

AN ABSTRACT OF THE THESIS OF

Suanne Goodrich for the Master of Science

in Psychology presented on July 28, 1995

Title: A COMPARISON OF DEPRESSIVE SYMPTOMS BETWEEN  
INDIVIDUALS WORKING TRADITIONAL AND NONTRADITIONAL HOURS

Abstract approved: Kenneth A. Leave

Shiftwork, which is becoming increasingly prevalent in our society, causes harmful side effects. Exactly what these effects are and what their severity may be is less well known. Shiftworkers have been reported to have higher levels of psychopathology (Akinawo, 1988) and psychological symptoms (Bohle & Tilley, 1989) than traditional workers, and large numbers of individuals suffer from musculoskeletal and cardiovascular problems (Cervinka, 1993). Despite the many studies in this area, however, little is known about the effects of shiftwork on depression. Because of the numerous health and psychological troubles these workers face, depression was predicted to be worse for workers with nontraditional hours. In addition, women were predicted to report more depressive symptoms than men as this is the case in the general population (Nolen-Hoeksema, 1987).

The second hypothesis was partially supported. While women were significantly more depressed than men among traditional workers, both sexes had equal levels of depression among shiftworkers. However, shiftworkers as a group suffered no more depressive symptoms than traditional workers. For women, the practice of shiftwork may offer certain benefits that are not present with traditional work, reducing the levels of depression they experience.

A \COMPARISON OF DEPRESSIVE SYMPTOMS  
BETWEEN INDIVIDUALS WORKING TRADITIONAL  
AND NONTRADITIONAL HOURS

---

A Thesis

Presented to

the Division of Psychology and Special Education

EMPORIA STATE UNIVERSITY

---

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

---

by

Suanne Goodrich

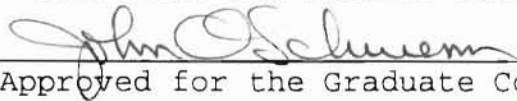
August 1995

Thesis  
1995  
G



Approved for the Division of

Psychology and Special Education



Approved for the Graduate Council

## ACKNOWLEDGEMENTS

I would like to thank Dr. Kenneth Weaver for his constant support, encouragement, and enthusiasm for this project and the others before it. Dr. Weaver always went out of his way to help and listened patiently no matter what the nature of the problem. He showed an interest in me as a person from the very beginning, and guided me to where I needed to be. As a teacher, he is an awe-inspiring model. I believe there are few teachers who can compare to him, in many ways.

In addition, Dr. Kurt Baker and Dr. Howard Smith were very helpful. Both had numerous helpful suggestions for this paper, and were able to provide them in an uncritical manner. They also indulged my many questions with good humor.

I greatly appreciate the participation of the workers of Dolly Madison and E.S.U., without whom this study would not have been possible.

I owe a large debt to my adopted family, Bob, Wendy, and Randi, who were generous enough to take me in as one of their own. I think there have been few times when I have felt more at home than when I am with them. Without them I know I would have never made it.

Finally, I am grateful for the interest and support of my family.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....ii

TABLE OF CONTENTS.....iii

LIST OF TABLES.....iv

LIST OF FIGURES.....v

CHAPTER 1:

    INTRODUCTION.....1

CHAPTER 2:

    METHOD.....11

        Participants.....11

        Design.....11

        Instrumentation.....12

        Procedures.....13

CHAPTER 3:

    RESULTS.....15

CHAPTER 4:

    DISCUSSION.....21

REFERENCES.....23

APPENDIX.....26

LIST OF TABLES

TABLE 1:  
Analysis of Covariance for Depression.....16

TABLE 2:  
Mean Scores on the Beck Depression Inventory  
for Traditional and Nontraditional Workers.....17

TABLE 3:  
Correlations Between Depression and Other  
Variables.....19

LIST OF FIGURES

FIGURE 1:

Interaction Between Schedule and Sex on Scores on  
the Beck Depression Inventory.....18

## CHAPTER I

## INTRODUCTION

Shiftwork, which has been defined as "evening or night work, rotating shifts, irregular shifts, split shifts, and extended-duty hours" (Liskowsky, 1992, p. 3047), forces individuals to sleep at times when the body is not inclined to sleep and to stay awake when the sleep cycle is most predisposed towards sleep. Sleep may be largely unaffected or seriously disturbed depending on the individual and the type of shiftwork (Liskowsky, 1992; Regestein & Monk, 1991).

