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RELATIONSHIPS BETWEEN STUDENT VALUES, TEACHER VALUES, AND HEALTH ATTITUDES AMONG STUDENTS ENROLLED IN A COLLEGE-LEVEL PERSONAL HEALTH CLASS

A Dissertation

Presented for the

Doctor of Education

Degree

The University of Tennessee, Knoxville

Stephen Eric Bohnenblust

August 1980

3045042

DEDICATION

To my wife, Sandy

ACKNOWLEDGEMENTS

The author wishes to thank his wife, Sandy, for being a wife, friend, mother, counselor, and many other roles too numerous to mention. She gave her love freely to the two men in her life when they needed it most. Without her this degree would not have been possible. Words will never adequately express the love and affection that is hers.

The author wishes to thank the members of his doctoral committee--Dr. Bill C. Wallace, Chairman, Dr. Warren Huffman, Dr. Robert Kirk, Dr. Alan Lasater, and Dr. John Ray. Special thanks is due to Dr. Wallace for being there when he was most needed.

A special note of appreciation is given to Ms. Brenda Smith and Dr. Frank Steele for allowing me to have access to their classes.

A note of appreciation is due my parents, who provided me with the opportunity and encourgement to get a good education.

ABSTRACT

The purpose of this study was to determine the relationship between values and health-related attitudes among students enrolled in a college-level personal health class. This study sought to identify and describe what values and/or value systems were most related to positive attitude change in college students. The effect of sex and socioeconomic status on values and attitudes was examined. The Semantic Differential Health Attitudes Inventory was developed to measure health attitudes. The teacher of the personal health classes identified 24 major concepts. A pilot study was conducted to select the appropriate bipolar adjectives for each concept. The Rokeach Value Survey was used to measure values. The experimental group consisted of 41 students enrolled in two personal health classes taught by the same teacher. The control group consisted of 31 students from four English classes. Only students between the ages of 18 and 22, and never having had a health class in college, were used. A pretest which included the Rokeach Value Survey and the Semantic Differential Health Attitudes Inventory was given at the beginning of the winter semester, 1980. The Semantic Differential Health Attitudes Inventory was given as a posttest at the end of the winter semester.

Attitude change scores were calculated for the experimental and control groups. No differences between the attitude change scores of the experimental and control group were found. A regression analysis was calculated with the attitude change scores as the dependent variable and each of the 36 values as independent variables. No relationship was identified. A Spearman correlation was calculated between the

teacher's values and each of the student's values in the experimental group. The obtained correlation coefficients were quite low. A second Spearman correlation was calculated correlating the original correlation coefficients with the student's attitude change scores. A low correlation was found. Attitude change scores were not different according to the sex and socioeconomic status of the students. There was a high correlation between the values of males and females.

Based upon the results of this study, there are two significant conclusions that can be postulated, neither of which is definitive. The first possibility is that there is no identifiable relationship between values and health attitudes. The second possibility is that since the teacher-student value match was low, that there was sufficient teacher-student incompatibility that no attitude change occurred. A way to resolve this issue is to identify a situation where attitude change has occurred and to determine the relationship between values, attitudes and the relationship between the teacher-student value match and the student's attitude change score.

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CHAPTER I

INTRODUCTION

A basic premise that health educators share is that the end result of health education should be to improve the health of the population being educated. Exactly how this can and should be done has been and will continue to be a subject of debate for many years. Often the health educator resorts to the "shotgun" approach to instruction where pellets of knowledge, or values clarification, or affective education are shot at the students with the hope that some of them hit the target. Since a variety of methods are available it is time to evaluate these methods and find if they work and why they work.

Toward this end, it is necessary to develop a systematic approach to health instruction. In order to develop and evaluate methods it is necessary to have some type of philosophical view of mankind. One particular perspective is based on the concept that people should be studied in conjunction with all factors that influence their lifestyle. This implies a complex web between health behavior and all other aspects of an individual's lifestyle. These other aspects include such diverse areas as genetics, cultural differences, social mores, religious beliefs, and environmental influences.

An important implication of a holistic philosophy is that health education must be considered from a multidisciplinary point of view. While many health educators find the multidisciplinary aspect exciting and challenging, it nonetheless poses a tremendous problem for health education researchers. Health education researchers do not have the

advantage of working within well-defined parameters. Important contributions to health education come from such diverse areas as sociology, psychology, physiology, and medicine. This often leads to a situation where the prospective researcher is unable to assess how a particular health behavior fits in or relates to a person's overall lifestyle. For example, dental health education is often treated as an isolated behavior. What is rarely known by the researcher is what priority the person places on maintaining good dental health. If a person is psychologically immature, uncertain of his future, going through the trials and tribulations of adolescence, financially insecure, having parental problems, and believing that tooth loss is inevitable, how can the researcher reasonably make a case for dental health behavior being an isolated behavior? Yet the central focus or ultimate goal in health behavior is to develop positive health attitudes, and behavior (Galli, 1976).

Since the knowledge of how to accomplish this is still fragmented, health educators are essentially in a situation where judgment and intuition are more important than empirical data.

One problem in health education is to identify predisposing characteristics that influence the learning process. Some potentially viable areas include: socioeconomic status, personality, self-concept, and values. If these characteristics can be efficiently identified, then we should be able to determine if people with different characteristics have different outcomes, in terms of behavior, knowledge, and attitudes, after exposure to health instruction. After these relationships have been identified then instructional methods can be developed

that will take into account these individual differences.

The area of values has been identified as the predisposing characteristic most likely to be a factor in health education. By definition, values are defined as the core or central focus of human behavior (Rokeach, 1973). Values are to be separate from, but related to such concepts as needs, interests, desires, and attitudes. The basic premise is that there is a relationship between values and attitudes and behavior. Since values are defined as a core, it would appear to be more feasible to attempt to identify a small number of significant values rather than to identify specific attitudes and behavior for the multitude of potential situations. Unfortunately this idea is far more complex than it appears. The complexity of the relationship between values, attitudes, knowledge, and behavior is poorly understood. If " . . . the function of a health educator is to bridge the gap between what is known about optimum health practice and what is actually practiced" (Upchurch, 1976), then we must attempt to learn more about this relationship.

I. PURPOSE OF THE STUDY

The purpose of this study was to determine the differences and similarities between students and teacher value systems and health-related attitudes among students enrolled in a college-level personal health class.

II. STATEMENT OF THE PROBLEM

This study is based on the concept that the sum total of a person's experience, background, heredity, etc. influences his/her tendency toward attitude change. One of the most significant predisposing factors is a person's value system. This study attempted to answer the question: Do people with different value systems have statistically significant attitude changes after exposure to health instruction?

Based on this concept this study sought to answer the following questions:

1. Are health attitudes changed as a result of the instructional practices?

2. Is there a significant relationship between values and health attitudes among students?

3. Is the degree of agreement between the student and teacher value systems related to the student attitudinal change?

4. Is there a significant difference in values between socio-economic groups?

5. Is there a significant relationship between health attitudes and socioeconomic status?

6. Is there a significant difference in values between males and females?

7. Is there a significant difference in health attitudes between males and females?

III. NEED FOR THE STUDY

From the only study that attempted to determine the status of school health education on a national basis comes a general statement concerning the need for this type of study. A major conclusion of the School Health Education Study was that the types of things that should be taught in the public schools should be related to the needs of students (Sliepcevich, 1964). The plan of action recommended in the School Health Education Study had three components: (1) to identify problems, (2) to examine the source of these problems, and then (3) to proceed with a plan (Sliepcevich, 1964).

A crucial need in health education is to be able to evaluate existing health education programs and to suggest improvements. One potential method of fulfilling this need is to understand value systems and their relationship to health attitudes. Experience has shown that knowledge alone does not guarantee positive health behavior. If other factors could be identified that affect the utilization of knowledge, then perhaps the educational process could be structured so that a person's value system could be considered. Assuming man to be a rational animal, if this knowledge can be tied to a coherent, logical system, consistent with a person's value system, then it might not be so presumptious of health educators to believe that formal health instruction can be instrumental in improving the quality of life.

IV. BASIC ASSUMPTIONS

1. Responses to the Semantic Differential Health Attitudes Inventory were honest and accurate.

V. DELIMITATIONS

1. The study was restricted to those students enrolled in personal health classes at Western Kentucky University.

2. The data were collected during the spring semester, 1980.

3. The study was restricted to students between the ages 17-22.

VI. LIMITATIONS

1. Students were not randomly assigned to either the control group or the experimental group.

2. Questions 1 and 2 necessitated the use of parametric statistics on non-parametric data.

VII. DEFINITION OF TERMS

1. Attitude--" . . . An organization of several beliefs focused on a specific object (physical or social, concrete or abstract) or situation, predisposing one to respond in some preferential manner" (Rokeach, 1973).

2. Holistic--That philosophy or point of view that considers the total sum of the person and his/her environment.

3. Order effects--The tendency to rate two or more items in a systematic way based on the order of presentation to the respondent.

4. Value--"A value is an enduring belief that a specific mode of

conduct or end-state of existence is personally or socially preferable to an opposite or converse mode or end-state of existence" (Rokeach, 1973).

a. Terminal value--An idealized end-state of existence with two subheadings, personal, and social values (Rokeach, 1973).

b. Instrumental value--An idealized mode of behavior with two subheadings, those emphasizing moral ideals and those emphasizing competence (Rokeach, 1973).

5. Value system--"An enduring organization of beliefs concerning preferable modes of conduct or end-state of existence along a continuum of relative importance" (Rokeach, 1973).

CHAPTER II

REVIEW OF RELATED LITERATURE

The literature reviewed was classified into two groups: (1) Values and (2) Attitudes. The purpose of the literature review on values was to present background material on the development of values, the measurement of values, and the uses and potential uses of value instruments. The initial section will attempt to define what is meant by the term value and then to arrive at an acceptable definition that will be used throughout the literature review. The next section will examine the etiology of values and value systems, with special emphasis on theoretical and philosophical issues. After this section, there will be a discussion on the measurement of values, including the process that Milton Rokeach used to develop the Rokeach Value Survey. Criticisms as well as reliability and validity studies will be presented so that uses and limitations of the Rokeach Value Survey can be determined. Finally some of the uses of the Rokeach Value Survey will be examined with specific reference to those studies that have implications for this study.

The second part of the literature review will be concerned with attitudes. A brief rationale for studying attitudes will be presented along with a definition and description of attitudes. The next section will present a rationale for the use of a generalized attitude scale such as the Semantic Differential in health education research. The final section will examine some of the uses of the Semantic Differential as well as a rationale for using this technique in this particular study.

I. STUDIES ON VALUES RELATED IN CONTENT

Definition of Values

The term values or value has many different meanings depending upon the author and context. This section will identify these definitions and then attempt to formulate a definition and description of values that will be used throughout the review of literature.

Traditionally the term value has been used loosely and interchangeably with several other concepts. Currently there is no agreed upon definition of this term. Synonyms for values include the following: attitudes and interests (Encyclopedia of Educational Measurement, 1975); attitudes, interests, motives, needs, sentiments, and valences (Dukes, 1955); attitudes, sentiments, interests, preferences, motives, cathexes, and valences (Smith, M.B., 1969); interests, attitudes, and motives (Handy, 1970).

