab} (6.1)	6.4 ^a (6.3)	5.7 ^b (5.6)
Pressure (7)	22	7.9**	3.5 ^b (3.6)	4.5 ^a (4.3)	3.9 ^{ab} (3.9)
Sleep (7)	23	1.2 (ns)	4.5 (4.3)	5.0 (4.6)	4.7 (4.5)
Friendship and love (7)	22	0.3 (ns)	5.6 (5.5)	5.6 (5.7)	5.4 (5.4)
Housework (7)	23	3.1 (ns)	4.3 (4.4)	4.8 (4.6)	4.2 (4.1)

TABLE 7 (Continued)

Variable ^a	<u>n</u>	<u>F</u>	Repeated Measures Means by Time (Overall Means ^b by Time)		
			Pretest	2 month posttest	13 month posttest
Satisfaction with work hours (7)	23	5.4**	3.9 ^b (4.1)	5.3 ^a (4.6)	4.1 ^b (4.0)
Job satisfaction (5)	23	2.3 (ns)	3.7 (3.5)	4.0 (3.6)	3.4 (3.2)
Intention to leave job (5)	23	3.1 (ns)	3.5 (3.5)	3.7 (3.6)	3.3 (3.1)
Personal satisfaction (7)	23	2.9 (ns)	4.5 (4.7)	5.1 (4.9)	4.7 (4.6)
Enjoyment of life (7)	23	7.7**	4.6 ^b (4.6)	5.3 ^a (4.9)	4.6 ^b (4.6)
Job tension (5)	23	4.2*	2.8 ^b (2.9)	3.3 ^a (3.2)	3.0 ^{ab} (3.0)
Stress symptoms (6)	23	3.4*	4.0 ^b (4.0)	4.4 ^a (4.2)	4.1 ^{ab} (4.0)

TABLE 7 (Continued)

Variable ^a	<u>n</u>	<u>F</u>	Repeated Measures Means by Time (Overall Means ^b by Time)		
			Pretest	2 month posttest	13 month posttest
Job fatigue (5)	23	6.9**	2.1 ^b (2.2)	3.4 ^a (2.8)	2.4 ^b (2.3)
Organizational commitment (5)	23	3.6**	3.5 ^{ab} (3.5)	3.6 ^a (3.5)	3.0 ^b (2.9)

Note. Means in the same row which do not have at least one superscript letter in common were significantly different ($p < .05$) in Tukey's HSD post hoc contrasts. For all variables, values are stated such that lower values are less favorable and higher values are more favorable. All n values apply to the repeated measures means.

^aNumbers in parentheses after each item indicate the maximum possible value for that item.

^bOverall means, included in parentheses below the repeated measures means, include the responses of all participants who returned questionnaires for that given time of measurement, whereas the repeated measures means include only the responses of participants who returned questionnaires for all three times at which measurements were taken. Comparison of overall means with repeated measures means will give some idea of any possible impact of experimental mortality on the repeated measures analysis. Post hoc comparisons were performed only on the repeated measures means.

Ivancevich and Lyon (1977), except that in the present study some of the positive effects of a change in work schedule seem to have diminished more rapidly (i.e., within 13 months as opposed to 25 months).

For one variable, time for chores, results were more negative at the first posttest than at the pretest and grew even more negative at the second posttest. In order to interpret this finding, it is important to understand exactly how the item was worded (i.e., "On the average, on days when you are working, how much time do you spend taking care of (or doing) household chores?"). Since the item refers specifically to days when the employees are working, it is understandable that conversion to a compressed workweek, resulting in a work shift which is expanded from eight to 12 hours per day, would reduce the time for chores on work days.

Also included in Table 7 (in parentheses, below the repeated measures means) are the overall means of all responses for each administration of the questionnaire, including those of participants who did not respond to all three administrations. By comparing the repeated measures means to the overall means, some indication of the effect of experimental mortality (i.e., the dropout of participants from one or more of the times of measurement) may be obtained. Visual comparison of the two sets of means reveals some evidence that the dropout may have caused the magnitude of the observed effects to be overestimated as compared to the larger group. However, for only two variables for which a significant F test was found using the repeated measures group (i.e., stress symptoms and job tension) would the overall means have failed to result in significance.

To summarize the empirical evidence for the first research question, the implementation of a compressed work schedule appears to have impacted the quality of life, but those effects were largely temporal. Little lasting change in the quality of life seems to have occurred.

Comparison of Four Work Schedule Formats

Question: For nursing employees working in existing intact groups, which one of four work schedule formats is associated with the most positive results in terms of quality of life?

Using intact work groups, currently performing under four distinct work schedule formats, an attempt was made to identify which schedule was most associated with positive quality of life results. A multivariate analysis of variance (MANOVA) was used to compare means of quality of life variables by schedule worked. Because intact groups, by their very nature, cannot be considered equivalent, chi-square tests were conducted to determine whether significant differences existed in any of six demographic variables (i.e., tenure, age, sex, educational level, marital status, and number of children. Differences were found for sex, educational level, marital status, and number of children ($p < .05$). These four variables were used as covariates in the analysis of the second research question. Kirk (1968) points out that analysis of covariance is useful in adjusting for differences in concomitant variables when using intact groups. (However, Kirk warns that even when the analysis of covariance is applied properly, we can never rule out the possibility that an unmeasured variable will affect the observed relationship. Further,

use of this technique would not rule out an interaction between the main effect variable and a concomitant variable.)

Two separate multivariate analyses performed: one with all dependent variables included and one with family items excluded. The two analyses produced similar results.

The comprehensive analysis including all of the dependent variables yielded a significant result (Wilk's $\Lambda = 0.37$), multivariate $F(66, 296) = 1.79$, $p < .006$. When family items are omitted, resulting in a substantial increase in the sample size, results displayed an even stronger relationship (Wilk's $\Lambda = 0.55$), multivariate $F = 3.05(57, 793)$ $p < .0001$. These results indicate that differences in quality of life variables exist among the four work schedules compared.

In order to explore the nature of the differences in the quality of life variables by schedule, univariate analysis of variance (ANOVA) was performed. For each of these analyses, all responses obtained were used, resulting in differing numbers of participants by variable. A summary of means, F tests, and the number of respondents for each variable, are shown in Table 8. Sixteen of 22 variables yielded F ratios significant at the $p < .05$ level, with 11 significant at the $p < .01$ level. Variables exhibiting the strongest relationship were satisfaction with working hours, time for chores, satisfaction with amount of free time, job tension, job-family life interference, job-free time interference, and job fatigue.

To further examine the differences among the schedules, means were compared by schedule, and post hoc tests were performed. Also included in Table 8, beside the means, are the results of Scheffé¹ post

TABLE 8

SUMMARY OF UNIVARIATE ANALYSES OF COVARIANCE, MEANS, AND
POST HOC ANALYSES BY SCHEDULE WORKED

Variable ^a	F	Adjusted Means by Schedule ^b (Number of Participants by Schedule)			
		1 (traditional 8 hour)	2 (12 hour 7 day)	3 (12 hour 2-3 day)	4 (revised 8 hour)
Time with children (5)	3.4*	3.0 ^a (26)	2.4 ^b (37)	2.8 ^{ab} (23)	3.2 ^a (49)
Time for chores (5)	9.4***	2.9 ^a (59)	2.3 ^b (99)	2.1 ^b (69)	2.8 ^a (93)
Life satisfaction (5)	1.4 (ns)	3.3 (59)	3.5 (101)	3.3 (70)	3.2 (95)
Peers' work quality (5)	3.6*	3.8 ^a (59)	3.8 ^a (101)	3.6 ^{ab} (70)	3.5 ^b (95)
Satisfaction with free time (4)	4.4**	3.0 ^b (59)	3.3 ^a (101)	3.0 ^b (70)	3.0 ^b (95)

TABLE 8 (Continued)