Shiftworkers tend to suffer from a number of psychological and physiological side effects (Liskowsky, 1992) such as chronic fatigue, especially when they are working nights (Akinawo, 1988), and a higher incidence of gastric and peptic ulcers and constipation than traditional workers (Gordon, Cleary, Parker, & Czeisler, 1986). Stress and a disrupted social life also occur (Liskowsky, 1992). Few studies, however, have examined the impact of shiftwork on mood. The combined effects of sleep deprivation, fatigue, stress, and health problems could increase the likelihood of developing depression. Also, since females relative to males reportedly have higher rates of depression (Nolen-Hoeksema, 1987), shiftwork may affect them more. This study will attempt to determine whether shiftworkers have more depressive symptoms than their traditional working counterparts and, if so, if this relationship is stronger among women.



## Literature Review

The body's sleep/wake cycle and temperature cycles are synchronized so that temperature drops slightly during sleep and rises again before waking. Abrupt changes in sleep routines, such as beginning shiftwork, may cause the two cycles to become desynchronized. This can make sleep difficult (Liskowsky, 1992). Adaption to new sleep schedules may occur fairly easily for some people, while for others the "circadian system may never fully adjust" (Barton, 1994, p. 449).

Adjustment to shiftwork involves a number of variables including length of work shift, number of night shifts worked in a row, and direction of rotation in rotating shifts (Akerstedt, 1988). Rotating shifts are periodically-changing morning, day, and night shifts. Personal factors such as age, rigidity of sleep patterns, commitment to work, health, and morningness/eveningness can also influence shiftwork adaptation (Akerstedt, 1988). Rigidity of sleep refers to a preference for eating and sleeping at the same time each day, something shiftworkers usually cannot count on. Thus, people with very rigid sleep patterns may adjust to shiftwork poorly (Bohle & Tilley, 1989). Morningness refers to a preference for early sleeping and rising with better performance on tasks earlier in the day rather than later. Morning people are expected to have difficulty coping with night shiftwork, whereas evening people should be troubled by morning shifts (Akerstedt & Torsvall, 1981).

Depression is an "emotional state characterized by

extreme dejection, gloomy ruminations, feelings of worthlessness, loss of hope, and often apprehension" (Carson, Butcher, & Coleman, 1988, p. G-5). Temporary depression might be caused by engaging in shiftwork, although more chronic depression might be possible as well.

Among the many studies involving shiftwork, relatively few have been concerned with depression. One such study was conducted by Alfredsson, Akerstedt, Mattsson, and Wilborg (1991), who contrasted self-report data concerning physical complaints from 197 male night guards and a comparable group from the general work force. The night guards had significantly higher levels of insomnia, fatigue, nervous problems, and depression. However, place of residence (urban or other) was found to be a confounding variable; after it was controlled, only insomnia and fatigue remained significant. Working in an urban area put guards at "excess risk" (p. 528), explaining why urban guards suffered more depression and nervous problems. Among the night workers, younger employees (20-34 years of age) reported significantly more gastrointestinal problems, insomnia, nervous problems, depression, and nausea than older employees (ages 35-64).

Another study conducted by Akinnawo (1988) in Nigeria investigated mood among shiftworkers although it did not directly examine depression. Individuals from the Bendel Brewery, Nigerian Television Authority, University of Benin Teaching Hospital, and two schools took the Awaritefe Psychological Index (API). The API was developed with Nigerian participants and measures sleep, intellect,

perception, mood, motor behaviors, and general somatic disorders. The participants included two-shift (day and evening work), three-shift (day, evening, and night work), permanent morning, and permanent afternoon workers. Shiftworkers had significantly higher levels of psychopathology than permanent morning or permanent afternoon workers with three-shift workers having the highest level of all groups. Disorders of intellect were the most common complaint, followed by mood, sleep, and somatic disorders ("disorders of intellect" was not operationalized). Female and married shiftworkers suffered the same amount of psychopathology as male or single shiftworkers.

