

**The Efficacy of an Introductory Health/Wellness Course
in Positively Changing Wellness Behaviors**

Steven Ross Murray

**A dissertation presented to the
Graduate Faculty of Middle Tennessee State University
in partial fulfillment of the requirements
for the degree Doctor of Arts
May, 1996**

UMI Number: 9625988

UMI Microform 9625988
Copyright 1996, by UMI Company. All rights reserved.

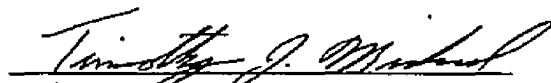
**This microform edition is protected against unauthorized
copying under Title 17, United States Code.**

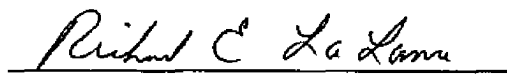
UMI
300 North Zeeb Road
Ann Arbor, MI 48103

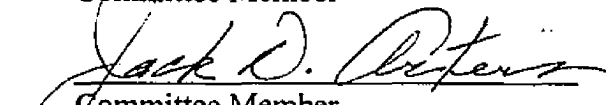
The Efficacy of an Introductory Health/Wellness Course
in Positively Changing Wellness Behaviors

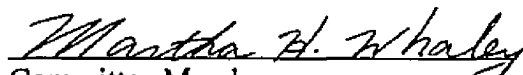
Steven Ross Murray

Approved:

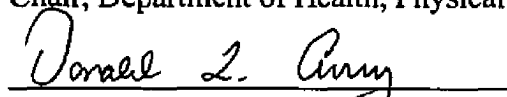

Major Professor


Committee Member


Committee Member


Committee Member


Chair, Department of Health, Physical Education, Recreation, and Safety


Dean, College of Graduate Studies

ABSTRACT

The Efficacy of an Introductory Health/Wellness Course in Positively Changing Wellness Behaviors

Steven Ross Murray

Courses that emphasize lifestyle changes to promote health and wellness are plentiful in higher education today. However, the effectiveness of these courses is unknown. Thus, the purpose of this study was to determine the efficacy of an introductory health/wellness course in producing positive changes in the wellness behaviors of the students enrolled. Subjects consisted of 860 undergraduate students enrolled in either a college health/wellness course (Treatment group, $n = 803$) or an English general studies course (Control group, $n = 57$). All subjects were pre- and posttested using *Testwell®: Wellness Inventory--College Edition* during the first two weeks and last week of the semester, respectively. The testing instrument assessed six dimensions of wellness: physical, social, emotional, intellectual, occupational, and spiritual. A two-factor (group by time) ANOVA was used to determine statistical differences at the 0.05 level of probability between the pre- and posttest scores with respect to each dimension and the total wellness score. Statistical differences were noted in the physical ($p < 0.0001$), social ($p < 0.0001$), and spiritual ($p < 0.02$) dimensions as well as the total wellness score ($p < 0.0001$) for the treatment group and not the control group. Therefore, the course was deemed to be effective in inducing positive changes in the enrolled students' wellness behaviors.

ACKNOWLEDGMENTS

When one sets a goal and undertakes the challenge to accomplish it, many others always play a crucial role in the process. I would like to take this opportunity to express my sincere appreciation to those who have played an important role in my education.

First, and most importantly, I must thank my major professor, Dr. Timothy J. Michael. Your guidance was invaluable throughout my doctoral studies.

Second, I never could have completed my education without the help of Dr. Martha H. Whaley, my committee member and department chair. You took a chance and offered me a graduate assistantship which enabled me to further my education. That was vital to my educational experience, and I cannot thank you enough.

Third, Dr. Richard E. LaLance offered valuable suggestions for my dissertation as well as provided excellent instruction during my course work. I thank you.

Fourth, I want to extend my gratitude to Dr. Jack D. Arters, professor emeritus of educational leadership. You provided an excellent model to follow in the classroom. Your standards and philosophy have shaped my own teaching style.

Fifth, Drs. Jim Colligon and Mike Johnson played an important role in my early educational experiences. Your encouragement and support were essential to my development, and I would not be where I am today without your help.

Lastly, I would like to thank my parents, Carl and Barbara Murray, for their endless support in my many endeavors. Also, I cannot thank you both enough for teaching me the value of hard work and discipline; without those qualities, I never would have been able to accomplish what I have done. I thank you.

TABLE OF CONTENTS

	page
List of Tables	iv
List of Appendices	v
 Chapter	
1. Introduction	1
Problem Statement	4
Subproblems	4
Hypothesis	5
Subhypotheses	5
Basic Assumptions	6
Limitations	6
Definitions of Terms	6
Importance of the Study	8
2. Review of Related Literature	
Well-being	9
Wellness Paradigms	11
Wellness in Higher Education	17
Summary	20
3. Methods	22
Subjects	22
Data Collection	22

	Statistical Analyses	23
4.	Results	24
	Participant Completion	24
	Reliability	24
	Interpretation of Scores	24
	Total Wellness Scores	25
	Wellness Dimensions	25
	Physical	25
	Social	26
	Emotional	26
	Intellectual	26
	Occupational	26
	Spiritual	27
5	Discussion	30
	Conclusion	40
	Recommendations	40
	APPENDICES	42
	BIBLIOGRAPHY	90

TABLES

Table	Page
1. Pre- and Posttest Scores for Wellness Dimensions	28
2. Pre- and Posttest Scores for Wellness Subcategories	29

APPENDICES

Appendix	Page
A. Proposal for the Institutional Review Board and Approval Letter . . .	43
B. Oral Directions	46
C. Testwell: Wellness Inventory--College Edition	48
D. Pre and Posttest Responses on <i>Testwell</i> [®] : <i>Wellness Inventory--College Edition</i>	53
E. ANOVA Tables	86

CHAPTER 1

Introduction

For thousands of years, mankind has been concerned with good health and optimal well-being. This emphasis on health and well-being dates back to Plato and the ancient Greeks where a harmony of mind, body, and spirit was pursued and cherished and most noted by the adage *mens sana in corpore sano*, that is, a sound mind in a sound body. Within this “most noble state of human functioning,” called *arete*, a total merging of mind, body, and spirit occurred; the individual as a whole was functioning optimally (Archer , Probert, & Gage, 1987, p. 311).

In modern times, this state of perfect harmony is termed *wellness* and has been coined by Dunn (1961) in his book *High-Level Wellness*. Dunn defines wellness as “an integrated method of functioning which is oriented toward maximizing the potential of which the individual is capable” (p. 4). Mostly, wellness is an integration of physical, mental, emotional, social, and spiritual health and how well someone is capable of combining each dimension and fulfilling a “meaningful whole.” However, high-level wellness only occurs when a balance of the integration transpires (Greenberg, 1985).

Further, various authors describe numerous paradigms of wellness (Ardell, 1979; Cmich, 1984; Dobbs, 1994; Eberst. 1984; Hettler, 1980). These views are multifaceted, and all point toward individuals being responsible for their optimal wellness and that self-awareness is key. Although open to debate, the dimensions of wellness usually are

considered the physical, social, emotional, spiritual, intellectual, and environmental (also termed occupational or vocational).

Powers (1994) writes, "Wellness represents a philosophy in which well-being comes from an integration of the body, mind, and spirit (p. 4)." Again, the Greek ideal *arete* is paramount. For if individuals are to be functioning perfectly in their environment, they must have a total enmeshment of the mind, body, and spirit, hence, a balance of all wellness dimensions. And, when individuals are well, they are healthy and thus are more likely to incur less medical costs.

Additionally, the astronomical rise in medical costs has prompted a renewed interest in wellness and preventive medicine. Robbins (1994) states, "Health care plans can no longer afford the price tag of patching up Americans who have spent a lifetime as fat-eating, cigarette-smoking, alcohol-consuming couch potatoes. . . . The cost . . . is exorbitant" (p. 25). Furthermore, Robbins ridicules the nonsensical approach to health care in the United States when she quotes Ornish, a physician, as stating, "'The way we treat lifestyle-related disease in this country is like when the sink overflows, we would rather mop up the floor over and over, when logically we should be turning off the faucet'" (p. 25). The problem is the individual depends on medical care to correct the illness or condition when all that is needed is self-responsibility to prevent it in the beginning. Ardell (1979) surmises this when he writes, "Ask not what your doctor can do for you; Ask what you can do for yourself" (p. 102).

Thus, the solution to rising health care costs is to prevent a disease from occurring or, once it develops, keep it from exacerbating. This can occur best through prevention programs that educate individuals in wellness and health. Robbins (1994) asserts, "Our nation's schools must begin immediately to take a leadership role in wellness education--with an emphasis on lifestyle change" (p. 26). Therefore, wellness education's *raison d'être* is to empower individuals to take control of their lives and behave in a way that is conducive to optimal well-being, thus, making them happier, more productive, and ultimately, well.

The empowerment of individuals to take responsibility of their health/wellness is exactly what is being implemented in higher education. With the Carnegie Foundation (1986) recognizing that wellness is important to the college student and that it "is a prerequisite to all else" (p. 21), many colleges and universities are implementing courses titled "Lifetime Wellness/Fitness," "Healthy Lifestyles," "Effective Living," etc. These courses are designed to fulfill the societal needs of educating the populace on wellness issues and preventing lifestyle-related diseases (e.g., cancer, heart disease). The current wellness programs in higher education are a revitalization of Plato's belief that a healthy body contributes to a healthy mind. Sivik, Butts, Moors, and Hyde (1992) further add, "Higher Education, after all, provides the ultimate environment for making positive lifestyle changes to enhance the quality of life." Moreover, with an enhanced quality of life, illness is avoided; thus, health care costs are reduced.

The question that arises is: Are these courses that are being implemented in higher education to induce a positive change in wellness behaviors actually doing what they are intended to do? Therefore, this investigation was conducted to evaluate the efficacy of an introductory health/wellness course at Middle Tennessee State University to make positive changes in wellness inventories of undergraduate students enrolled in said course.

Problem Statement

The purpose of this investigation was to determine the effect of an introductory health/wellness course at Middle Tennessee State University on the enrolled students' wellness inventories.

Subproblems

This investigation specifically considered the following:

1. the effect of an introductory health/wellness course on the physical dimension of the students' wellness inventories;
2. the effect of an introductory health/wellness course on the social dimension of the students' wellness inventories;
3. the effect of an introductory health/wellness course on the emotional dimension of the students' wellness inventories;
4. the effect of an introductory health/wellness course on the intellectual dimension of the students' wellness inventories;

5. the effect of an introductory health/wellness course on the occupational dimension of the students' wellness inventories;

6. the effect of an introductory health/wellness course on the spiritual dimension of the students' wellness inventories; and

7. the effect of an introductory health/wellness course on the total score of the students' wellness inventories.

Hypothesis

An introductory health/wellness course at Middle Tennessee State University will positively influence the wellness inventories of the students enrolled at the completion of the course.

Subhypotheses

It was hypothesized that:

1. the physical dimension scores on the students' wellness inventories will improve after completion of an introductory health/wellness course;

2. the social dimension scores on the students' wellness inventories will improve after completion of an introductory health/wellness course;

3. the emotional dimension scores on the students' wellness inventories will improve after completion of an introductory health/wellness course;

4. the intellectual dimension scores on the students' wellness inventories will improve after completion of an introductory health/wellness course;

5. the occupational dimension scores on the students' wellness inventories will improve after completion of an introductory health/wellness course;
6. the spiritual dimension scores on the students' wellness inventories will improve after completion of an introductory health/wellness course; and
7. the total wellness scores on the students' wellness inventories will improve after completion of an introductory health/wellness course.

Basic Assumptions

1. *TestWell*®: *Wellness Inventory--College Edition* was a valid and reliable instrument for the determination of wellness behaviors in undergraduate students.
2. Students were candid and unbiased with their responses on the *TestWell*®: *Wellness Inventory--College Edition* questionnaire.

Limitations

1. The responses for the study were self-reported.
2. The "Effective Living" courses were taught by multiple instructors.
3. Only "Effective Living" courses taught at Middle Tennessee State University during the Fall, 1995 semester were used in this investigation.
4. The control group was utilized to examine pre- and posttest changes in the scores; it was not used to make between group comparisons.
5. If between group comparisons were conducted, the small sample size of the control group could be confounding statistically.

Definition of Terms

Due to their relevance to this study, the following terms were defined:

Emotional Dimension--the dimension involving where individuals recognize and accept feelings, strengths, and limitations that allow them to manage emotions and cope with stressful events, thus allowing them "to experience life's ups and downs with enthusiasm and grace and maintain satisfying relationships with others" (National Wellness Institute, 1993, p. 20).

Effective Living Course--a two-hour class taught at Middle Tennessee State University designed to provide students with basic health information to help guide them to create a "healthy lifestyle" for themselves. The class includes lectures, media aids, and cognitive-based laboratories.

Intellectual Dimension--the dimension involving feelings of creativity and mental challenge as well as "seeking to expand knowledge and skills" (National Wellness Institute, 1993, p. 20).

Introductory Health/Wellness Course--for the purpose of this study, the introductory health/wellness course was the "Effective Living" course taught at Middle Tennessee State University during the Fall, 1995 semester.

Occupational Dimension--the dimension consisting of finding work satisfying and having "a balance between work and leisure time" (National Wellness Institute, 1993, p. 21).