Variable ^a	F	Adjusted Means by Schedule ^b (Number of Participants by Schedule)			
		1 (traditional 8 hour)	2 (12 hour 7 day)	3 (12 hour 2-3 day)	4 (revised 8 hour)
Satisfaction with amount of free time (4)	8.2***	2.0 ^b (59)	2.5 ^a (100)	2.3 ^a (70)	2.1 ^b (94)
Job-family life interference (5)	5.7***	3.3 ^{ab} (55)	3.5 ^a (89)	3.0 ^{bc} (61)	2.9 ^c (86)
Job-free time interference (5)	5.3***	3.3 ^b (57)	3.7 ^a (97)	3.2 ^b (68)	3.1 ^b (92)
Feeling about family life (7)	1.3 (ns)	5.4 (48)	5.6 (71)	5.7 (53)	5.3 (76)
Pressure (7)	5.0**	4.2 ^a (57)	4.4 ^a (96)	4.2 ^a (68)	3.7 ^b (91)
Sleep (7)	2.8*	4.8 ^a (59)	4.8 ^a (98)	4.7 ^{ab} (69)	4.3 ^b (93)
Friendship and love (7)	2.5 (ns)	5.3 (59)	5.4 (98)	5.3 (69)	4.9 (93)

TABLE 8 (Continued)

Variable ^a	<u>F</u>	Adjusted Means by Schedule ^b (Number of Participants by Schedule)			
		1 (traditional 8 hour)	2 (12 hour 7 day)	3 (12 hour 2-3 day)	4 (revised 8 hour)
Housework (7)	3.3*	4.3 ^{ab} (59)	4.6 ^a (98)	4.5 ^a (67)	4.1 ^b (92)
Satisfaction with work hours (7)	12.6***	4.8 ^b (59)	5.7 ^a (99)	4.5 ^b (70)	4.8 ^b (93)
Job satisfaction (5)	2.4 (ns)	3.6 (59)	4.1 (100)	3.6 (70)	3.8 (93)
Intention to leave job (5)	0.4 (ns)	3.4 (59)	3.5 (100)	3.4 (70)	3.6 (95)
Personal satisfaction (7)	1.4 (ns)	4.6 (59)	4.9 (99)	4.7 (69)	4.6 (94)
Enjoyment of life (7)	5.4**	4.8 ^b (59)	5.1 ^a (99)	4.6 ^b (69)	4.6 ^b (93)
Job tension (5)	7.6***	3.2 ^b (59)	3.4 ^a (99)	3.3 ^{ab} (70)	3.0 ^c (94)

TABLE 8 (Continued)

Variable ^a	F	Adjusted Means by Schedule ^b (Number of Participants by Schedule)			
		1 (traditional 8 hour)	2 (12 hour 7 day)	3 (12 hour 2-3 day)	4 (revised 8 hour)
Stress symptoms (6)	5.4**	4.2 ^b (58)	4.5 ^a (101)	4.2 ^b (69)	4.1 ^b (93)
Job fatigue (5)	5.7***	3.2 ^{ab} (59)	3.4 ^a (100)	2.7 ^b (70)	2.6 ^b (93)
Organizational commitment (5)	5.3**	3.5 ^b (59)	3.8 ^a (100)	3.3 ^b (70)	3.4 ^b (93)

Note. Means in the same row which do not have at least one superscript letter in common were significantly different ($p < .05$) in Scheffé post hoc contrasts. For all variables, values are stated such that lower values are less favorable and higher values are more favorable.

^aNumbers in parentheses after each item indicate the maximum possible value for that item.

^bDependent variable means were adjusted using sex, educational level, marital status, and number of children as covariates.

hoc tests. In order to summarize the tests on the 22 criterion variable means, two indexes were formed for each of the four work schedule formats. One index reflects the number of variables for which the schedule was found to be statistically more favorable than at least one of the other three schedules (i.e., in Scheffé¹ post hoc contrasts). The other index reveals the number of variables for which the schedule was statistically less favorable than at least one of the other schedules. Values for the two indexes for each of the four schedule formats may be found in Table 9. Included below each value is the rank, comparing the value for that schedule with those of the other three formats. This summary of results reveals a clear pattern. The 12-hour, seven day on, seven day off schedule was significantly better than at least one other schedule for 14 of the 22 variables and was significantly less favorable only twice. This schedule format was superior to all three rival schedules for six variables, including satisfaction with working hours, satisfaction free time, job-free time interference, enjoyment of life, stress symptoms, and organizational commitment. Each of these six variables yielded F tests significant at the p < .01 level. No other schedule was found to contrast favorably with all three remaining schedules, even for a single variable.

The second most favorable schedule overall was the traditional eight-hour schedule, which was superior to at least one other schedule for seven of the 22 variables. However, this schedule was also less favorable eight times. In answer to the second research question, it appears that the most positive overall quality of life results were associated with a compressed, 7 day on, 7 day off work schedule.

TABLE 9
SUMMARY OF POST HOC COMPARISONS
BY SCHEDULE WORKED

Schedule	Number of Times Significantly Better (Rank)	Number of Times Significantly Worse (Rank)
Traditional eight hour	7 (2)	8 (2)
12 hour, 7 day	14 (1)	2 (1)
12 hour, 2 - 3 day	4 (3)	9 (3)
Revised eight hour	2 (4)	14 (4)

Note. Number of Times Significantly Better is an index of the number of variables for which a given schedule format was found to be statistically more favorable than at least one other schedule in the Scheffé post hoc contrasts found in Table 8. Number of Times Significantly Worse is an index of the number of variables for which a given schedule format was found to be statistically less favorable than at least one other schedule.

Regression of Quality of Life Variables on Satisfaction with Work Hours

Question: To what extent are specific work and nonwork variables related to satisfaction with the hours one works?

Intercorrelations among all variables for the third questionnaire administration may be found in Table 10. All variable pairs reflect the Pearson product-moment coefficients obtained from using the responses of all participants who responded to both items in that variable pair. Multiple regression analysis was used in order to examine possible relationships between a number of potentially relevant work and nonwork variables and satisfaction with work hours. In building the regression models to explain variance in the dependent variable, the following decision rules were used:

- 1) At each step, the variable which was added to the model was the one that could improve R^2 more than any other remaining variable.
- 2) A significance level of .05 was used for entry to the model.⁴
- 3) Any variable added during a previous step for which significance fell below .05 after subsequent variables were added, was dropped from the model. While the Pearson correlations were based on all cases for which responses were available for each to the two variables being correlated, regression analyses were based on all cases for which responses were available for all of the variables included

⁴A significance level of .05 was chosen so as to obtain sufficient statistical power without unduly increasing the probability of a Type I error. The same level was used for both entry and retention in the model. According to Draper and Smith (1966), the two levels are usually equivalent.

TABLE 10
INTERCORRELATIONS AMONG VARIABLES FOR THE THIRD
ADMINISTRATION OF THE QUESTIONNAIRE

variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1. Time with children	--																				
2. Time for chores	.47	--																			
3. Satisfaction with life	.14	.16	--																		
4. Peers' work quality	-.05	.39	.26	--																	
5. Satis. with free time	.18	.33	.47	.15	--																
6. Satis. with amount of free time	.07	.30	.20	.15	.35	--															
7. Job-family life interference	.11	.22	.36	.24	.31	.45	--														
8. Job-free time interference	.09	.14	.33	.22	.28	.48	.70	--													
9. Feeling about family life	.33	.34	.47	.21	.34	.19	.27	.25	--												
10. Pressure	.18	.10	.50	.27	.41	.33	.50	.44	.39	--											
11. Sleep	.13	.10	.36	.13	.38	.37	.47	.39	.34	.48	--										
12. Friendship and love	.18	.32	.51	.17	.44	.12	.24	.29	.60	.39	.35	--									
13. Housework	-.06	.36	.26	.16	.28	.40	.25	.25	.21	.34	.37	.26	--								
14. Satisfaction with work hours	.04	.11	.39	.27	.38	.42	.58	.50	.28	.43	.42	.20	.29	--							
15. Job satisfaction	.06	.39	.28	.21	.23	.20	.33	.37	.19	.29	.25	.19	.12	.43	--						
16. Intention to leave job	.08	.16	.23	.18	.07	.12	.29	.27	.09	.22	.21	.10	.05	.30	.48	--					
17. Personal satisfaction	.19	.12	.60	.29	.40	.24	.37	.34	.42	.57	.50	.48	.35	.40	.36	.32	--				
18. Enjoyment of life	.14	.38	.55	.22	.62	.26	.40	.33	.45	.54	.40	.58	.36	.45	.32	.15	.66	--			
19. Job tension	.02	.39	.25	.31	.23	.28	.40	.46	.20	.51	.24	.23	.16	.34	.45	.24	.35	.34	--		
20. Stress symptoms	.12	.39	.40	.23	.35	.27	.37	.38	.34	.34	.44	.33	.27	.40	.31	.23	.49	.48	.44	--	
21. Job fatigue	.09	.18	.22	.11	.26	.38	.52	.47	.11	.32	.35	.12	.27	.45	.28	.25	.28	.28	.40	.39	--
22. Organizational commitment	.04	.17	.22	.29	.14	.15	.31	.34	.16	.21	.23	.16	.12	.42	.64	.53	.31	.25	.35	.20	.26

in the analysis (i.e., listwise deletion of missing values).

