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An Assessment of Associations Between Selected Health Practices and Mental Wellness

Ginger Bomar
Western Kentucky University

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AN ASSESSMENT OF ASSOCIATIONS BETWEEN
SELECTED HEALTH PRACTICES AND MENTAL WELLNESS

A Thesis
Presented to
the Faculty of the Department of Public Health
Western Kentucky University
Bowling Green, Kentucky

In Partial Fulfillment
of the Requirements for the Degree
Master of Science

by
Ginger J. Bomar
November 1994
AN ASSESSMENT OF ASSOCIATIONS BETWEEN SELECTED HEALTH PRACTICES AND MENTAL WELLNESS

Date Recommended 11/23/94

Director of Thesis

Wayne Higg

Dean of Graduate Studies  Date
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The purpose of this study was to assess the relationship between mental well-being and selected health behaviors. A cross-sectional study was performed on a sample of 490 students at Western Kentucky University during the 1993 Spring, Summer, and Fall semesters. Study participants completed the Participant Data Sheet, General Well-Being Schedule, and the Health Behavior Instrument. The data were gathered and analyzed via correlation analysis which revealed a relationship between mental well-being and certain health behaviors. The correlations between general well-being and selected health behaviors were stronger among males than females. There was a relationship found between mental well-being and hours of sleep, eating breakfast, and exercising. It is very noteworthy that there was a significant correlation between GWBS and combined health behaviors.
Communicable diseases, war, and natural disasters took many lives in America prior to 1900. Epidemic diseases such as smallpox, yellow fever, cholera, typhoid, and measles swept through the nation. By 1800, states began establishing health departments. During the late 1800s, improvements were made in environmental sanitation, standards of living, and quarantine measures. The late 1800s witnessed a public health revolution. Many health programs were developed as well as more humane hospitals for the mentally ill. Pasteur, Jenner, and Koch helped expand knowledge with research on the etiology of infectious disease (Green & Anderson, 1986).

The responsibilities of public health were expanded during the early 1900s. Deaths still occurred from infectious diseases. However, the frequency of major epidemics subsided. Through the course of the 20th century, lifespans increased and chronic, noncommunicable diseases became the leading killers. It is apparent that lifestyle factors play a major role in health and disease today. Wellness programs have been developed that focus upon a
healthier lifestyle and improved well-being (Green & Anderson, 1986).

The five leading causes of death today include in descending order (a) heart disease, (b) cancer, (c) cerebrovascular accident (CVA), (d) chronic obstructive pulmonary diseases, and (e) accidents (U.S. Department of Health and Human Services, 1993). A person's health behaviors can have a notable impact on these causes of death.

Heart disease has been found to be associated with (a) smoking cigarettes, (b) lack of exercise, (c) high blood pressure, (d) increased cholesterol levels, and (e) diabetes. Secondarily associated factors include obesity, genetics, and psychological stress. Many of these factors are linked to lifestyle choices or health behaviors (Green & Anderson, 1986). To a large extent a person has voluntary control over (a) whether or not to be a smoker, (b) dietary decisions, (c) monitoring their blood pressure, and (d) exercise options.

The second leading cause of death are cancers. Lung cancer is the number one cancer killer. Smokers are at a greater risk for lung cancer. In women, breast and cervical cancer are the second and third cancer killers, respectively. Breast cancer can be detected by self-breast examinations and mammography while cervical cancer can be detected by PAP smears. Recent research has found cervical
cancer to be linked to sexual activity and possibly preventable by safer sex practices (U.S. Department of Health and Human Services, 1992). The most commonly occurring cancer is skin cancer which is known to be linked to excessive exposure to the sun or tanning beds (Schroeder, Krupp, Tierney, & McPhee, 1990). There is also a demonstrated relationship between some types of cancer and a person's diet (U.S. Department of Health and Human Services, 1992). Thirty to thirty-five percent of cancers are regulated to diet. The lack of fiber has been linked to colon cancer while an increase in fat is tied to breast cancer. Fruits and vegetables that are high in Vitamin A are known to be protective against cancer (U.S. Department of Health and Human Services, 1992). It is clear that health behaviors contribute to the occurrence of cancer as well as early diagnosis and treatment.

Cerebrovascular accidents are affected by similar health behaviors that influence heart disease. Chronic obstructive pulmonary disease is primarily linked with smoking.

The fifth leading cause of death, accidents, encompasses many different behavior patterns. Motor vehicle accidents occur from factors such as (a) alcohol abuse, (b) drug abuse, (c) speeding/unsafe driving, and (d) falling asleep while driving. The risk of injury and death
increases when drivers and passengers do not wear seatbelts or child safety seats. Accidents involving fire commonly occur from smoking. Not having fire alarms leads to a lack of early fire detection (U.S. Department of Health and Human Services, 1992).

It is evident from the five leading causes of death that there is a relationship between physical well-being and health behaviors such as (a) diet, (b) physical activity, and (c) lifestyle choices such as smoking (Miller, 1984). Belloc and Breslow's (1972) study described the relationship between health behaviors and physical well-being. Positive health was found to be associated with good practices and the more good practices the person performed: the healthier the person, regardless of age. The association was independent of age, sex, and economic status.

Research has also connected psychosocial stress with bodily symptoms (i.e., increased heart rate and perspiration), behavioral responses (i.e., accident proneness and sleep disturbance), and psychological reactions (i.e., irritability, worry, absent mindedness, etc.) (Sarason and Sarason, 1993). Stress has been related to various physical illnesses such as diabetes and tuberculosis as well as to decreasing an individual's overall resistance to disease (Borysenko, 1985; Kissen, 1952; Soloman, 1985). Given the relationship between physical and mental health, it is important to determine if
a relationship also exists between health behaviors and mental well-being.

**Purpose of the Study**

The purpose of this study was to explore the relationship between mental well-being and seven selected health behaviors. This research study was based on the previous work by Belloc and Breslow (1972) which utilized the same seven selected health behaviors. It is hoped that this study will enhance previous research on health related behaviors.