Other studies have been concerned with the broad concept of psychological symptoms. Again, these studies do not directly test the existence of depression among shiftworkers, but suggest it is a possibility. For example, Bohle and Tilley (1989) conducted a more rigorous shiftwork study in which one group of women nurse volunteers having no experience in shiftwork worked rotating day and afternoon shifts for the 15 month duration of the study. A second group of women worked rotating days and afternoons for six months, after which a night shift was added to their schedule. Rigidity of sleep patterns, morningness/eveningness, psychological symptoms, and other variables were measured as possible predictors of adjustment to shiftwork. Bohle and Tilley measured psychological symptoms with the General Health Questionnaire (GHQ), a 12-item Likert-type scale. A sample question is "Have you recently lost much sleep over

worry?" For the first six months of the study, both groups of nurses had gradually increasing symptoms. Symptoms for the two shift group then decreased while nurses working the night shift suffered worsening symptoms throughout the rest of the study. Nurses working three (day, afternoon, and night), relative to two (day and afternoon) shift schedules had significantly more psychological symptoms. In addition, morningness significantly predicted psychological symptoms at 15 months, although rigidity of sleep was not a significant predictor. One possible explanation for this is that rigidity of sleep and morningness appear to be correlated, although morningness is the more robust predictor (Smith, Reilly, & Midkiff, 1989).

Spelten, Barton, and Folkard (1993) examined the possibility that shiftworkers become desensitized to their physical and psychological complaints. Retired and active male police officers who had primarily worked rotating shifts for an average of 21 and 13 years, respectively, completed the General Health Questionnaire (measuring psychological symptoms), the Cognitive and Somatic Anxiety Questionnaire, and the Sleep Quality, Social and Domestic Disruption, and Chronic Fatigue scales. The retirees rated each item based on "How I felt at the time" (when they were engaging in shiftwork) and "How I now realize I felt" (p. 309). Retirees rated psychological symptoms as being worse in retrospect than they had thought while they were working shifts. Active police officer's scores were similar to the retirees 'At the time' scores. The authors argue that while some participants

may under- or overestimate past symptoms, the overall similarity between current and past police officers' scores suggests accurate results. If in fact shiftworkers habituate to their problems, questioning long-time shiftworkers will likely produce an underestimation of symptoms. New shiftworkers, on the other hand, might provide better evidence of their problems. Of course, using only new shiftworkers does not reveal any long-term effects of shiftwork on health (e.g., ulcers).

Still another symptom that may provide indirect evidence for depression among shiftworkers is stress. Cervinka (1993) studied the effect of night shift dose (i.e., the amount of night shiftwork in one year as determined from company records) on health, stress, and job satisfaction. Male shiftworkers from a manufacturing plant were interviewed during a four-week period. A large percentage of individuals suffered musculoskeletal, cardiovascular, or gastrointestinal problems (70%, 42%, and 35.5%, respectively). However, night shift dose was not correlated with stress or job satisfaction.

Gold et al. (1992) questioned 878 nurses and other hospital staff about sleep quality, use of sleep medications, and fatigue. Participants also recorded the number of day, evening, or night shifts worked and sleeping and waking times for days working and days off. Night workers and rotators had poorer sleep quality, used more sleep-inducing medications, and fell asleep at work more frequently than day or evening workers. Also, rotating workers reported more

medication errors (presumably dispensing the wrong quantity or type of drug to patients).

Some types of shiftwork appear to be worse than others. Gordon, Cleary, Parker, and Czeisler (1986) interviewed 3,025 individuals in 1979 and 2,436 of these original respondents again in 1980. Rotating shiftworkers comprised 26% of the men and 18% of the women. Rotating shiftworkers were more likely to be heavy drinkers than those working permanent shifts, and female rotators were more likely to use sleeping pills and tranquilizers regularly than their permanent counterparts. Unexpectedly, rotating and permanent shiftworkers did not differ in amount of cigarettes smoked, coffee consumed, or hours of sleep.

Many of the problems suffered by shiftworkers might be avoided by careful scheduling. Czeisler, Moore-Ede, and Coleman (1982) questioned rotating and nonrotating workers on sleep and schedule preferences and health information. Rotating relative to nonrotating shiftworkers suffered from significantly more insomnia and complained that the schedules changed before their bodies could adjust. Their work schedules ran midnight to 8 a.m. for one week, 4 p.m. to midnight for another week, and so on. This type of schedule, referred to as a phase advance, begins progressively earlier in the day. In contrast, a phase delay schedule moves progressively later (e.g., changing from a 4 p.m. to midnight shift to a midnight to 8 a.m. shift). The authors hypothesized that individuals would adjust better to phase delay rather than phase advance schedules, especially when a

longer period of time (e.g., two to three weeks instead of one) was allowed between rotations. Shiftworkers were then separated into two groups. The first group phase delayed shifts every week, while the second group phase delayed every 21 days. Workers on the 21-day phase delay schedule significantly preferred it over phase advance schedules and their subjective health reports improved. Workers on the weekly changing schedule also preferred phase delay schedules but the difference was not significant. This method of reducing the ill effects of shiftwork may be easier to adopt than others (i.e., employing only permanent rather than rotating shiftworkers).