It is necessary to distinguish between values and other concepts, especially attitudes. The following are some distinguishing characteristics (Feather, 1975):

1. An attitude involves an organization of beliefs upon a single object or situation whereas values transcend objects and situations.

2. Attitudes do not have the function of acting as standards or criteria. Values have this function since values may be said to underlie attitudes or provide the core.

3. Values are also more closely linked with motivation than are attitudes and would therefore be considered more dynamic in that a person's value system is an important determinant of action.

4. Values are not the same as needs since it could be said that

if they are the same, then a rat could be said to have values because it has needs (Rokeach, 1973). Values are then defined as the cognitive representations and transformations of needs (Rokeach, 1973).

5. Interest is a narrower concept than a value in that it would be difficult to say that interests can represent a standard of behavior. Interests seem to be more closely related to attitudes than to values (Rokeach, 1973).

6. Values are different from desires in that values are formed as a result of reflection and judgment (Kitwood, 1976).

From this, a definition of value and value system can be developed. Rokeach (1973) defined values and value systems as:

> A value is an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence. A value system is an enduring organization of beliefs concerning preferable modes of conduct or end-state of existence along a continuum of relative importance (p. 5).

It is this definition of value and value system that distinguishes man from other animals. Animals are essentially "motivated" by what may be termed instinct or need satisfaction. While need satisfaction is a key element in human behavior, the way in which these needs are satisfied is based upon some type of value system. Since man is a rational (able to think) creature, as well as a social animal, all human behavior can be said to be influenced by values.

There is also the possibility that there may be different types of values that serve different purposes. Those authors that identified values in a similar fashion as Rokeach, also attempted to distinguish between types of values. Morris (1956) identified three types of values:

1. Operative values--This is the tendency of humans to prefer one kind of object over another.

2. Conceived values--This involves a preference for a symbolically indicated object.

3. Object values--This is what is preferable regardless of whether it is in fact preferred. Emphasis is placed upon the properties of the object, not the object itself. Smith (1976) classified values as:

1. Intrinsic--This is when something is valued for its own sake.

2. Extrinsic--This type of value is important because of its actual or potential relationship to something else.

The classification scheme that Rokeach finally developed was based upon the work of Hilliard (1950) who defined two types of values:

1. Terminal value--This is when an object is valued for its own sake.

2. Instrumental value--This is when something is valued for the sake of some other object.

The references by Rokeach (1973) which led to the actual identification of values were:

1. A terminal value is an idealized end-state of existence with two subheadings, personal and social values.

2. An instrumental value is an idealized mode of behavior, also with two subheadings, those values with an emphasis on moral ideals and those values emphasizing competence.

II. THEORETICAL AND PHILOSOPHICAL ISSUES IN THE MEASUREMENT OF VALUES

Since the vast majority of research in this area is concerned with attitudes it would be useful to consider the following questions: Why measure values and how can they be measured?

A major reason for measuring values is that by definition, there are relatively few values. Values and value systems are the core from which attitudes and behavior emanate. Since values are at the core, if values can be correctly measured, then the predictive power of values should be great (Cochrane, 1974; Rokeach, 1968). Values should also be much more stable than are attitudes, since attitudes are very much a product of the specific situation whereas the hierarchial nature of value systems should provide us a clue to what attitudes will predominate under what circumstances. An actual example of where this occurred can be taken from a national sample where Rokeach (1973) found that individuals with a racist attitude rated the value equality much lower than those people with an anti-racist attitude. While this example does not provide definitive evidence of the relationship between values, attitudes, and behavior nor does it address the issue of the complexity of human behavior, it should provide a simple explanation of the type of relationship that can be studied. Later sections of this paper will explore this type of relationship in greater depth.

The basic problem in the measurement of values is to try and determine if in fact we are measuring values. If we are going to attempt to measure values it is necessary to operationalize the definition of values and develop a list of values and/or value statements.

This dilemma can be best summed by the following quote from Weisskopf (1959):

> . . . values supported by science would be valid goals of human endeavor; but science left us without a guide for pure aspirations (p. 107).

The earliest attempt to measure values was the Allport-Vernon (and later) Lindzey (1931) Study of Values. A major criticism of this instrument is the underlying assumptions. Six values were identified:

1. theoretical
2. economic
3. aesthetic
4. social
5. political
6. religious

These values were based upon the typologies proposed by Edward Spranger (1928) in his book the Types of Men. While Spranger's work is certainly one of the better publications of the times, it is doubtful that an application of the work of one man can be the basis for determining values, especially since this (values) was not the primary purpose of the book.

Despite this limitation the Allport-Vernon-Lindzey Scale is still one of the most widely used instruments. Two major reasons for this are the lack of available instruments and the fact that the AVL Scale is reliable. The problem of reliability or consistency is a problem that is often ignored by researchers using attitude and value scales. The problem is that a person "may be entirely consistent in what he says and in what he does about a controversial issue, and yet both of these

indices may be dead wrong in reflecting his attitude" (Thurstone, 1954). While this issue will not be an especially important one if all one is looking for is correlations, it is a real problem if one tries to explain why these correlations exist. While the AVL Scale is reliable, the criticism that it is only a relative measure of preferences and not a measure of values (Handy, 1970) would seem to rule out the AVL Scale as an instrument with some degree of predictive efficacy in the area of values.

If theoretical or philosophical derivation of values is rejected, what alternatives are available? There are only two ways that the scientist has of determining what values people have. The first method is a direct study of a person's behavior (Rokeach, 1973; Handy, 1970). There are too many potential drawbacks: it is time-consuming, it cannot be done with large numbers of people, there may be bias from the observers, and a person's overt behavior is not always indicative of his values. The other method is to simply ask a person what his/her values are. This has several drawbacks in that a person may be either unwilling or unable to tell the researcher what his/her values are (Rokeach, 1973).

Value Comparisons

From a research standpoint the easiest research study is to obtain a value instrument and then attempt to correlate values with some other variable or variables. After this has been done, the author speculates or makes some inferences about the results and then calls the study complete. While it is certainly necessary to find these correlations and relationships, most of these have little practical application to

such things as education in general, or health in particular. For example, one of the most consistent differences is between the sexes. The explanation given is usually something to the effect that boys and girls are raised differently and would therefore be expected to have developed somewhat different value systems. Yet we are no where near the point where we can take these differences and structure learning experiences around them.

The earliest attempt to summarizing the knowledge of the times was done in 1940 by Duffy (1940). The conclusion was that there are differences in value systems between:

1. students in different fields of study
2. individuals in different occupations
3. men and women

It was also indicated that value systems tended to remain constant during the college years.

The next comprehensive summary was done in 1955 by Dukes. At this stage several additional correlations were evident. These included correlations between:

1. men and women
2. body and personality types
3. individuals in different occupations
4. intelligence, aptitude, and achievement
5. married and non-married
6. different cultures

It was also theorized that an individual's value orientations operate in a dual fashion: (1) role of sensitizer--lowering the

threshold for acceptable items and (2) as a perceptual defense--raising the threshold for unacceptable stimuli. As will be seen later, this dual function makes the data interpretation difficult.

Another important finding reported by Dukes (1955) was that students who hold values similar to those of the teacher got better grades, controlling for I.Q. While this finding by itself is not particularly significant, it does point out the need to know something about the value system of the teacher.

Value-Behavior Comparisons

If the terminal and instrumental values are standards by which a person lives, then the overt behavior should, at the very least, be a partial indicator of a person's value system. Those values that are the most logically related to the behavior should be the values that predict that particular behavior (Groves and Kahalas, 1974; Rokeach, 1973). An important consideration is the type of behavior being investigated. It would be expected that a simple behavior in a specific situation should be more easily analyzed then a complex behavior where many different values could be involved (Rokeach, 1973).

The most frequent, utilitarian use of value-behavior comparisons is in the area of vocational counseling. While vocational counseling is not an important aspect of this paper, the types of relationships found and their implications do have some potential value. Feather (1971) concluded that a value mismatch may have unpleasant consequences involving unhappiness and perhaps eventual failure at that particular occupation. This supports the idea that people from similar groups (e.g. occupation) have similar value systems (Feather, 1971). The

importance of these findings is that this lends credence to the idea that the way in which a person fits into their environment is a major factor in whether or not they are satisfied. Feather (1972) further pointed out that this factor makes it important to consider student and teacher value systems.

At the very minimum, any specific behavior must be determined by no less than two values. One value would be based on the general object (e.g. cheating) and the other value would be based on the situation (e.g. cheating on an examination or an athletic contest) (Homant and Rokeach, 1970). In an experimental situation, it would be expected that persons who valued honesty would be less likely to cheat. This is what Homant and Rokeach (1970) actually found. However, they also found that those who were determined to be highly dishonest also valued honesty. Several reasons given were that it was an ego defense or a method of denying their dishonesty. It also may serve to illustrate another facet of human behavior, that being that a person may place a greater premium on something that they do not have rather than on something that is taken for granted. Another example of this is with the value, clean. Several studies have found a significant relationship between this value and socioeconomic status (Rokeach, 1973; Feather, 1970). The best explanation for this consistent finding is that the upper socioeconomic groups have always had this value, whereas the lower socioeconomic class sees this as a need that has yet to be sufficiently met.

An important characteristic of value systems is that they give a clue about behavioral predispositions. While a person's values are generally considered a predictor of behavior, the relationship can also be a two-way proposition. For example, Heath (1976) placed students in

hypothetical situations: (1) protest movement, (2) threat of war, (3) government suppression. The value systems in the experimental group were significantly different than the control group. This demonstrates the dynamic nature of value systems as well as the potential influence that some situations may have on value systems.

If values are related to behavior then it would be expected that different groups would show different value systems. It would also be expected that these values should show some logical relationship with the desired behavior.

Cochrane (1974) examined groups that he termed deviants (delinquents, prisoners, drug users, and homosexuals) with the purpose of determining whether or not these groups had different value systems when compared with matched control groups. The number of values significantly different from the control group was 9 of 36 for homosexuals, 14 of 36 for female prisoners, 10 of 36 for male prisoners, and 12 of 36 for drug users. They were also considered to be logically related to the behavior studied. For example, it was determined that drug users:

1. rejected the middle-class work ethic
2. rejected forces that lead to the construction of self in favor of self-expression and personal fulfillment
3. had a generally liberal political philosophy

A key element in the value-attitude-behavior controversy is the inconsistency between values, attitudes, and behaviors. Several theories (e.g. Cognitive Dissonance, Values Clarification) indicate that when a person would realize this discrepancy or inconsistency,

something would be done to reconcile this problem. Either the values, attitudes, or behaviors would change so that the relationship would be consistent. Studies cited previously as well as subsequent studies give no consistent, definitive clue as to which of these three is most likely to change. Some of Rokeach's work illustrates this problem. Rokeach reports very high reliabilities for the Values Survey and indicates a high degree of value stability over time. He also reports on an experiment where he identified discrepancies in a person's ranking of the value, equality, and their actual attitudes and behavior toward civil rights (1973). Through the technique of self-confrontation (directly pointing out the discrepancies) Rokeach was able to report changes in specific behaviors as well as a change in the ranking of the value, equality. Grube (1977) reanalyzed this behavior and concluded that an important factor in predicting behavior change was the initial ranking of the value, equality. This would seem to indicate that even though values are susceptible to change, a person's value system would represent a predisposition toward certain attitudes and behaviors.