**Need for the Study**

According to the World Health Organization, "Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" (Green & Anderson, 1986, p. 422). Holistic health means the entire person including individual lifestyle. "Holism symbolizes the interaction among all aspects of the body and the mind - one disorder of one aspect will eventually become noticeable in all the other aspects as well" (Dusek, 1989, p. xiii-xiv). For example, physical problems that occur may cause psychological suffering due to physical deterioration (Dusek, 1989).

Many things occurring in everyday life affect mental well-being. Examples include (a) anger, (b) violence, (c) stress, (d) divorce, (e) drug abuse, and (f) sexual abuse (Green & Anderson, 1986). According to Miller (1984):
More than forty million Americans experience major medical illness of some kind. One family in three is affected by mental illness, and one person in ten is hospitalized for mental or emotional disorders at some point in life. The cost of psychiatric disorders in the United States has been estimated at over $40 billion a year for direct clinical care. (p. 325)

Once thought is given to the numerous causes of mental problems it is easy to see why mental health programs try to educate and promote mental well-being. In the United States, research is needed on promoting mental health in order to improve this education. Research in this area has not been a priority in the past. However, improvements in the mental well-being of our society partially rest with future research efforts.

Mental health is a concern among Americans today with one family in three being affected by mental illness (Miller, 1984). It is imperative to continue further research concerning mental well-being and selected mental behaviors in order to contribute more knowledge to mental health promotion. More research performed and knowledge gained in this area of mental well-being will allow better education to be provided on mental health.
**Hypothesis**

The null hypothesis--There will be no relationship between mental well-being and any of the selected health behaviors.

**Delimitations**

Western Kentucky University students enrolled during the 1993 Spring, Summer, and Fall semesters were sampled due to access, convenience, and minimal cost. A sampling of various ages was obtained by gathering data from undergraduate classes as well as graduate and evening classes.

**Assumptions**

The following assumptions were made in this study:

1. It is assumed that subjects in the study completed the questionnaires honestly and to the best of their ability.
2. It is assumed that the subjects in the study understood how to complete the questionnaire properly and did so.

**Definitions**

1. **Health Behavior** - "personal attributes such as beliefs, expectations, motives, values, perceptions, and other cognitive elements; personality characteristics, including affective and emotional states and traits; and overt behavior patterns, actions and habits that relate to
health maintenance, to health restoration and to health improvement" (Gochman, 1988, p. 3).

2. **Mental Well-Being** - The state of being healthy and happy in one's mind (The American Heritage Dictionary).

3. **Lifestyle** - A way of life that reflects the attitudes and values of an individual or group (The American Heritage Dictionary).

4. **Stress** - Situations that pose demands, constraints, or opportunities (Sarason and Sarason, 1993).
CHAPTER 2

REVIEW OF RELATED LITERATURE

The five leading causes of death and their risk factors reveal that lifestyle practices influence health status. Belloc and Breslow (1972) performed a study that revealed a positive relationship between health and good health practices. A review of literature was performed to determine the previous research findings on the selected health behaviors and mental well-being.

Nutritionists recommend having breakfast daily, eating three meals per day instead of snacking and maintaining moderate body weight in order to lead a healthier life. Americans do have an increased interest in weight control. It seems more people are aware of the cholesterol in their diet and more people are exercising daily or weekly (Miller, 1984).

Research studies revealed there is a relationship between exercise and positive psychological growth. A relationship also exists between exercise and improvements in depression, anxiety, and other mood states (Brown, Welsh, Labbe, Vitulli, & Kulkarni, 1992; Rice & Duncan, 1985). Aerobic activity has proven to have psychological benefits as well as physiological benefits (Dishman, 1988). State
anxiety is positively affected by aerobic exercise performed for eight weeks to one year (Morgan, 1979).

Sleep is a necessary human function. Research reveals lack of sleep causes a decrease in mental alertness and an increase in poor performance which results in traffic fatalities and industrial accidents (Toufexis, 1990). Sleep researchers describe sleep as "an overlooked part of our health and well-being" and "time invested in sharp mental skills and alertness" (Nowroozi, 1992, p. 73). Recent studies have revealed "that sleep deprived people are impaired by smaller quantities of alcohol than rested people" (Angier, 1991, p. 36).

Research on the negative physical health impacts of smoking is abundant. In addition, a study from 1976 using the California Psychological Inventory (CPI) classified smokers as having low scores on mental well-being (Geist & Herrman, 1990).

As discussed earlier, mental problems do not have to be psychiatric disorders but can be irritations that occur in everyday life (Miller, 1984). The causes can be very common daily events such as traffic congestion. In a United States survey, "82% of those polled indicated that they need less stress in their lives" (Green & Anderson, 1986, p. 190).

Belloc and Breslow (1972) determined a relationship between physical well-being and health behaviors among adults in Alameda County, California. They studied the
following common health-related behaviors (a) hours of sleep, (b) regularity of meals, (c) physical activity, (d) smoking, (e) drinking, and (f) physical health status. The study concluded that there was a relationship between positive health behaviors and a healthier physical well-being.

The results revealed the most favorable physical health with (a) sleeping seven to eight hours per night, (b) having breakfast every day, (c) hardly ever snacking between meals, (d) maintaining less than 5% underweight and up to 19.99% overweight for men and maintaining underweight or less than 10% overweight for women, (e) participating in physical activity, (f) being a non-drinker or moderate drinker of alcoholic beverages, and (g) being a non-smoker. The final conclusion of the study reports "the physical health status of those reported following all seven good health practices were consistently about the same as those 30 years younger who followed few or none of these practices" (Belloc & Breslow, 1972, p. 419).

Five and one-half years later Belloc (1973) performed a follow-up study on the participants in Alameda County to determine if a relationship existed between the seven health practices and mortality. The results included "the average life expectancy of men aged 45 who reported six or seven good practices was more than 11 years more than that of men reporting fewer than four. For women the relationship
between health practices and mortality was less strong, and the difference between life expectancy at age 45 for those who reported six or seven, and those who reported fewer than four, was 7 years" (p. 67).