Physical Dimension--the dimension concerning exercise, diet, medical self-care, and the avoidance of tobacco, drugs, and excessive alcohol consumption (National Wellness Institute, 1993)

Social Dimension--the dimension encompassing "satisfying relationships with spouse, family, friends, and associates" as well as community involvement and environmental concerns; "social wellness is based on [the] ability to interact harmoniously with people and the Earth" (National Wellness Institute, 1993, p. 20).

Spiritual Dimension--the dimension comprising "an appreciation for the meaning of life and the expanse of nature... [and being] at peace with the universe... [and having] a set of beliefs and values that give purpose to life" (National Wellness Institute, 1993, p. 21).

Wellness Inventory--for this investigation, the wellness inventory was considered the scores collected on *TestWell*[®]: *Wellness Inventory--College Edition*.

Importance of the Study

Findings of this study can be used in the construction and implementation of classes that are designed to guide students to develop positive lifestyle changes. Results from this investigation are critical to the university in determining the effectiveness of introductory health/wellness classes. Furthermore, the information provided by this study is useful to corporate and governmental agencies that desire to construct an effective introductory health/wellness program.

CHAPTER 2

Review of Related Literature

The review of related literature is presented in three sections. The first section describes well-being and provides a historical perspective of wellness, its definition and development. The second section includes the descriptions of various wellness paradigms. The final section addresses wellness in higher education and specifically examines past research on wellness courses in educational settings.

Well-Being

Good health and optimal well-being have been the goal of mankind since the ancient Greeks. As noted earlier, the ancient Greeks valued a harmony of the mind, body, and spirit (Archer et al., 1987) and believed that through the development of a sound mind one could acquire a sound body. This belief in the cultivation of the mind as a precursor to the development of the body is evident in Plato's writings.

Gymnastics will hold the next place to Music in the education of our young men. This is my view of the case: --not that a good body will necessarily make the soul good: but that a good soul will by its proper virtue render the body as perfect as it can be. We must therefore first administer the requisite treatment to the mind, and then charge it with the direction of the body. (cited in Miller & Robinson, 1963, p. 41 from Plato's *The Republic*, translated by William Whewell, London: The MacMillian Company, 1861, p. 203)

In this passage, Plato indicates that proper mental preparation can strengthen the soul which can lead to individuals reaching their full potential physically. The underlying message is that the mind, soul, and body are not separate; they are related and work together to strengthen the individual as a whole from many different constructs. It is

evident that the ancient Greeks believed that man was formed from various constructs and that each was interwoven, interrelated, and affected one another. This is noted in their belief of the ideal lifestyle. Miller and Robinson (1963) write:

The [Greek] ideal of life, a balance of moral, mental, physical, and aesthetic living, along with civic participation and moderation in all things, was the foundation of much of the education of the youth of means, and of life for the adults (p. 37).

However, not only did the ancient Greeks recognize various constructs (or dimensions) were involved in the idiosyncrasy of the individual, but a “balance” of the constructs was required to fulfill their archetype.

A modern description of the Greek ideal has been penned by Dunn (1961), albeit under a new term coined wellness. Dunn writes that wellness is:

an integrated method of functioning which is oriented toward maximizing the potential of which the individual is capable. It requires that the individual maintain a continuum of balance and purposeful direction within the environment which he is functioning (pp. 4-5).

In his definition of wellness, Dunn describes many of the qualities of the Greek ideal. He believes the individual must have “an integrated method of functioning” (p. 4), that is, all dimensions of the individual (i.e., physical, emotional, intellectual, spiritual, social, and environmental) must be related, balanced, and synthesized into a whole in order for the individual to be well. This synthesis is similar to the ancient Greek’s “balance of moral, mental, physical, and aesthetic living” described by Miller and Robinson (1963, p. 37). However, Dunn uses the term “balance” in his definition, and this maintenance of balance is required for the individual to reach “high-level wellness.” It is not enough for

individuals to “complete” the fulfillment of their potential. They must, instead, maximize, or as Dunn describes, maintain their potential because “what is complete today might be quite incomplete tomorrow. . . .But maximizing means maintaining completeness from day to day” (p. 5). Therefore, for individuals to obtain high-level wellness, maximization of their potential must be reached and maintained daily through the balance of their wellness dimensions. As Dunn asserts, “Wellness is a direction in progress toward an ever-higher potential of functioning. It involves the total individual as a personality in all of his uniqueness” (p. 6). And, this uniqueness refers to the many dimensions of wellness that are used to formulate wellness/health paradigms.

Wellness Paradigms

Among the earliest paradigms of wellness was a five dimension model developed by Ardell (1979) that included the following dimensions: (1) self-responsibility; (2) nutrition; (3) stress management; (4) physical fitness; and (5) environmental sensitivity. The premise of this model was that individuals designed, implemented, and followed their own program to high level wellness through an integration of all dimensions. Ardell believed that each of these dimensions was of equal importance; however, self-responsibility was deemed to be “more equal than all the rest” (p. 102). He writes:

It [self-responsibility] is the philosopher’s stone, the mariner’s compass, and the ring of power to a high level wellness lifestyle. Without an active sense of accountability for your own well-being, you won’t have the necessary motivation to lead a health-enhancing lifestyle. That is, you are not likely to put the energy into nutrition, stress management, fitness, and environmental shaping that is required for optimal health...self-responsibility represents your keystone to a life of high level wellness (p. 102).

Thus, Ardell's model was a self-designed and self-regulated path to high level wellness. Moreover, self-regulation is considered of prime importance to self-care models (Horowitz, 1985). In fact, Horowitz believes "that by developing self-care and self-regulation skills, students will achieve and maintain higher levels of wellness, thus improving the quality of their lives and ensuring healthy human development" (p. 57). This self-regulation and self-responsibility is best described by Yarber and Bobilya (1980) when they quote Califano:

You, the individual, can do more for your own health and well-being than any doctor, any hospital, any drug, any exotic medical device. Indeed, a wealth of scientific research reveals that the key to whether a person will be healthy or sick, live a long life or die prematurely, can be found in several simple personal habits (p. 62).

Archer et al. (1987) cited Ardell's newer eight-dimension model for behavioral modification as "(a) psychological and spiritual, (b) physical fitness, (c) job satisfaction, (d) relationships, (e) family life, (f) nutrition, (g) leisure time, and (h) stress management" (p. 312). Currently, however, the past wellness models have been combined.

Eberst (1984) writes of a health model that involves the integration of five dimensions as physical, emotional, mental, social, and spiritual. However, he notes that a "vocational" dimension needs to be included to represent entirely all of health. He defines the vocational dimension as an "area that encompasses both the social (community) and personal health components" (p. 100). Furthermore, the vocational dimension includes "financial success, sharing of work experience with others, and nonrecreational challenges" (p. 100).

Eberst's (1984) model, therefore, has six "intimately related" dimensions. He likens his health paradigm to a three-dimensional cube; each side of the cube, made up of subcubes, represents a separate dimension that combines to create a whole. This paradigm is analogous to the puzzle, Rubik's cube™ (a six-sided cube with each side constructed from nine smaller movable subcubes of the same color). The Rubik's cube™ is interrelated; if one subcube is moved, it has ramifications on the whole cube. When each side of the cube is labeled with a health dimension, "a 'Health Cube' is produced" (p. 101). Eberst surmises his Health Cube model when he states:

Employing this "cube" concept as a model of health, total wellness (highest level health) in each dimension would theoretically be represented when all of the subelements of the entire dimension were the same color and each was in its proper position. Total wellness would be represented when all six dimensions are in the same situation (p. 101).

Wellness is now viewed, due primarily to Hettler (1980), as a holistic approach of lifestyle and environment and "involves six health components: physical, emotional, spiritual, social, intellectual, and vocational [or occupational], which are of equal value in helping individuals achieve a healthy lifestyle, and therefore a more balanced and centered life" (Dobbs, 1994, p. 8). Each of these components is described by Powers (1994). She refers to the physical dimension as the "functional operations of the body" (e.g., diet, exercise, drug usage, sleep, medical checkups). The intellectual dimension is mental processing, that is, "ongoing pursuance of knowledge, reading, critical thinking, [and] applying information" (p. 5). Managing the emotions through coping mechanisms, determination of strengths and weaknesses, and the maintenance of intimate relationships

makes up the emotional dimension. The social dimension is simply how one relates to other individuals. Spirituality “involves the development of the inner self and soul: identifying the purpose and meaning of life, a sense of right and wrong/ethics, innermost values and needs, identifying a philosophy of life” (p. 5). Lastly, the occupational dimension, as described by Powers, involves a person’s vocation and the intrinsic and extrinsic rewards that a given profession can provide that individual.

Powers (1994) reiterates the importance of the interrelatedness of the dimensions by writing, “Even though each dimension functions separately, there is a strong interdependence among dimensions. Each dimension is intricately woven into our existence. Therefore, it is not only important to understand and strive for continuous growth within each dimension, maintaining an equal *balance* of all dimensions is the ultimate goal” (p. 5).

Greenberg (1985) writes of health being multifaceted. He lists that health is constructed of social, mental, emotional, spiritual, and physical health. Each of these constructs must be developed and is necessary for an individual to be truly healthy. However, if these components are integrated at any level of health or illness, individuals can be well despite the fact that they are still ill. For example, someone can be ill, yet, not remain isolated and depressed by exercising regularly and being involved in social activities. Therefore, the individual reaches a certain limit for potential health. Greenberg writes:

Consequently, an ill person cannot be healthy but can have wellness. Paraplegics may not be defined as healthy, but they can achieve high level wellness by

maximizing and integrating the five components of health. Within their physical limitations, they can live a quality life. They may interact well with family and friends (social health), do well at school, on the job, or with a hobby (mental health), express their feelings when appropriate (emotional health), sense how they fit into the “grand scheme of things” either through a religious belief or a belief in the laws of nature (spiritual health), and exercise within their capabilities, such as completing a marathon on crutches or in a wheelchair (physical health). When these components of health are enhanced near their potential, and are integrated, a person may achieve wellness in spite of being ill (p. 404).

Integration of the various wellness dimensions is of chief importance to Greenberg (1985). He surmises that many times individuals are concerned with only one or two aspects of wellness and that they neglect other areas. For example, some individuals believe that physical fitness is a panacea. Consequently, they are obsessed with its development and work on only physical fitness and budget no time for other dimensions such as socialization. Conversely, others just develop socialization skills and neglect intellectual and physical development. Thus, these individuals may be free of disease but they are not well. Then, one might ask: How can these individuals become well? As Greenberg states, “The answer depends on how highly physical and social health [or any other dimensions] are valued. . . . The lesson: when improving one component of health, consciously work on improving all other components of health” (p. 405). An individual must seek a balance of the wellness components and synthesize them into a whole. Balance implies “that, as people work to improve one aspect of their health, they also need to work to improve others” (p. 405).

The discussion of balance and that one aspect of health affects many is addressed by Cmich (1984) with the theory of holism. Cmich believes that a person is “one single

individuality, and it is the unified whole that determines the characteristics of the parts” (p. 30). Furthermore, according to Cmich, the various “parts” are related to one another intimately. Meaning, if one part changes, the other parts will incur corresponding changes. This process is termed “interrelatedness” by Cmich; she writes, “the organism and its surroundings are not related merely by the theory of cause and effect but by the principle of reciprocity” (p. 30). That is, everything is a give and take. When one part is weakened, it can , and often does, cause other areas to be affected negatively. However, the converse is also true. An improvement in one or more areas can prompt other areas to develop beneficially also. Thus, these interrelated reactions provide the reasoning for the “principle of reciprocity.”

Further, Cmich (1984) discusses a paradigm of holistic health which is made up of the following twelve components:

- (1) Health is an expression of each person functioning as an integrated whole, a totality of body, mind, and spirit; (2) the spiritual dimension. . . giving meaning and significance to the experiences of existence; (3) a focus on degrees of health and well-being rather than the absence of disease; (4) health is a dynamic and ongoing process that reflects the continuous change occurring in each individual’s life; (5) synchronicity . . . the continuous process of integration and harmony between oneself and the environment; (6) self-awareness and action in the here and now enhance the health and well-being of individuals; (7) the human is a national healing system; (8) psychosomatic . . . both mind and body are involved in illness; (9) individuals are responsible for the development and maintenance of their own health and well-being; (10) the individual is not merely a passive victim in the development of disease, but a responsible participant; (11) health practitioner and client are partners who share responsibility for the healing process; and (12) a multidimensional approach to health includes an investigation of various healing systems.

Cmich's model stresses "wholeness" of the individual. In addition, this wholeness or holistic health involves the integration of wellness and the creation of a positive lifestyle that the individual initiates and maintains. Holistic health, as Cmich describes, is moving "toward the gradual evolution of human consciousness to higher levels of physical, mental, social, and spiritual awareness. . . . The thrust is toward healing and wellness as a personal and global way of life" (p. 32). Likewise, the indoctrination of a healthy way of life is the purpose of wellness in higher education.