The results of Grube's and Cochrane's studies provide important implications. It lends credence to the hypothesis that values and behavior are related and that this relationship is measurable (this should also hold for values and attitudes). If this relationship holds for health attitudes and behaviors, then it would appear to be plausible to identify those students most (or least) likely to exhibit behavioral (or attitudinal) changes.

III. STUDIES ON VALUES RELATED IN METHOD

The Development of the Rokeach Value Survey

At this point a rationale for the use of values in health education research, a working definition of values and value systems and a discussion of some of the theoretical and philosophical problems of measurement has been provided. This section will describe the process used by Rokeach in developing the Value Survey, validity and reliability studies on the Value Survey, including criticisms and limitations of the Value Survey.

Rokeach's final form of the Value Survey contained two lists of 18, alphabetically arranged terminal and instrumental values (see Appendix A for the lists). Two forms of the test are currently in use. The first of these, Form E, is a pencil and paper test where the respondents are given the two lists and asked to rank each value from 1 to 18. The more widely used Form D also has two separate lists but the lists are printed on a removable gummed label. This procedure is essentially the same as for Form E except that it is easier to change one's answer utilizing the gummed label method. The instructions are as follows (Rokeach, 1973):

> Study the list carefully and pick out the one value which is the most important for you. Peel it off and paste it in Box 1 on the left. Then pick out the value which is second most important for you. Peel it off and paste it in Box 2. Then do the same for each of the remaining values. The value which is least important goes in Box 18. Work slowly and think carefully. If you change your mind, feel free to change your answers. The labels peel off easily and can be moved from place to place. The end result should truly show how you really feel (p. 27).

The 18 terminal values were obtained from a much longer list that came from these sources: a review of literature mentioning values in

American and other societies, Rokeach's personal list of terminal values, those obtained from about 30 graduate students in psychology and those obtained from a representative sample of 100 adults in Lansing, Michigan. The resulting list was reduced to 18 by eliminating those that were synonymous, those which were overlapped, those that were too specific, and those that were judged as something other than a terminal value.

The instrumental values were derived in a much different fashion. The original list was from a list of 555 words for which positive and negative ratings were obtained (Anderson, 1968). The list was further narrowed by eliminating negative words, physical characteristics, sex-linked words, and relatively unfamiliar words. This new list was later reduced by retaining only one word from a group of synonyms, by retaining those judged to be maximally different or minimally intercorrelated with one another, those judged to be the most important values in American society, those capable of discriminating across social status, sex, race, age, religion, politics, etc.; those judged to be meaningful values in all cultures, and by retaining those which could be admitted to without appearing to be immodest, vain, or boastful (Rokeach, 1973).

The major criticism in the development of this survey was that basically the 18 terminal values and 18 instrumental values were formulated intuitively. There is always the possibility that one or more important values have been omitted (Kitwood and Smithers, 1975). For example, health educators might wonder why something akin to health is not included. Some degree of positive health is necessary (means to an end, instrumental value) for a person to be able to attempt to

obtain the desired ends. Yet this list is comprehensive and as will be seen later, it does have projective qualities (Rokeach, 1973).

A major feature of the Rokeach Value Survey was that most people would subjectively rate most values as positive or desirable. If this were so, and the respondents did not feel threatened, then the responses should come close to representing the respondents true value system. A test of social desirability was administered to a group of college students also taking the Rokeach Value Survey. The conclusion was that if the Value Survey was administered with neutral instructions there was no tendency to respond in socially desirable ways or that there was no need to fake a value system (Kelly, 1972; Homant, 1969).

Another report attempted to determine if there was internal consistency in the value-attitude relationship. A modified version of the Value Survey was used in conjunction with an instrument called the Inventory of Personal Opinion. Data indicated that the value-attitude relationship in this one study was internally consistent and that therefore the prediction of the attitudes from values is possible (Mitchell, 1976). While internal consistency is necessary, it must be kept in mind that the exact relationship between values and attitudes is difficult to infer let alone predict.

IV. STUDIES ON VALUES RELATED IN CONTENT AND METHOD

Values and Demographic Variables

This section will examine the following demographic variables: sex, social class, income, education, age differences, and racial differences. Any special problems related to interpretation of the results

will be mentioned.

As mentioned in the preceding sections, sexual differences were found regardless of the instrument used (Dukes, 1955; Duffy, 1940). This was also the case with the Rokeach Value Survey. Rokeach (1973) found sex differences in 12 of the 18 terminal values and 8 of 18 instrumental values.[1] The terminal value which most distinguished men and women was a comfortable life, the distinguishing instrumental value was imaginative.

In a study (Wright and Wright, 1976) that focused on social values, "social class was considered the most important predictor of values." Of the indicators of social class, education was considered the most important criteria for social class differences with region (locale), religion, and ethnicity also being significantly related. While this study does provide some clues about the relationship between values and social class, only social variables were considered. Rokeach (1973) also found that education was a significant predictor of value differences with 25 of the 36 values showing statistical significance. The values that best distinguish the low and high educated groups were clean, a comfortable life, a sense of accomplishment, and logical. Clean and a comfortable life were ranked higher by the low educated with a sense of accomplishment and logical being more highly rated by the high educated group. When income differences are considered, 20 of the 36 values were found to be significantly different. Of all 36 values, the one that most clearly distinguishes between different

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[1]Unless otherwise indicated, all differences or significant differences will be at the level of .05 or better.

incomes is the value clean (Rokeach, 1973). This finding was also duplicated, on a smaller scale, in Australia (Feather, 1975). An explanation of this phenomena (Feather, 1975) was that since the more affluent have this attribute (clean) they are therefore freed to identify other sources of value. This illustrates one of the problems in attempting to explain differences. It also illustrates one characteristic of a value: immediacy of interest. For example, when we are in good health, we are not aware of its importance, health is simply not a problem or area of concern. The area of immediate interest is the one that will be most likely considered important (Hermans, 1976). This aspect of values is consistent with theories of need satisfaction in that when one need is essentially fulfilled another one emerges. This would appear to be a factor that this author must be aware of in trying to explain values and their relationship to health education.

While values tend to remain stable there are some changes that occur at different ages and there are differences between different age groups. Hoge and Bender (1974) found that change was most likely to occur among students and that as one ages, value systems tend to become more stable. There were sufficient differences between ages to support the concept of a generation gap. These findings are confirmed by Rokeach (1973) although Rokeach indicated that there may be several generation gaps.

Racial differences were also found by Rokeach (1973) with the value equality ranked much higher for blacks than for whites. Yet the overall value systems were quite similar after age, income, and educational levels were matched. On the basis of these apparent similarities

Rokeach discounts the idea of a "culture of poverty." Rokeach is probably not justified in concluding this since one of the methodological problems is that the way in which people operationalize their values may be quite different. Even though the values may be similar it would not be unexpected to find behavioral differences.

Value-Attitude Comparison

Previously in this section (see pages 9-10), the distinction between attitudes and values was made. This section attempts to explore this distinction in greater depth. An attitude can be defined as follows: "An attitude is an organization of several beliefs focused on a specific object (physical or social, concrete or abstract) or situation, predisposing one to respond in some preferential manner" (Rokeach, 1973).

The relationship between values and attitudes can be summed as follows: first, a value transcends objects and situations, whereas an attitude is based on an object or situation. Second, as a result of the first relationships there may be as many attitudes as there are objects and situations. A value, on the other hand is a belief concerning a mode of conduct or end-state existence. It was thus estimated that values would number in the dozens, while attitudes number in the thousands (Rokeach, 1973). If one takes a holistic view (the total person) of health education then it would seem more economical to enhance the importance of a small number of values instead of trying to change a great many attitudes (Kehoe, 1975). Third, values serve as standards and attitudes do not. Individual evaluations of attitudes toward objects and situations is based on the values that serve as standards.

Fourth, values occupy a more central position in a person's personality and cognitive systems. Values are "therefore determinants of attitudes as well as of behavior" (Rokeach, 1973). A key implication is that if a particular attitude can be linked to the more important values it should be more resistant to change than if it was linked to less important values. Fifth, values have a more immediate link to motivation than do attitudes. Values are more like an end, while an attitude helps determine the means to the end (Rokeach, 1973).

Values have been shown to be more stable than attitudes. Since attitudes are more flexible and numerous than values a problem arises. Attitudes can be more easily manipulated (as evidenced by the numerous amount of literature about attitude change and the paucity of literature concerning value change) yet so many exist that manipulating a relatively few attitudes may yield only modest, overall changes. Rokeach (1968) identifies three methods of inducing a state of inconsistency or dissonance between values and attitudes.

1. The person may be induced to engage in a behavior that is inconsistent with their attitudes or values.

2. The person may get exposed to new information from credible sources that is inconsistent with their previous information.

3. Inconsistencies in a person's attitudes and values can be pointed out.

Rim (1970) examined several value-attitude relationships and found some significant differences. On a scale that measured dogmatism, those individuals who scored high also rated the values honest and obedient significantly higher. Those scoring lower on the dogmatism

scale valued independent and broadminded. On a scale that measured authoritarianism, those scoring high valued polite and clean, those scoring lowest valued ambitions, broadminded and independent. Those subjects that were relatively intolerant of ambiguity valued polite and ambitious, those individuals more tolerant of ambiguity valued cheerful and being broadminded.

An example of where the value-attitude relationship was shown to be inconsistent was in a study undertaken by Rokeach (1968). Rokeach identified people who were pro-civil rights yet ranked the value of equality low. When this inconsistency was pointed out and dissonance induced, the value equality was changed significantly ($p \leq .001$). At least in this instance the value system was changed in order to relieve this dissonance.

Implications for health education are that if we identify a value system, and a set of attitudes those attitudes found to be inconsistent with the value system could be pointed out and perhaps changed. This would require knowledge of the student's value system and then the structuring of health education to accommodate this system. A combination of value-attitude clarification exercises might prove feasible.

V. STUDIES ON ATTITUDES RELATED IN CONTENT

The goal of any health education program is to improve the health of the particular population being studied. Basically, there are two major ways of measuring these outcomes. One of these is to measure behavior. If the educational outcomes have been successful then some type of positive behavior change should occur. There are some obvious

difficulties in this since it is virtually impossible to actually observe behavior. Another way of determining this is to ask the person to report what behaviors they have engaged in. For this to be an effective assessment procedure, it is necessary to study the person over an extended period of time.