Table 11 gives the results of the regression of quality of life items on work hour satisfaction. Those items selected for inclusion in the regression model dealt with perceived job-family life interference, satisfaction with free time, organizational commitment, fatigue at the end of the work shift, and a feeling of being rushed. These results demonstrate dramatically that one's satisfaction with working hours is strongly related to the extent to which those work hours and other aspects of the job are perceived to encroach upon free time and family life activities. One item (i.e., job-family life interference) explains one-third of the variation in work hour satisfaction. Collectively, the five item model accounts for 54 percent of the variation. Results of the parallel analysis of this research question, performed without family items so as to broaden and expand the sample, are found in Table 12. As in the preceding analysis, a work-nonwork interference item was most predictive of satisfaction with working hours. In this case, perceived interference between the job and free time activities (in general) accounted for 23 percent of the variance, while the model as a whole explained 46 percent.

From the results of these two analyses, it can be said that there is a substantial relationship between quality of life variables and satisfaction with working hours. Further, it appears that the variables which are most strongly associated with work hour satisfaction are nonwork variables, suggesting that employee reactions to an organization's decisions concerning the hours its employees are asked to work may be strongly related to perceptions of the impact of those

TABLE 11
MULTIPLE REGRESSION OF VARIABLES ON
SATISFACTION WITH WORK HOURS --
FAMILY ITEMS INCLUDED

Predictors listed in order in order of entry	Cummulative <u>R</u> ²	Change in <u>R</u> ²	<u>F</u> ^a
Interference between job and family life	.33		64.02*
Satisfaction with free time	.43	.10	48.77*
Organizational commitment	.48	.05	39.58*
Fatigue	.51	.03	33.64*
Peers' work quality	.54	.03	29.63*

^aF values pertain to the entire model to that point; n = 132.

* p < .0001

TABLE 12
MULTIPLE REGRESSION OF VARIABLES ON
SATISFACTION WITH WORK HOURS --
FAMILY ITEMS NOT INCLUDED

Predictors listed in order in order of entry	Cummulative $\underline{R}^2$	Change in $\underline{R}^2$	$\underline{F}^a$
Interference between job and free time	.23		89.04*
Enjoyment of Life	.34	.11	77.79*
Organizational commitment	.39	.05	63.41*
Time for free time	.42	.03	53.36*
Sleep	.44	.02	46.02*
Fatigue	.45	.01	39.80*
Peers' work quality	.46	.01	35.09*

^a $\underline{F}$ values pertain to the entire model to that point; $\underline{n} = 301$.

* $\underline{p} < .0001$

working hours on off-the-job activities. The only two job-related variables to appear in either regression model were peers' work quality and organizational commitment.

Regression of Work and Nonwork Variables on Life Satisfaction

Question: To what extent are specific work and nonwork variables related to overall life satisfaction?

Multiple regression analysis was used to examine possible relationships between potentially relevant work and nonwork variables and life satisfaction. The decision rules used for building models were the same as used in the previous section.

Results of the initial analysis, with family related items included, are given in Table 13. As can be seen, one item (i.e., personal satisfaction) accounted for a striking 46 percent of the variation in life satisfaction. Two stress and fatigue related items also appeared in the five variable regression model (i.e., pressure and job tension). In addition, satisfaction with free time and satisfaction with work hours were also included. Noticeably absent is any item dealing directly with the job itself. These results seem to indicate that satisfaction with or commitment to the job is not as highly related with total life satisfaction as are items which assess the off-the-job impact of the job. Further, the total percentage of life satisfaction variation explained is quite impressive (65 percent). It must be noted, however, that several of the variables found

TABLE 13
MULTIPLE REGRESSION OF VARIABLES ON LIFE SATISFACTION --
FAMILY ITEMS INCLUDED

Predictors listed in order in order of entry	Cummulative $\underline{R}^2$	Change in $\underline{R}^2$	$\underline{F}^a$
Personal satisfaction	.46		109.35*
Satisfaction with free time	.58	.12	89.63*
Pressure	.62	.04	70.21*
Satisfaction with work hours	.64	.02	56.43*
Job tension	.65	.01	47.10*

^a $\underline{F}$ values pertain to the entire model to that point; $\underline{n}$ = 132.

* $\underline{p}$ < .0001

to be highly associated with life satisfaction, were themselves measures of other "satisfactions," providing the possibility that method variance may account for a portion of the shared variance.

The second analysis for this research question was conducted with the family items omitted. Results are found in Table 14. There were several variables included in the regression model built in this analysis which were included in the previous model (i.e., from the analysis which included family items). They were pressure and job tension. The rest of the variables were different; however, as in the preceding analysis, nonwork variables were dominant. The only exception was intention to leave job, but this result could be at least partially due to job demands interfering with nonwork activities and causing the employee to consider leaving in order to find more desirable employment. This six variable model explained 49 percent of life satisfaction variation.

Whether the differences between the two analyses in the specific variables found to be most strongly associated with life satisfaction and the strength of those relationships is due to statistical artifact or due to real differences in the two groups based on family status is unknown. Only further research which carefully studies these factors can begin to provide an answer. Nonetheless, the results obtained from the present study do provide the insight that nonwork variables appear to be most strongly related to life satisfaction, and for the work variables which are highly related, those variables may reflect the impact of job characteristics on off-the-job behavior.

TABLE 14

MULTIPLE REGRESSION OF VARIABLES ON LIFE SATISFACTION
 -- FAMILY ITEMS NOT INCLUDED

Predictors listed in order in order of entry	Cumulative $\underline{R}^2$	Change in $\underline{R}^2$	$\underline{F}^a$
Personal satisfaction	.34		151.67*
Satisfaction with free time	.41	.07	105.30*
Friendship and love	.45	.04	80.95*
Pressure	.47	.02	64.53*
Intention to leave job	.48	.01	54.19*
Job tension	.49	.01	46.32*

^a $\underline{F}$ values pertain to the entire model to that point; $\underline{n} = 301$.

* $\underline{p} < .0001$

Direct Measures of the Impact of Work on Nonwork

Question: Based on "direct" measures of the impact of work on nonwork, is there evidence that work impacts the quality of nonwork life?

This final analysis was not based on any statistical procedures. Instead, this analysis focused "direct measures" of the potential impact of work on nonwork. While hours of work would be expected to play a major role in employee responses, other work characteristics, such as the physical demands of the job and job pressures, might also affect those responses. For each item, responses of all participants in the third questionnaire administration were examined collectively.

Table 15 contains a description of responses to a work/nonwork interference item (How much interference is there between your job and your free time activities?). Over 43 percent said "a good bit" or "a great deal" of interference was present.

Table 16 displays the responses to a related, but somewhat more specific, item (How much interference is there between your job and your family life?). Almost 37 percent indicated "a good bit" or "a great deal," and over 73 percent said at least some interference was occurring. While these responses indicate slightly less interference with free time activities in general than with family life activities, there seems to be substantial perception of job related interference in each case. It is possible that the reason for somewhat more perceived interference between job and family activities (as opposed to

TABLE 15
 RESPONSE TO DIRECT MEASURE OF THE PERCEIVED
 INTERFERENCE BETWEEN THE JOB AND
 FREE TIME ACTIVITIES

Response Category	% Response
Almost none	5.4
Very little	16.0
Some	35.6
A good bit	26.3
A great deal	16.6

Note. n = 330.