Knutsson & Akerstedt (1992) studied the healthy worker effect, the possibility that less healthy individuals will have greater difficulties with shiftwork and eventually quit so that a healthier group of shiftworkers remains. Such an effect would produce an underestimation of shiftwork symptoms. To test this possibility, Knutsson and Akerstedt administered questionnaires to applicants for day and shiftwork positions. Rigidity of sleep was measured with four questions taken from the Circadian Type Inventory, while morningness was measured with a scale developed by Torsvall and Akerstedt. Health was measured using a questionnaire, blood pressure, blood samples, and cholesterol levels. Shiftwork applicants were no healthier than those applying for day work. However, prospective shiftworkers did have less rigid sleep patterns and were more likely to be evening types on the morningness/eveningness scale than prospective day

workers. The authors speculated that although shiftworkers may not be healthier, they may tolerate unusual work hours better simply because of their more flexible sleep patterns. Multiple regression analyses revealed that once age was added as an independent variable, morningness/eveningness no longer predicted prospective shiftwork status. However, the sample ( $N = 53$ ) was not large enough to justify the use of multiple regression. Pedhazur (1982) recommends 30 subjects per independent variable; in this study the four independent variables would require 120 subjects.

Finally, a study by Ford and Kamerow (1989) suggests a link between poor sleep and the development of depression. Insomniacs had a much greater risk for developing major depression than individuals with normal sleep. When insomniacs' sleep troubles were resolved, their risk for later depression was significantly decreased. Because shiftwork is known to cause insomnia (Bliwise, 1991; Bootzin & Perlis, 1992), this in itself could subsequently lead to depression.

In summary, shiftwork can disrupt the sleep/wake cycle, resulting in fatigue, poor sleep, and stress. Shiftwork also disrupts social activities for the shiftworker, which can add anxiety. A number of studies have implicated shiftwork as a determinant of several psychological symptoms (Akinawo, 1988; Bohle et al., 1989; Spelten et al., 1993). Too few studies (e.g., Alfredsson et al., 1991) have investigated depression as a symptom of shiftwork to draw conclusions on that topic, however. Given the sleep deprivation, health



complaints, and stress many shiftworkers endure, depressive symptoms appeared to be very likely. Considering that more women than men suffer from depression (Nolen-Hoeksema et al., 1987), more female than male workers were expected to experience depression as well. This study tested the following two hypotheses: shiftworkers would have more depressive symptoms than traditional workers, and women would experience more depression than men.

Finally, rigidity of sleep may significantly predict shiftwork status (Knutsson & Akerstedt, 1992). Likewise morningness may predict psychological symptoms among night workers (Bohle & Tilley, 1989). Yet, there seems to be considerable overlap between rigidity of sleep and morningness. Although the terms seem initially to be quite different, a number of the questions measuring these two constructs are similar (Smith et al., 1989). Therefore, only morningness was included in the analysis as a covariate.

## CHAPTER 2

## METHOD

Participants

The participants consisted of 56 individuals working at a bakery or a university in a medium-sized Midwestern community. University volunteers were solicited through the mail from the physical plant and police and safety divisions. Bakery workers were approached by their personnel supervisor and given the option to volunteer for the study.

The sample included 23 men and 33 women ranging in age from 19 to 65 with a mean age of 34 ( $SD = 10.36$ ). The majority (66%) of participants were married while 34% were not. Also, 66% of the sample had children living with them. Regarding work schedules, 24 individuals worked days only, 10 worked nights, 12 worked days and nights, and 10 worked rotating shifts. Among workers with rotating shifts, all but two reported that the schedule rotated both forward and back (both phase advance and phase delay). The majority (41%) of workers had been at their current job longer than four years, while 25% reported 2 to 4 years on the job.