The second way of measuring outcomes is through the measurement of attitudes. Attitudes don't represent and end in themselves since a change in attitudes does not necessarily mean that their health has been improved. Attitudes do represent a behavioral disposition. For example, if a person had an extremely unfavorable attitude towards Blacks, one might expect to find behavior consistent with this attitude (Osgood, 1957). It is also worth noting that attitudes alone do not necessarily adequately predict behavior. A great deal of interest has been generated by this problem of consistency. It is beyond the scope of this paper to explore this controversy in detail, however some explanatory notes will be given. This study will proceed from the point of view that man attempts to understand and justify behavior or to be sensible and rational. There is also a recognition that behavior is not always consistent with attitudes since irrational methods are often used (Zajonc, 1966). What will be assumed is that health education can help develop positive attitudes that eventually will lead to improved health behavior and that this attitude change can be measured.

Definition and Description of Attitude(s)

Attitude was earlier defined as " . . . an organization of several beliefs focused on a specific object (physical or social, concrete or abstract) or situation, predisposing one to respond in some preferential

manner" (Rokeach, 1973). Any definition can legitimately be criticized since definitions cannot really describe the dynamic nature of attitudes and attitude formation.

A basic assumption underlying all research on attitudes and of critical importance is that attitudes are learned (Lemon, 1973). Since attitudes are assumed to be learned, it logically follows that further learning may modify attitudes. For the purpose of this study, it is necessary to identify an instrument capable of measuring attitudinal change.

In selecting an instrument two major problems can occur. The first one is that a person may not say what his/her attitudes are. A reason for this is that often a person is not aware what their attitudes are. A second problem is that attitudes are measured at one point in time and not over time. Since attitudes represent a behavioral tendency related to the situation, it is quite possible that the measurement, while being accurate at that time, will not represent the true attitude this person will have in a "real life" situation (Chisman, 1976).

VI. STUDIES ON ATTITUDES RELATED IN METHOD

Constructing a Semantic Differential Attitude Scale

The Semantic Differential has been used in hundreds, perhaps thousands of studies in a large number of disciplines. Ratings have been obtained for hundreds of word concepts, stories, poems, social roles, stereotypes, colors, sounds, shapes, and people. The three dimensions: evaluation, potency, and activity have been shown to be

valid and reliable when used with a wide variety of subjects, concepts, and scales (Heise, 1970).

The semantic differential is based on the idea that certain words evoke a very precise image of a concept. For example, certain types of words can be used to describe the concept, President of the United States. The work of Osgood and others was basically to identify word pairs that provide a consistent index of meaning. The technique developed was a list of bipolar adjectives which could be used to provide a clear understanding of a particular concept. For example, the bipolar adjectives good and bad could easily be applied to the concept, President of the United States. If you substitute the name of a president such as Carter, Nixon, Johnson, and Kennedy you could probably get a fair idea as to how a particular population would rate that president. The logic of the semantic differential technique can be summarized as follows (Osgood, 1952):

> 1. The process of description or judgement can be conceived as the allocation of a concept to an experiential continuum definable by a pair of polar items.
> 2. Many different experimental continua or ways in which meanings vary are equivalent and hence may be represented by a simple dimension.
> 3. A limited number of such continua can be used to define a semantic space within which the meaning of any concept can be specified (p. 227).

The key to effectively adapting the semantic differential to a particular situation is almost wholly dependent upon the selection of appropriate scales. Osgood (1957) in his original work identified three major dimensions (evaluation, potency, and activity) with appropriate bipolar adjectives for each scale. The important point is that not every set of bipolar adjectives is appropriate for every

concept. This problem was identified by Brown (1969) when he titled his article concerning scale selection: "Is a boulder sweet or sour?" While this obviously overstates the problem it nonetheless illustrates the reason why selection procedures are so important.

Maguire (1973) identified four principles in scale selection:

1. Adjectives must be representative of attitudes in the domain.
2. Adjectives must be well-defined for the population.
3. Adjectives must be appropriate to concepts in the domain.
4. Adjectives must be polar opposites.

These principles can be operationalized in one of four different ways. One way is to simply look at the concepts and decide which ones are appropriate. A modification of this method is to have a jury of experts. A second method is to select adjectives based on scale relevance, i.e. to present subjects with a scale and assess the meaningfulness (Heise, 1970). The third method is to select the scales on the basis of previously done factor analyses (Heise, 1970). A fourth method is to include a Likert scale to the concept with a strongly opposed continuum. The groups are divided into two groups based on their answer. Various adjective pairs for each concept will also be presented. Adjective pairs selected would be those that best distinguish the two groups (Brinton, 1969).

The selection of concepts is much easier. Snider (1969) provides a list called a semantic atlas that lists over 550 concepts that can be "plugged in" to an attitude scale. Other sources include the following (Maguire, 1973): (1) ask knowledgeable subjects, (2) literature review, (3) related studies, and (4) Roget's Thesaurus. Traditionally

what has been done is to select four bipolar adjectives for evaluation and three each for potency and activity. Heise (1970) recommends fewer evaluative adjectives since the evaluative dimension has been consistently shown to be the most reliable. For this reason Osgood (1957) and others suggest that only the evaluation dimension be used in attitude scale construction. The consensus is that the number of judgments should be between 50 and 400 (Heise, 1970).

In the original work a process called the Thurstone Centroid Factor Method was used to identify scales. The first factor which accounted for 70 percent of the common variance included the following adjective pairs: good-bad, beautiful-ugly, sweet-sour, clean-dirty, tasty-distasteful, valuable-worthless, kind-cruel, pleasant-unpleasant, bitter-sweet, happy-sad, sacred-profane, nice-awful, fragrant-foul, honest-dishonest, fair-unfair, rich-poor, clear-hazy, fresh-stale, and healthy-sick. The potency dimension includes: large-small, strong-weak, heavy-light, and thick-thin. The third major factor identified was termed activity and included: fast-slow, active-passive, hot-cold, sharp-dull, and angular-rounded (Osgood and Suci, 1969). This list was later expanded to include 50 scales (Osgood, Suci, and Tannenbaum, 1957).

VII. GENERALIZED ATTITUDE SCALES

A major problem that health education researchers have is in the realm of content validity. Content validity refers to the idea that an instrument adequately measures the domain of the area under investigation (Lemon, 1973). For example, it would be incorrect to say that

one had a sexual attitude scale if all that one measured were attitudes toward premarital sexual activity. This should be a particularly critical situation in health education since classroom objectives are likely to vary from teacher to teacher especially in view of the wide variety of topics taught in a basic personal health class. One attitude scale could show that one teacher is consistently (reliability) affecting attitudes whereas another teacher might not. It is entirely possible that the instrument has content validity for one instructor and not the other. There is no evidence to indicate the school health educators teach a uniform health curriculum.

A possible solution to this dilemma is a type of scale that is generalizable to a range of different attitudes. A fundamental question is, "Can school health educators change attitudes?" The important part of the question for this study is not so much the attitude that is involved but whether or not the attitude is changed and the magnitude of that change.

A generalizable scale has several advantages over other methods of measuring changes. A generalizable technique of measurement can be adapted to each research problem to which it is applied. The concepts and scales used depend upon that particular research problem (Osgood, 1957). Another consideration is the economics of a generalized scale in terms of money, time, and effort. It is unnecessary to undergo the process for the standardization of new tests since this has already been done in similar situations (Osgood, 1957). Perhaps the greatest virtue of this type of instrument is in the area of comparability. For instance, if one measured attitudes toward premarital sexual activity

on one scale and attitudes toward early cancer detection on another scale it would be a highly tenuous argument, at best, to conclude that one set of attitudes was more important than another set. However, if the same scale was used, assuming it is valid, then these kinds of inferences can be drawn (Osgood, 1957). Since attitude change is what is important in this study, this kind of measuring instrument would be beneficial to this study.

The semantic differential is an example of a generalizable technique. The semantic differential is not a test such as the MMPI but rather a standardized technique. This allows the researcher to use the scales appropriate for a particular study. Currently there is a Semantic Atlas that gives statistical information on 550 concepts (Snider and Osgood, 1969). The researcher can select any of these concepts, knowing that some background research has been done on each of them.

VIII. SUMMARY

Values were identified as a critical area of concern because values represent the core or center from which attitudes and behavior emanate. Values are also a key concern when a holistic philosophy of health education is used as a framework for health education research.

Values and value systems were defined and compared with similar concepts. A major part of this chapter was devoted to the problem of measuring values. The problems that were identified provided a basis for the development of the Rokeach Value Survey. Various value comparisons of differing complexity were examined. Studies ranged from a

simple correlation study to the use of values as a predictive tool. Included in these comparisons were the relationship between values and behavior. The available research indicates that the Rokeach Value Survey may be useful in predicting attitudes and/or behavior before and after health instruction.

The latter section was basically concerned with two issues: (1) the reasoning why attitudes should be studied and (2) the type of instrument that could be used to measure health attitudes. It was concluded that a generalizable technique such as that found in the semantic differential would be most appropriate.

CHAPTER III

METHODOLOGY

I. OVERVIEW

The purpose of this study was to determine the relationship between values and health-related attitudes among students in a college-level personal health class. This study sought to answer the following questions:

1. Are health attitudes changed as a result of the instructional practices?

2. Is there a significant relationship between values and health attitudes among students?

3. Is the degree of agreement between the student and teacher value systems related to the students attitudinal change?

4. Is there a significant difference in values between socio-economic groups?

5. Is there a significant relationship between health attitudes and socioeconomic status?

6. Is there a significant difference in values between males and females?

7. Is there a significant difference in health attitudes between males and females?

II. SAMPLE SELECTION

The population in this study consisted of students taking personal health classes at Western Kentucky University. Since it was impossible

to randomly assign students, the best alternative was to select a representative sample. Western Kentucky University was chosen because the majority of students enrolling At Western Kentucky University enroll in a personal health class. While this procedure did not guarantee a representative sample, it was as close as could be obtained without being able to randomly assign students.

The experimental group chosen consisted of students enrolled in two personal health classes at Western Kentucky University, taught by the same teacher. Selection of the particular classes was contingent upon obtaining two personal health classes taught by the same teacher.

Students between the ages of 17-22 were included in this study. It was the decision of the researcher to limit the sample to what is normally considered "college age" students. The maximum number of students included in this study was 80. The number of students eliminated from this study because of age was 17. While it was not known whether or not students outside that age of 17-22 would contaminate the results, their exclusion from this study was an attempt to insure a more homogeneous sample.

III. EXPERIMENTAL DESIGN

One major problem in educational research is that rarely can subjects be assigned at random. The alternative is to control for as many variables as possible. The design was to select two experimental groups taught by the same teacher. Both groups were pre-tested with the Rokeach Value Survey, the Semantic Differential Health Attitudes Inventory, and for demographic variables. The pre-test was given at

the beginning of the winter semester, 1980, at Western Kentucky University. At the end of the semester both groups were given the Semantic Differential Health Attitudes Inventory. The control groups were chosen by selecting students in four English classes. Each group was pretested and posttested in the same manner as the experimental group. Scores from students in the control group who had taken a personal health class were eliminated from the statistical analysis.