Wellness in Higher Education

The University of Wisconsin--Stevens Point introduced the first student oriented wellness program (Hettler, 1980). Other campuses soon followed and by the mid 1980s, approximately 20 percent of institutions implemented wellness/health programs (McMillan, 1986). Further, with wellness being recognized as an important and necessary component of the undergraduate experience (Carnegie Foundation, 1986), many more colleges and universities incorporated programs to address wellness issues and promote the development of healthy lifestyles.

Presently, however, approximately 74 percent of colleges and universities provide some form of a wellness program (Sivik et al., 1992). Many of these institutions' programs are affiliated with their departments of health, physical education, and recreation. Often, these departments offer courses specifically planned to inform students of wellness principles and to guide students in the development of healthier lifestyles.

With the development of these college and university wellness courses, researchers began investigating the effectiveness of these courses in inducing positive changes in students' wellness levels. Several studies have examined the effectiveness of wellness instruction.

Kushner and Hartigan (1983) studied the effect of a cognitive-based wellness course, offered in the psychology department, on students' trait anxieties, self-concepts, and lifestyle habits. Results of their study indicated that the course produced no significant changes in students with respect to the aforementioned areas. Furthermore, another study, using some of the same instruments (i.e., State-Trait Anxiety Inventory and the Tennessee Self-Concept Scale) as well as various physiological tests, demonstrated that an activity-based course resulted in no significant changes in students' wellness levels both psychologically and physiologically (Griffin, Klinzing, & Ziegler 1983).

However, other studies have revealed that wellness courses are effective in changing students' wellness levels and attitudes toward wellness. Papenfuss and Beier (1984) investigated the effectiveness of a wellness program in changing the wellness attitudes and behaviors of high school sophomores. The researchers concluded "the education program was effective in enhancing positive attitudes and behaviors toward wellness" (p. 360).

Robbins, Powers, and Rushton (1992) studied the effectiveness of a 16-week semester lecture/activity fitness/wellness course on wellness knowledge, physical

variables (i.e., skinfolds, resting pulse, blood pressure, and weight), and fitness variables (i.e., push-ups and sit-and-reach) of 144 undergraduate students. Results of the study indicated that the course was successful in significantly improving the knowledge and a majority of the physical variables of the students.

One study compared the effect of an activity-based wellness course and a cognitive-based wellness course on student wellness behaviors (McClanahan, 1990). Students ($n = 274$) in the courses were pre- and post-tested for wellness behavior by *Testwell: A Self-Scoring Wellness Assessment Questionnaire*. Results of the study showed that students improved their wellness behavior at the completion of the courses. However, the study demonstrated the superiority of an activity-based wellness course in improving both physical and nonphysical wellness as compared to a cognitive-based course.

Archer et al. (1987) surveyed how students perceived the six dimensions of wellness (physical, emotional, spiritual, occupational, social, and intellectual). Subjects ($n = 3190$) were students from eleven different American colleges and universities. Using a 5-point Likert scale, the subjects rated the degree to which they believed the dimensions affected their wellness, the dimensions about which they desired more information and assistance, and their present level in each dimension of wellness. Results revealed that students thought all dimensions influenced their wellness. The dimension that they thought affected their wellness to the greatest extent was the physical, followed by the emotional, social, occupational, intellectual and lastly, spiritual. Students

believed the occupational dimension was of highest importance in terms of need for information and assistance; conversely, the physical dimension was deemed the dimension that information was needed least. According to present wellness levels, the authors found that students reported themselves with high social wellness and low spiritual wellness. The authors concluded that students recognize the connection between the physical and emotional levels of wellness and that they simply are not a mind/body dichotomy.

Summary

Well-being has been recognized as an important goal of mankind since the ancient Greeks. The idea of well-being, or wellness, is that all aspects of the individual--mind, body, and spirit--are working in unison, in complete balance and harmony, so that the individual is functioning optimally. From the early works of Dunn (1961), wellness is known as the maximization of one's potential through balancing various wellness dimensions. Moreover, many wellness paradigms were designed to facilitate the development and understanding of the wellness principle of a balanced healthy lifestyle. These paradigms of wellness represent a "whole" made up of various "parts" termed dimensions (i.e., physical, emotional, spiritual, intellectual, social, and occupational). The key to each of these models is balance through self-regulation. Self-responsibility is considered the cornerstone to wellness.

During the early 1970s, wellness programs were beginning to be implemented into higher education (Hettler, 1980). The number of programs grew over the next two

decades where approximately 74 percent of institutions were offering students some form of a wellness program (Sivik et al., 1987). With the development of these programs, researchers began evaluating these programs' effectiveness. Today, with the results of these various program evaluations, institutions are designing, modifying, and implementing courses designed to promote healthy and productive lifestyles, that is, wellness.

CHAPTER 3

Methods

Subjects

This study was approved by the university's Institutional Review Board (see Appendix A). In all, 860 undergraduate students participated in the study; however, only 788 students finished the posttest (see Results). Of the total participants, 803 were enrolled in 27 sections of an introductory health/wellness course titled "Effective Living" and 57 students were enrolled in two sections of English general studies classes at Middle Tennessee State University during the Fall, 1995 semester. The students enrolled in the "Effective Living" classes served as the treatment group. Serving as the control group were the students enrolled in the English general studies classes. Subjects were informed that participation in the investigation in no way would affect their grades for the course.

Data Collection

All data were collected in the first two weeks (pretest) and last week (posttest) of the Fall, 1995 semester during the scheduled class time for the courses. After reporting to each class at the regularly scheduled time, the instructor provided oral directions for the subjects (see Appendix B); subjects completed *Testwell®: Wellness Inventory--College Edition* (see Appendix C).

Statistical Analyses

A two-factor (group by time) ANOVA was used to determine statistical differences between the pre- and posttest scores for the total wellness score as well as each wellness dimension (i.e., physical, social, emotional, intellectual, occupational, and spiritual). The 0.05 level of probability was used to determine significance. Reliability of *Testwell*®: *Wellness Inventory--College Edition* was determined by computing Cronbach's coefficient alpha.

CHAPTER 4

Results

Participant Completion

Of the 860 students participating in this study, 743 (93 percent) and 45 (79 percent) of the students enrolled in the Effective Living and English classes, respectively, completed the posttest. The decline in student participants was attributed to normal attrition during an academic semester where students often withdraw from courses.

Reliability

The consistency of the testing instrument, *Testwell®: Wellness Inventory--College Edition*, was determined by computing Cronbach's coefficient alpha for both the pre- and posttest. The coefficient alphas obtained for the pre- and posttest were 0.94 and 0.96, respectively, thus indicating the instrument was reliable.

Interpretation of Scores

The scores listed in the results are the true raw scores reported by the students on *Testwell®: Wellness Inventory--College Edition*; that is, the numbers (i.e., 1, 2, 3, 4, or 5) that the students selected for each question were summed to create the dimension scores. However, in the wellness inventory results computed by the computer software package accompanying *Testwell®: Wellness Inventory--College Edition*, the scores are doubled for each subcategory (i.e., physical fitness, nutrition, self-care & safety, environmental wellness, social awareness, emotional management and sexuality, and emotional management) as well as the intellectual, occupational, and spiritual dimensions

so that there are ten separate sections to the wellness inventory worth 100 points each for a total of 1,000 points. Furthermore, the National Wellness Institute (1993) classifies the total scores as follows: an obtainment of 85 percent or more of the available points as “excellent,” an obtainment of 70 - 85 percent of the available points as “good,” and an obtainment of less than 70 percent of the available points as “room for improvement.”

Total Wellness Scores

Mean pre- and posttest total wellness scores, presented in Table 1, differed significantly in the treatment group and not in the control group over time.

Wellness Dimensions

Physical

Shown in Table 1 are mean pre- and posttest scores for the physical dimension. Mean pre- and posttest physical dimension scores were significantly different for the treatment group over time. No significant differences were observed for the control group's mean pre- and posttest scores for the physical dimension. The physical dimension's three subcategories, physical fitness, nutrition, and self-care and safety, all differed significantly between the mean pre- and posttest scores for the treatment group (see Table 2). However, no significant differences were observed for the control group with respect to the mean pre- and posttest scores on the physical dimension subcategories (see Table 2).

Social

Mean pre- and posttest social dimension scores (see Table 1) were significantly different for the treatment group and not different for the control group. The subcategories of the social dimension, environmental wellness and social awareness, were found to differ significantly from the mean pretest scores to the mean posttest scores with the treatment group (see Table 2). As shown in Table 2, the control group's mean pre- and posttest scores for the social dimension did not differ significantly.

Emotional

As listed in Table 1, mean pre- and posttest scores for the emotional dimension did not differ significantly for either the treatment or control groups over time. Additionally, neither of the two subcategories, emotional awareness and sexuality or emotional management, were significantly different between the mean pre- and posttest scores for either group (see Table 2).

Intellectual

Mean pre- and posttest scores on the intellectual dimension for the treatment and control groups, located in Table 1, did not differ significantly over time for either group.

Occupational

In Table 1, mean pre- and posttest occupational dimension scores are displayed. Mean pre- and posttest scores for the occupational dimension were not significantly different for the treatment group as well as the control group over time.

Spiritual

A significant difference over time was found for mean pre- and posttest scores on the spiritual dimension for the treatment group and not for the control group (see Table 1).

Table 1
Pre- and Posttest Scores for Wellness Dimensions

	Pretest		Posttest		
Group	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	p
<hr/>					
Total Wellness Score (500)					
Treatment	359.8	44.1	368.9	48.8	.0001
Control	376.2	43.3	381.1	52.9	.6085
Physical (150)					
Treatment	89.5	16.9	94.1	18.3	.0001
Control	96.3	17.1	100.4	19.1	.2623
Social (100)					
Treatment	65.7	11.1	68.1	12.3	.0001
Control	70.0	11.8	72.4	13.3	.3351
Emotional (100)					
Treatment	84.7	9.4	84.9	11.0	.6761
Control	86.3	9.2	84.4	13.3	.3932
Intellectual (50)					
Treatment	37.6	7.8	38.3	8.2	.0971
Control	40.0	7.5	39.3	7.5	.6656
Occupational (50)					
Treatment	43.4	6.1	43.7	6.5	.3398
Control	43.6	5.7	43.1	7.5	.7075
Spiritual (50)					
Treatment	38.9	7.1	39.8	7.4	.0118
Control	40.0	6.2	41.5	6.3	.2370

N.B., The number in parentheses denotes the highest score obtainable.

Treatment, $n = 803$ (pretest); 743 (posttest)

Control, $n = 57$ (pretest); 45 (posttest)

Table 2
Pre- and Posttest Scores for Wellness Subcategories

Group	Pretest		Posttest		p
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
Physical Fitness (50)					
Treatment	26.3	8.4	28.4	8.7	.0001
Control	29.4	9.3	29.5	9.9	.9497
Nutrition (50)					
Treatment	29.6	7.3	30.7	7.6	.0057
Control	32.3	7.4	34.6	8.5	.1359
Self-Care & Safety (50)					
Treatment	33.6	7.1	35.1	7.1	.0001
Control	34.7	7.4	36.3	6.9	.2833
Environmental Wellness (50)					
Treatment	29.3	7.3	30.8	3.8	.0002
Control	31.7	8.0	33.6	8.5	.2456
Social Awareness (50)					
Treatment	36.4	6.3	37.3	6.7	.0057
Control	38.3	5.7	38.8	6.0	.6679
Sexuality/Emotional Awareness (50)					
Treatment	43.9	5.3	44.0	5.9	.7434
Control	44.3	5.1	43.5	7.3	.5238
Emotional Management (50)					
Treatment	40.8	6.0	40.9	6.6	.6971
Control	42.0	5.6	40.9	7.2	.3784

N.B., The number in parentheses denotes the highest score obtainable.

Treatment, n = 803 (pretest); 743 (posttest)

Control, n = 57 (pretest); 45 (posttest)

CHAPTER 5

Discussion

The objective of this study was to investigate the effect of an introductory health/wellness course on the wellness behaviors of the students enrolled. The investigation involved the pre- and posttesting of the students enrolled with *Testwell*[®]: *Wellness Inventory--College Edition* to assess wellness behaviors. Specifically, the ability of the course to effect positive changes in the enrolled students' wellness behaviors at the completion of the class was studied.

Results of this study indicate that an introductory health/wellness course did create positive changes in the enrolled students' wellness behaviors. The scores on the posttest demonstrate that the students' wellness inventories improved with respect to the physical, social, and spiritual dimensions as well as the total wellness score. Additionally, among the subcategories of physical fitness, nutrition, self-care and safety, environmental wellness, and social awareness, the students' wellness scores also improved at the conclusion of the course. Thus, the introductory health/wellness course was deemed to be effective in inducing positive changes in the enrolled students' wellness behaviors.

Results of the present study contradict the findings of Kushner and Hartigan (1983) and Griffin et al. (1983). Both of these studies revealed that neither a cognitive nor an activity-based wellness course affected the wellness levels of the students enrolled. However, these studies had several distinct differences from the present study. First, the

instruments used in those studies to determine wellness levels and to detect changes in the students were different from the one utilized in the present study. Second, the course material taught in those studies was different and did not encompass the same topics presented in the present study's introductory health/wellness course. These differences could possibly explain why dissimilar findings were obtained.