A study that focused on mental health and health behaviors was performed by Rice and Duncan (1985) at a university setting. Their study looked at the seven specific health behaviors discussed previously and how they influenced the mental health of 128 civil service employees. Rice and Duncan used the positive response percentages for the health behaviors and a mean score for mental health from the General Well-Being Schedule. The results suggested "persons who eat breakfast daily, are obese, smoke and sleep more or less than average, will tend to have high energy, to be relaxed rather than tense or anxious, and to have poor emotional or behavior self-control" (p. 1110).

Mental disorders have often been a mystery in our society's past. Historically there has often been no agreement on what defines a mental disorder. In the years past, persons with mental disorders were ridiculed and locked away to be hidden from society. Times have definitely changed. Today it is our society's duty to help prevent mental disorders and promote mental well-being. It is suggested more research be undertaken in this area, in order to refine our knowledge on health behaviors that can be controlled by individuals to promote mental well-being.
CHAPTER 3

METHODOLOGY

The purpose of this study was to assess the relationship between mental well-being and selected health behaviors. A cross-sectional design was used in a sample of Western Kentucky University graduate and undergraduate students. The survey was conducted in 1993.

Hypothesis

The null hypothesis—There will be no relationship between mental well-being and any of the selected health behaviors.

Population

The population included Western Kentucky University graduate and undergraduate students during the 1993 Spring, Summer, and Fall semesters.

Sample Selection

The sample consisted of a cross section of graduate and undergraduate students enrolled in health classes during the 1993 academic semesters (sample of convenience).

Design

This study was a cross-sectional survey design. The independent variables included the following seven health behaviors (a) eating moderately and not snacking between
meals, (b) eating breakfast, (c) exercising regularly and maintaining an active lifestyle, and (d) sleeping seven to eight hours per night, (e) not smoking, (f) maintaining normal weight, and (g) drinking alcohol moderately. The dependent variable was mental well-being.

Testing was performed by a doctoral level instructor or graduate student in the Department of Public Health. Students were asked to complete the instrument on a voluntary basis.

**Instrumentation**

The instrumentation included the (a) Participant Data Sheet, (b) Health Behavior Instrument, and (c) General Well-Being Schedule (GWBS).

The Participant Data Sheet is a 1-page form that was used to collect information on the following variables: (a) date of birth, (b) gender, (c) race, (d) family income, (e) family history of alcoholism, (f) hospitalizations, (g) physician visits, (h) missed days of work, (i) confinement to bed days, (j) health insurance coverage, and (k) personal view on health status (Appendix A).

The Health Behavior Instrument, based on work by Belloc and Breslow (1972) and as used by Rice and Duncan (1985), is a 4-page form. It collects information on health behaviors which include (a) hours of sleep per night, (b) breakfast eating, (c) snacking, (d) drinking, (e) smoking tobacco
cigarettes, (f) specified active sports, (g) height, and (h) weight (Appendix B).

The National Institute of Health's (NIH) definition for desirable weight was used to determine maintenance of normal body weight. The NIH defines desirable weight as the midpoint of the recommended weight range at a specific height for persons of medium build according to the 1983 Metropolitan Life Insurance Table. Normal body weight was any weight for the person's height that was not 20% over or 20% under the recommended midpoint weight.

The GWBS was developed by Dupuy (1970) to assess self-representation of subjective well-being and distress. The instrument consists of 18 items, with the first 14 questions having 6 response options and the last 4 items using a rating scale from 0 - 10. The GWBS includes the following scales: feelings in general; nervousness; control of behavior, thoughts, emotions or feelings; feeling sad or discouraged; under stress or pressure; feeling happy, satisfied, or pleased; wondering if losing your mind; feeling anxious, worried, or upset; feeling fresh and rested; having illness or bodily disorder; interests in daily life; feeling blue. The above listed categories are further organized into 6 subscales (a) health worry, (b) satisfying-interesting life, (c) energy level, (d) depressed-cheerful mood, (e) emotional-behavioral control, and (f) the relaxed vs. tense-anxious.
Fazio (1977) evaluated the robustness of the GWBS and compared it to the Minnesota Multiphasic Personality Inventory (MMPI) (Hathaway & McKinley, 1951), the Zung Self-Rating Depression Scale (Zung, 1965), the College Health Questionnaire (CHQ) (Whitney, Cadoret, & McClure, 1971), the Personal Feeling Inventory (PFI) (Fazio, 1977), and the Psychiatric Symptom Scale (PSS) (Dohrenwend and Crandell, 1970). The study sample involved 195 undergraduates (79 male; 116 female) from the University of Wisconsin-Milwaukee from 1972 to 1973 (Nicholson, 1983, p. 46).

Intercorrelations between the six GWBS subscales and the other instruments were performed. The health worry subscale had an average correlation of .40 when compared to the anxiety scales. Satisfying-interesting life corresponded with the depression scales at .52. The energy level subscale had an average correlation of .57 in comparison to the depression scales. The emotional-behavioral control subscale and the depressed-cheerful subscale correlated .60 and .63, respectively, when compared with the depression scales. When compared with the anxiety scales, the relaxed vs. tense-anxious subscale and the emotional-behavioral subscale, correlated .57 and .63, respectively, with the anxiety scales (Nicholson, 1983).

Forty-one students from the original sample were again administered the GWBS after the first testing. The test-retest reliability was a total score of .85. Fazio (1977)
claims that major weakness of the GWBS is in its
differentiation into the 6 subscales. He contends that
there are too few items in each subscale. Overall, the GWBS
was confirmed to be an effective instrument in measuring
depression, a major symptom of distress. The GWBS is also
easy to understand, brief, and is applicable to any number
of settings (Nicholson, 1983).

In scoring the GWBS, the sum of the first 18 questions
illustrates an individual's total score. The first 14
questions contain 6 structured response options and 0 to 10
rating bars are used for the last 4 questions. "Each item
response is given an ordinal score from 0 to 10 to 5 with
the high value (10 or 5) representing a high level of well-
being and the low values (0) representing high distress.
Positive well-being is represented by a total score between
73 and 110. Scoring between 61 and 72 reveals a level of
moderate stress and scoring below 60 denotes severe

The arrangement in the test packet of the GWBS, Health
Behavior Instrument, and the Participant Data Sheet varied
from packet to packet. The subjects completed the
instruments in approximately 15 to 30 minutes.