TABLE 16
 RESPONSE TO DIRECT MEASURE OF THE PERCEIVED
 INTERFERENCE BETWEEN THE JOB AND
 FAMILY LIFE ACTIVITIES

Response Category	% Response
Almost none	8.4
Very little	18.2
Some	36.7
A good bit	23.7
A great deal	13.0

Note. n = 308.

job and free time activities) is that many participants may view family time to be critically important, and any interference with the quantity or quality of that time, caused by the job, is more distressing.

Results for an item concerning the amount of time available for free time activities can be found in Table 17. Almost one in five workers felt that they have much less time than they need. Over 58 percent of those responding said that, to some degree, they have less time than they need. A meager two percent indicated that they have more time than they need.

Responses to an item measuring satisfaction with free time activities may be seen in Table 18. Over 28 percent were "very satisfied," and 82 percent were "somewhat satisfied" or "very satisfied." Less than three percent were not at all satisfied.

Participants in the present study seem to be indicating that they wish that they had more time for free time activities and that they feel some interference between their job and those activities. Nonetheless, they are generally satisfied with the quality and substance of those activities. Employees seem to be using their free time in ways that satisfy them, even though many of them wish they had more of it.

One of the most direct off-the-job effects of employee work hours is the extent to which those hours disrupt normal sleep patterns. Lack of sleep and poor sleep quality can influence an individual's enjoyment of free time activities, as well as his or her performance on the job. Table 19 displays responses to an item which asks how

TABLE 17
 RESPONSE TO DIRECT MEASURE OF THE
 AMOUNT OF TIME AVAILABLE FOR
 FREE TIME ACTIVITIES

Response Category	% Response
Much less time than I need	19.4
Somewhat less time than I need	39.1
Just about the time that I need	39.4
More time than I need	2.1

Note. n = 330.

TABLE 18
 RESPONSE TO DIRECT MEASURE OF SATISFACTION
 WITH FREE TIME ACTIVITIES

Response Category	% Response
Not at all satisfied	2.9
Not too satisfied	14.7
Somewhat satisfied	53.8
Very satisfied	28.5

Note. n = 330.

TABLE 19
 RESPONSE TO DIRECT MEASURE OF THE
 FREQUENCY OF SLEEP DISRUPTION

Response Category	% Response
Never	1.5
Seldom	3.6
Occasionally	5.9
Fairly often	28.5
Frequently	37.7
Almost all the time	22.8

Note. n = 330.

often respondents have difficulty sleeping. Strikingly, almost 23 percent said they have trouble "almost all the time," over 60 percent at least "frequently," 89 percent at least "fairly often," and 95 percent experience difficulty sleeping at least occasionally. Only five percent experience sleep problems seldom or never. Numerous studies (such as those cited and discussed in Dunham, 1977) have found that persons working other than normal, daylight work hours often experience serious sleep disruption. Such seems to be the case for participants in the present study. To the extent that work hours affect when and how long employees can sleep, and that effect is disruptive, then hours of work can be said to have substantial impact on the quality of nonwork, which includes sleep time. Evidence for the fifth research question suggests that work, most specifically working hours, does have perceived impact on the quality of nonwork life.

Summary of Results

The results of the present study, in answering each of the five research questions, may be summarized as follows.

Research Question 1

What are the effects of a conversion to compressed work schedule (i.e., two or three consecutive 12-hour days) from a traditional schedule (i.e., seven consecutive 8-hour days) on nursing employees?

Repeated measures analysis of variance was used to identify the extent of changes in specific dependent variables and to determine whether any such changes were temporary or long lasting. For most of the variables under study, participants indicated a positive change

immediately after the compressed schedule was implemented. However, the changes appear to have been relatively short-lived, as much of the positive shift in attitudes had dissipated by the time the 13-month measurement was taken. Not one of the 22 quality of life variables studied showed a positive change ($p < .05$) from the pretest to the 13-month posttest.

Research Question 2

Which one of four existing work schedule formats is associated with the most positive results in terms of quality of life?

Results of multivariate tests for differences in the means of the quality of life dependent variables among four work schedules were significant. Univariate F tests and post hoc analyses were used in an attempt to identify which one of the four schedule formats was most associated with positive quality of life perceptions. Overall, the most positive results were obtained for a 12-hour schedule, with seven days on and seven days off. For the most direct item, "How do you feel about the hours you work?", this schedule revealed significantly higher satisfaction than each of the three comparison schedule formats.

Research Question 3

What is the relationship of work and nonwork variables to satisfaction with working hours?

With family items included, a five variable regression model explained 54 percent of the variation in work hour satisfaction, with interference between the job and family life possessing the strongest

relationship ($r^2 = .33$). When family items were excluded the seven variable model accounted for 46 percent of the variance, with another interference item, interference between the job and free time, showing the greatest association ($r^2 = .23$). From both analyses it can be concluded that the variables most closely related with the way an employee feels about his or her working hours are variables which reflect the nonwork impact of those working hours.

Research Question 4

What is the relationship of work and nonwork variables to overall life satisfaction?

Including family items, a single item (i.e., fatigue) explained 45 percent of the variation in life satisfaction. The five variable model accounted for 65 percent of the variance. When family items were excluded, a six variable model was constructed which explained 49 percent of life satisfaction variance. For both analyses, nonwork variables and fatigue and tension variables were dominant. Satisfaction with free time was common to the models built in both analyses and displayed a strong relationship with the overall expressions of how employees felt about their lives as a whole.

Research Question 5

Based on "direct measures" of the impact of work on nonwork, is there evidence that the hours one works impacts the quality of nonwork life?

A majority of participants reported at least some interference between their job and free time and family life activities. Many also felt that the amount of time available for free time was less

than they need. On the other hand, a strong majority expressed satisfaction with their free time activities. These attitudes would seem to indicate that despite the problems and limitations that participants' jobs (and the corresponding work hours) placed on them, other personal factors relating to nonwork offset the negative and caused them to feel positive about their free time overall. Finally, one obvious potential result of working other than a traditional work schedule, sleep disruption, was reported by a vast majority of participants.

CHAPTER IV

DISCUSSION

The present study examined research questions relating to the relationship between working hours and the quality of life. Such questions are of vital importance in today's workplace for several reasons. The workforce contains employees who possess a great heterogeneity of interests and preferences. Consequently, the same "solution" to many issues cannot be expected to work equally well for all employees. At the same time, there is an increased need for organizations to acquire and retain valuable human resources in order to spur productivity, which after years of dramatic increases has begun to stagnate during the last decade. Where shortages of qualified personnel exist, the competition for human resources is intense, and organizations are required to seek innovative ways to attract and retain the desired caliber of employees. Coupled with these factors is the increasing activism among workers in pursuit of quality of life -- a pursuit that involves searching for a good job which meets financial and career objectives while not intruding unnecessarily on non-work life. Taken together, this atmosphere in the labor marketplace demands that organizations seek a more complete understanding of how jobs and organizational expectations and policies can be designed in such a way as to permit the organization to secure the valuable human resources that are necessary for their organization's future success and prosperity.

The first research question called for a search for concomitants

of a change in work schedule. The data suggested that participants experienced changes in attitudes and well-being after the schedule change. The areas of strongest reported change included satisfaction with the amount of free time, the amount of interference between the job and free time activities, and the amount of interference between the job and family life activities. However, positive changes in the quality of life experienced by workers immediately after the work schedule change were not long lasting, and in no case were reports 13 months after the change substantially improved over those before the schedule change. These findings that no lasting changes occurred are consistent with those of other authors (e.g., Ivancevich and Lyon, 1977) who have found that few long-term improvements have been associated with conversion to compressed workweeks.

It should be noted that there are numerous possible explanations for why an immediate change occurred but was short-lived, other than the existence of a truly temporary effect. Among those explanations are the presence of experimental artifacts (i.e., history, testing, mortality, or experimental reactivity). Due to evidence from the examination of nonequivalent control groups within the same organization, the presence of substantial artifactual influences, while not ruled out altogether, would appear to be unlikely to explain the phenomenon observed.