Design

This study employed a 2 (schedule: traditional or shiftwork) X 2 (sex: male or female) causal-comparative design (Fraenkel & Wallen, 1993). Shiftwork was defined as working either between the hours of 6:00 p.m. to 6:00 a.m. for at least six hours at a time, or a mixture of times between 6:00 a.m. and 6:00 p.m. and 6:00 p.m. to 6:00 a.m. for at least six hours at a time. Traditional work was

considered any day shift occurring between 6:00 a.m. and 6:00 p.m. Schedule (traditional or shiftwork) and sex (male or female) were the independent variables. Depression was the dependent variable. Morningness was used as a covariate to provide greater statistical control.

A number of possible extraneous variables involved in shiftwork studies have been identified by Alfredsson et al. (1991) including place of residence and type of work. In this study all participants came from a small community that included several small cities.

#### Instrumentation

Depression was measured with the Beck Depression Inventory Revised Edition (BDI; Beck, 1972). The BDI has been widely used for 25 years and consists of 21 items with 4 possible responses each. Respondents choose the one answer that best describes their feelings at the time, but they may circle more than one answer. Each possible answer has a score value of 0-3 points, with the higher scores signifying greater depression. For individuals who choose more than one answer, the response with the highest point value is counted. Thus scores can range from 0 (not depressed) to 63 (very depressed). The scale may be used by individuals ranging in age from 13 to 80 and takes 5 to 15 minutes to complete. Concurrent validity has been reported at between .60 and .76 (Conoley, 1992). Test-retest reliability ranges from .60 to .90 with non psychiatric samples and from .48 to .86 with patients (Sundberg, 1992).

Smith, Reilly, and Midkiff (1989) created the Composite

Smith, Reilly, and Midkiff (1989) created the Composite Morningness Questionnaire. This questionnaire is composed of 13 of the most useful items from the Horne and Ostberg (1976) and Torsvall and Akerstedt (1980) scales (questions with low interitem correlations or ambiguous wording were discarded). Respondents choose the one best answer for each question. Scores on the questions range from 1 to 5 (although several have a high score of 4) with a total possible score ranging from 13 to 55. Higher scores on individual items and the overall scale correspond to greater morningness. The authors report a coefficient alpha of .83 for the questionnaire's reliability. Regarding validity, external criteria (reports of alertness, well-being, and performance) correlated with the 13 items on the test in the expected directions.

#### Procedures

The University participants were mailed an informed consent form, a set of demographic questions (see Appendix), the BDI, the Composite Morningness Scale, and a stamped and addressed envelope. After 8 days, a reminder postcard was mailed. Bakery participants were given the option of participating by the personnel manager; if they chose to be in the study they could pick up the same packet of forms (informed consent form, BDI, etc.) that the university subjects received. No follow-up postcard was mailed to bakery participants. Two weeks were allowed for respondents to return the questionnaires. Nine questionnaires were returned incomplete and had to be eliminated while another two were returned blank. Altogether, the response rate was 44% (67 out

of a possible 153 questionnaires returned).

Upon receipt of the questionnaires, the BDI and Composite Morningness Scale were scored first to help prevent possible experimenter bias. Next the demographic items including questions regarding sex and schedule (traditional or shiftwork) were examined.

## CHAPTER 3

## RESULTS

The scores on the BDI were analyzed using a 2 (schedule: traditional or shiftwork) X 2 (sex: male or female) analysis of covariance (ANCOVA). The morningness score served as a covariate (see Table 1). The ANCOVA revealed that the main effect of schedule was not significant,  $F(1, 51) = 1.52, p > .05$ . The main effect of sex proved significant, however,  $F(1, 51) = 5.41, p < .05$ . A significant interaction between sex and schedule was found,  $F(1, 51) = 4.48, p < .05$ , and was further examined with a Tukey test. The means (see table 2) reveal that among traditional workers, women suffered more depressive symptoms than men. Surprisingly, no difference existed between men and women working nontraditional schedules (see Figure 1). In all, 9 (16%) individuals scored a 15 or higher on the BDI, which is the recommended cut-off for depression among the general population (Sundberg, 1992). The mean score was 8.66 ( $SD = 7.50$ ).

Pearson  $r$  correlations show that of all variables examined, only subjective health rating was related to scores on the BDI,  $r(56) = .38, p < .01$ , see table 3. Greater depression was associated with poorer health as would be expected (higher scores on both the BDI and the health question corresponded to more severe symptoms). Older age was positively correlated with greater morningness,  $r(56) = .46, p < .01$ . Interestingly, the older the workers were, the less likely they were to work nontraditional hours,  $r(56) = -.43, p < .01$ .