Data Analysis

Data collection was carried out with permission from
instructors to enter classes and perform the study on a
voluntary basis. The information obtained was scored and
entered onto the Western Kentucky University mainframe computer.

Once the information was entered onto the Western Kentucky University mainframe, it was analyzed utilizing the Statistical Analysis System (SAS) data processing package (Statistical Analysis System (SAS), 1992). The analyses focused on determining the relationship between the specific health behaviors with levels of mental wellness. Descriptive analyses were done to describe the sample results. Initial univariate analyses, including correlation and analysis of variance (ANOVA), studied the relationship between specific health behaviors.

The health behaviors items were combined to form a behavior scale and this behavior was correlated with the GWBS. A multiple regression was performed with these behavior items as the independent variables and the GWBS served as the dependent variable.
CHAPTER 4

RESULTS

The purpose of this study was to explore the foundations of mental health promotion. A cross-sectional study was performed on Western Kentucky University graduate and undergraduate students to determine the relationship between mental well-being and selected health behaviors. Subjects completed the Participant Data Sheet, Health Behavior Instrument, and the General Well-Being Schedule (GWBS).

Description of Study Sample

A total of 490 individuals participated in the study. The mean age of the group was 24.1 years (Standard Deviation=7.0, Range 18 to 57 years). The gender and race proportions consisted of 177 males (36.1%), 310 (63.3%) females, and 3 missing data (.6%); 88.6% white (n=434), 8.4% black (n=41), .6% native american (n=3), .4% hispanic (n=2), .4% oriental (n=2), .4% other (n=2), and 1.2% missing data (n=6). Of the sample 4.7% (n=23) people acknowledged being separated or divorced, 15.7% (n=77) were married, 64.3% (n=315) had never been married, and 15.3% (n=75) missing data.
Descriptive Data

Each person's view of his/her health status was measured in descending order as (a) excellent, (b) good, (c) average, (d) poor, or (e) very poor. The results on health status included (a) 85 (17.4%) excellent, (b) 264 (53.9%) good, (c) 127 (25.9%) average, (d) 11 (2.2%) poor, (e) 0 (0%) very poor, and 3 (.6%) missing data. Of the sample 424 (86.5%), reported being covered by health insurance while 55 (11.2%) were not covered, 10 (2.0%) did not know if they had health insurance, and 1 (.2%) missing data.

The number of times hospitalized in the last year ranged from 0 to 40 while the number of days hospitalized in the last year ranged from 0 to 90. The hospitalization results are summarized in Table 1. The days confined to a bed for all or most of the day during the last year are displayed in Table 2 with a range of 0 to 90 days. Table 3 reveals the number of work days missed in the last year because of illness or injury; Table 4 breaks down the number of physician visits in the last year--they range respectively, 0 to 30 and 0 to 45. The majority of the sample reported no family history of alcoholism 62.4% (n=306), 29.4% (n=144) acknowledged a family history of alcoholism, and 8.2% (n=40) missing data.

Yearly family income was broken down from less than $15,000 to greater than $60,000. The results of the
Table 1

Descriptive Statistics for the Number of Times and Number of Days Hospitalized in the Last Year

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Note. * = missing data
Table 2

Descriptive Statistics for Number of Days Confined to Bed for All or Most of the Day During the Last Year

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<th>%</th>
<th>Number of Days Confined</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
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<td>229</td>
<td>46.7</td>
<td>14</td>
<td>3</td>
<td>0.6</td>
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<td>76</td>
<td>15.5</td>
<td>15</td>
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<td>0.4</td>
</tr>
<tr>
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<td>73</td>
<td>15.0</td>
<td>20</td>
<td>3</td>
<td>0.6</td>
</tr>
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<td>36</td>
<td>7.4</td>
<td>30</td>
<td>1</td>
<td>0.2</td>
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<td>2.7</td>
<td>35</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
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<td>22</td>
<td>4.5</td>
<td>45</td>
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<td>0.2</td>
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<tr>
<td>6</td>
<td>3</td>
<td>0.6</td>
<td>60</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>1.4</td>
<td>90</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>0.8</td>
<td>*</td>
<td>6</td>
<td>1.2</td>
</tr>
<tr>
<td>10</td>
<td>8</td>
<td>1.6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total                  | 365 | 490 | 100.0

Note. * = missing data
Table 3

Descriptive Statistics for Days of Work Missed Due to Illness or Injury in the Last Year

<table>
<thead>
<tr>
<th>Number of Days</th>
<th>n</th>
<th>%</th>
<th>Number of Days</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>235</td>
<td>48.0</td>
<td>10</td>
<td>7</td>
<td>1.4</td>
</tr>
<tr>
<td>1</td>
<td>58</td>
<td>11.8</td>
<td>12</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>2</td>
<td>73</td>
<td>15.0</td>
<td>13</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>3</td>
<td>45</td>
<td>9.2</td>
<td>14</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
<td>3.3</td>
<td>15</td>
<td>3</td>
<td>0.6</td>
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<td>4.1</td>
<td>20</td>
<td>3</td>
<td>0.6</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>0.6</td>
<td>25</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>0.4</td>
<td>30</td>
<td>2</td>
<td>0.4</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>0.8</td>
<td>*</td>
<td>13</td>
<td>2.6</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>0.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>184</td>
<td></td>
<td>490</td>
<td></td>
<td>100.0</td>
</tr>
</tbody>
</table>