However, several other studies found similar results as those revealed in the current study. Pappenfuss and Beier (1984) concluded that a wellness program "was effective in enhancing positive attitudes and behaviors toward wellness" (p. 360) in high school sophomores. The current study's results support their conclusions; again, however, the evaluating instruments, course's content, and students' ages were not the same in that study as in the current study. Nonetheless, Pappenfuss and Beier's study demonstrated that wellness classes do work in improving attitudes and behaviors of the students enrolled. In fact, they state that the class brought about continual change in the students. Pappenfuss and Beier (1984) write, "There was a continuation of both attitude enhancement and behavior change after one and one-half years" (p. 361). This was evident by the fact that 100 percent of the students responded "yes" in a follow-up questionnaire "when asked if they had made any health habit changes in the last one and one-half years" (p. 361).

Additionally, Robbins et al. (1992) provided strong evidence that college fitness/wellness courses can and do change students' knowledge and fitness levels favorably. They assessed the effectiveness of a 16-week fitness/wellness course on

improving wellness knowledge and physical fitness variables of the students enrolled and determined that the course was successful. Specifically, the authors found that the students scored higher on the knowledge test about wellness concepts as well as improved many physical fitness variables (e.g., skinfolds, resting pulse, push-ups, etc.) at the conclusion of the course. Results of the current study reiterate these findings; the students' wellness behaviors did improve favorably, thus it is possible to infer that they became more knowledgeable about health and wellness and implemented changes in their lifestyles in order to improve their well-being.

McClanahan (1990) conducted a study that found similar results as the present study. The purposes of McClanahan's study was to: first, determine the influence of activity- and cognitive-based wellness courses on students' lifestyle behaviors; second, assess which method of instruction was better; and third, ascertain the reliability and validity of *Testwell®: A Self-Scoring Wellness Assessment Questionnaire* (a precursor to the assessment instrument used in the present study). She had two major findings in her study. One, both an activity- and cognitive-based wellness course produced significantly greater results on the enrolled students' non-physical wellness levels (i.e., emotional awareness, emotional control, intelligence, occupational, and spiritual). However, the activity-based wellness course produced results that were significantly greater than the cognitive-based course. Further, with respect to the physical wellness levels (i.e., physical fitness, nutrition, and self-care), the activity- and cognitive-based wellness courses did result in improvements in the students' pre- and posttest wellness scores.

Moreover, the largest increase was with the activity-based wellness course, and it was also significantly different from the control group where the cognitive-based wellness course was not. Two, she concluded that *Testwell®: A Self-Scoring Wellness Assessment Questionnaire*, because of its “Cronbach’s alpha of 0.86 and a test/retest coefficient of 0.96 (p. 46), . . . is a reasonably reliable and valid instrument for college students” (p. 48) in assessing wellness levels.

Similar findings were recorded in the present study as compared to McClanahan (1990). The posttest scores on the wellness inventory indicate that the introductory health/wellness course increased the overall wellness levels of the students enrolled. Additionally, with respect to instrument reliability, *Testwell®: Wellness Inventory--College Edition* was computed a Cronbach’s coefficient alpha of 0.94 and 0.96, for the pre- and posttests, respectively. Thus, these values would indicate that the instrument is highly reliable.

With respect to the present study, an examination of Tables 1 and 2 indicates that the pre- and posttest scores for the treatment and control groups differed significantly in many instances. This would imply that the treatment (students enrolling in and finishing the introductory health/wellness course) produced changes in the students’ lifestyles specifically related to wellness behaviors. In fact, the total wellness score, the factor to denote if the individual as a “whole” reached a higher level of wellness, was significantly different between the pre- and posttest scores for the treatment group and not the control group. Furthermore, the scores for the pre- and posttest would be classified by the

National Wellness Institute's standards as "good" evident by the 72 and 74 percent obtainment of total points, respectively. This demonstrates that the students completing the introductory health/wellness course did reach a higher level of wellness. Thus, it can be concluded that the introductory health/wellness course was effective in improving students wellness behaviors. More specifically, the effect of the introductory health/wellness course on each dimension of the students' wellness inventories must be addressed.

The physical dimension was found to be influenced positively by the introductory health/wellness course. This is evident by the fact that the treatment group's posttest scores were significantly higher ($p < 0.0001$) than the pretest scores. Moreover, each of the treatment group's posttest scores for the subcategories of the physical dimension, physical fitness, nutrition, and self-care and safety, were significantly higher ($p < 0.0001$, $p < 0.01$, and $p < 0.0001$, respectively) than the pretest scores. These findings suggest that the introductory health/wellness course emphasized the importance of physical fitness and health promotion. Furthermore, the increase in this area by the students demonstrates this to be a strong and effective part of the course for inducing lifestyle changes.

The findings related to the physical dimension in the current study are in direct opposition to the results of Kushner and Hartigan (1983). Kushner and Hartigan reported no significant differences for pre- and posttest scores on exercise, nutrition, and self-care assessed by the *Lifestyle Assessment Questionnaire* after the completion of a wellness

course. In fact, virtually no changes were recorded in their study with respect to the aforementioned variables. The authors related this to the short “incubation period” of ten weeks in that it may not have been long enough to manifest lifestyle changes. However, a similar time period was employed in this study (approximately fourteen weeks) and changes were observed. The differences in the two study’s results possibly could be related to course subject matter, instructors, sample size, or a combination of each factor.

As for the social dimension, the treatment group incurred significant changes from the pretest to the posttest ($p < 0.0001$). Because the control group did not experience a significant change in social dimension scores, the introductory health/wellness course can be credited with the produced results. Thus, the course brought about a change in the students’ wellness inventories with respect to the social dimension. Furthermore, the two subcategories of the social dimension, environmental wellness and social awareness, both underwent significant changes from the pretest to the posttest for the treatment group. Again, the control group did not incur significant changes between the pre- and posttest scores of the social dimension’s subcategories; thus, the course was effective in positively changing both subcategories of the students’ social dimension of the wellness inventories. These results, once again, refute the findings of Kushner and Hartigan (1983).

The students did not incur any changes in their emotional wellness at the completion of the introductory health/wellness course. The mean pre- and posttest scores for the treatment group as well as the control group were virtually unchanged. Furthermore, the emotional dimension’s subcategories, emotional awareness and

sexuality and emotional management, did not differ significantly. This finding would seem to indicate that the introductory health/wellness course was ineffective in increasing emotional wellness. However, a closer examination of the emotional dimension scores shows that the students began the study at an “excellent” level of emotional wellness (noted by the achievement of a score of 85 out of a possible 100). Therefore, the course may be ineffective in improving an already high level of wellness within a dimension. Similar results were reported by Kushner and Hartigan (1983). However, they reported a non-significant reduction in the students’ emotional awareness after the completion of a wellness course; whereas, the current study found a non-significant increase.

The intellectual dimension scores of the students did not differ significantly between the pre- and posttest for the treatment or control groups. The lack of significant change demonstrates that the introductory health/wellness course did not affect the intellectual wellness of the students. Kushner and Hartigan (1983) noted similar findings concerning the intellectual wellness scores. In their study, the intellectual wellness scores decreased a small, yet statistically insignificant, amount. However, the contrary was true in the present study. A small increase was noted, but it, too, was statistically insignificant. Because the intellectual dimension’s posttest scores did not improve, it must be inferred that the course did not have an effect on the students with respect to the intellectual dimension. This could be attributed to a lack of instruction in this specific area by the instructors, a failure of the students to assimilate information and institute changes in their lifestyles accordingly, or simply student apathy toward the topic.

The students' occupational wellness scores on the wellness inventories did not increase after completion of the course. The pre- and posttest occupational scores did not differ significantly for either the treatment or control groups. These findings demonstrate that the introductory health/wellness course did not affect the occupational wellness scores of the students. However, as in the emotional dimension, the students' pretest scores were "excellent" in the beginning (noted by the obtainment of 43 out of a possible 50 points); thus, the course did not improve an already high score.

Lastly, the spiritual dimension scores of the treatment group differed significantly between the pre- and posttest ($p < .02$). No significant differences were observed for the control group's pre- and posttest spiritual dimension scores. Thus, this change can be attributed to the introductory health/wellness course. Results of this study with respect to the spiritual dimension's posttest scores increasing significantly in the treatment group contradict those reported by Kushner and Hartigan (1983). They reported that spiritual wellness scores were unaffected by a wellness course. Furthermore, past research has indicated that college students perceive the spiritual dimension as "relatively low" in importance to their personal wellness and little information is needed in this area for assistance in improving their well-being (Archer et al., 1987). However, the results of this study show that students do indeed need information about this dimension because of the low scores in the pretest and the improved scores in the posttest.

Overall, the introductory health/wellness course improved the wellness inventories of the students enrolled evident by the significant increase in the total

wellness scores. However, certain dimensions incurred improvement (i.e., physical, social, and spiritual) while others did not (i.e., emotional, intellectual, and occupational). These results indicate that the course influenced students' behaviors in certain areas and not others. This may be due to some areas being stressed more than others by the instructors in the courses. Another explanation could be that the students viewed some dimensions more important to their wellness than others and only chose to make modifications in those areas.

Archer et al. (1987) studied students' perceptions of wellness dimensions and concluded that "students believed that all the dimensions had an effect on their overall wellness. There were, however, important differences in the strength of the perceived effect" (p. 315). In fact, the dimensions ranked from most important to least important by the students were as follows: physical, emotional, social, occupational, intellectual, and spiritual. In the present study, the physical, social, and spiritual dimensions incurred significant improvements. Moreover, Archer et al. state that college students rate the physical and social dimensions very important to their well-being; thus, a favorable change in these areas as noted in the current study is worthwhile. However, the introductory health/wellness course did not affect the emotional dimension of the students in the current study. This could be problematic; yet, as discussed earlier, the students' emotional dimension scores were higher in the beginning indicating an already "excellent" level of wellness.

Archer et al. (1987) found that students viewed that they needed assistance most in the occupational dimension, followed by the intellectual, emotional, social, spiritual, and physical. The ranking of importance for the need of information and assistance was vastly different than the rankings of the importance of the dimension to total wellness. In fact, Archer et al. write:

The striking disparity between the high perceived effect of the physical dimension and the low need for assistance, coupled with the relatively higher ratings on need for assistance for the other dimensions, may mean that more emphasis should be placed on the nonphysical dimensions of wellness. (p. 316)

However, the findings of the current study do not support this premise of where the added emphasis should be placed. Archer et al.'s students ranked that they needed less information in the physical dimension. Yet, in the present study, the initial scores were low in this dimension and significant changes were found at the conclusion of the course. Thus, the students either did not have the knowledge about the physical dimension, or they needed the course to serve as a catalyst for the development of the physical dimension. Either way, the course was effective in improving the physical dimension of the students. Similar findings were found for the social dimension, also. However, Archer et al. found that the students believed information about that dimension was needed greatly to improve their well-being.

Lastly, Archer et al. (1987) noted that many students selected the occupational and emotional dimensions as the two most important dimensions where information and assistance were needed to improve their well-being. This is indicative "that students also

recognized a strong connection between their emotional state and their general health and wellness” (p. 316). The current study’s results indicate that the students have high levels of emotional and occupational wellness. Thus, courses in wellness should strive to increase the students’ further development and understanding of these dimensions and empower them to achieve and maintain high levels.

Conclusion

In conclusion, the introductory health/wellness course was effective in inducing positive changes in the enrolled students’ wellness behaviors. Specifically, the course significantly increased the students’ wellness levels in the physical, social, and spiritual dimensions as well as the total wellness scores.

Recommendations

Based on the findings of this study, the following recommendations were made:

1. The “Effective Living” course taught at Middle Tennessee State University should be continued.
2. To further meet the needs of the students, modifications in the “Effective Living” course should be made to increase the students’ awareness of the intellectual, occupational, and emotional dimensions of wellness and how they affect well-being.
3. To ensure continuity of individual classes, a standard course outline should be developed for the course and followed by each instructor.
4. Because of the success of the “Effective Living” course in improving wellness levels of the students enrolled and that this could possible reduce future health care costs

and improve the quality of life of the students, it should be made a requirement for all students at Middle Tennessee State University.

5. Based on the findings of this study, follow-up studies should be conducted to determine if the “Effective Living” course has lasting effects on students in subsequent years.

APPENDICES

APPENDIX A

Proposal for the Institutional Review Board and Approval Letter

Proposal for the Institutional Review Board

***The Efficacy of an Introductory Health/Wellness Course in
Positively Changing Wellness Behaviors***

Steven Ross Murray
Box 96, Department of HPER

1. Description of proposed project.

The effect of an introductory health/wellness course in positively changing wellness behaviors will be investigated in my doctoral dissertation. The purpose of the study will be to evaluate the effectiveness of the "Effective Living" course currently being taught in the Health, Physical Education, Recreation, and Safety department.

2. Description of population, procedures, and methods.

Students enrolled in the "Effective Living" classes as well as students enrolled in two English general studies classes during the Fall, 1995 semester will serve as subjects for this investigation. All data will be collected using *Testwell®: Wellness Inventory--College Edition* in the first two weeks (pretest) and last week (posttest) of the Fall, 1995 semester during the scheduled class time for the courses. After reporting to each class at the regularly scheduled time, the instructor will provide oral directions for the subjects and will have the students complete *Testwell®: Wellness Inventory--College Edition*.