Despite the fact that permanent changes in the quality of life variables measured in the present study were not found to exist, it cannot be assumed that the change in work schedule had no impact on workers' lives. The fact that numerous tests on dependent variable

means were significant suggests that changes did occur. However, those changes were not stable over time. Such a finding is not surprising when one thinks about the dramatic alteration in the daily routine of employees who experience a change in the number of hours they work per day as well as the number of consecutive days they work between days off. Under the compressed work schedule, employees would have less time and energy for nonwork activities on the days worked, but would have much more frequent opportunity for such activities on days off since there would never be more than three consecutive days worked. One would expect workers to adapt their nonwork patterns such that many activities which had previously been possible after work would now be postponed until an off day (e.g., household chores, times with friends). Even those nonwork activities for which there is continued participation on days worked (e.g., times with family), the quality of those activities would be diminished and would be more satisfactory on days off.

Substantial alteration of the timing of nonwork activities, such as has been suggested, would take time for its full impact to be felt. At first, the positive aspects of the new schedule might appear most prominently, but over time those inconveniences which would result from the change would begin to take their toll. While this scenario cannot be definitively proven, it appears quite reasonable and would explain the relationships which were observed.

Based on the insights gained in the present study, two recommendations may be offered for future research in this area. First, any attempt to observe changes associated with modifications made in

employees' work schedules must take place over a sufficient span of time -- preferably 12 months or more. Based on the strong indications that short-term quality of life enhancements may not endure over the long run, any artificially brief observations may fail to capture the most important, lasting changes. It is also important to gain insight into the specific changes in activities and attitudes, related to the modification in working hours, over time. To this end, a second recommendation is that some quality of life assessments, should be gathered in three separate ways: an overall assessment, an assessment for days working, and an assessment for days off. If separate measurements of this type existed for relevant variables (e.g., variables measuring the amount of time for certain activities, fatigue) at each of several points in time after a schedule manipulation, any changes in the quality of life associated with changes in nonwork activity patterns could be more fully understood.

The second research question focused on the attempt to identify any existing differences in reports of quality of life that might be associated with four work schedule formats. Realizing that because of the limitations of quasi-experimental studies, definite answers could not be hoped to be obtained, the objective was to seek some insight which might be useful to practitioners and might serve to focus future research on this topic.

Significant multivariate tests (one with family items included, the other with these items excluded) indicated that differences in quality of life attitudes and self-report measures of well-being existed by schedule worked. Univariate analyses revealed that 16 out

of 22 variables evaluated showed statistically significant differences, with one of the two compressed work schedule formats (i.e., 12 hours per day, seven days on, seven days off) being associated with the most positive results. Variables for which the strongest differences by schedule were found were satisfaction with the amount of free time, the amount of time for chores, the amount of interference between the job and free time activities, the amount of interference between the job and family life activities, satisfaction with work hours, job tension, and job fatigue. While no one schedule demonstrated unequivocal superiority in terms of quality of life results, the pattern of relationships revealed that a compressed, 12-hour, seven day on, seven day off schedule was the most favorable across all 22 variables. This schedule was found to be superior to each of the other three schedule formats for six of the 22 variables. Examination of the individual comparisons among schedules shows that this schedule was superior to the revised eight-hour schedule on 14 of 22 variables, better than the 12-hour, two or three day schedule on eight variables, and more favorable than the traditional eight-hour schedule eight times. Thus, the greatest point of difference for these results exists between a 12-hour, seven day schedule and a modified eight-hour format.

In interpreting these results, one must remember that a full range of possible work schedule options was not evaluated. Because of the requirements of health care organizations, such as the one involved in the present study, many jobs must be staffed 24 hours per day, seven days per week. Consequently, each schedule contained

shifts working other than daylight hours and required work on the weekends on a regular basis. It could be said, then, that a comparison was made among four less than ideal schedule formats, each of which would be expected to result in some negative quality of life results. Much more striking findings might be anticipated should any of these schedules be compared with a daylight only, Monday through Friday work schedule.

While the use of intact groups is far from ideal from a research standpoint, there are many organizational questions which inevitably must be addressed in field settings, using intact groups, due to the organizational nonfeasance of conducting pure research on those topics. The present study is an example of this fact. Even the preceding analysis, which involved an experimental manipulation of work schedule, used an intact group and, in fact, merely "captured" the impact of a change in work schedule already planned by the organization. Cook and Campbell (1979) list a number of factors which potentially threaten a researcher's ability to draw valid statistical conclusions in quasi-experimental studies. Among the possible threats which do not appear to have affected the present results are low statistical power, "fishing" for results (leading to an inflated error rate), unreliability of measures, instrumentation, and regression. Unable to be ruled out, but not likely to have had a strong influence are history and maturation. History could have been involved, but only to the extent that the events were specific to, or had specific impact on, one schedule differently from another. Maturation could have existed due to the fact that participants in some

units had been working their given schedule longer than those in other units, due to a more recent conversion. However, the fact that at least four organizational units comprised each schedule comparison would mean that any recent changes in one unit would not completely dominate the results for that schedule. The most serious limitation in the present study was the potential for heterogeneity in the research population which could lead to a distortion of results. Specifically, factors for which there are differences by work schedule, such as were found for some demographic variables, could cause problems in interpretation. It is possible that despite the use of analysis of covariance to adjust criterion variable means, the analyses obtained might not reflect true differences related to schedule. Findings may lack validity because of the presence of an interaction between the treatment and respondent variables or because the criterion variables themselves are related to the respondent variables. For the present study it is impossible to eliminate either of these possibilities as affecting the analyses reported for the second research question. In order to improve the interpretability of future studies on the topic, it is recommended that researchers attempt to utilize more homogeneous work populations or to form their research samples in an attempt to obtain homogeneity on relevant respondent variables.

The third research question was directed toward the investigation of possible relationships between quality of life variables and satisfaction with work hours. With family items included, a five variable model, explaining 54 percent of the variance, was formed. The single

variable most associated with work hour satisfaction was perceived interference between the job and family life activities ($\underline{r}^2 = .33$). When family items were excluded, the result was a seven variable model, accounting for 46 percent of work satisfaction variability. The most predictive items were perceived job-free time interference and enjoyment of life (each demonstrating an $\underline{r}^2 = .23$). These results are not surprising in that one might expect work hours to be one of the primary causes of perceived job-family life and job-free time interference, in turn leading to reduced satisfaction with the work hours themselves. While causality has not been established from the results of the present study, it is clear that attitudes toward a prominent work characteristic such as working hours are strongly associated with the perceptions of the quality of life.

The fourth research question called for the search for relationships between life satisfaction and quality of life variables. This question was important in order to examine the overall nature of relationships contributing to employees' feelings of satisfaction and well-being. This question also permits satisfaction with work hours to be placed into a broader perspective by evaluating work hour satisfaction and other quality of life variables simultaneously for their association with life satisfaction. With family items included, five items accounted for 65 percent of the variation in life satisfaction. The most strongly linked individual variables were personal satisfaction ($\underline{r}^2 = .46$) and satisfaction with free time ($\underline{r}^2 = .45$). Satisfaction with work hours, although only the fourth most predictive variable in

the model, explained 31 percent of the variance in overall life satisfaction. This finding alone, the fact that a single aspect of work (i.e., work hours) accounts for almost one-third of life satisfaction variability, speaks to the importance of employee attitudes concerning their work schedules. When family items were excluded from the analysis, six variables were entered into a model which explained 49 percent of life satisfaction variance. As in the preceeding analysis, personal satisfaction ($r^2 = .34$) and satisfaction with free time ($r^2 = .25$) were the most strongly associated individual items. Satisfaction with work hours did not enter into the regression model but explained 15 percent of the variation in life satisfaction. While this relationship between life satisfaction and satisfaction with work hours is still meaningful, it is substantially less than that found for the same two variables when family life variables were included (resulting in the deletion of cases for which responses were not present). This difference in the magnitude of the relationship for the total group of participants in comparison to a subset of participants who responded to family life items suggests the possibility that working hours have a greater impact on employees with families than on employees who do not have a spouse or children.