Note. * = missing data
Table 4

Descriptive Statistics for Number of Physician Visits in the Last Year

<table>
<thead>
<tr>
<th>Number of Visits</th>
<th>n</th>
<th>%</th>
<th>Number of Visits</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>88</td>
<td>18.0</td>
<td>12</td>
<td>1</td>
<td>0.2</td>
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<tr>
<td>1</td>
<td>122</td>
<td>25.0</td>
<td>13</td>
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<td>0.2</td>
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<td>2</td>
<td>111</td>
<td>22.7</td>
<td>15</td>
<td>3</td>
<td>0.6</td>
</tr>
<tr>
<td>3</td>
<td>57</td>
<td>11.6</td>
<td>20</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>4</td>
<td>35</td>
<td>7.2</td>
<td>23</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>5</td>
<td>24</td>
<td>4.9</td>
<td>24</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>6</td>
<td>10</td>
<td>2.0</td>
<td>25</td>
<td>2</td>
<td>0.4</td>
</tr>
<tr>
<td>7</td>
<td>10</td>
<td>2.0</td>
<td>30</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>8</td>
<td>3</td>
<td>0.6</td>
<td>45</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>10</td>
<td>12</td>
<td>2.4</td>
<td>*</td>
<td>6</td>
<td>1.2</td>
</tr>
<tr>
<td>Total</td>
<td>253</td>
<td></td>
<td>490</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Note. * = missing data
economic status included (a) 69 (14.1%) $15,000 or less, (b) 76 (15.5%) $15,001 to $30,000, (c) 116 (23.7%) $30,001 to $45,000, (d) 102 (20.8%) $45,001 to $60,000, (e) 116 (23.7%) greater than $60,000, (f) 11 (2.2%) missing data.

The General Well-Being Schedule (GWBS) was completed by 490 people in the sample. The mean of the GWBS was 63.96 and the standard deviation 16.62. A total of 155 (31.6%) people in the sample had positive well being, 128 (26.1%) were in moderate stress, and 207 (42.3%) were in severe distress.

Of the sample, 33.7% (n=165) acknowledged eating breakfast daily. These results are summarized in Table 5. Snacking between regular meals occurred frequently as shown in the frequency distribution in Table 6.

Four hundred and two persons in the sample reported their weight. There were only 19.4% (n=95) persons within their normal weight range.

The average person in this study got 6.9 hours of sleep per night (Standard Deviation=16.62). Of the sample 14.3% (n=70) reported daily physical exercise. The majority of the respondents indicated physical exercise occasionally or frequently. Table 7 shows the breakdown of physical exercise and Table 8 reveals other physical activities performed such as sports, swimming, hunting, and gardening.

This sample contained 324 (66.1%) people who had never smoked or were ex-smokers, 89 (18.2%) who were current
### Table 5

**Descriptive Statistics for Frequency of Breakfast Eating**

<table>
<thead>
<tr>
<th>Frequency</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rarely or Never</td>
<td>130</td>
<td>26.6</td>
</tr>
<tr>
<td>Infrequently</td>
<td>60</td>
<td>12.2</td>
</tr>
<tr>
<td>One or Two Times a Week</td>
<td>60</td>
<td>12.2</td>
</tr>
<tr>
<td>Daily or Almost Daily</td>
<td>165</td>
<td>33.7</td>
</tr>
<tr>
<td>*</td>
<td>75</td>
<td>15.3</td>
</tr>
<tr>
<td>Total</td>
<td>490</td>
<td>100.0</td>
</tr>
</tbody>
</table>

*Note. * = missing data*
Table 6
Descriptive Statistics for Frequency of Snacking Between Meals

<table>
<thead>
<tr>
<th>Frequency</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every Day</td>
<td>89</td>
<td>18.2</td>
</tr>
<tr>
<td>Frequently</td>
<td>158</td>
<td>32.2</td>
</tr>
<tr>
<td>Once in a While</td>
<td>116</td>
<td>23.7</td>
</tr>
<tr>
<td>Rarely</td>
<td>46</td>
<td>9.4</td>
</tr>
<tr>
<td>Never</td>
<td>4</td>
<td>.8</td>
</tr>
<tr>
<td>*</td>
<td>77</td>
<td>15.7</td>
</tr>
<tr>
<td>Total</td>
<td>490</td>
<td>100.0</td>
</tr>
</tbody>
</table>

* = missing data
Table 7

Descriptive Statistics for Frequency of Physical Exercise

<table>
<thead>
<tr>
<th>Frequency</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>8</td>
<td>1.6</td>
</tr>
<tr>
<td>Rarely</td>
<td>55</td>
<td>11.2</td>
</tr>
<tr>
<td>Occasionally</td>
<td>146</td>
<td>29.8</td>
</tr>
<tr>
<td>Frequently</td>
<td>136</td>
<td>27.8</td>
</tr>
<tr>
<td>Daily</td>
<td>70</td>
<td>14.3</td>
</tr>
<tr>
<td>*</td>
<td>75</td>
<td>15.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>490</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Note. * = missing data
Table 8
Descriptive Statistics of Other Types of Physical Exercise

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Sports</th>
<th>Swim</th>
<th>Hunt</th>
<th>Garden</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Never</td>
<td>27</td>
<td>5.5</td>
<td>10</td>
<td>2.0</td>
</tr>
<tr>
<td>Rarely</td>
<td>88</td>
<td>18.0</td>
<td>76</td>
<td>15.5</td>
</tr>
<tr>
<td>Occasionally</td>
<td>141</td>
<td>28.8</td>
<td>188</td>
<td>38.4</td>
</tr>
<tr>
<td>Frequently</td>
<td>109</td>
<td>22.2</td>
<td>100</td>
<td>20.4</td>
</tr>
<tr>
<td>Daily</td>
<td>49</td>
<td>10.0</td>
<td>40</td>
<td>8.2</td>
</tr>
<tr>
<td>*</td>
<td>76</td>
<td>15.5</td>
<td>76</td>
<td>15.0</td>
</tr>
<tr>
<td>Total</td>
<td>490</td>
<td>100</td>
<td>490</td>
<td>100</td>
</tr>
</tbody>
</table>

Note. * = missing data
smokers, and 77 (15.7%) missing data. Most of the sample reported drinking wine, beer, or liquor occasionally as displayed in Table 9. The average number of drinks per setting of wine, beer, or liquor ranged from 0 to 18 with a mean of 3.4 drinks per setting (Standard Deviation = 3.03).