IV. INSTRUMENTATION

A critical concern of this study or any other study of this type is the instrumentation. Any study that purports to measure values and/or attitudes is subject to the limitations of the particular instrument used. While no instrument is 100 percent accurate, nevertheless there are differences in instruments. This section will present validity and reliability studies, as well as other pertinent studies that will justify the rationale used to select these instruments.

The Rokeach Value Survey

Test-retest reliabilities for the terminal values ranged from .62 to .80 with most scores around .75. The test-retest reliabilities for the instrumental values ranged from .53 to .72 with most scores around .70 (Rokeach, 1973). There was also a very high completion rate, which meant that very few returns will need to be thrown out. Out of about 1,500 adults in a National Opinion Research sample only about 5 percent did not complete Form D (Rokeach, 1973). The Rokeach Value Survey was sufficiently easy to read and understand that seventh grade students were able to complete the Value Survey without any special

instructions (Rokeach, 1973).

An important consideration in the development of the Value Survey was to maximize diversity and minimize overlap among the values. In this type of instrument it is desirable to have each value independent of every other value. The amount of intercorrelation found was -.06 with the highest being +.32 (between a comfortable life and wisdom). A factor analysis revealed that the values are not totally independent of each other. Seven value clusters were identified which accounted for 41 percent of the variance. No single cluster accounted for more than 8 percent of the variance (Rokeach, 1973). These findings would indicate that the 36 values are " . . . for the most part negligibly correlated" (Rokeach, 1973). These findings were essentially duplicated in a similar study using a different statistical procedure (Feather and Peay, 1975).

The possibility of order effects exists in any type of ranking procedure. In some groups samples Rokeach found that those values appearing at the beginning (both lists were arranged alphabetically) might be favored over those appearing at the bottom (Rokeach, 1973). While Rokeach did not adequately answer this question, another study did. All the values were placed into a computer and then the two lists were randomly printed. Since only .1 percent of the variation was attributable to order effects, it was concluded that for all practical purposes the Rokeach Value Survey was free of order effects (Greenstein and Bennett, 1974).

The Semantic Differential Attitudes Inventory

The semantic differential is more correctly labeled as a technique rather than an instrument. Because the semantic differential is a generalized attitude scale, certain scale properties are known because of previous research. This simplifies scale construction since extensive validity and reliability studies have already been done. However, it is necessary to choose concepts that are appropriate for the particular set of attitudes, which in this case are health attitudes. It is also necessary to choose appropriate adjective pairs based on the concepts. The best way to choose the appropriate concepts would be to simply ask the teacher of the class what his/her objectives are for each unit. For example, the teacher may specify that a key objective of a unit on alcohol is that the drinking individual learn to drink "safely" or in moderation. This concept could then be readily used in the semantic differential. Lemon (1973) outlines an approach for selecting the adjective pairs. Potentially useful adjective pairs are identified and then a pilot study is conducted in order to determine the loadings for particular pairs. Those adjectives found to have a high loading on the evaluative factor would be retained, while the others would be discarded or used as filler adjectives. With this technique any number of concepts and adjective pairs could be incorporated into this scale.

A key consideration in attitude measurement is reliability or random error. Osgood (1957) cited a test-retest correlation of 0.85. Lemon (1973) reported on several other reliability studies, none of which reach 0.85 using either the test-retest method or the split-half method. While Lemon (1973) felt that it was "disappointing" that none

of these studies were able to replicate Osgood's coefficients, he nevertheless concluded that they were acceptable. In a study utilizing an undergraduate population, Norman (1969) found correlation coefficients of 0.96 and 0.94 for scales and concepts respectively. These studies indicate that the reliability of the semantic differential technique should be sufficient for this study.

The problem of content validity should be minimized because of the method used to derive the particular scale. Since the teacher of the class is the person identifying the attitude changes deemed desirable, the content validity should only be restricted by the teacher's ability to identify these attitudes.

Lemon (1973) in a review of several studies concluded that the semantic differential had a relatively high degree of predictive or concurrent validity. The only confounding factor found was the degree of salience of the attitude. Those attitudes that had a high degree of salience were found to have a higher correlation than those attitudes that were less salient. Except for the problem of salience and the ability to predict overt behavior, Lemon (1973) concluded that the semantic differential was valid and reliable.

V. SOCIOECONOMIC STATUS

The technique used to measure socioeconomic status was the Hollingshead Two Factor Index of Social Position (Bonjean, Hill, and McLemore, 1967). An index was developed using two factors--amount of formal education and occupation. The amount of formal education is put on a seven-step scale as follows:

Level 1 = Post Graduate

Level 2 = College Graduate

Level 3 = 1 to 3 Years of College

Level 4 = High School Graduate

Level 5 = 10th to 11th Grade

Level 6 = 7th to 9th Grade

Level 7 = Under 7th Grade

Educational level was given a weighting factor of four. The lowest educational level had a score of 28 (4 x 7) and the highest educational level had a score of four (4 x 1).

The second factor considered was occupation. Occupation also was on a seven-step scale as follows:

Level 1 = Higher Executives of Large Concerns, Properties, and Major Professionals

Level 2 = Business Managers, Proprietors of Medium Sized, and Lesser Professionals

Level 3 = Administrative Personnel, Owners of Small Businesses, and Minor Professionals

Level 4 = Clerical and Sales Workers, Technicians, and Owners of Small Businesses

Level 5 = Skilled Manual Employees

Level 6 = Machine Operators and Semiskilled employees

Level 7 = Unskilled Employees

Occupation was given a weighting factor of seven. The highest occupational level had a score of seven (7 x 1) and the lowest had a score of 49 (7 x 7).

Each person had a score for education and one for occupation. These scores were then added. The minimum score possible was 11, the maximum possible score was 77. Based on the total overall score each person could then be categorized according to socioeconomic status. Table 3-1 summarizes the scoring and classification scheme.

TABLE 3-1

HOLLINGSHEAD TWO FACTOR INDEX OF SOCIAL POSITION

Socioeconomic Classification	Socioeconomic Standing	Total Score
Class 1	Upper Class	11-17
Class 2	Upper Middle Class	18-31
Class 3	Middle Class	32-47
Class 4	Lower Middle Class	48-63
Class 5	Lower Class	64-77

VI. PILOT STUDY

The semantic differential is a technique rather than a ready-made instrument. The experimenter must select the concepts to be measured and then select a set of bipolar adjectives appropriate for the concepts (Osgood, 1957). The method used in this study was to ask the cooperating teacher to identify the important concepts toward which he/she teaches. After the concepts were identified 12 bipolar adjectives were selected for each concept (Heise, 1970). In November, 1979, 24

concepts, each with 12 scales, were presented to 28 students taking a personal health class at Western Kentucky University. Those concepts and scales judged to be meaningful were retained.

Meaningfulness was judged in two ways. The first method was to ask a question after the 12 pairs of bipolar adjectives. This question asked each student to give an overall rating for each of the 24 concepts being measured. (E.g., How would you rate your overall attitude toward _____?) A Likert scale with extremely positive and extremely negative at each end of the continuum was constructed. The students were then divided into two groups (positive and negative) based on their responses. Adjective pairs were selected that best distinguished the two groups (Brinton, 1969).

The second method used was to eliminate all those bipolar adjectives that a significant percentage of the students indicated were irrelevant. Each bipolar adjective pair had a 1-7 scale associated with it. A score of 4 was considered to mean that the student had no opinion or that the adjective pairs were irrelevant (Heise, 1970).

From these two methods the five most appropriate adjective pairs were selected for each of the 24 concepts (Appendix B).

VII. STATISTICAL TREATMENT

The Rokeach Value Survey yields data that is clearly ordinal level. The semantic differential technique yields data that is often considered interval. The three dimensions of the semantic differential (evaluation, potency, and activity or EPA) yield a score for each concept measured. Because each score is given a number based on a

Likert type scale, most studies assume interval level data.

The statistical problem in this study was to analyze the individuals within the experimental group. This requires a statistical technique capable of analyzing these differences rather than a technique based on group means.

Question number 1 in this study was, Are health attitudes changed as a result of the instructional practices? The Semantic Differential Health Attitudes Inventory was developed to measure attitudes. In this study the important consideration was to measure attitude change. Attitude change was measured by taking the difference between each adjective pair on the pretest and posttest. There were five adjective pairs for each of 24 concepts. Each student's attitude change score represented the difference between the pretest and posttest scores on a total of 120 adjective pairs.

Means and standard deviations for the control and experimental groups were calculated. A t-test for differences between means was calculated to determine if there were differences between the experimental and control group.

Question number 2 was, Is there a significant relationship between values and health attitudes among students? In this case attitude change is the dependent variable and each value is an independent variable (total of 36 independent variables). The multiple regression technique was used to analyze individual differences. Since the Rokeach Value Survey yielded ordinal level data and multiple regression required at least interval data, a data transformation was needed. This was done by transferring the ranked data into z-scores (Hays, 1967).

Each value thus had a z-score based upon its relative rank. The multiple regression equation was: attitude change score = a comfortable life + an exciting life + a sense of accomplishment + a world at peace + a world of beauty + equality + family security + freedom + happiness + inner harmony + mature love + national security + pleasure + salvation + self-respect + social recognition + true friendship + wisdom + ambitious + broadminded + capable + cheerful + clean + courageous + forgiving + helpful + honest + imaginative + independent + intellectual + logical + loving + obedient + polite + responsible + self-controlled.

Question number 3 was, Is the degree of agreement between the student and teacher's value system related to the student's attitudinal change? The first part of this question is to get a measure of agreement between the student and teacher value systems. Each student's values will be compared with the teacher's values by the use of the Spearman r. This will give an r value for the correlation between the student's and the teacher's values on both the instrumental and terminal values.

The next step is to take each Spearman r score and to correlate this number with the attitude change scores previously obtained. This correlation was obtained by doing another Spearman r. The results should give some indication as to whether or not teacher-student value similarities (or differences) are more (or less) likely to correlate with attitude change.

Question number 4 was, Is there a difference in values between socioeconomic groups? Socioeconomic groups were divided into five

classes based on the Hollingshead Two Factor Index of Social Position (Bonjean, Hill, and McLemore, 1967). Median rankings for each value were obtained. A 2 x 5 table was constructed and the extension of the median test was used to determine if differences existed between the five socioeconomic groups (Siegel, 1956).

Question number 5 was, Is there a significant relationship between health attitudes and socioeconomic status? Mean attitude change scores for each of the five groups were calculated and a one factor analysis of variance run. If a significant F score was obtained a post hoc analysis will be performed to determine where the differences are.

Question number 6 was, Is there a significant difference in values between males and females? For each of the 36 values a median score was obtained. A Spearman r was calculated for each value and a value similarity table compiled to indicate the degree of similarity between males and females.

Question number 7 was, Is there a significant difference in health attitudes between males and females? For each student, an attitude change score was obtained for the control groups and the experimental groups. Mean scores were obtained and a t-test calculated to determine if males and females differed in either the experimental or the control group.