3. Oral directions for the students.

Your participation in this study is voluntary and will in no way affect your grade for the course. On the answer sheet provided, circle the number that best identifies your response to each corresponding statement. You can look upon these numbers as a sort of continuum --5 being the strongest or highest; 1 being the weakest or lowest. Read the questions carefully and compare your own behavior with that described in the question. Answer the questions on the basis of the following comparisons: My behavior matches the behavior described in the question: 5-90% or more of the time; 4-about 75% of the time; 3-about 50% of the time; 2-about 25% of the time; and 1-less than 10% of the time. Please answer all questions honestly and to the best of your ability. Please begin.



on-campus memo:

To: Steven R. Murray and Dr. Timothy Michael
From: Teresa L. Davis *TD*
Representative of College of Education
MTSU IRB
Re: "The Efficacy of an Introductory Health/Wellness
Course on Positively Changing Student Behavior"
(protocol: 96-010)
Date: September 13, 1995

Since your research involves the use of survey procedures, the confidentiality of the participants is protected, and there is no risk to the participants, it is approved according to 45 CFR Part 46. This approval is granted for one year only and must be reviewed by the committee on an annual basis if the project continues beyond the next 12 months; likewise any changes in the protocol require resubmission of your project for the committee approval. Best of luck on the successful completion of your project.

APPENDIX B

Oral Directions

Oral Directions

Instructors, please follow the directions below precisely.

1. Distribute (1) questionnaire and one (1) answer sheet to each student in the class.
2. Read the following instructions to the students:

On the answer sheet provided, circle the number that best identifies your response to each corresponding statement. You can look upon these numbers as a sort of continuum --5 being the strongest or highest; 1 being the weakest or lowest. Read the questions carefully and compare your own behavior with that described in the question. Answer the questions on the basis of the following comparisons:

My behavior matches the behavior described in the question:

- 5-90% or more of the time**
- 4-about 75% of the time**
- 3-about 50% of the time**
- 2-about 25% of the time**
- 1-less than 10% of the time**

Please answer all questions honestly and to the best of your ability. Please begin.

3. After the students have completed answering the questionnaire, collect both the questionnaire and answer sheet and place both in the envelope provided.
4. Please return the envelope with the completed answer sheets and questionnaires to my mailbox (Steve Murray) in the HPERS office. The office is located in Murphy Center.

APPENDIX C

Testwell®: Wellness Inventory--College Edition

NATIONAL WELLNESS INSTITUTE, INC.**College Version**

INSTRUCTIONS:

On the answer sheet provided, **please circle the number** that best identifies your response to each corresponding statement.

1. **Almost never** (less than 10% of the time)
 2. **Occasionally** (approximately 25% of the time)
 3. **Often** (approximately 50% of the time)
 4. **Very often** (approximately 75% of the time)
 5. **Almost always** (90% or more of the time)

◆ PHYSICAL FITNESS

1. I exercise aerobically (continuous, vigorous, sweat-producing exercise for 20-30 minutes) at least 3 times per week.
2. Stretching is a routine part of my exercise program.
3. I walk or cycle as a means of transportation whenever possible.
4. I include weight training in my exercise program at least 2 times per week.
5. If I am not in shape, I avoid sporadic (once a week or less) strenuous exercise. (If you are in shape, answer "5".)
6. I engage in an adequate amount of physical activity to keep my resting heart rate at 60 beats or less per minute.
7. My friends and family support my efforts to exercise regularly.
8. I know my exercise target heart rate and exercise within my target zone.
9. An integral part of my leisure time includes physical activity instead of TV viewing.
10. I maintain my body fat percentage in the acceptable range for my gender. (If you do not know your body fat percentage, answer "1".)

◆ NUTRITION

11. I eat a variety of wholesome, minimally processed foods (fruits, vegetables, whole grains and whole grain products, low fat dairy, and low fat/high protein foods) in moderation.
12. I drink at least eight 8-ounce glasses of water every day.
13. I consume all of my calories before 8:00 p.m.
14. I include cruciferous vegetables (cabbage, broccoli, cauliflower, Brussels sprouts) in my daily diet.
15. I limit my salt intake by not salting my food at the table.
16. I avoid eating foods that are high in fat (fatty cuts of meat, whole milk dairy products, fried foods, hot dogs, processed foods, rich desserts, and creamy sauces).
17. I eat at fast food restaurants once per week or less.
18. I include whole grain breads and/or cereals in my diet every day.
19. I maintain the recommended weight for my height and gender.
20. I eat at least five servings (one serving equals 1/2 cup) of fruits and/or vegetables every day.

Copyright © 1993 by the National Wellness Institute, Inc. All rights reserved. No part of this questionnaire may be reproduced, stored, or transmitted by any means—mechanical, electronic, or otherwise. National Wellness Institute, Inc., 1045 Clark Street, Suite 210, Stevens Point, WI 54481-2962. (715) 342-2969.

◆ SELF-CARE AND SAFETY

21. I refrain from riding with vehicle operators who are under the influence of alcohol or other drugs.
22. I examine my breasts or testes on a monthly basis.
23. I choose not to use tobacco products.
24. I get 6 - 8 hours of sleep every day.
25. I wear my seat belt and/or shoulder harness while traveling.
26. I floss my teeth every day.
27. When I travel on a motorcycle, bicycle, or all-terrain vehicle, I wear a helmet.
28. I take action to protect my skin from damage caused by overexposure to the sun, tanning booths, or sun lamps.
29. I choose to enjoy myself without the use of alcohol or drugs.
30. I maintain my blood cholesterol level within the range recommended by my doctor. (If you have never had your cholesterol checked, answer "1".)

◆ ENVIRONMENTAL WELLNESS

31. To conserve energy, I turn off lights and electrical appliances (such as stereos, televisions, or curling irons) when I am not using them.
32. I carpool or take as many riders as I safely can when I am driving a car. (If you do not drive, answer "5".)
33. In order to protect fish and wildlife, I cut or tear plastic six-pack rings before throwing them away. (If you do not use these items, answer "5".)
34. I do not purchase food packaged in styrofoam.
35. When I go shopping, I take my own reusable bag to carry my purchases rather than accept plastic or paper bags.
36. I do not let the faucet run while I am brushing my teeth, shaving, or washing my car.
37. I regularly recycle my paper, plastic, glass and aluminum.
38. I am involved in learning more about how I can protect the environment.
39. I encourage others to support efforts to protect the environment.
40. I purchase products made with recycled materials whenever possible.

◆ SOCIAL AWARENESS

41. My behavior reflects fairness and justice.
42. I contribute to the feeling of acceptance with my family, friends, and coworkers.
43. I resolve conflict in a positive and respectful manner.
44. I refrain from operating a vehicle while I am under the influence of alcohol or other drugs.
45. I keep up to date with world news.
46. I participate in local or national politics.
47. I help others in need.
48. When I notice a safety hazard, I take action to correct the situation.
49. I initiate discussions with individuals who are from a different cultural or ethnic background from me.
50. I participate in university/community events.

◆ EMOTIONAL AWARENESS AND SEXUALITY

51. I am able to develop close, intimate, personal relationships.
52. I respect the value of a long-term monogamous relationship.
53. I have positive relationships with men in my life.
54. I have positive relationships with women in my life.
55. I have satisfying relationships with other people that are not sexual in nature.
56. I respect other people's decisions to engage or not engage in sexual behavior.
57. I understand how sexually transmitted diseases, including AIDS, are spread.
58. If I engage in sexual intercourse I use reliable, proven methods to prevent unwanted pregnancy. (If you do not engage in sexual intercourse, answer "5".)
59. I respect the rights of others who have different sexual orientations.
60. If I engage in sexual behavior I take steps to minimize the risk of spreading or contracting sexually transmitted diseases. (If you do not engage in sexual behavior, answer "5".)

◆ EMOTIONAL MANAGEMENT

61. I express my feelings of anger in ways that are not hurtful to others.
62. I can say "no" without feeling guilty.
63. I can accept the things about myself that I cannot change.
64. I keep things in perspective.
65. I include relaxation time as part of my daily routine.
66. When I make mistakes, I learn from them.
67. I set realistic objectives for myself.
68. I can relax my body and mind without the use of drugs or alcohol.
69. I accept responsibility for my actions.
70. I accept responsibility for creating my own feelings.

◆ OCCUPATIONAL WELLNESS

81. Enjoyment is a consideration I use when making occupational choices.
82. I take advantage of opportunities to learn new skills which will enhance my future employment possibilities.
83. I am knowledgeable about the skills necessary for the occupations in which I am interested.
84. I am aware of the time commitment necessary to pursue the occupations of my choice.
85. I am aware of how plans for my personal life may affect future occupational choices.
86. I strive to attain a good work ethic.
87. I am satisfied with my ability to make my own choice of occupation.
88. I actively pursue information about different occupations that may be of interest to me.
89. I am aware of occupational choices that I am well suited for.
90. I am aware of my own strengths and skills.

◆ INTELLECTUAL WELLNESS

71. I keep informed about social and political issues.
72. I am interested in learning about scientific discoveries.
73. I make an effort to maintain and improve my writing and verbal skills.
74. I seek opportunities to learn new things.
75. I participate in activities such as visiting museums, exhibits, and zoos, or attending plays and concerts at least three times a year.
76. I watch educational programs on television or listen to educational programs on the radio.
77. I actively pursue learning about topics that interest me.
78. I read about different topics from a variety of newspapers, magazines, or books.
79. I gather information from several sources before making important decisions.
80. I am interested in understanding the views of others.

◆ SPIRITUALITY AND VALUES

91. I am satisfied with my spiritual life.
92. I spend a portion of every day in prayer, meditation, and/or personal reflection.
93. I feel a sense of connectedness with other human beings.
94. I am mainly guided by my "inner self" rather than the expectations of others.
95. I am concerned about humanitarian issues.
96. My values guide my daily life.
97. My leisure time activities are consistent with my values.
98. I respect the right of others to choose different values and beliefs.
99. I offer support to individuals who are seriously ill or dying.
100. I feel that my life has a positive purpose.



National Wellness Institute, Inc., 1045 Clark Street, Suite 210, Stevens Point, WI 54481-2962 (715) 342-2969

APPENDIX D

Pre- and Posttest Responses on *Testwell®: Wellness Inventory--College Edition*

APPENDIX D

Pre- and Posttest Responses on *Testwell®: Wellness Inventory--College Edition*

Treatment Group

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
1	1	291	36.2	232	31.2
	2	241	30.0	252	33.9
	3	117	14.6	97	13.1
	4	60	7.5	76	10.2
	5	94	11.7	86	11.6
2	1	31	3.9	150	20.2
	2	54	6.7	170	22.9
	3	174	21.7	116	15.6
	4	239	29.8	102	13.7
	5	305	38.0	205	27.6
3	1	161	20.0	176	23.7
	2	173	21.5	139	18.7
	3	184	22.9	160	21.5
	4	165	20.5	142	19.1
	5	120	14.9	126	17.0
4	1	507	63.1	376	50.6
	2	120	14.9	162	21.8
	3	57	7.1	73	9.8
	4	37	4.6	54	7.3
	5	82	10.2	78	10.5
5	1	132	16.4	103	13.9
	2	133	16.6	134	18.0
	3	182	22.7	146	19.7
	4	120	14.9	133	17.9
	5	236	29.4	227	30.6
6	1	116	14.4	92	12.4
	2	170	14.4	157	21.1
	3	204	25.4	201	27.1
	4	152	18.9	158	21.3
	5	161	20.0	135	18.2

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
7	1	176	21.9	120	16.2
	2	120	14.9	121	16.3
	3	156	19.4	144	19.4
	4	129	16.1	132	17.8
	5	222	27.6	226	30.4
8	1	373	46.5	198	26.6
	2	121	15.1	121	16.3
	3	118	14.7	151	20.3
	4	87	10.8	117	15.7
	5	104	13.0	156	21.0
9	1	162	20.2	111	14.9
	2	217	27.0	189	25.4
	3	238	29.6	216	29.1
	4	98	12.2	137	18.4
	5	88	11.0	90	12.1
10	1	486	60.5	344	46.3
	2	53	6.6	60	8.1
	3	80	10.0	94	12.7
	4	70	8.7	85	11.4
	5	114	14.2	160	21.5
11	1	62	7.7	58	7.8
	2	166	20.7	117	15.7
	3	232	28.9	245	33.0
	4	196	24.4	169	22.7
	5	147	18.3	154	20.7
12	1	206	25.7	177	23.8
	2	191	23.8	164	22.1
	3	154	19.2	170	22.9
	4	117	14.6	105	14.1
	5	135	16.8	127	17.1

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
13	1	198	24.7	129	17.4
	2	159	19.8	173	23.3
	3	182	22.7	176	23.7
	4	156	19.4	164	22.1
	5	108	13.4	101	13.6
14	1	216	26.9	184	24.8
	2	232	28.9	184	24.8
	3	177	22.0	170	22.9
	4	101	12.6	108	14.5
	5	77	9.6	97	13.1
15	1	195	24.3	157	21.1
	2	129	16.1	119	16.0
	3	95	11.8	109	14.7
	4	106	13.2	91	12.2
	5	278	34.6	267	35.9
16	1	201	25.0	138	18.6
	2	193	24.0	186	25.0
	3	182	22.7	188	25.3
	4	128	15.9	131	17.6
	5	99	12.3	100	13.5
17	1	183	22.8	153	20.6
	2	154	19.2	142	19.1
	3	142	17.7	117	15.7
	4	115	14.3	105	14.1
	5	209	26.0	226	30.4
18	1	93	11.6	61	8.2
	2	143	17.8	109	14.7
	3	168	20.9	188	25.3
	4	169	21.0	156	21.0
	5	230	28.6	229	30.8