The implications of these findings are several. First, for the sample in the present study, relationships were established between quality of life variables and life satisfaction. The existence of such relationships allows researchers and practitioners to examine the factors, both on and off the job, which impact the most comprehensive

of all variables reflecting human attitudes -- total life satisfaction. Through a better understanding of the simple relationships, as well as more complex interrelationships among variables, researchers have the opportunity to broaden their focus beyond the countless studies which have looked at the much narrower topic of job satisfaction and examine the quality of life as it relates to work. Second, relationships were found to exist between quality of life variables and work hours satisfaction. The presence of such relationships suggests that the way one feels about the hours he or she works is, at the very least, strongly associated with attitudes toward work and nonwork. While the present study does not permit causal inferences to be drawn, the strong relationships suggest the possibility that working hours have impacted employees' lives.

The final research question called for simply looking at five key questionnaire items and observing the nature of responses from participants. Results indicate that many employees perceive that there is at least some interference between the job and free time activities (79 percent), at least some interference between the job and family life activities (73 percent), and that they have less time than they need for free time activities (59 percent). Nonetheless, employees overwhelmingly expressed satisfaction with their current free time activities (82 percent). The results suggest that employees have fewer complaints concerning the ways in which free time is spent than they have with the shortage of such time and with frustrations caused by interference between their job and activities they wish to pursue off of the job. Finally, a vast majority of participants (89 percent)

indicated that they have difficulty sleeping fairly often (includes respondents who indicated problems "frequently" and "almost all the time"). Taken together, responses to all of these items illustrate the attitudes of employees that work is intruding into their personal lives and interfering with the quality and quantity of discretionary time off of the job.

To reflect on what the results of the present study tell us about alternate work schedule formats, it can be said that while many employees may wish that they had more time away from work, there are obvious limits to what can be offered without reducing take-home pay for employees. Organizations can, however, attempt to understand the impact of various organizational decisions and policies on the quality of life in an effort to minimize negative influences as much as possible. As mentioned earlier, the reasons for making more careful decisions are not purely humanitarian; organizations can expect returns in terms of better ability to attract and retain a skilled workforce, as well as possible gains in productivity through better employee health and overall well-being.

A Model of the Relationship Between Work Characteristics and Employee Attitudes

Based on the findings of the present study, a model may be proposed to describe the interrelationships among working hours, work, nonwork, and life satisfactions (see Figure 4). This model should be viewed as a first attempt to understand and explain, in a clearer way, the relationships among these variables. Specifically, an attempt has

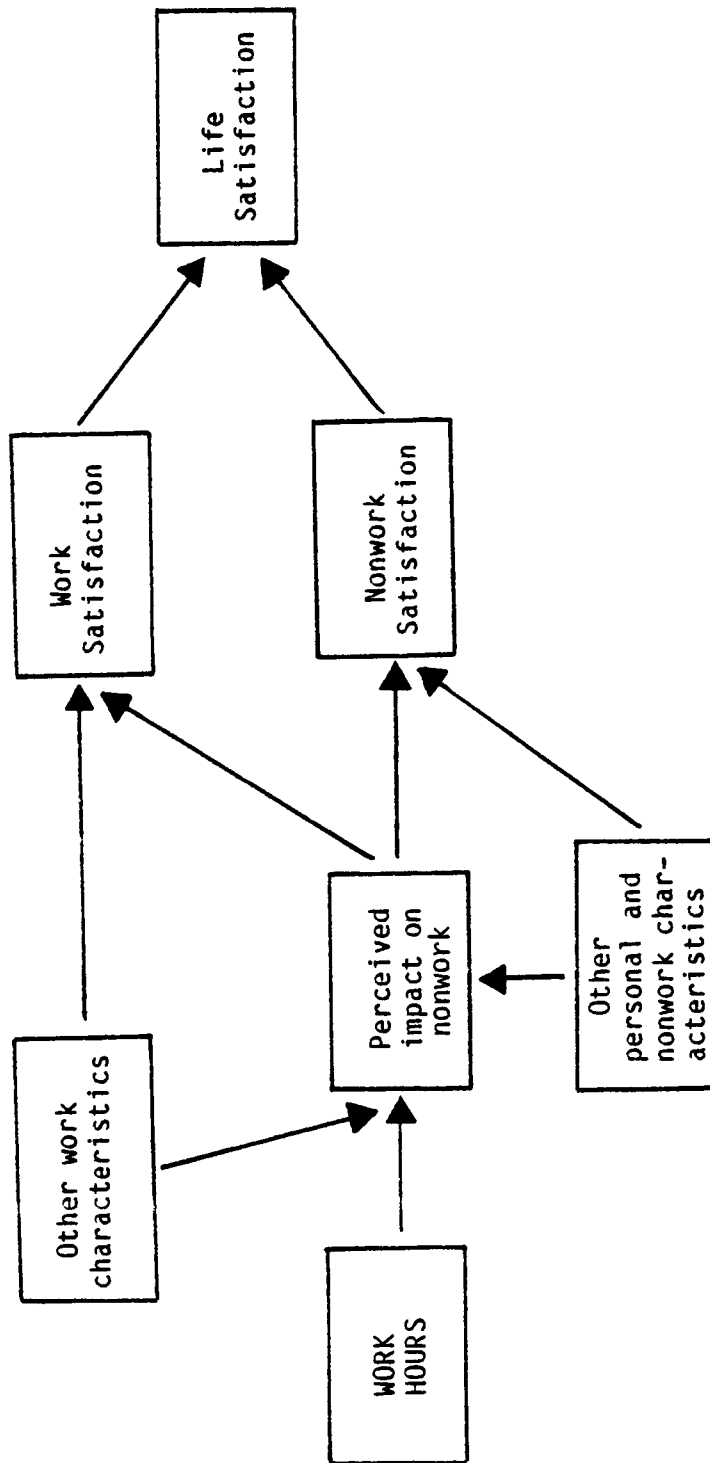


Figure 4. Proposed Model of the Relationships Among Work Characteristics and Employee Attitudes

been made to explain the nature of the impact of working hours on these other important variables.

It is suggested that work hours, or any other work characteristic which has the potential for changing the quantity, quality, or timing of nonwork hours, is first evaluated by employees for the perceived impact it will have on nonwork. This evaluation may be conscious or subconscious. To the extent that there is not perceived impact, then satisfactions with work and nonwork will not be affected. However, should there be a perception of impact of work hours on nonwork, then work and/or nonwork satisfaction may be affected. The influence on these "satisfactions" may be either positive or negative, and may be strong, moderate, or weak, depending on the perceived nature of any existing impact. The importance of perceptions, as opposed to objective assessments of reality, has been discussed by Adams (1963). Despite what is actually happening, the perception of events and their impact is colored and interpreted in light of numerous personal characteristics of the individual worker, as well as by other characteristics of his/her life away from the workplace. Examples of relevant personal factors include, but are not limited to, age, sex, marital status, number of children, and occupation. Nonwork characteristics could include such factors as the number and type of chores and responsibilities one has, what one does for relaxation (i.e., hobbies, interests), and the number and quality of the support relationships one has (e.g., spouse, friends, other relatives, professional contacts). Depending on these personal and nonwork variables, a given characteristic of work (e.g., work hours) might have dramatically

different perceived impact. Work and nonwork satisfactions together shape how we feel about our lives as a whole.

The advantage of the proposed model over previously suggested alternatives is twofold: the differentiation between work characteristics and work satisfaction, and the elaboration of the perceptual processes which influence both work and nonwork variables. Past explanations of the relationship between work and nonwork have failed to isolate how work affects the quality of life in general and nonwork in particular. This model realizes that work and nonwork are related, but that neither directly causes changes in the other. Instead, satisfactions with work and nonwork may each be influenced, in part, by any perceived impact of work characteristics, such as hours of work, on the individual's life away from the job. "Satisfactions" (i.e., work and nonwork) have little, if any, influence on each other; their correlations may be spuriously high because of method error variance (i.e., commonality of measurements involving satisfaction variables). However, characteristics of work or nonwork (e.g., working hours) may have an impact on these satisfactions, depending on how the characteristics are perceived. This realization should tell managers that they should not only focus their attention on objectively assessing the results of organizational actions on employees, but that they must also be aware of, and attempt to "manage," the perceptions of individual employees. This management of perceptions includes providing information and guidance aimed at shaping employee perceptions, as well as responding to individual differences in perceptions when deciding how organizational actions will be taken. An example of this

recommendation, as it would relate to the present study, should help illustrate the point. Before considering a change in work schedule, managers should consider the way in which the change would be received, based on individual employees' personal and nonwork characteristics. It may be decided, as a result, that no change should take place, that change should occur involving every employee, or that employees should be given different options due to the fact that no single work schedule may fit the preferences and needs of all employees. Regardless of the decision itself, the implementation of any change should be done so as to alleviate as many of the apprehensions and negative expectations of the employees as possible.