Table 1

Analysis of Covariance for Depression

Source of Variation	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Schedule	72.13	1	72.13	1.52
Sex	255.97	1	255.97	5.41*
Interaction	212.06	1	212.06	4.48*
Within Cells	2412.51	51	47.30	

Note. \* $p < .05$ .

Table 2

Mean Scores on the Beck Depression Inventory for Traditional  
and Nontraditional Workers

Schedule	<u>n</u>	<u>M</u>	<u>SD</u>
Traditional			
Men	11	4.73	5.37
Women	13	12.77	8.15
Nontraditional			
Men	12	8.58	7.52
Women	20	8.20	6.47
Total	56	8.66	7.50



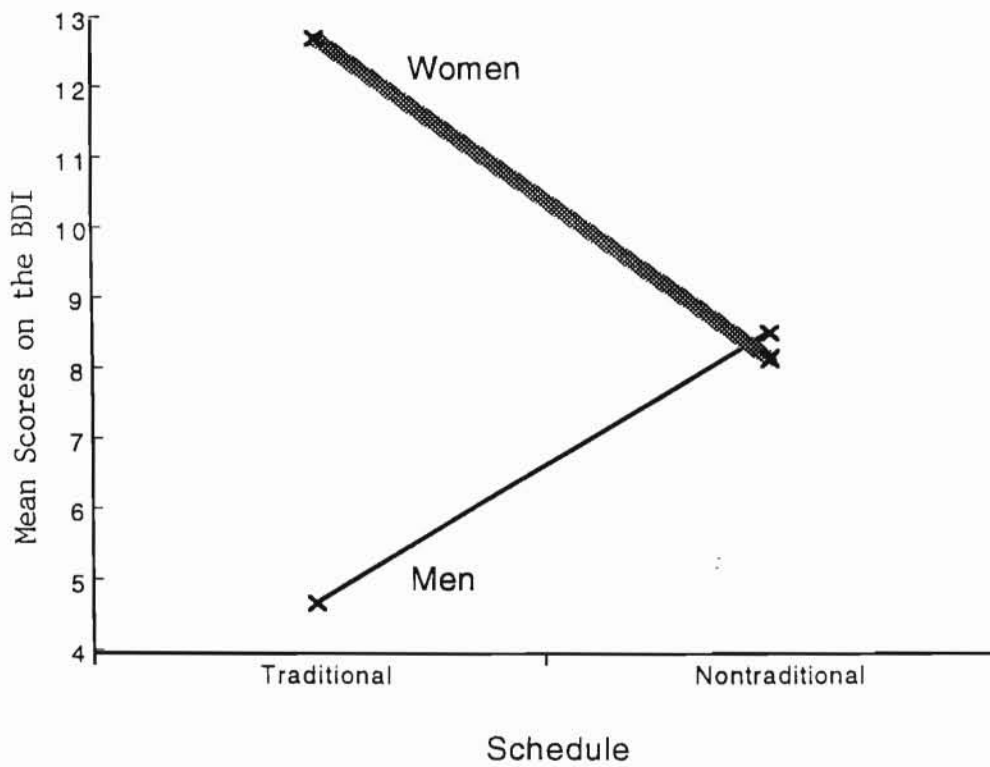


Figure 1. Interaction Between Schedule and Sex on Scores on the Beck Depression Inventory.

Table 3

Correlations Between Depression and Other Variables

Subscale	1	2	3	4	5	6
1. Age	--	.42**	.05	.19	.03	.46**
2. Time		--	.18	.08	-.03	.16
3. Sleep			--	-.10	.00	-.13
4. Health				--	.38**	-.06
5. BDI					--	-.24
6. Morn						--

Note. Time = number of years worked at the present job; Sleep = estimated number of hours slept per night; Health = estimated health; BDI = Beck Depression Inventory; Morn = Composite Morningness Questionnaire.

N = 56.

\*p < .05 \*\*p < .01.

A one-way analysis of variance was conducted on BDI scores to identify which of the four particular work schedules produced the most depression. Examined schedules included day shifts only, night shifts only, day and night shifts combined, and rotating shifts. No difference in depressive symptoms among the various shift groups was found ( $M = 8.66$ ,  $SD = 7.50$ ).

Self-reported sleep per night ranged from 3 hours to 12, with a mean of 6.79 ( $SD = 1.52$ ). Most (68%) individuals slept at approximately the same time every day, while 32% did not. The majority of workers rated their health as "good" (57%), while 16% rated it as "excellent", and 27% as "fair." No worker reported "poor" health.