**Test of Hypothesis**

Research Hypothesis: There will be no relationship between mental well-being and selected health behaviors.

To test this hypothesis univariate analyses including correlation, analysis of variance (ANOVA), and chi-square of the relationship between specific health behaviors, demographics, and scores on the GWBS were performed. Additional multivariate analyses were done to study possible interactions of variables and develop a predictive model.

The Pearson Correlation Coefficient revealed a positive relationship between the GWBS and hours of sleep ($r=.15; p<.01, n=414$). There was no relationship between GWBS and the number of drinks per setting ($r=-.04; p<ns$).

The Spearman Correlation Coefficient was used to compare the GWBS and the selected health behaviors. There were significant relationships noted between the GWBS and hours of sleep per night, breakfast eating, active sports, hunting, and physical activity. These coefficients are displayed in Table 10. No significant relationships were noted between the GWBS and alcohol, smoking, and snacking.
Table 9

Descriptive Statistics for Alcohol Drinking

<table>
<thead>
<tr>
<th>Frequency</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
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<td>16.1</td>
</tr>
<tr>
<td>Rarely</td>
<td>83</td>
<td>17.1</td>
</tr>
<tr>
<td>Occasionally</td>
<td>180</td>
<td>36.7</td>
</tr>
<tr>
<td>Frequently</td>
<td>69</td>
<td>14.1</td>
</tr>
<tr>
<td>Daily</td>
<td>2</td>
<td>0.4</td>
</tr>
<tr>
<td>*</td>
<td>77</td>
<td>15.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>490</td>
<td>100.0</td>
</tr>
</tbody>
</table>

*Note. * = missing data
Table 10

Spearman Correlation Coefficient for GWBS and Health Behaviors

<table>
<thead>
<tr>
<th>Variable</th>
<th>cc</th>
<th>Sign</th>
<th>n</th>
<th>*</th>
</tr>
</thead>
<tbody>
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<td>Sleep</td>
<td>0.19</td>
<td>0.00</td>
<td>414</td>
<td>76</td>
</tr>
<tr>
<td>Breakfast</td>
<td>0.15</td>
<td>0.00</td>
<td>415</td>
<td>75</td>
</tr>
<tr>
<td>Snack</td>
<td>-0.00</td>
<td>0.96</td>
<td>413</td>
<td>77</td>
</tr>
<tr>
<td>Drinking</td>
<td>-0.05</td>
<td>0.28</td>
<td>413</td>
<td>77</td>
</tr>
<tr>
<td>Exercise</td>
<td>0.10</td>
<td>0.04</td>
<td>415</td>
<td>75</td>
</tr>
<tr>
<td>Sports</td>
<td>0.15</td>
<td>0.00</td>
<td>414</td>
<td>76</td>
</tr>
<tr>
<td>Swim</td>
<td>-0.00</td>
<td>0.96</td>
<td>414</td>
<td>76</td>
</tr>
<tr>
<td>Hunt</td>
<td>0.01</td>
<td>0.01</td>
<td>415</td>
<td>75</td>
</tr>
<tr>
<td>Garden</td>
<td>0.05</td>
<td>0.33</td>
<td>411</td>
<td>79</td>
</tr>
<tr>
<td>Normal Weight</td>
<td>-0.00</td>
<td>0.94</td>
<td>402</td>
<td>88</td>
</tr>
</tbody>
</table>

Note. * = missing data
Point Biserial Correlation Coefficient analysis revealed no relationship between smoking and the GWBS ($r=.01; p<ns$). The Spearman Correlation Coefficient was significant between perceived health status and the GWBS ($r=-.19; p<.00$). A high score on the GWBS indicates a positive mental well-being while a low score on the perceived health status specifies positive physical health.

Pearson Correlation Coefficients were calculated for the GWBS and the combined scores of the seven selected health behaviors for males and females separately and together. The separate results for the males ($r=.45; p<.00$) were stronger than the females ($r=.28; p<.00$). The results with the genders combined were $r=.34; p<.00$.

Multiple Stepwise Regression was performed to predict GWBS. GWBS served as the dependent variable and the seven selected health behaviors were the independent variables. An examination of these results reveals the following variables contributed significantly to the model: (a) exercise ($F=53.56; 1,488 \text{ df}$), (b) hours of sleep ($F=22.53; 2,487 \text{ df}$), and (c) eating breakfast ($F=3.74; 3,486 \text{ df}$). These results are shown in Table 11. There was no significance in the relationship between GWBS and snacking between meals, smoking, drinking alcohol, and maintaining normal weight.
Table 11

Summary of Stepwise Regression with GWBS as the Dependent Variable

Part A

<table>
<thead>
<tr>
<th></th>
<th>DF</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F</th>
<th>Prob&gt;F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
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<td>19637.36</td>
<td>6545.79</td>
<td>27.54</td>
<td>0.0001</td>
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<td>Error</td>
<td>486</td>
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<td>237.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>490</td>
<td>135137.18</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Part B

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number</th>
<th>In</th>
<th>Partial R**2</th>
<th>Model R**2</th>
<th>C(p)</th>
<th>F</th>
<th>Prob&gt;F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exercise</td>
<td>1</td>
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<td>0.0989</td>
<td>0.0989</td>
<td>23.42</td>
<td>53.56</td>
<td>0.0001</td>
</tr>
<tr>
<td>Sleep</td>
<td>2</td>
<td>2</td>
<td>0.0398</td>
<td>0.1387</td>
<td>2.90</td>
<td>22.53</td>
<td>0.0001</td>
</tr>
<tr>
<td>Breakfast</td>
<td>3</td>
<td>3</td>
<td>0.0066</td>
<td>0.1453</td>
<td>1.18</td>
<td>3.74</td>
<td>0.0537</td>
</tr>
</tbody>
</table>
The null hypothesis—There will be no relationship between mental well-being and selected health behaviors is partially rejected based on the preceding results.
CHAPTER 5

CONCLUSION

A cross-sectional survey was conducted using Western Kentucky University graduate and undergraduate students in order to determine the relationship between well-being and selected health behaviors. Subjects completed the Participant Data Sheet, Health Behavior Instrument, and the General Well-Being Schedule (GWBS).