Implications for Future Research

The present study has investigated the relationship between hours of work, attitudes, and employee well-being. Based on these results, as well as those reported elsewhere, a model of the relationships among these variables has been proposed.

It is hoped that the empirical research reported here, despite its pragmatic limitations, has helped to shed some light on a very basic question: What is the nature of the impact of organizational decisions concerning various work characteristics on the quality of employees' lives? One such organizational decision has been discussed in detail here; however, this discussion should be placed in the broader context of all organizational decisions which may impact (or have perceived impact) on employees. Further research is needed in a

variety of types of organizations with numerous different organizational characteristics and types of decisions involved.

The proposed model has not been tested empirically. Conversely, the model serves as a summary of the present research effort and should be evaluated and modified, in appropriate, by future research. Only by working to develop a more complete view of the impacts of organizational decisions on their employees can we better understand the processes which cause employees to behave as they do. In turn, an understanding of the underlying psychological phenomena resulting from work characteristics or decisions should permit us to get a more comprehensive, long-term picture of the full results of organizational decisions and policies concerning its human resources on tangible business outcomes such as profitability.

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APPENDIX

SECTION I -- YOUR LIFE ON AND OFF THE JOB

Instructions: For the items in this section, please place a mark (X) in the box under the heading that best describes the way you feel about that statement.

1. On most days on your job, how often does time seem to drag?

Never	Seldom	Occasionally	Fairly often	Frequently	Almost all the time
☐	☐	☐	☐	☐	☐

2. On the average, on days when you are working, how much time do you spend playing with or taking care of your children?

Almost none	Very little	Some	A good bit	A great deal	Does not apply
☐	☐	☐	☐	☐	☐

3. On the average, on days when you are working, how much time do you spend taking care of (or doing) household chores?

Almost none	Very little	Some	A good bit	A great deal	Does not apply
☐	☐	☐	☐	☐	☐

4. In general, how do you feel about your time. Would you say you always feel rushed even to do the things you have to do, only sometimes feel rushed, or almost never feel rushed?

Almost never	Sometimes	Always
☐	☐	☐

5. How many of the people you get together with outside of work do you know from places where you've ever worked?

None	Few	Some	A lot	All
☐	☐	☐	☐	☐

6. Taking everything into consideration, how satisfied are you with your life in general at the present time?

Not satisfied	Slightly satisfied	Fairly satisfied	Very satisfied	Extremely satisfied
☐	☐	☐	☐	☐

7. Over your lifetime, has the quality of your life . . . ?

Gotten much worse	Gotten slightly worse	Stayed the same	Improved slightly	Improved greatly
☐	☐	☐	☐	☐

8. How would you describe the overall quality of the patient care that you give your patients?

Poor	Adequate	Good	Very good	Extremely good
☐	☐	☐	☐	☐

9. How would you describe the overall quality of patient care that is given by other nurses in your unit (your coworkers)?

Poor	Adequate	Good	Very good	Extremely good
☐	☐	☐	☐	☐

(OVER)

10. Now I'd like to ask you some questions about your free time activities.
I mean what you do for relaxation and enjoyment, not the things you do on your job, and not the chores you have to do in and around your home.

	Nearly every day	Several times a week	Once a week	Several times a month	Once a month	Several times a year	Once a year or less	Never
How often do you . . .								
Read newspapers, magazines, or books	☐	☐	☐	☐	☐	☐	☐	☐
Watch television	☐	☐	☐	☐	☐	☐	☐	☐
Visit family, friends, or neighbors, either at each other's home or by telephone	☐	☐	☐	☐	☐	☐	☐	☐
Work on hobbies at home	☐	☐	☐	☐	☐	☐	☐	☐
Work around the house or yard for pleasure	☐	☐	☐	☐	☐	☐	☐	☐
Eat out at restaurants	☐	☐	☐	☐	☐	☐	☐	☐
Play in athletic games or do other active things	☐	☐	☐	☐	☐	☐	☐	☐
Go to church or synagogue	☐	☐	☐	☐	☐	☐	☐	☐
Go to museums, concerts, plays, or lectures	☐	☐	☐	☐	☐	☐	☐	☐
Go to parties, night-clubs, or dancing places	☐	☐	☐	☐	☐	☐	☐	☐
Go to the movies	☐	☐	☐	☐	☐	☐	☐	☐
Travel for pleasure	☐	☐	☐	☐	☐	☐	☐	☐

11. All in all, how satisfied would you say you are with your free time activities?
- | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|
| Not at all satisfied | Not too satisfied | Somewhat satisfied | Very satisfied |
| ☐ | ☐ | ☐ | ☐ |
12. How do you feel about the amount of time you have available for free time activities?
- | | | | |
|----------------------------|--------------------------------|---------------------------------|--------------------------|
| Much less time than I need | Somewhat less time than I need | Just about the time that I need | More time than I need |
| ☐ | ☐ | ☐ | ☐ |
13. How much interference is there between your job and your family life?
- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Almost none | Very little | Some | A good bit | A great deal | Does not apply |
| ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
- If they do interfere, in what way?
-
-
14. How much interference is there between your job and your free time activities?
- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Almost none | Very little | Some | A good bit | A great deal | Does not apply |
| ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
- If they do interfere, in what way?
-
-
15. If you have your own way, will you be working for UF Hospital two years from now?
- | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Certainly not | Probably not | Not sure | Probably | Certainly |
| ☐ | ☐ | ☐ | ☐ | ☐ |
16. All things considered, how likely is it that you will be working at UF Hospital two years from now?
- | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Certainly not | Probably not | Not sure | Probably | Certainly |
| ☐ | ☐ | ☐ | ☐ | ☐ |
- If they do interfere, in what way?
-
-

(OVER)

SECTION 2 -- QUALITY OF LIFE

Instructions: In the following section of the questionnaire we want to find out how you feel about various parts of your life. Please respond using the scale below. In the space beside each item, place the number that corresponds to the category which best describes the way you feel about that item. If an item does not apply to you, write "NA" in the space beside it. Please respond to every item.

I feel:

7	6	5	4	3	2	1
Delighted	Pleased	Mostly satisfied	Mixed (about equally satisfied and dissatisfied)	Mostly dissatisfied	Unhappy	Terrible

How do you feel about . . .

9. Yourself. _____

10. How interesting your day-to-day life is. _____

11. The chance you have to enjoy pleasant or beautiful things. _____

12. The way you spend your spare time, your nonwork activities. _____

13. The variety and diversity in your life. _____

14. The amount of time you have for doing the things you want to do. _____

15. The amount of pressure you are under. _____

16. The way your husband/wife helps you cope with your tensions. _____

17. The amount of relaxation in your life. _____

18. The sleep you get. _____

19. The amount of friendship and love in your life. _____

20. The people who live in the houses/apartments near yours. _____

21. The things you do and the times you have with your friends. _____

22. How neat, tidy, and clean, things are around you. _____

23. Your housework -- the work you need to do around your home. _____

NA Does not apply

7	6	5	4	3	2	1
Delighted	Pleased	Mostly satisfied	Mixed (about equally satisfied and dissatisfied)	Mostly dissatisfied	Unhappy	Terrible

How do you feel about . . .