CHAPTER 4  
DISCUSSION

The first hypothesis, that depressive symptoms would be greater among shiftworkers, was not supported. However, the hypothesis that women would report more depression than men was partially supported. Women working traditional hours were more depressed than men working the same hours, yet among shiftworkers, sex made no difference. Therefore, for traditional workers, women suffer from more depression than men, as is reflected in research on the general work force. Yet among shiftworkers, the two sexes have equal levels of reported depression.

This result might be explained by the attitudes of women with children. Oginska, Pokorski, and Oginski (1993) reported that women working shifts see the ability to take care of their children during the day as one of the main advantages of shift work, while for men, it is not. Perhaps the possibility of spending more time with family serves as a sort of buffer from depression for shiftworking women, thus eliminating the expected sex differences in depression.

The fact that shiftworkers were no more depressed than traditional workers was a surprise. Despite numerous other problems shiftworkers may face, depression is not a significant difficulty. In fact, in this study shiftworkers fared well. Greater depression was associated with poorer health; however, most individuals were reportedly in good health. Furthermore, amount of sleep and shift group were not correlated, suggesting that for the workers in this study,

shiftwork did not detract substantially from their sleep.

A negative correlation between morningness and shift group indicated that morning people were more likely to work traditional shifts. This is consistent with theory and helps to justify the use of the Composite Morningness Questionnaire in other shiftwork research.

This study implies that for women, working shifts may be psychologically more healthy than traditional schedules. However, further research must be done before any definitive statements can be made. This sample was composed of a mixed group of workers with differing responsibilities drawn from two different industries. Furthermore, although all participants came from the same general area, they do not all reside in the same city. A large age group was included also. The ability to hold these variables constant would make these results clearer.

In this study, while shiftworkers were no more depressed than traditional workers, female traditional workers reported greater depression than their male counterparts. The shiftwork seemed to provide women a schedule that allowed them to ameliorate other influences contributing to their depression.

## REFERENCES

- Akerstedt, T. (1988). Sleepiness as a consequence of shift work. Sleep, 11, 17-34.
- Akerstedt, T., & Torsvall, L. (1981). Shift work: Shift-dependent well-being and individual differences. Ergonomics, 24, 265-273.
- Akinawo, E.O. (1988). Psychopathology of shift work. Social Behavior and Personality, 17, 103-109.
- Alfredsson, L., Akerstedt, T., Mattsson, M., & Wilborg, B. (1991). Self-reported health and well-being amongst night security guards: A comparison with the working population. Ergonomics, 34, 525-530.
- Barton, J. (1994). Choosing to work at night: A moderating influence on individual tolerance to shift work. Journal of Applied Psychology, 79, 449-454.
- Beck, A.T. (1972). Depression: Causes and treatment. Philadelphia: University of Pennsylvania Press.
- Bliwise, D.L. (1991). Treating insomnia: Pharmacological and nonpharmacological approaches. Journal of Psychoactive Drugs, 23, 335-341.
- Bohle, P., & Tilley, A.J. (1989). The impact of night work on psychological well-being. Ergonomics, 32, 1089-1099.
- Bootzin, R.R. & Perlis, M.L. (1992). Nonpharmacologic treatments of insomnia. Journal of Clinical Psychiatry, 53, 37-41.
- Cervinka, R. (1993). Night shift dose and stress at work. Ergonomics, 36, 155-160.
- Conoley, C.W. (1992). Review of the Beck Depression

Conoley, C.W. (1992). Review of the Beck Depression Inventory [Revised Edition]. In J.J. Kramer & J.C. Conoley (Eds.), Eleventh mental measurements yearbook (pp. 78-79). Lincoln, NE: Bureau of Mental Measurements.

Czeisler, C.A., Moore-Ede, M.C., & Coleman, R.M. (1982). Rotating shift work schedules that disrupt sleep are improved by applying circadian principles. Science, 217, 460-463.

Ford, D.E., & Kamerow, D.B. (1989). Epidemiologic study of sleep disturbances and psychiatric disorders. Journal of the American Medical Association, 262, 1479-1484.

Fraenkel, J.R., & Wallen, N.E. (1993). How to design and evaluate research in education. New York: McGraw-Hill, Inc.