VIII. ADMINISTRATION AND SCORING PROCEDURE

At the beginning of the winter semester, 1980, each student was asked to complete the following items in the following order: (1) Values Survey, (2) the Semantic Differential Health Attitudes

Inventory, and (3) demographic information. At this time the teacher was asked to complete a copy of the Values Survey. At the end of the semester the students were asked to complete the Semantic Differential Health Attitudes Inventory and the demographic information. Only those forms correctly completed were used.

IX. SUMMARY

This study sought to determine the relationship between values and health-related attitudes. The sample consisted of college students enrolled in selected personal health classes. A pilot study was done in the fall of 1979 in order to develop the Semantic Differential Health Attitudes Inventory. The Rokeach Value Survey was used to measure values. An appropriate statistical procedure was developed for each of the seven research questions.

CHAPTER IV

ANALYSES AND INTERPRETATION OF THE DATA

I. INTRODUCTION

The primary purpose of this chapter was to present the findings based on the analyses of the collected data. The data were collected by administering two paper and pencil instruments--The Rokeach Value Survey and the Semantic Differential Health Attitudes Inventory. A pretest was given in January, 1980 and a posttest given in May, 1980. The sample consisted of students enrolled in a personal health class (experimental group) or in an English class at Western Kentucky University.

A pilot study was conducted in the fall of 1979. The purpose of the pilot study was to develop the Semantic Differential Health Attitudes Inventory (Appendix B).

Seven research questions were identified in this study. For question number 1, Are health attitudes changed as a result of the instructional practices? a t-test for differences between means was calculated to determine if there were differences between the experimental and control group. For question number 2, Is there a significant relationship between values and health attitudes among students? a multiple regression analysis was calculated with the attitude change score as the dependent variable and each of the 36 values as the independent variables. For question number 3, Is the agreement between the student and teacher's value system related to the student's attitudinal change? Spearman correlations were calculated for the student-teacher value similarities and for the relationship between values and attitudes.

For question number 4, Is there a difference in values between socio-economic groups? the extension of the median test was used to determine what, if any, differences exist. For question number 5, Is there a significant relationship between health attitudes and socioeconomic status? a one factor analysis of variance was run to determine if differences exist. For question number 6, Is there a significant difference in values between males and females? a value similarity table was compiled to indicate the degree of similarity between males and females. For question number 7, Is there a significant difference in health attitudes between males and females? a t-test was calculated to determine differences between males and females in both the experimental and control groups.

II. RESULTS OF THE PILOT STUDY

A pilot study was conducted during the fall semester, 1979. The purpose of the pilot study was to identify concepts and bipolar adjectives necessary to construct the Semantic Differential Health Attitudes Inventory. Twenty-nine students in a personal health class at Western Kentucky University participated in the pilot study.

The cooperating teacher was asked to identify the concepts she teaches toward in her personal health class. Twenty-four concepts were identified. Twelve pairs of bipolar adjectives were selected for each concept. Following the adjective pairs, another single scale was added:

E.g. How would you rate your overall feeling about stress?

strongly positive 1 2 3 4 5 6 7 strongly negative

The final pilot study instrument consisted of 24 concepts, 12 adjective

pairs for each concept, a single scale for each subject, and a set of instructions.

The five most appropriate bipolar adjectives for each concept were identified. Two methods were used to select these adjectives. The first method was to eliminate those adjective pairs that had a large number of 4's. Each of the bipolar adjectives had a scale of 1-7 associated with it. On the pilot study instrument, 4 was labeled as irrelevant. This meant that if a mark (X) was made at 4 that particular adjective pair was irrelevant for that concept according to that particular respondent. For example, on the concept, Stress, 13 of the 29 students indicated that the adjective pair, fast-slow, was irrelevant for that concept.

The second method was to divide the students (on each concept) into one of two groups based on their overall feeling toward each concept. For example, on the concept, Stress, those students checking the first, second, or third interval were placed in one group. Those checking the fifth, sixth, and seventh interval were placed in the other group. Those scoring 4 were regarded as being in a neutral position. Means for each group on each of the 12 bipolar adjective scales were then computed. Adjective pairs that best distinguish the two groups were used.

Based on these two methods, five adjective pairs were selected for each concept. The final instrument consisted of 24 concepts and five adjective pairs for each concept for a total of 120 responses.

III. SAMPLE CHARACTERISTICS

The experimental group consisted of two personal health classes taught by the same teacher. At Western Kentucky University, the maximum number of students permitted to enroll in any one personal health class is 40. The maximum number possible is therefore 80. Since enrollment was down during the winter semester there were only a total of 57 originally enrolled in the class. After accounting for various types of attrition (Table 4-1), the number of students present on both the pretest and posttest was 41. This includes two students who were absent the day of the posttest. Of this group, all had properly completed all forms. The number of students in the experimental group was therefore 41.

The control group consisted of four freshman English classes. At Western Kentucky University, the maximum number of students permitted to enroll in any one English class is 25. The maximum number possible is therefore 100. Enrollment declines reduced this figure to 74 students present for the pretest. The attrition rate was higher for the control group since in addition to attrition, factors that the experimental group had, students who had personal health in college were eliminated from the control group. The number of students present on both the pretest and posttest was 34. This number was further reduced to 31 since three students improperly completed the Semantic Differential Inventory.

This study was also concerned with two characteristics of the sample: sex and socioeconomic status. Males and females were equally divided. There were 36 males and 36 females. In the control group there were 14 females and 17 males. The experimental group had 22

TABLE 4-1

REASONS FOR ATTRITION AMONG STUDENTS IN THE CONTROL AND EXPERIMENTAL GROUPS

Class	Pretest N	Drop	Quit Attending Or Unaccounted For	Had Personal Health	> 22	Absent	Posttest N	Improperly Completed Instrument	Usable N
Personal Health 11:40	33	2	4	NA	2	0	25	0	25
Personal Health 12:50	24	3	2	NA	2	1	16	0	16
English[c,d] 10:25	15	3	3[b]	3	1[a]	0	6	0	6
English 5:00	23	5	0	4	6[a]	0	9	1	8
English 8:00	21	5[e,f]	0	4	2	0	10	1	9

TABLE 4-1 (continued)

Class	Pretest N	Drop	Quit Attending Or Unaccounted For	Had Personal Health	> 22	Absent	Posttest N	Improperly Completed Instrument	Usable N
Personal Health 10:25	25	8[f]	0	4	4	0	9	1	8

[a]One student also had personal health.

[b]Classroom teacher indicated that no regularly attending student was absent the day of the posttest.

[c]One student declined to participate. Subject was over 22.

[d]One foreign student eliminated from the control group.

[e]One student died.

[f]Classroom teacher did not know if students had dropped, were absent, or had quit attending class.

females and 19 males.

Socioeconomic status was determined by using the Hollingshead Two Factor Index of Social Position. The two factors were education and occupation. For each student a score was obtained based on the education and occupation of the parents. In this study, the sample was predominantly middle class (level three) with very few in the upper class (level one) and very few in the lower class (level five). Table 4-2 summarizes the results.

TABLE 4-2

SOCIOECONOMIC STATUS LEVELS OF STUDENTS IN THE EXPERIMENTAL AND CONTROL GROUPS

SES Level	Control	Experimental
1	5	1
2	4	11
3	12	17
4	7	10
5	2	2
Unknown	1	0
Total	31	41

IV. STATISTICAL TREATMENT

This section will present the results of the statistical analysis and interpretation of the seven research questions identified in this study. Formulas will be presented where appropriate. The analysis for each question was done either wholly or partly by the SAS computer package. Data cards were keypunched by The University of Tennessee data entry staff and were proofread for possible errors.

Are Health Attitudes Changed As A Result of Instructional Practices?

For each student an attitude change score was calculated. There were 31 students in the control group and 41 in the experimental group. A t-test for differences between means was calculated to determine if there were differences between the experimental group and the control group.

The formula for the t-test is (Hays, 1973):

$$t = \frac{(M_1 - M_2) - E(M_1 - M_2)}{\text{est. } \sigma \text{ diff.}}$$

If the null hypothesis is used (i.e. no difference between the means), then the quantity $E(M_1 - M_2)$ equals zero.

The quantity σ diff. is determined by the following formula (Hays, 1973):

$$\sigma \text{ diff.} = \sqrt{\text{est. } \sigma^2 \left(\frac{1}{N_1} + \frac{1}{N_2} \right)}$$

In order to determine the σ^2 when there are two estimates, the pooled estimate or pooled variance is a better measure than either sample σ^2 taken separately. The formula for the pooled estimate is (Hays, 1973):

$$\text{est. } \sigma^2 = \frac{(N_1 - 1)s_1^2 + (N_2 - 1)s_2^2}{N_1 + N_2 - 2}$$

Based on these results the conclusion would be that there is no difference between the control and experimental group (Table 4-3). The mean attitude change score was slightly higher for the control group although these differences were not statistically significant.

There are several possible interpretations why no statistical significance was found. The first interpretation was that there was no attitude change. One possible reason was that the teacher was ineffective in terms of influencing attitudes. A second possible reason was that the attitudes were essentially positive to begin with and the health instruction served primarily to confirm these attitudes. If this was the case then the attitude change would neither be expected nor desired.

A second interpretation is that the Semantic Differential Health Attitudes Inventory was not capable of detecting attitude change. Twenty-four "major" concepts were identified. It is possible that the use of the subconcepts would have made this instrument more sensitive.

A third interpretation is that the control and experimental groups were not equivalent. For some unknown reason the control group's responses could have been more variable than the experimental groups responses. This would therefore lead to a finding of no statistically significant differences.

TABLE 4-3

t-TEST FOR DIFFERENCES IN ATTITUDE CHANGE SCORES BETWEEN THE EXPERIMENTAL AND CONTROL GROUP

Group	N	Mean	Standard Deviation	Variance	t	Prob. > | t |
Control	31	105.65	33.85	1145.57		
Experimental	41	99.61	29.12	847.80	0.81	0.420

Is There A Significant Relationship Between Values and Health Attitudes Among Students?

The statistical procedure used was a multiple regression equation with the attitude change score as the dependent variable and each of the 36 values as independent variables. The equation was: Attitude change score = a comfortable life + an exciting life + a sense of accomplishment + a world at peace + a world of beauty + equality + family security + freedom + happiness + inner harmony + mature love + national security + pleasure + salvation + self-respect + social recognition + true friendship + wisdom + ambitious + broadminded + capable + cheerful + clean + courageous + forgiving + helpful + honest + imaginative + independent + intellectual + logical + loving + obedient + polite + responsible + self-controlled.

A regression equation implies that the data be at least interval level. The Rokeach Value Survey yields ranked data. There are two lists of 18 values. A completed Rokeach Value Survey form yields a rank for each value on each list. The data level was clearly ordinal. This

necessitates the use of a technique that transforms ordinal level data to interval level. The technique used was the z-transformation as described by Hays (1967).[1] This is based on the assumption that values ranked near the top and the bottom of the list are farther from the mean than a ranking procedure would indicate. This technique allows any differences between values to be fully exploited. Table 4-4 indicates the z-score given to each rank. For example, if someone ranked honest as number one, it had a corresponding z-score of 1.92. If it was ranked seventh, the corresponding z-score was 0.36.