9. Yourself. _____

10. How interesting your day-to-day life is. _____

11. The chance you have to enjoy pleasant or beautiful things. _____

12. The way you spend your spare time, your nonwork activities. _____

13. The variety and diversity in your life. _____

14. The amount of time you have for doing the things you want to do. _____

15. The amount of pressure you are under. _____

16. The way your husband/wife helps you cope with your tensions. _____

17. The amount of relaxation in your life. _____

18. The sleep you get. _____

19. The amount of friendship and love in your life. _____

20. The people who live in the houses/apartments near yours. _____

21. The things you do and the times you have with your friends. _____

22. How neat, tidy, and clean, things are around you. _____

23. Your housework -- the work you need to do around your home. _____

NA Does not apply

SECTION 3 -- SOURCES OF TENSION ON THE JOB

Instructions: All of us are occasionally bothered by certain things in our work. Using the following scale, please indicate how frequently you are bothered by each of the circumstances described below.

1	2	3	4	5
Never	Rarely	Sometimes	Rather often	Nearly all the time

Please put the appropriate number in the space to the left of each item.

How frequently are you bothered by . . .

1. Feeling that there is too much to be done, so much that the quality of patient care suffers.
2. Feeling that you have too little authority to be able to handle certain situations you are confronted with on your job.
3. Thinking that you'll not be able to satisfy the conflicting demands of the various people you are responsible to.
4. Thinking that how you do your job will greatly affect the lives of other people (your patients and their families).
5. Not knowing what your supervisor thinks of you, how she/he evaluates your performance.
6. Not having enough resources (supplies, equipment, or staff) to do your job effectively.
7. Feeling that paperwork and "red tape" prevent you from doing your job as well as you would like.
8. Not getting cooperation from your co-workers when you need it.
9. Feeling that your job interferes with your family life.

7	6	5	4	3	2	1
Delighted	Pleased	Mostly satisfied	Mixed (about equally satisfied and dissatisfied)	Mostly dissatisfied	Unhappy	Terrible

How do you feel about . . .

☐ NA Does not apply

24. Your job.
25. The people you work with -- your co-workers.
26. The work you do on your job -- the work itself.
27. The pay and fringe benefits you get.
28. The security of your job.
29. The physical surroundings where you work.
30. The hours you work.
31. The amount of work you are asked to do.
32. How secure you are financially.
33. How well your family agrees on how family income should be spent.
34. This community as a place to live.

SECTION 4 -- STRESS AND HEALTH

Instructions: For the next three questions, please mark the answer which you think is most appropriate.

1. How much stress is placed on you during an average shift on your job?

- _____ Almost none
- _____ A little
- _____ A moderate amount
- _____ A substantial amount
- _____ A great deal

2. How tired are you when you go home after an average shift on your job?

- _____ Extremely tired
- _____ Moderately tired
- _____ Fairly tired
- _____ Slightly tired
- _____ Not very tired

3. How would you describe your health in general?

- _____ Poor
- _____ Fair
- _____ Good
- _____ Very good
- _____ Excellent

Instructions: Please use the following scale to answer the six questions below. Place your answer in the space to the left of each item.

1	2	3	4	5	6
Never	Seldom	Occasionally	Fairly Often	Frequently	Almost all the time

How often do you experience the following?

- _____ 1. Headache
- _____ 2. Trouble getting to sleep
- _____ 3. Upset stomach
- _____ 4. Tiredness
- _____ 5. Nervousness
- _____ 6. Depression

SECTION 5 -- YOUR JOB AT UT HOSPITAL

Instructions: Please answer the questions in this section by placing a mark (X) in the box under the heading that best describes the way you feel about that statement.

	Disagree	Slightly disagree	Not sure	Slightly agree	Agree
1. I am satisfied with my usual shift (hours of work).	☐	☐	☐	☐	☐
2. I am so tired at the end of my shift that it interferes with the time I spend with my family.	☐	☐	☐	☐	☐
3. For me this is the best of all possible places to work at the present time.	☐	☐	☐	☐	☐
4. In general, the working conditions on my job are <u>not</u> satisfactory.	☐	☐	☐	☐	☐
5. Considering everything about my job here at UT Hospital, I am very satisfied.	☐	☐	☐	☐	☐
6. I am so tired at the end of my shift that it interferes with my <u>free</u> time activities.	☐	☐	☐	☐	☐
7. The major satisfaction in my life comes from my job.	☐	☐	☐	☐	☐
8. This hospital really inspires the very best in me in the way of job performance.	☐	☐	☐	☐	☐
9. The most important things that happen to me involve my work.	☐	☐	☐	☐	☐
10. I feel very little loyalty to this hospital.	☐	☐	☐	☐	☐
11. I live, eat, and breathe my job.	☐	☐	☐	☐	☐
12. I am willing to put in a great deal of effort beyond that normally expected in order to help this hospital be successful.	☐	☐	☐	☐	☐
13. Most things in life are more important than work.	☐	☐	☐	☐	☐

(OVER)

Instructions: Please indicate how satisfied you are with each aspect of your job listed below. Write the appropriate number in the blank beside each statement.

1	2	3	4	5	6	7
Extremely dissatisfied	Dissatisfied	Slightly dissatisfied	Neutral	Slightly satisfied	Satisfied	Extremely satisfied

1. The amount of job security I have.
2. The amount of pay and fringe benefits I receive.
3. The amount of personal growth and development I get in doing my job.
4. The people I talk to and work with on my job.
5. The degree of respect and fair treatment I receive from my supervisor.
6. The feeling of worthwhile accomplishment I get from doing my job.
7. The chance to get to know other people while on the job.
8. The amount of support and guidance I receive from my supervisor.
9. The degree to which I am fairly paid for what I contribute to this hospital.
10. The amount of independent thought and action I can exercise in my job.
11. How secure things look for me in the future at this hospital.
12. The chance to help other people while at work.
13. The amount of challenge in my job.
14. The overall quality of the supervision I receive in my work.

The following information will be useful in the analysis of this survey. Your responses here, just as all others you have made, will be kept strictly confidential.

What shift do you ordinarily work?

7 - 3 _____ 7 a.m. - 7 p.m.
 3 - 11 _____ 7 p.m. - 7 a.m.
 11 - 7 _____

How long have you been employed by UT Hospital?

less than 1 year _____ 6 - 10 years _____
 2 - 3 years _____ 11 - 15 years _____
 4 - 5 years _____ 16 or more years _____

Are you full or part-time?

Full-Time _____ Part-Time _____

What is your age?

25 or less _____ 46 - 55 _____
 26 - 35 _____ 56 - 65 _____
 36 - 45 _____ 66 or more _____

What is your sex?

Female _____ Male _____

What is the title of your job?

What is the highest level of education you have attained?

1 - 12 grade _____ Bachelor's Degree _____
 High School Diploma _____ Other (please specify) _____
 Some College, Business, _____
 or Technical School _____

What is your marital status?

Single _____ Divorced _____
 Married _____ Widowed _____

How many children do you have?

None _____ 3 _____
 1 _____ 4 _____
 2 _____ 5 or more _____

How far do you live from work?

_____	less than 1 mile	_____	10 - 12 miles
_____	1 - 3	_____	13 - 15 miles
_____	4 - 6 miles	_____	16 miles or more
_____	7 - 9 miles		

Unit Name _____

It is extremely important that you identify yourself so that we can match this questionnaire with the one you filled out before. Please print your name on the line below. (If you used some other means of identification before, such as your mother's maiden name, please use the same thing here).

Name (please print) _____

VITA

Michael T. Roberson was born May 15, 1953, in Birmingham, Alabama. He received a Bachelor of Science degree in Personnel Management and Industrial Relations from Auburn University in August 1976.

Following graduation, Mr. Roberson entered the Graduate School of The University of Tennessee, Knoxville, and he received his Master of Science degree in Industrial and Organizational Psychology in June 1980. While in Knoxville, he worked for the UTK Personnel Department as a graduate research assistant.

In September of 1980 he joined the faculty of Ohio University as an Assistant Professor of Management, where he is employed presently. Mr. Roberson continued to work toward his doctorate and in March 1986 was awarded a Doctor of Philosophy degree in Industrial and Organizational Psychology from The University of Tennessee, Knoxville.

He is married to the former Kathy C. Davis of Columbus, Georgia, and has two daughters, Angela Kristin and Ashley Elizabeth.