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
19	1	124	15.4	93	12.5
	2	112	13.9	104	14.0
	3	128	15.9	134	18.0
	4	142	17.7	141	19.0
	5	297	37.0	271	36.5
20	1	146	18.2	133	17.9
	2	240	29.9	209	28.1
	3	224	27.9	208	28.0
	4	112	13.9	123	16.6
	5	81	10.1	70	9.4
21	1	39	4.9	30	4.0
	2	57	7.1	43	5.8
	3	88	11.0	96	12.9
	4	107	13.3	106	14.3
	5	512	63.8	468	63.0
22	1	331	41.2	220	29.6
	2	161	20.0	136	18.3
	3	130	16.2	157	21.1
	4	77	9.6	90	12.1
	5	104	13.0	140	18.8
23	1	197	24.5	171	23.0
	2	40	5.0	50	6.7
	3	42	5.2	42	5.7
	4	27	3.4	39	5.2
	5	497	61.9	441	59.4
24	1	33	4.1	34	4.6
	2	96	12.0	71	9.6
	3	141	17.6	132	17.8
	4	167	20.8	187	25.2
	5	366	45.6	319	42.9
25	1	65	8.1	51	6.9
	2	50	6.2	41	5.5
	3	71	8.8	72	9.7
	4	66	8.2	81	10.9
	5	551	68.6	498	67.0

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
26	1	269	33.5	219	29.5
	2	188	23.4	171	23.0
	3	196	24.4	172	23.1
	4	86	10.7	99	13.3
	5	64	8.0	82	11.0
27	1	223	27.8	140	18.8
	2	57	7.1	63	8.5
	3	74	9.2	64	8.6
	4	57	7.1	63	8.5
	5	392	48.8	413	55.6
28	1	139	17.3	76	10.2
	2	128	15.9	98	13.2
	3	136	16.9	161	21.7
	4	128	15.9	134	18.0
	5	272	33.9	274	36.9
29	1	65	8.1	55	7.4
	2	98	12.2	73	9.8
	3	152	18.9	166	22.3
	4	131	16.3	117	15.7
	5	357	44.5	332	44.7
30	1	475	59.2	375	50.5
	2	42	5.2	34	4.6
	3	58	7.2	83	11.2
	4	65	8.1	75	10.1
	5	163	20.3	176	23.7
31	1	28	3.5	25	3.4
	2	38	4.7	40	5.4
	3	81	10.1	102	13.7
	4	166	20.7	152	20.5
	5	490	61.0	424	57.1
32	1	142	17.7	105	14.1
	2	128	15.9	115	15.5
	3	192	23.9	172	23.1
	4	159	19.8	145	19.5
	5	182	22.7	206	27.7

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
33	1	158	19.7	120	16.2
	2	49	6.1	53	7.1
	3	65	8.1	72	9.7
	4	79	9.8	88	11.8
	5	452	56.3	410	55.2
34	1	175	21.8	123	16.6
	2	121	15.1	117	15.7
	3	189	23.5	221	29.7
	4	150	18.7	119	16.0
	5	168	20.9	163	21.9
35	1	711	88.5	589	79.3
	2	50	6.2	56	7.5
	3	21	2.6	41	5.5
	4	10	1.2	27	3.6
	5	11	1.4	30	4.0
36	1	281	35.0	200	26.9
	2	107	13.3	110	14.8
	3	128	15.9	118	15.9
	4	86	10.7	96	12.9
	5	201	25.0	219	29.5
37	1	280	34.9	237	31.9
	2	165	20.5	131	17.5
	3	148	18.4	160	21.5
	4	79	9.8	81	10.9
	5	131	16.3	134	18.0
38	1	244	30.4	179	24.1
	2	198	24.7	174	23.4
	3	189	23.5	188	25.3
	4	82	10.2	90	12.1
	5	90	11.2	112	15.1
39	1	173	21.5	116	15.6
	2	169	21.0	149	20.1
	3	170	21.2	184	24.8
	4	124	15.4	116	15.6
	5	167	20.8	178	24.0

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
40	1	96	12.0	72	9.7
	2	157	19.6	142	19.1
	3	226	28.1	209	28.1
	4	139	17.3	117	15.7
	5	185	23.0	203	27.3
41	1	10	1.2	10	1.3
	2	29	3.6	18	2.4
	3	106	13.2	92	12.4
	4	236	29.4	225	30.3
	5	422	52.6	398	53.6
42	1	5	0.6	14	1.9
	2	28	3.5	17	2.3
	3	89	11.1	77	10.4
	4	212	26.4	186	25.0
	5	469	58.4	449	60.4
43	1	13	1.6	11	1.5
	2	38	4.7	33	4.4
	3	163	20.3	149	20.1
	4	274	34.1	249	33.5
	5	315	39.2	301	40.5
44	1	33	4.1	17	2.3
	2	47	5.9	46	6.2
	3	81	10.1	84	11.3
	4	120	14.9	106	14.3
	5	522	65.0	490	65.9
45	1	47	5.9	39	5.2
	2	114	14.2	72	9.7
	3	228	28.4	220	29.6
	4	226	28.1	210	28.3
	5	188	23.4	202	27.2
46	1	337	42.0	270	36.3
	2	179	22.3	161	21.7
	3	139	17.3	131	17.6
	4	74	9.2	85	11.4
	5	74	9.2	96	12.9

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
47	1	10	1.2	10	1.3
	2	63	7.8	48	6.5
	3	141	17.6	153	20.6
	4	257	32.0	215	28.9
	5	232	41.3	317	42.7
48	1	52	6.5	34	4.6
	2	118	14.7	92	12.4
	3	228	28.4	213	28.7
	4	237	29.5	196	26.4
	5	168	20.9	208	28.0
49	1	80	10.0	64	8.6
	2	140	17.4	92	12.4
	3	184	22.9	196	26.4
	4	178	22.2	155	20.9
	5	221	27.5	236	31.8
50	1	170	21.2	138	18.6
	2	187	23.3	169	22.7
	3	200	24.9	188	25.3
	4	132	16.4	117	15.7
	5	114	14.2	131	17.6
51	1	28	3.5	26	3.5
	2	66	8.2	45	6.1
	3	105	13.1	94	12.7
	4	164	20.4	145	19.5
	5	440	54.8	433	58.3
52	1	10	1.2	9	1.2
	2	14	1.7	25	3.4
	3	41	5.1	48	6.5
	4	77	9.6	67	9.0
	5	661	82.3	594	79.9
53	1	67	8.3	39	5.2
	2	34	4.2	27	3.6
	3	92	11.5	101	13.6
	4	163	20.3	134	18.0
	5	447	55.7	442	59.5

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
54	1	28	3.5	19	2.6
	2	35	4.4	35	4.7
	3	79	9.8	77	10.4
	4	169	21.0	145	19.5
	5	492	61.3	467	62.9
55	1	15	1.9	15	2.0
	2	15	1.9	19	2.6
	3	75	9.3	66	2.9
	4	139	17.3	124	16.7
	5	559	69.6	519	69.9
56	1	12	1.5	13	1.7
	2	10	1.2	12	1.6
	3	42	5.2	50	6.7
	4	90	11.2	86	11.6
	5	649	80.8	582	78.3
57	1	2	0.2	6	0.8
	2	8	1.0	4	0.5
	3	14	1.7	18	2.4
	4	39	4.9	45	6.1
	5	740	92.2	670	90.2
58	1	27	3.4	17	2.3
	2	26	3.2	26	3.5
	3	49	6.1	60	8.1
	4	184	22.9	157	21.1
	5	517	64.4	483	65.0
59	1	71	8.8	66	8.9
	2	57	7.1	49	6.6
	3	114	14.2	107	14.4
	4	142	17.7	126	17.0
	5	419	52.2	395	53.2
60	1	53	6.6	43	5.8
	2	47	5.9	41	5.5
	3	69	8.6	89	12.0
	4	168	20.9	139	18.7
	5	466	58.0	431	58.0

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
61	1	17	2.1	10	1.3
	2	42	5.2	37	5.0
	3	193	24.0	170	22.9
	4	265	33.0	253	34.1
	5	286	35.6	273	36.7
62	1	45	5.6	33	4.4
	2	104	13.0	93	12.5
	3	195	24.3	163	21.9
	4	208	25.9	210	28.3
	5	251	31.3	244	32.8
63	1	34	4.2	27	3.6
	2	89	11.1	68	9.2
	3	169	21.0	161	21.7
	4	270	33.6	231	31.1
	5	241	30.0	256	34.5
64	1	9	1.1	11	1.5
	2	52	6.5	43	5.8
	3	183	22.8	155	20.9
	4	306	38.1	272	36.6
	5	253	31.5	262	35.3
65	1	66	8.2	58	7.8
	2	93	11.6	77	10.4
	3	144	17.9	151	20.3
	4	172	21.4	156	21.0
	5	328	40.8	301	40.5
66	1	6	0.7	7	0.9
	2	28	3.5	26	3.5
	3	111	13.8	112	15.1
	4	239	29.8	225	30.3
	5	419	52.2	373	50.2
67	1	13	1.6	18	2.4
	2	39	4.9	29	3.9
	3	158	19.7	156	21.0
	4	296	36.9	251	33.8
	5	297	37.0	289	38.9

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
68	1	18	2.2	15	2.0
	2	35	4.4	36	4.8
	3	73	9.1	71	9.6
	4	117	14.6	115	15.5
	5	560	69.7	506	68.1
69	1	2	0.2	6	0.8
	2	9	1.1	12	1.6
	3	42	5.2	63	8.5
	4	188	23.4	154	20.7
	5	562	70.0	508	68.4
70	1	6	0.7	11	1.5
	2	20	2.5	20	2.7
	3	96	12.0	89	12.0
	4	207	25.8	192	25.8
	5	474	59.0	431	58.0
71	1	64	8.0	45	6.1
	2	113	14.1	80	10.8
	3	222	27.6	232	31.2
	4	228	28.4	185	24.9
	5	176	21.9	201	27.1
72	1	72	9.0	69	9.3
	2	143	17.8	106	14.3
	3	197	24.5	202	27.2
	4	179	22.3	159	21.4
	5	212	26.4	207	27.9
73	1	26	3.2	21	2.8
	2	66	8.2	68	9.2
	3	186	23.2	177	23.8
	4	227	28.3	185	24.9
	5	298	37.1	292	39.3
74	1	12	1.5	11	1.5
	2	43	5.4	44	5.9
	3	102	12.7	113	15.2
	4	263	32.8	213	28.7
	5	383	47.7	362	48.7

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
75	1	60	7.5	53	7.1
	2	73	9.1	80	10.8
	3	118	14.7	116	15.6
	4	148	18.4	147	19.8
	5	404	50.3	347	46.7
76	1	97	12.1	68	9.2
	2	145	18.1	116	15.6
	3	190	23.7	187	25.2
	4	170	21.2	147	19.8
	5	201	25.0	225	30.3
77	1	14	1.7	11	1.5
	2	47	5.9	35	4.7
	3	142	17.7	122	16.4
	4	221	27.5	206	27.7
	5	379	47.2	369	49.7
78	1	30	3.7	26	3.5
	2	90	11.2	67	9.0
	3	201	25.0	182	24.5
	4	217	27.0	178	24.0
	5	265	33.0	290	39.0
79	1	47	5.9	34	4.6
	2	111	13.8	86	11.6
	3	237	29.5	197	26.5
	4	219	27.3	194	26.1
	5	189	23.5	232	31.2
80	1	12	1.5	12	1.6
	2	39	4.9	45	6.1
	3	155	19.3	134	18.0
	4	255	31.8	207	27.9
	5	342	42.6	345	46.4
81	1	12	1.5	7	0.9
	2	22	2.7	19	2.6
	3	88	11.0	89	12.0
	4	234	29.1	194	26.1
	5	447	55.7	434	58.4

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
82	1	8	1.0	9	1.2
	2	15	1.9	19	2.6
	3	95	11.8	95	12.8
	4	242	30.1	195	26.2
	5	443	55.2	425	57.2
83	1	10	1.2	7	0.9
	2	26	3.2	26	3.5
	3	101	12.6	74	10.0
	4	246	30.6	230	31.0
	5	420	52.3	406	54.6
84	1	11	1.4	7	0.9
	2	16	2.0	17	2.3
	3	80	10.0	65	8.7
	4	203	25.3	187	25.2
	5	493	61.4	467	62.9
85	1	7	0.9	4	0.5
	2	13	1.6	17	2.3
	3	52	6.5	67	9.0
	4	201	25.0	168	22.6
	5	530	66.0	487	65.5
86	1	1	0.1	7	0.9
	2	19	2.4	20	2.7
	3	66	8.2	57	7.7
	4	169	21.0	163	21.9
	5	548	68.2	496	66.8
87	1	12	1.5	9	1.2
	2	18	2.2	16	2.2
	3	58	7.2	54	7.3
	4	174	21.7	163	21.9
	5	541	67.4	501	67.4
88	1	26	3.2	23	3.1
	2	64	8.0	40	5.4
	3	183	22.8	149	20.1
	4	245	30.5	185	24.9
	5	285	35.5	346	46.6