Summary of Results

Research Hypothesis: There will be no relationship between mental well-being and selected health behaviors.

A relationship was found between mental well-being and hours of sleep, eating breakfast, and exercising. There were no significant relationships between mental well-being and snacking between meals, drinking alcohol, smoking, and maintaining normal weight. The correlation between the GWBS and the aggregate health behavior score was notable ($r=.34$). The relationship was stronger among males than females.

Discussion

The GWBS revealed some notable and surprising results. Many of the persons in the study were in moderate or severe distress. It would be interesting to know if these results are representative of Americans in general or in certain
subgroups of Americans. It would also be interesting to explore mental well-being and health behaviors further using other measures.

**Limitations**

The major limitation of this study was the sample population used. The results are not applicable to the general population. The sample selected for this study was not representative of the general population based on race, gender, and age. It was not a randomly selected probability sample.

It was impossible to determine whether the subjects interpreted the questions and answers on the questionnaires the same. For example, frequently and occasionally mean different things to most people. Another potential problem with this study was the length of the questionnaires in order to obtain all of the needed data. It is impossible to determine if all data were accurate or if some data were erroneously reported due to time constraints.

**Conclusions**

It is noteworthy that there was a significant correlation between the GWBS and combined health behaviors. It appears, for this sample, as people engaged in health behaviors, the GWBS increased for a more positive GWBS score or those with higher GWBS chose to participate in more positive health behaviors. The primary findings of the study are the noted positive relationship between mental
well-being and health behaviors. The correlations between GWBS and the selected health behaviors were stronger among males than females. There was a relationship found between mental well-being and hours of sleep, eating breakfast, and exercising. It was notable that 42% of the population displayed distress.

**Recommendations**

1. Future research should attempt to replicate this study using a large randomly selected sample and other measures of stress/distress.
2. Future research should attempt to obtain a more representative sample.
3. Research needs to determine if mental well-being contributes to health behaviors or if health behaviors contribute to mental well-being.
4. Research needs to determine the levels of distress among this and other groups.
5. Future research should attempt to replicate this study utilizing other stress measures and other measures of health behaviors.
REFERENCES


APPENDIX A

PARTICIPANT DATA SHEET

1. Date of Birth: ______________________________

2. Gender: ___ Male ___ Female

3. Race: ___ Black ___ Oriental
   ___ White ___ Native American
   ___ Hispanic ___ Other

4. The total family income in your household for this year is: (check one)
   ___ $15,000 or less
   ___ $15,001 to $30,000
   ___ $30,001 to $45,000
   ___ $45,001 to $60,000
   ___ Greater than $60,000

5. Family history of alcoholism? ___ Yes ___ No

6. How many times have you been hospitalized in the last year? _____
   How many days in the hospital in the last year? _____

7. How many physician visits have you had in the last year? _____

8. How many days of work have you missed in the last year because of illness or injury? _____

9. How many days have you been confined to bed for all or most of the day during the last year? _____

10. Are you currently covered by health insurance? ___ Yes ___ No ___ Do not know

11. How do you view your own health status?
    ___ Excellent ___ Good ___ Average
    ___ Poor ___ Very Poor

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APPENDIX B

HEALTH BEHAVIOR INSTRUMENT

How many hours of sleep do you usually get a night?

_________________ (# of hours)

How often do you eat breakfast?

1. rarely or never
2. infrequently
3. one or two times a day
4. daily or almost every day

How often do you eat (snack) in between your regular meals?

1. every day
2. once in a while
3. frequently
4. rarely

How often do you drink wine, beer, or liquor?

1. never
2. rarely
3. occasionally
4. frequently

When do you drink wine, beer, or liquor, on average how many drinks do you usually have at a setting?

_________________ (# of drinks)

Have you ever smoked cigarettes regularly?

1. Yes
2. No

Do you smoke cigarettes at the present time?

1. Yes
2. Ex-Smoker
3. Never Smoked

How often do you do any of these things?

Active sports
Never Rarely Occasionally Frequently Daily

Swimming or taking long walks
Never Rarely Occasionally Frequently Daily

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Hunting or fishing
Never   Rarely   Occasionally   Frequently   Daily

Doing physical exercises
Never   Rarely   Occasionally   Frequently   Daily

Working in a garden
Never   Rarely   Occasionally   Frequently   Daily

How tall are you? ________

How much do you weigh? ________

What is your current marital status?
1. Divorced or Separated
2. Never Married
3. Married

How many close friends do you have? (People that you feel at ease with, can talk to about private matters, and can call on for help.)

_______________ (# of friends) (put 0 if none)

How many relatives do you have that you feel close to?

_______________ (# of relatives) (put 0 if none)

How many of these friends or relatives do you see at least once a month?

_______________ (Actual #) (put 0 if none)

Do you belong to any of these kinds of groups?

a social or recreational group?

1. No
2. Yes

a labor union, commercial group or professional association?

1. No
2. Yes

a group concerned with children (such as PTA or Boy Scouts)?

1. No
2. Yes
a group concerned with community betterment, charity or service?

1. No  2. Yes

any other group?

1. No  2. Yes

How often do you practice meditation?

Never  Rarely  Occasionally  Frequently  Daily

How often do you practice progressive relaxation?

Never  Rarely  Occasionally  Frequently  Daily

When you feel stressed out or under pressure, how often do you cope by doing each of the following?