Gold, D.R., Rogacz, S., Bock, N., Tosteson, T.D., Baum, T.M., Speizer, F.E., & Czeisler, C.A. (1992). Rotating shift work, sleep, and accidents related to sleepiness in hospital nurses. American Journal of Public Health, 82, 1011-1114.

Gordon, N.P., Cleary, P.D., Parker, C.E., & Czeisler, C.A. (1986). The prevalence and health impact of shiftwork. American Journal of Public Health, 76, 1225-1228.

Knutsson, A. & Akerstedt, T. (1992). The healthy-worker effect: Self-selection among Swedish shift workers. Work and Stress, 6, 163-167.

Liskowsky, D.R. (1992). Biological rhythms and shift work [From the congressional office of technology assessment]. JAMA, The Journal of the American Medical Association, 268, 3047.

Moore-Ede, M.C., Czeisler, C.A., & Richardson, G.S. (1983). Circadian timekeeping in health and disease. The New

England Journal of Medicine, 309, 530-536.

Oginska, H., Pokorski, J., & Oginski, A. (1993). Gender, ageing, and shiftwork intolerance. Ergonomics, 36, 161-168.

Pedhazur, E.J. (1982). Multiple regression in behavioral research: Explanation and Prediction (2nd ed.). Fort Worth, TX: Harcourt Brace Jovanovich.

Smith, C.S., Reilly, C. & Midkiff, K. (1989). Evaluation of three circadian rhythm questionnaires with suggestions for an improved measure of morningness. Journal of Applied Psychology, 74, 728-738.

Spelten, E., Barton, J., & Folkard, S. (1993). Have we underestimated shiftworkers' problems? Evidence from a 'reminiscence' study. Ergonomics, 36, 307-312.

Sundberg, N.D. (1992). Review of the Beck Depression Inventory [Revised Edition]. In J.J. Kramer & J.C. Conoley (Eds.), Eleventh mental measurements yearbook (pp. 79-80). Lincoln, NE: Buros Institute of Mental Measurements.



## APPENDIX

## Informed Consent Document

The purpose of this study is to examine stress and emotional issues involved with different occupations and is part of a project being done by Suanne Goodrich at Emporia State University. Participation is voluntary and may be discontinued at any time for any reason. Also, the information in this questionnaire will be kept strictly anonymous. If you agree to participate, please sign your name below.

Signed\_\_\_\_\_

Instructions: Please answer the questions below and BOTH sides of the other questionnaire, and mail them in the enclosed stamped envelope by June 1. Your participation in this study is greatly appreciated.

## Demographic Questionnaire

1. Sex: Male\_\_\_\_ Female\_\_\_\_
2. Age:\_\_\_\_\_
3. Marital status: Married\_\_\_\_ Single\_\_\_\_
4. Do you have children living with you? Yes\_\_\_\_ No\_\_\_\_
7. Place of residence: Emporia\_\_\_\_ Other\_\_\_\_\_
8. Please describe your work (check all that apply):  
 full time\_\_\_\_ part-time\_\_\_\_ day shifts only\_\_\_\_ night  
 shifts only\_\_\_\_ combination of day and night shifts\_\_\_\_  
 rotating shifts\_\_\_\_\_
9. How long have you worked this schedule:  
 0-6 months\_\_\_\_ 6-12 months\_\_\_\_ 1-2 years\_\_\_\_ 2-4 years\_\_\_\_

other\_\_\_\_\_

10. Do you sleep at approximately the same time every day?

Yes\_\_\_\_ No\_\_\_\_

11. How would you describe your own physical health?

Excellent\_\_\_\_ Good\_\_\_\_ Fair\_\_\_\_ Poor\_\_\_\_

12. What is your job title?\_\_\_\_\_

I, Suanne Goodrich, hereby submit this thesis to Emporia State University as partial fulfillment of the requirements for an advanced degree. I agree that the Library of the University may make it available for use in accordance with its regulations governing materials of this type. I further agree that quoting, photocopying, or other reproduction of this document is allowed for private study, scholarship (including teaching) and research purposes of a nonprofit nature. No copying which involves potential financial gain will be allowed without written permission of the author.

Suanne Goodrich  
Signature of Author

July 28, 1995  
Date

A Comparison of Depressive Symptoms  
Between Individuals Working  
Traditional and Nontraditional Hours  
Title of Thesis/Research  
Project

Dorey Cooper  
Signature of Graduate Office  
Staff Member

August 10, 1995  
Date Received

*Goodrich*