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
89	1	18	2.2	19	2.6
	2	38	4.7	37	5.0
	3	134	16.7	100	13.5
	4	232	28.9	208	28.0
	5	381	47.4	379	51.0
90	1	5	0.6	10	1.3
	2	24	3.0	24	3.2
	3	91	11.3	78	10.5
	4	256	31.9	217	29.2
	5	427	53.2	414	55.7
91	1	55	6.8	43	5.8
	2	93	11.6	68	9.2
	3	206	25.7	172	23.1
	4	198	24.7	197	26.5
	5	251	31.3	263	35.4
92	1	130	16.2	99	13.3
	2	150	18.7	138	18.6
	3	179	22.3	155	20.9
	4	139	17.3	115	15.5
	5	205	25.5	236	31.8
93	1	41	5.1	26	3.5
	2	89	11.1	70	9.4
	3	203	25.3	182	24.5
	4	237	29.0	206	27.7
	5	233	29.0	259	34.9
94	1	32	4.0	31	4.2
	2	80	10.0	61	8.2
	3	206	25.7	173	23.3
	4	252	31.4	223	30.0
	5	233	29.0	255	34.3
95	1	43	5.4	31	4.2
	2	78	9.7	69	9.3
	3	201	25.0	174	23.4
	4	237	29.5	190	25.6
	5	244	30.4	279	37.6

Question	Pretest			Posttest	
	Response	Frequency	Percentage	Frequency	Percentage
96	1	17	2.1	12	1.6
	2	35	4.4	29	3.9
	3	149	18.6	135	18.2
	4	223	27.8	200	26.9
	5	379	47.2	367	49.4
97	1	31	3.9	16	2.2
	2	54	6.7	47	6.3
	3	174	21.7	143	19.2
	4	239	29.8	214	28.2
	5	305	38.0	323	43.5
98	1	16	2.0	12	1.6
	2	26	3.2	27	3.6
	3	73	9.1	85	11.4
	4	164	20.4	129	17.4
	5	524	65.3	490	65.9
99	1	41	5.1	34	4.6
	2	66	8.2	34	4.6
	3	116	14.4	128	17.2
	4	194	24.2	171	23.0
	5	386	48.1	376	50.6
100	1	16	2.0	12	1.6
	2	20	2.5	21	2.8
	3	66	8.2	86	11.6
	4	159	19.8	124	16.7
	5	542	67.5	500	67.3

Control Group

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
1	1	20	35.1	15	33.3
	2	12	21.1	12	26.7
	3	8	14	4	8.9
	4	6	10.5	6	13.3
	5	11	19.3	8	17.8
2	1	10	17.5	6	13.3
	2	10	17.5	9	20
	3	8	14	8	17.8
	4	11	19.3	9	20
	5	18	31.6	13	28.9
3	1	12	21.1	11	24.4
	2	15	26.3	10	22.2
	3	13	17.5	11	24.4
	4	9	15.8	8	17.8
	5	11	19.3	5	11.1
4	1	31	54.4	23	51.1
	2	7	12.3	8	17.8
	3	5	8.8	5	11.1
	4	5	8.8	4	8.9
	5	9	15.8	5	11.1
5	1	5	8.8	6	13.3
	2	7	12.3	8	17.8
	3	9	15.8	8	17.8
	4	14	24.6	8	17.8
	5	22	38.6	15	33.3
6	1	5	8.8	9	20
	2	8	14	6	13.3
	3	16	28.1	10	22.2
	4	15	26.3	11	24.4
	5	13	22.8	9	20

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
7	1	6	10.5	6	13.3
	2	11	19.3	5	11.1
	3	10	17.5	10	22.2
	4	6	10.5	10	22.2
	5	24	42.1	14	31.1
8	1	24	42.1	10	22.2
	2	7	12.3	9	20
	3	5	14	8	17.8
	4	10	14.5	10	22.2
	5	8	14	8	17.8
9	1	8	14	9	20
	2	13	22.8	6	13.3
	3	15	26.3	10	22.2
	4	12	21.1	8	17.8
	5	9	15.8	12	26.7
10	1	34	59.6	19	42.2
	2	1	1.8	3	6.7
	3	6	10.5	5	11.1
	4	5	8.8	7	15.6
	5	11	19.3	11	24.4
11	1	5	8.8	1	2.2
	2	5	8.8	4	8.8
	3	13	22.8	8	17.8
	4	18	31.6	14	31.1
	5	16	28.1	18	40
12	1	7	12.3	4	8.9
	2	11	19.3	13	28.9
	3	19	33.3	14	31.1
	4	10	17.5	2	4.4
	5	10	17.5	12	26.7

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
13	1	11	19.3	6	13.3
	2	12	21.1	9	20
	3	11	19.3	12	26.7
	4	16	28.1	9	20
	5	7	12.3	9	20
14	1	13	22.8	6	13.3
	2	10	17.5	8	17.8
	3	17	29.8	9	20
	4	10	17.5	9	20
	5	7	12.3	13	28.9
15	1	5	8.8	4	8.9
	2	8	14	11	24.4
	3	7	12.3	4	8.9
	4	9	15.8	6	13.3
	5	28	49.1	20	44.4
16	1	10	17.5	3	6.7
	2	12	21.1	9	20
	3	14	24.6	9	20
	4	12	21.1	12	26.7
	5	9	15.8	12	26.7
17	1	14	24.6	10	22.2
	2	12	21.1	7	15.6
	3	12	21.1	7	15.6
	4	8	14	5	11.1
	5	11	19.3	16	35.6
18	1	3	5.3	3	6.7
	2	7	12.3	5	11.1
	3	11	19.3	8	17.8
	4	14	24.6	13	28.9
	5	22	38.6	16	35.6

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
19	1	5	8.8	3	6.7
	2	9	15.8	5	11.1
	3	10	17.5	9	20
	4	10	17.5	10	22.2
	5	23	40.4	18	40
20	1	12	21.1	3	6.7
	2	12	21.1	10	22.2
	3	16	28.1	15	33.3
	4	11	19.3	7	15.6
	5	6	10.5	10	22.2
21	1	2	3.5	2	4.4
	2	6	10.5	3	6.7
	3	4	7	5	11.1
	4	2	3.5	4	8.9
	5	43	75.4	31	68.9
22	1	17	29.8	5	11.1
	2	6	10.5	9	20
	3	5	8.8	7	15.6
	4	9	15.8	11	24.4
	5	20	35.1	13	28.9
23	1	15	26.3	8	17.8
	2	4	7	6	13.3
	3	2	3.5	2	4.4
	4	3	5.3	5	11.1
	5	33	57.9	24	53.3
24	1	2	3.5	4	8.9
	2	9	15.8	6	13.3
	3	8	14	7	15.6
	4	17	29.8	13	28.9
	5	21	36.8	15	33.3

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
25	1	3	5.3	3	6.7
	2	4	7	2	4.4
	3	4	7	4	8.9
	4	6	10.5	1	2.2
	5	40	70.2	35	77.8
26	1	18	31.6	11	24.4
	2	12	21.1	9	20
	3	13	22.8	10	22.2
	4	6	10.5	12	26.7
	5	8	14	3	6.7
27	1	10	17.5	6	13.3
	2	8	14	5	11.1
	3	6	10.5	8	17.8
	4	8	14	6	13.3
	5	25	43.9	20	44.4
28	1	8	14	1	2.2
	2	5	8.8	1	2.2
	3	10	17.5	13	28.9
	4	10	17.5	9	20
	5	24	42.1	21	46.7
29	1	5	8.8	5	11.1
	2	7	12.3	3	6.7
	3	13	22.8	12	26.7
	4	10	17.5	8	17.8
	5	22	38.6	17	37.8
30	1	38	66.7	18	40
	2	3	5.3	2	4.4
	3	2	3.5	7	15.6
	4	2	3.5	9	20
	5	12	21.1	9	20

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
31	1	2	3.5	1	2.2
	2	2	3.5	1	2.2
	3	7	12.3	3	6.7
	4	13	22.8	8	17.8
	5	33	57.9	32	71.1
32	1	7	12.3	2	4.4
	2	6	10.5	8	17.8
	3	17	29.8	11	24.4
	4	14	24.6	13	28.9
	5	13	22.8	11	24.4
33	1	9	15.8	8	17.8
	2	3	5.3	3	6.7
	3	2	3.5	7	15.6
	4	6	10.5	4	8.9
	5	37	64.9	23	51.1
34	1	8	14	7	15.6
	2	9	15.8	7	15.6
	3	13	22.8	12	26.7
	4	12	21.1	6	13.3
	5	15	26.3	13	28.9
35	1	50	87.7	30	66.7
	2	5	8.8	4	8.9
	3	1	1.8	4	8.9
	4	0	0	2	4.4
	5	1	1.8	5	11.1
36	1	9	15.8	9	20
	2	11	19.3	4	8.9
	3	9	15.8	7	15.6
	4	9	15.8	5	11.1
	5	19	33.3	20	44.4

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
37	1	13	22.8	9	20
	2	17	29.8	7	15.6
	3	10	17.5	10	22.2
	4	5	8.8	6	13.3
	5	12	21.1	13	28.9
38	1	16	28.1	8	17.8
	2	12	21.1	7	15.6
	3	15	26.3	9	20
	4	3	5.3	11	24.4
	5	11	19.3	10	22.2
39	1	9	15.8	6	13.3
	2	8	14	8	17.8
	3	15	26.3	9	20
	4	8	14	9	20
	5	17	29.8	13	28.9
40	1	4	7	4	8.9
	2	12	21.1	7	15.6
	3	12	21.1	10	22.2
	4	10	17.5	7	15.6
	5	19	33.3	17	37.8
41	1	1	1.8	1	2.2
	2	0	0	0	0
	3	7	12.3	2	4.4
	4	14	24.6	14	31.1
	5	35	61.4	28	62.2
42	1	0	0	0	0
	2	0	0	1	2.2
	3	5	8.8	4	8.9
	4	18	31.6	12	26.7
	5	34	59.6	28	62.2

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
43	1	0	0	1	2.2
	2	2	1.8	2	4.4
	3	3	14	5	11.1
	4	4	36.8	16	35.6
	5	5	47.4	21	46.7
44	1	1	1.8	2	4.4
	2	2	3.5	1	2.2
	3	7	12.3	4	8.9
	4	6	10.5	8	17.8
	5	41	71.9	30	66.7
45	1	3	5.3	2	4.4
	2	5	8.8	5	11.1
	3	13	22.8	18	40
	4	21	36.8	10	22.2
	5	15	26.3	10	22.2
46	1	25	43.9	15	33.3
	2	10	17.5	5	11.1
	3	9	15.8	9	20
	4	6	10.5	7	15.6
	5	7	12.3	9	20
47	1	1	1.8	0	0
	2	2	3.5	4	8.9
	3	11	19.3	8	17.8
	4	20	35.1	13	28.9
	5	23	40.4	20	44.4
48	1	0	0	0	0
	2	7	12.3	5	11.1
	3	18	31.6	7	15.6
	4	16	28.1	16	35.6
	5	16	28.1	17	37.8

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
49	1	5	8.8	1	2.2
	2	6	10.5	5	11.1
	3	12	21.1	11	24.4
	4	15	26.3	10	22.2
	5	19	33.3	18	40
50	1	9	15.8	8	17.8
	2	9	15.8	6	13.3
	3	17	29.8	16	35.6
	4	10	17.5	8	17.8
	5	12	21.1	7	15.6
51	1	2	3.5	2	4.4
	2	6	10.5	4	8.9
	3	7	12.3	9	20
	4	9	15.8	6	13.3
	5	33	57.9	24	53.3
52	1	1	1.8	1	2.2
	2	0	0	2	4.4
	3	2	3.5	4	8.9
	4	6	10.5	6	13.3
	5	48	84.2	32	71.1
53	1	7	12.3	3	6.7
	2	2	3.5	2	4.4
	3	9	15.8	5	11.1
	4	10	17.5	9	20
	5	29	50.9	26	57.8
54	1	0	0	2	4.4
	2	1	1.8	1	2.2
	3	7	12.3	1	2.2
	4	10	17.5	9	20
	5	39	68.4	32	71.1

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
55	1	0	0	2	4.4
	2	2	3.5	3	6.7
	3	5	8.8	3	6.7
	4	9	15.8	7	15.6
	5	41	71.9	30	66.7
56	1	2	3.5	2	4.4
	2	1	1.8	5	11.1
	3	1	1.8	1	2.2
	4	3	5.3	5	11.1
	5	50	87.7	32	71.1
57	1	0	0	1	2.2
	2	0	0	2	4.4
	3	1	1.8	1	2.2
	4	2	3.5	4	8.9
	5	54	94.7	37	82.2
58	1	1	1.8	0	0
	2	2	3.5	0	0
	3	3	5.3	6	13.3
	4	14	24.6	8	17.8
	5	37	64.9	31	68.9
59	1	3	5.3	3	6.7
	2	6	10.5	3	6.7
	3	8	14	6	13.3
	4	12	21.1	10	22.2
	5	28	49.1	23	51.1
60	1	3	5.3	1	2.2
	2	2	3.5	3	6.7
	3	2	3.5	3	6.7
	4	18	31.6	7	15.6
	5	32	56.1	31	68.9