After the z-transformation had been done the equation was run with attitude change scores as the dependent variable and each of the 36 values as independent variables. Table 4-5 summarizes these results.

The obtained F-score of 1.63 was not statistically significant at $\alpha = .05$. This indicates that values were not a predictor of attitude change. A non-significant F-score also indicates that no further analysis of this model is appropriate. Any further analysis of this research question requires that another model or models be developed. A possible justification for developing another model is that in this particular model the error degrees of freedom is quite small (4). This means that the sum of squares error is only divided by four which makes the MS error term relatively large. A way of increasing the error degrees of freedom is to reduce the number of independent variables. This can be done logically in this study by having the attitude change score as the dependent variable and either the instrumental or the

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[1]For a complete, step-by-step method of transforming ordinal data into z-scores see Hays (1967).

TABLE 4-4

THE TRANSFORMATION OF RANKED DATA TO Z-SCORES

Rank	Area Under the Normal Curve	Corresponding z-Score
1	.028	1.92
2	.084	1.38
3	.139	1.09
4	.195	0.86
5	.250	0.67
6	.306	0.51
7	.361	0.36
8	.417	0.21
9	.472	0.07
10	.528	-0.07
11	.583	-0.21
12	.639	-0.36
13	.694	-0.51
14	.750	-0.67
15	.805	-0.86
16	.861	-1.09
17	.916	-1.38
18	.972	-1.92

TABLE 4-5

REGRESSION ANALYSIS OF THE RELATIONSHIP BETWEEN ATTITUDES AND VALUES IN THE EXPERIMENTAL GROUP

Source		SS	DF	MS	F	PR > F
Model	(SSTR)	31745.78	36	881.83	1.63	0.345
Error	(SSE)	2165.97	4	541.49		
Total	(SSTO)	33911.76	40			

terminal values as the independent values. If the SSTR would stay near its present figure for one of these models, a statistically significant F-score would be likely. Both models were run. Tables 4-6 and 4-7 summarize these results.

TABLE 4-6

REGRESSION ANALYSIS OF THE RELATIONSHIP BETWEEN ATTITUDES AND INSTRUMENTAL VALUES IN THE EXPERIMENTAL GROUP

Source		SS	DF	MS	F	PR > F
Model	(SSTR)	17910.17	18	995.01	1.37	0.240
Error	(SSE)	16001.59	22	727.34		
Total	(SSTO)	33911.76	40			

TABLE 4-7

REGRESSION ANALYSIS OF THE RELATIONSHIP BETWEEN ATTITUDES AND TERMINAL VALUES IN THE EXPERIMENTAL GROUP

Source		SS	DF	MS	F	PR > F
Model	(SSTR)	15318.57	18	851.03	1.01	0.452
Error	(SSE)	18593.19	22	845.14		
Total	(SSTO)	33911.76	40			

Neither of these two models had a statistically significant F-score ($\alpha = .05$). In both models, reducing the number of independent variables had the effect of increasing the sum of squares error (SSE) to a point where the F-score remained non-significant. Since no other logical value groupings existed, no further models were run.

The regression analysis failed to detect any relationship between values and health attitude change scores. One interpretation is that no relationship exists. A second interpretation is that no relationship could be expected since no attitude change occurred. The regression analysis that was done would then have been between values and the variability between the pretest and posttest scores.

Is the Degree of Agreement Between the Student and Teacher's Value System Related to the Student's Attitudinal Change?

The first step toward answering this question was to correlate the terminal and instrumental value systems of the teacher with each of the 41 students in the experimental group. The correlation technique used was the Spearman r. The correlation coefficients obtained represent the degree of agreement between the teacher and each student on each of the two value systems. The Spearman r was calculated by applying the following formula (Siegel, 1956):

$$r = 1 - \frac{6 \sum_{i=1}^{N} d_i^2}{N^3 - N}$$

N = 18 (number of instrumental or terminal values).

Table 4-8 shows the correlation between the teacher and students on the terminal values. Table 4-9 has the instrumental value system correlations. Table 4-10 provides a summary of these results.

After these correlations were obtained the next step was to correlate this figure with each student's attitude change score. The 41 correlations obtained for the student-teacher terminal value systems were converted into ranks. Each student's attitude change score was also given a rank. A Spearman r was then calculated to measure the degree of correlation between the teacher and student terminal value system with each student's attitude change score. This procedure was repeated for the instrumental value system correlations. Table 4-11 gives the results.

Both of the correlations are low. According to the probabilities given in Table 4-11 neither of these correlations differs from zero.

TABLE 4-8

SPEARMAN CORRELATIONS BETWEEN THE TEACHER AND STUDENTS ON THE TERMINAL VALUE SYSTEMS (N = 41)

Subject	r
1	0.2116
2	0.0258
3	0.4985
4	-0.1125
5	0.3271
6	0.2219
7	0.3953
8	0.2095
9	0.2467
10	0.4572
11	0.4118
12	0.2219
13	0.1909
14	0.1249
15	0.3787
16	0.0815
17	-0.0588
18	0.3230
19	0.2879
20	0.2570
21	0.2549
22	0.5294
23	0.4510
24	0.1352
25	0.5315
26	0.3148
27	0.3210
28	0.3622
29	0.1889
30	0.3263
31	0.0857
32	0.4572
33	0.6367
34	0.1538
35	0.4345
36	0.4138
37	0.3560
38	0.0836
39	-0.1228
40	0.1662
41	0.2178

TABLE 4-9

SPEARMAN CORRELATIONS BETWEEN THE TEACHER AND STUDENTS ON THE INSTRUMENTAL VALUE SYSTEMS (N = 41)

Subject	r
1	0.0857
2	0.0299
3	-0.1146
4	-0.2673
5	0.3292
6	0.2178
7	0.0155
8	0.6264
9	-0.3540
10	0.4551
11	0.1393
12	0.0939
13	0.1517
14	0.1352
15	0.0403
16	0.1662
17	0.0258
18	0.0939
19	0.1311
20	0.0733
21	0.3622
22	0.3354
23	0.2673
24	0.4200
25	-0.1207
26	0.1022
27	0.0753
28	0.4799
29	0.3148
30	0.5562
31	0.5955
32	0.0547
33	0.4262
34	0.2962
35	0.7338
36	-0.0691
37	0.6553
38	0.2487
39	0.4758
40	0.2281
41	-0.2178

TABLE 4-10

SUMMARY OF TEACHER-STUDENT VALUE CORRELATIONS (N = 41)

Value System	Mean r	Median r	Minimum r	Maximum r	Number of Statistically Significant r's (α = .05)
Terminal	0.26822	0.25697	-0.12281	0.63674	4
Instrumental	0.20230	0.15170	-0.35397	0.73375	7

TABLE 4-11

TEACHER-STUDENT VALUE SYSTEMS AND ATTITUDE CHANGE SCORE CORRELATIONS

Value System	r	PROB r > 0
Terminal	-0.25422	0.1087
Instrumental	0.12301	0.4436

No statistical relationship between the teacher-student value systems and the student's attitude change scores were found.

Is There A Difference In Values Between Socioeconomic Groups?

The statistical procedure used to analyze this question was the extension of the median test as described by Siegel (1956). The first step was to obtain median rankings for all subjects on all values. Tables 4-12 and 4-13 summarize these rankings.

The next step was to assign plusses to any individual score above the median and minuses to all scores below the median. The plusses and minuses were totaled by socioeconomic status. Tied scores were divided in half. Originally there were to be five categories of socioeconomic status. Levels one and five had low N's (six and four, respectively). Since the extension of the median test required a Chi-Square computation, it was recommended by Siegel (1956) that cells with less than five be combined. Level one was combined with level two and level five was combined with level four. Levels one and two had 21 subjects, level three had 29, and levels four and five had 21. In one subject socioeconomic status could not be determined. Using the null

TABLE 4-12

MEDIAN SCORES, AND RANK OF INSTRUMENTAL VALUES
FOR ALL SUBJECTS (N = 72)

Value	Median Score	Rank
Ambitious	6.0	3.5
Broadminded	9.0	7
Capable	12.5	15.5
Cheerful	10.0	10
Clean	12.0	13.5
Courageous	11.0	12
Forgiving	7.0	5
Helpful	9.5	9
Honest	3.0	1
Imaginative	12.5	15.5
Independent	10.5	11
Intellectual	12.0	13.5
Logical	13.0	17
Loving	5.0	2
Obedient	14.0	18
Polite	9.0	7
Responsible	6.0	3.5
Self-Controlled	9.0	7

TABLE 4-13

MEDIAN SCORES AND RANK OF TERMINAL VALUES
FOR ALL SUBJECTS (N = 72)

Value	Median Score	Rank
A Comfortable Life	11.0	12
An Exciting Life	12.0	13.5
A Sense of Accomplishment	9.0	8.5
A World at Peace	10.0	10.5
A World of Beauty	15.0	17.5
Equality	12.0	13.5
Family Security	6.0	4
Freedom	5.5	2
Happiness	6.0	4
Inner Harmony	10.0	10.5
Mature Love	9.0	8.5
National Security	15.0	17.5
Pleasure	13.0	15
Salvation	4.0	1
Self-Respect	7.0	6.5
Social Recognition	14.5	16
True Friendship	6.0	4
Wisdom	7.0	6.5

hypothesis that there was no difference between socioeconomic levels, the expected cell frequencies were one-half of the N for each socioeconomic group. The expected cell frequencies and the observed cell frequencies for each value are found in the tables found in Appendix D.

The next step was to calculate a Chi-Square score for each value. Since each value had a 2 x 3 table, the degrees of freedom was k - 1 or 3 - 2 = 2. At $\alpha = .05$ the critical Chi-Square value was 5.99 (Table C, Siegel, 1956). The following formula was used to calculate the Chi-Square scores.

$$\chi^2 = \sum_{i=1}^{r} \sum_{j=1}^{k} \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

Tables D-1 to D-36 (Appendix D) summarize the results for each of the 36 values. Tables 4-14 and 4-15 give the obtained Chi-Square scores for each value.

The Chi-Square scores for the terminal values had a range of 0.180 for Wisdom to 4.460 for Inner Harmony. The range scores on the instrumental values was 0.182 for Self-Controlled to 2.574 for Imaginative. Since the critical value needed was 5.99 at $\alpha = .05$, none of the 36 values differed significantly based on the socioeconomic status of the subjects in this study.

Is There A Significant Relationship Between Health Attitudes and Socioeconomic Status?

The original sample of 72 was broken down by group (experimental and control) and then a one factor analysis of variance was run. The factor, socioeconomic status, had five levels.