Eat

Never  Rarely  Occasionally  Frequently  Daily

Exercise

Never  Rarely  Occasionally  Frequently  Daily

Have a beer or other alcoholic beverage

Never  Rarely  Occasionally  Frequently  Daily

Get drunk

Never  Rarely  Occasionally  Frequently  Daily

Listen to music

Never  Rarely  Occasionally  Frequently  Daily

Meditate

Never  Rarely  Occasionally  Frequently  Daily

Play a musical instrument

Never  Rarely  Occasionally  Frequently  Daily

Sing

Never  Rarely  Occasionally  Frequently  Daily
Practice progressive relaxation

Never  Rarely  Occasionally  Frequently  Daily

Sleep

Never  Rarely  Occasionally  Frequently  Daily

Talk with a counselor

Never  Rarely  Occasionally  Frequently  Daily

Talk with a family member

Never  Rarely  Occasionally  Frequently  Daily

Talk with a friend

Never  Rarely  Occasionally  Frequently  Daily

Take a walk

Never  Rarely  Occasionally  Frequently  Daily

Take a bath or shower

Never  Rarely  Occasionally  Frequently  Daily

Watch TV

Never  Rarely  Occasionally  Frequently  Daily

Go to a movie

Never  Rarely  Occasionally  Frequently  Daily

Get close to nature, in the park, the woods, etc.

Never  Rarely  Occasionally  Frequently  Daily

Make love

Never  Rarely  Occasionally  Frequently  Daily
APPENDIX C
GENERAL WELL-BEING SCHEDULE (GWBS)

INSTRUCTIONS: This section of the examination contains questions about how you feel and how things have been going with you. For each question, mark (X) the answer which best applies to you.

1. How have you been feeling in general? (During the past month)
   1. ____ In excellent spirits
   2. ____ In very good spirits
   3. ____ In good spirits mostly
   4. ____ I have been up and down in spirits a lot
   5. ____ In low spirits mostly
   6. ____ In very low spirits

2. Have you been bothered by nervousness or your "nerves"? (During the past month)
   1. ____ Extremely so--to the point where I could not work or take care of things
   2. ____ Very much so
   3. ____ Quite a bit
   4. ____ Some--enough to bother me
   5. ____ A little
   6. ____ Not at all

3. Have you been in firm control of your behavior, thoughts, emotions or feelings? (During the past month)
   1. ____ Yes, definitely so
   2. ____ Yes, for the most part
   3. ____ Generally so
   4. ____ Not too well
   5. ____ No, and I am somewhat disturbed
   6. ____ No, and I am very disturbed

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4. Have you felt so sad, discouraged, hopeless, or had so many problems that you wondered if anything was worthwhile? 
   (During the past month)
   1. ____ Extremely so--to the point that I have almost given up
   2. ____ Very much so
   3. ____ Quite a bit
   4. ____ Some--enough to bother me
   5. ____ A little
   6. ____ Not at all

5. Have you been under or felt you were under any strain, stress, or pressure? 
   (During the past month)
   1. ____ Yes--almost to the point that I have just about given up
   2. ____ Yes--quite a bit of pressure
   3. ____ Yes--some - more than usual
   4. ____ Yes--some - but about usual
   5. ____ Yes - a little
   6. ____ Not at all

6. How happy, satisfied, or pleased have you been with your personal life? 
   (During the past month)
   1. ____ Extremely happy - could not have been more satisfied or pleased
   2. ____ Very happy
   3. ____ Fairly happy
   4. ____ Satisfied--pleased
   5. ____ Somewhat dissatisfied
   6. ____ Very dissatisfied

7. Have you had any reason to wonder if you were losing your mind, or losing control over the way you act, talk, feel, think, or of your memory? 
   (During the past month)
   1. ____ Not at all
   2. ____ Only a little
   3. ____ Some--but not enough to be concerned or worried about
   4. ____ Some and I have been a little concerned
   5. ____ Some and I am quite concerned
   6. ____ Yes, very much so and I am very concerned
8. Have you been anxious, worried, or upset?  
(During the past month)

1. ___ Extremely so--to the point of being sick or almost sick  
2. ___ Very much so  
3. ___ Quite a bit  
4. ___ Some--enough to bother me  
5. ___ A little bit  
6. ___ Not at all  

9. Have you been waking up fresh and rested?  
(During the past month)

1. ___ Every day  
2. ___ Most every day  
3. ___ Fairly often  
4. ___ Less than half the time  
5. ___ Rarely  
6. ___ None of the time  

10. Have you been bothered by any illness, bodily disorder, pains, or fears about your health?  
(During the past month)

1. ___ All the time  
2. ___ Most of the time  
3. ___ A good bit of the time  
4. ___ Some of the time  
5. ___ A little of the time  
6. ___ None of the time  

11. Has your daily life been full of things that were interesting to you?  
(During the past month)

1. ___ All the time  
2. ___ Most of the time  
3. ___ A good bit of the time  
4. ___ Some of the time  
5. ___ A little of the time  
6. ___ None of the time
12. Have you felt down-hearted and blue?
   (During the past month)
   1. _____ All the time
   2. _____ Most of the time
   3. _____ A good bit of the time
   4. _____ Some of the time
   5. _____ A little of the time
   6. _____ None of the time

13. Have you been feeling emotionally stable and sure of yourself?
   (During the past month)
   1. _____ All the time
   2. _____ Most of the time
   3. _____ A good bit of the time
   4. _____ Some of the time
   5. _____ A little of the time
   6. _____ None of the time

14. Have you felt tired, worn out, used-up, or exhausted?
    (During the past month)
    1. _____ All the time
    2. _____ Most of the time
    3. _____ A good bit of the time
    4. _____ Some of the time
    5. _____ A little of the time
    6. _____ None of the time

INSTRUCTIONS: For each of the four scales below, note that
the words at each end of the 0 to 10 scale describe opposite feelings. Circle any
cnumber along the bar which seems closest to
you have generally felt DURING THE
PAST MONTH.

15. How concerned or worried about your HEALTH have you
    been?
    (During the past month)
    
    | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
    |---|---|---|---|---|---|---|---|---|---|----|
    Not concerned at all | Very Concerned
16. How RELAXED or TENSE have you been?  
(During the past month)  

0 1 2 3 4 5 6 7 8 9 10

Very relaxed       Very tense

17. How much ENERGY, PEP, VITALITY have you felt?  
(During the past month)  

0 1 2 3 4 5 6 7 8 9 10

No energy       Very ENERGETIC
AT ALL, listless  dynamic

18. How DEPRESSED or CHEERFUL have you been?  
(During the past month)  

0 1 2 3 4 5 6 7 8 9 10

Very depressed  Very cheerful