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
61	1	2	3.5	5	11.1
	2	2	3.5	2	4.4
	3	12	21.1	9	20
	4	18	31.6	13	28.9
	5	23	40.4	16	35.6
62	1	2	3.5	2	4.4
	2	6	10.5	7	15.6
	3	13	22.8	9	20
	4	12	21.1	8	17.8
	5	24	42.1	19	42.2
63	1	1	1.8	2	4.4
	2	11	19.3	5	11.1
	3	7	12.3	8	17.8
	4	15	26.3	11	24.4
	5	23	40.4	19	42.2
64	1	0	0	0	0
	2	2	3.5	1	2.2
	3	5	8.8	8	17.8
	4	29	50.9	19	42.2
	5	21	36.8	17	37.8
65	1	3	5.3	1	2.2
	2	7	12.3	5	11.1
	3	6	10.5	8	17.8
	4	16	28.1	13	28.9
	5	25	43.9	18	40
66	1	1	1.8	1	2.2
	2	1	1.8	3	6.7
	3	3	5.3	2	4.4
	4	23	40.4	20	44.4
	5	29	50.9	19	42.2

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
67	1	1	1.8	1	2.2
	2	1	1.8	2	4.4
	3	11	19.3	5	11.1
	4	23	40.4	16	35.6
	5	21	36.8	21	46.7
68	1	1	1.8	2	4.4
	2	1	1.8	3	6.7
	3	7	12.3	6	13.3
	4	10	17.5	7	15.6
	5	38	66.7	27	60
69	1	1	1.8	0	0
	2	0	0	2	4.4
	3	3	5.3	3	6.7
	4	11	19.3	11	24.4
	5	42	73.7	29	64.4
70	1	0	0	0	0
	2	0	0	3	6.7
	3	2	3.5	3	6.7
	4	18	31.6	14	31.1
	5	37	64.9	25	55.6
71	1	4	7	1	2.2
	2	3	5.3	6	13.3
	3	17	29.8	14	31.1
	4	15	26.3	15	33.3
	5	18	31.6	9	20
72	1	3	5.3	4	8.9
	2	8	14	5	11.1
	3	7	12.3	6	13.3
	4	21	36.8	14	31.1
	5	18	31.6	16	35.6

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
73	1	1	1.8	1	2.2
	2	6	10.5	3	6.7
	3	11	19.3	8	17.8
	4	12	21.1	19	42.2
	5	27	47.4	14	31.1
74	1	0	0	0	0
	2	3	5.3	2	4.4
	3	7	12.3	10	22.2
	4	15	26.3	17	37.8
	5	32	56.1	16	35.6
75	1	3	5.3	1	2.2
	2	4	7	7	15.6
	3	5	8.8	10	22.2
	4	8	14	4	8.9
	5	37	64.9	23	51.1
76	1	7	12.3	2	4.4
	2	5	8.8	4	8.9
	3	14	24.6	11	24.4
	4	13	22.8	11	24.47
	5	18	31.6	17	37.8
77	1	0	0	1	2.2
	2	2	3.5	2	4.4
	3	6	10.5	7	15.6
	4	14	24.6	13	28.9
	5	35	61.4	22	48.9
78	1	2	3.5	0	0
	2	3	5.3	3	6.7
	3	6	10.5	13	28.9
	4	23	40.4	10	22.2
	5	23	40.47	19	42.2

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
79	1	3	5.3	0	0
	2	5	8.8	3	6.7
	3	15	26.3	12	26.7
	4	20	35.1	16	35.6
	5	14	24.6	14	31.1
80	1	0	0	0	0
	2	1	1.8	1	2.2
	3	9	15.8	7	15.6
	4	24	42.1	17	37.8
	5	23	40.4	20	44.4
81	1	1	1.8	1	2.2
	2	1	1.8	1	2.2
	3	4	7	7	15.6
	4	17	29.8	10	22.2
	5	34	59.6	26	57.8
82	1	0	0	1	2.2
	2	2	3.5	3	6.7
	3	1	1.8	4	8.9
	4	17	29.8	11	24.4
	5	37	64.9	26	57.8
83	1	0	0	2	4.4
	2	2	3.5	2	4.4
	3	6	10.5	4	8.9
	4	16	28.1	11	24.4
	5	33	57.9	26	57.8
84	1	0	0	3	6.7
	2	0	0	1	2.2
	3	4	7	6	13.3
	4	16	28.1	10	22.2
	5	37	64.9	25	55.6

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
85	1	1	1.8	1	2.2
	2	1	1.8	1	2.2
	3	3	5.3	7	15.6
	4	12	21.1	11	24.4
	5	40	70.2	25	55.6
86	1	1	1.8	0	0
	2	0	0	1	2.2
	3	2	3.5	6	13.3
	4	18	31.6	6	13.3
	5	36	63.2	32	71.1
87	1	1	1.8	0	0
	2	0	0	2	4.4
	3	4	7	3	6.7
	4	14	24.6	10	22.2
	5	38	66.7	30	66.7
88	1	4	7	0	0
	2	6	10.5	4	8.9
	3	11	19.3	11	24.4
	4	14	24.6	11	24.4
	5	22	38.6	19	42.2
89	1	1	1.8	0	0
	2	2	3.5	4	8.9
	3	18	31.6	8	17.8
	4	17	29.8	7	15.6
	5	19	33.3	26	57.8
90	1	0	0	0	0
	2	3	5.3	1	2.2
	3	7	12.3	5	11.1
	4	18	31.6	10	22.2
	5	29	50.9	29	64.4

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
91	1	3	5.3	3	6.7
	2	8	14	5	11.1
	3	14	24.6	5	11.1
	4	15	26.3	11	24.4
	5	17	29.8	21	46.7
92	1	12	21.1	5	11.1
	2	16	28.1	4	8.9
	3	5	8.8	9	20
	4	8	14	10	22.2
	5	16	28.1	17	37.8
93	1	3	5.3	2	4.4
	2	8	14	5	11.1
	3	10	17.5	6	13.3
	4	17	29.8	14	31.1
	5	19	33.3	18	40
94	1	0	0	3	6.7
	2	4	7	1	2.2
	3	7	12.3	2	4.4
	4	23	40.4	15	33.3
	5	23	40.4	24	53.3
95	1	0	0	0	0
	2	7	12.3	2	4.4
	3	14	24.6	7	15.6
	4	13	22.8	20	44.4
	5	23	40.4	16	35.6
96	1	3	5.3	0	0
	2	1	1.8	2	4.4
	3	7	12.3	8	17.8
	4	18	31.6	14	31.1
	5	28	49.1	21	46.7

Question	Response	Pretest		Posttest	
		Frequency	Percentage	Frequency	Percentage
97	1	2	3.5	0	0
	2	2	3.5	0	0
	3	7	12.3	9	2
	4	26	45.6	17	37.8
	5	20	35.1	19	42.2
98	1	1	1.8	1	2.2
	2	1	1.8	2	4.4
	3	5	8.8	4	8.9
	4	7	12.3	8	17.8
	5	43	75.4	30	66.7
99	1	2	3.5	1	2.2
	2	2	3.5	1	2.2
	3	6	10.5	6	13.3
	4	15	26.3	11	24.4
	5	32	56.1	26	57.8
100	1	1	1.8	1	2.2
	2	2	3.5	0	0
	3	4	7	5	11.1
	4	9	15.8	11	24.4
	5	41	71.9	28	62.2

APPENDIX E
ANOVA Tables

.

APPENDIX E
ANOVA Tables

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	F	p
Analysis of Variance for Physical Dimension					
Time	1	8173.227	8173.227	26.51	0.0001
Error	1544	476078.997	308.341		
Total	1545	484252.204			
Analysis of Variance for Social Dimension					
Time	1	2124.727	2124.727	15.65	0.0001
Error	1544	209665.090	135.793		
Total	1545	211789.817			
Analysis of Variance for Emotional Dimension					
Time	1	18.287	18.287	0.17	0.6761
Error	1544	161672.909	104.710		
Total	1545	161691.196			
Analysis of Variance for Intellectual Dimension					
Time	1	176.040	176.040	2.76	0.0971
Error	1544	98650.982	63.893		
Total	1545	98827.023			
Analysis of Variance for Occupational Dimension					
Time	1	36.264	36.264	0.91	0.3398
Error	1544	61417.332	39.778		
Total	1545	61453.596			
Analysis of Variance for Spiritual Dimension					
Time	1	332.181	332.181	6.36	0.0118
Error	1544	80685.356	52.257		
Total	1545	81017.537			

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	F	p
Analysis of Variance for Physical Fitness					
Time	1	1664.160	1664.160	22.75	0.001
Error	1544	112960.316	73.161		
Total	1545	114624.476			
Analysis of Variance for Nutrition					
Time	1	430.079	430.079	7.68	0.0057
Error	1544	86504.789	56.026		
Total	1545	86934.867			
Analysis of Variance for Self-Care and Safety					
Time	1	833.676	833.676	16.64	0.0001
Error	1544	77340.923	50.091		
Total	1545	78174.598			
Analysis of Variance for Environmental Wellness					
Time	1	786.056	786.056	13.71	0.0002
Error	1544	88512.906	57.327		
Total	1545	89298.965			
Analysis of Variance for Social Awareness					
Time	1	326.092	326.092	7.65	0.0057
Error	1544	65784.082	42.606		
Total	1545	66110.174			
Analysis of Variance for Emotions and Sexuality					
Time	1	3.342	3.342	0.11	0.7434
Error	1544	48144.629	31.182		
Total	1545	48147.972			

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	F	p
Analysis of Variance for Emotional Management					
Time	1	5.994	5.994	0.15	0.6971
Error	1544	61075.676	39.557		
Total	1545	61081.669			

BIBLIOGRAPHY

BIBLIOGRAPHY

- Archer, J., Probert, B. S., & Gage, L. (1987). College students' attitudes toward wellness. *Journal of College Student Personnel*, 28(4), 311-317.
- Ardell, D. B. (1979). *High-level wellness*. New York: Bantam Books.
- Carnegie foundation's report on college. (1986, November 15). *The Chronicle of Higher Education*. 16-22.
- Cmich, D. E. (1984). Theoretical perspectives of holistic health. *Journal of School Health*, 54(1): 30-32.
- Dobbs, H. T. (1994). Personal physical health--the wellness way. *Thresholds in Education*, 20(1): 8-12.
- Dunn, H. A. (1961). *High-level wellness*. Arlington, VA: R. W. Beatty.
- Eberst, R. M. (1984). Defining health: a multidimensional model. *Journal of School Health*, 54(3): 99-104.
- Greenberg, J. S. (1985). Health and wellness: a conceptual differentiation. *Journal of School Health*, 55(10): 403-406.
- Griffin, T. B., Klinzing, J. E., & Ziegler, S. G. (1983). *A comparative study on the effects of traditional versus wholistic physical fitness programs*. (ERIC, ED 266 129), 34.
- Hettler, W. (1980). Wellness promotion on a university campus. *Journal of Health Promotion*, 3: 77-92.
- Horowitz, L. G. (1985). The self-care motivatin model: theory and practice in healthy human development. *Journal of School Health*, 55(2): 57-61.
- Kushner, R. I. & Hartigan, P. (1983). *An evaluation of the impact of a wellness course in the undergraduate psychology curriculum*. (ERIC, ED 240 459), 26.
- Miller, N. P. & Robinson, D. M. (1963). *The leisure age*. Belmont, CA: Wadsworth.
- McClanahan, B. S. (1990). *The influence of an undergraduate wellness course on lifestyle behaviors: a comparison of an activity-based course and a cognitive-based course*. (unpublished doctoral dissertation, Memphis State University, 1990).

- McMillan, L. (1986, February 19). Bran muffins at faculty meetings and 5-mile runs at lunch: this college is mecca for fitness buffs. *Chronicle of Higher Education*, 23.
- National Wellness Institute, Inc. (1993). *TestWell® : wellness inventory--college edition, user manual*. Stevens Point, WI: National Wellness Institute, Inc.
- Papenfuss, R. & Beier, B. (1984). Developing, implementing, and evaluating a wellness education program. *Journal of School Health*, 54(9): 360-362.
- Powers, D. (1994). Understanding and Working with an emphasis on wellness. *Thresholds in Education*, 20(1): 4-7.
- Robbins, G. (1994). Current wellness programs that are working: two emerge as national prototypes. *Thresholds in Education*, 20(1): 25-29.
- Robbins, G., Powers, D., & Rushton, J. (1992). A required fitness/wellness course that works. *Journal of physical education, recreation, and dance*, 63(2): 17-21.
- Sivik, S. J., Butts, E. A., Moors, K. K., & Hyde, S. A. (1992). College and university wellness programs: an assessment of current trends. *NASPA Journal*, 29(2): 136-142.
- Yarber, W. L. & Bobilya, L. J. (1980). Your health is up to you. *Independent School*, 40(1): 58-62.