TABLE 4-14

CHI-SQUARE SCORES FOR TERMINAL VALUES
BY SOCIOECONOMIC STATUS

Value	Chi-Square
A Comfortable Life	1.786
An Exciting Life	0.972
A Sense of Accomplishment	0.618
A World at Peace	1.922
A World of Beauty	1.644
Equality	2.014
Family Security	2.796
Freedom	0.832
Happiness	1.322
Inner Harmony	4.460
Mature Love	0.324
National Security	1.136
Pleasure	0.472
Salvation	2.124
Self-Respect	0.174
Social Recognition	2.034
True Friendship	1.032
Wisdom	0.180

$\chi^2_{.05} = 5.99$

TABLE 4-15

CHI-SQUARE SCORES FOR INSTRUMENTAL VALUES
BY SOCIOECONOMIC STATUS

Value	Chi-Square
Ambitious	0.472
Broadminded	2.560
Capable	0.066
Cheerful	1.526
Clean	0.814
Courageous	1.048
Forgiving	2.170
Helpful	0.780
Honest	1.800
Imaginative	2.574
Independent	1.056
Intellectual	1.256
Logical	0.704
Loving	1.110
Obedient	1.090
Polite	0.750
Responsible	0.448
Self-Controlled	0.182

$\chi^2_{.05} = 5.99$

In the experimental group there were 41 subjects. An ANOVA table was compiled. Table 4-16 summarizes the ANOVA procedure.

TABLE 4-16

ONE-FACTOR ANOVA TABLE FOR ATTITUDE DIFFERENCES BY SOCIOECONOMIC STATUS IN THE EXPERIMENTAL GROUP (N = 41)

Source of Variation	SS	DF	MS	F	PR > F
SES (Between Group)	3588.50	4	897.12	1.07	0.388
Error (Within Group)	30323.26	36	842.31		
Total (SSTO)	33911.76				

The obtained F-score of 1.07 was not statistically significant at $\alpha = .05$. This indicates that there were no differences in attitude change scores by socioeconomic status. No further procedures were necessary in the experimental group.

In the control group there were originally 31 subjects. In one subject the socioeconomic status could not be determined which reduced the number to 30. An ANOVA table was compiled. Table 4-17 summarizes the ANOVA procedure.

The obtained F-score of 2.87 was statistically significant at $\alpha = .05$. This indicates that there is a difference between one or more of the factor levels. A post hoc analysis was done to find out where these differences were. To determine what post hoc procedure to use, certain characteristics of the control group must be known. One important characteristic was the number of subjects in each factor

TABLE 4-17

ONE-FACTOR ANOVA TABLE FOR ATTITUDE DIFFERENCES BY SOCIOECONOMIC STATUS IN THE CONTROL GROUP (N = 30)

Source of Variation	SS	DF	MS	F	PR > F
SES (Between Groups)	10759.12	4	2689.78	2.87	0.0436
Error (Within Group)	23395.05	25	935.80		
Total (SSTO)	34154.17				

level. It is also necessary to have mean scores for each factor level. Table 4-18 summarizes these characteristics.

TABLE 4-18

TREATMENT MEANS BY SOCIOECONOMIC STATUS IN THE CONTROL GROUP (N = 30)

Level	N	Mean
1	5	81.80
2	4	92.25
3	12	102.50
4	7	118.00
5	2	160.50

Based on the characteristics found in the control group, a post hoc procedure was done that could accommodate unequal n's. The only major post hoc procedure that adequately handles pairwise comparisons

with unequal n's is the Scheffe' Post Hoc Analysis.

In order to calculate the Scheffe' values it is necessary to calculate an S value for each pairwise comparison. The formula for this is:

$$S = \sqrt{\left(\frac{c_j^2}{n_j}\right) (MSE)\ (R-1)\ (F_{.05}[R-1, n-R])}$$

where MSE = 935.8

R-1 = 5-1=4

$F_{.05}(4,25) = 2.76$ (Hays, 1973, Table V)

n = number of subjects in each factor level

The next step was to order the treatment means from highest to lowest. The subscript refers to the socioeconomic status level from Table 4-19.

TABLE 4-19

ORDERED TREATMENT MEANS BY SOCIOECONOMIC STATUS LEVEL IN THE CONTROL GROUP (N = 30)

SES Level	Mean	N
$\bar{X}_5$	160.50	2
$\bar{X}_4$	118.00	7
$\bar{X}_3$	102.50	12
$\bar{X}_2$	92.25	4
$\bar{X}_1$	81.80	5

The next step was to identify treatment contrast means, to calculate $\frac{c_j^2}{n}$ values for each contrast, determine the difference between contrast means ($\hat{L}$), and S value for each contrast, and a 95 percent confidence interval ($\hat{L} \pm S$). Table 4-20 summarizes these results.

TABLE 4-20

SCHEFFE' POST HOC ANALYSIS OF DIFFERENCES IN SOCIOECONOMIC STATUS LEVELS

Contrast	$\frac{c^2}{n}$	$\hat{L}$	S	$\hat{L} \pm S$
1. $\bar{X}_5-\bar{X}_1$	.70	78.7	85.0	6.3 to 163.7
2. $\bar{X}_5-\bar{X}_3$	.58	48.0	77.6	29.6 to 125.6
3. $\bar{X}_4-\bar{X}_3$	.22	15.5	48.3	32.8 to 63.8
4. $\bar{X}_3-\bar{X}_1$	.28	20.7	54.1	33.4 to 74.8
5. $\bar{X}_5+\bar{X}_4-\bar{X}_2-\bar{X}_1$	1.09	104.5	106.3	1.8 to 210.8
6. $3\bar{X}_5+3\bar{X}_4-2\bar{X}_3-2\bar{X}_2-2\bar{X}_1$	7.89	282.4	285.5	2.1 to 567.9

Based on the Scheffe' Post Hoc Analysis, none of the comparisons were significant. Since the F Score was significant there should be some significant contrast. None of the contrasts in Table 4-20 were significant. It is probably because the Scheffe' procedure is a conservative procedure that a significant contrast was not obtained. The next step was to use a less conservative procedure. The procedure chosen was the Bonferroni procedures used as a post hoc procedure. The formula for calculating Bonferroni confidence intervals is:

$$\hat{L} \pm t_{\frac{\alpha}{2b}} \sqrt{MSE\left(\Sigma \frac{c^2}{n}\right)}$$

where $\alpha = .05$

b = the number of contrasts (6)

$t = 2.787$ (Hays, 1973, Table III)

Table 4-21 summarizes the Bonferroni confidence intervals.

TABLE 4-21

BONFERRONI CONFIDENCE INTERVALS

Contrast	$\frac{c^2}{n}$	$\hat{L}$	t	Confidence Intervals
1. $\bar{X}_5-\bar{X}_1$	.70	78.7	2.787	-7.4 to 150.0
2. $\bar{X}_5-\bar{X}_3$	.58	48.0	2.787	17.1 to 113.1
3. $\bar{X}_4-\bar{X}_3$	.22	15.5	2.787	24.8 to 55.7
4. $\bar{X}_3-\bar{X}_1$	.28	20.7	2.787	24.7 to 66.1
5. $\bar{X}_5+\bar{X}_4-\bar{X}_2-\bar{X}_1$	1.09	104.5	2.787	-15.4 to 193.6
6. $3\bar{X}_5+3\bar{X}_4-2\bar{X}_3-2\bar{X}_2-2\bar{X}_1$	7.89	282.4	2.787	-42.9 to 521.9

The Bonferroni confidence intervals indicated that contrasts 1, 5, and 6 were significant. The common element in all three contrasts was that level five was in each one. Level five was significantly different from level one, but not levels two, three, and four unless level five was combined with level four (contrasts 5 and 6). A possible interpretation why level five may be different from the other levels was the size of the n for level five. There were two subjects in level five with

one of them having an attitude change score of 215. The control group mean was 105.2 with a standard deviation of 30.6. This subject was therefore more than three standard deviations from the mean. An argument could be made for eliminating this subject, although it was the decision of the researcher to leave this subject in and attribute the main source of significance to the relatively high mean that was in level five.

Is There A Significant Difference in Values Between Males and Females?

The first step was to create a value similarity index between males and females. This index included means and medians for each value as well as the overall rank for each value based on the median. Tables 4-22 and 4-23 summarize these results.

The next step was to calculate a Spearman r between males and females for the terminal and instrumental values. In calculating the Spearman r, a relatively large proportion of tied scores tends to give an inflated r value. It is the recommendation of Siegel (1956) that a correction factor be used if a significant number of ties exist. Tables 4-22 and 4-23 indicate that a relatively large proportion of the scores were tied. The formula for computing r when there are a large number of ties is (Siegel, 1956):

$$r = \frac{\Sigma X^2 + \Sigma Y^2 - \Sigma d^2}{2\sqrt{\Sigma X^2 \Sigma Y^2}}$$

when $\Sigma X^2 = \frac{N^3 - N}{12} - \Sigma Tx$

and $\Sigma Y^2 = \frac{N^3 - N}{12} - \Sigma Ty$

TABLE 4-22

VALUE SIMILARITY INDEX FOR THE TERMINAL VALUES OF MALES AND FEMALES (N = 72)

Value	Males N=36			Females N=36		
	Mean	Median	Rank	Mean	Median	Rank
A Comfortable Life	10.250	11.0	12.5	10.556	10.5	12.0
An Exciting Life	10.611	10.5	10.5	12.611	13.0	14.5
A Sense of Accomplishment	8.472	9.0	9	8.444	8.5	8
A World at Peace	10.139	11.0	12.5	8.028	9.0	9.5
A World of Beauty	14.194	15.0	18	12.694	14.0	16
Equality	12.250	12.5	14	10.694	12.0	13
Family Security	6.722	6.0	4.5	7.000	6.0	4
Freedom	5.528	4.0	2	6.528	6.0	4
Happiness	6.667	5.5	3	6.083	6.0	4
Inner Harmony	10.389	10.5	10.5	9.134	9.0	9.5
Mature Love	7.944	8.0	7.5	9.583	10.0	11
National Security	12.861	14.0	16.5	13.417	16.0	17.5

TABLE 4-22 (continued)

Value	Males N=36			Females N=36		
	Mean	Median	Rank	Mean	Median	Rank
Pleasure	12.139	13.0	15	12.500	13.0	14.5
Salvation	6.944	3.5	1	6.472	4.5	1
Self-Respect	8.917	8.0	7.5	7.500	6.0	4
Social Recognition	12.861	14.0	16.5	14.389	16.0	17.5
True Friendship	6.444	6.0	4.5	8.167	7.5	7
Wisdom	7.667	7.0	6	7.139	6.0	4

TABLE 4-23

VALUE SIMILARITY INDEX FOR THE INSTRUMENTAL VALUES OF MALES AND FEMALES

Value	Males N=36			Females N=36		
	Mean	Median	Rank	Mean	Median	Rank
Ambitious	6.222	5.5	3	7.139	6.0	4
Broadminded	8.000	8.0	6	10.000	9.0	8.5
Capable	10.722	11.0	11.5	13.194	15.0	18
Cheerful	9.861	10.0	9.5	9.722	9.5	10.5
Clean	11.917	13.0	15.5	11.139	11.5	12
Courageous	9.472	8.5	7	10.778	12.0	14
Forgiving	7.583	6.5	4	8.028	7.5	6
Helpful	10.056	10.0	9.5	8.250	8.5	7
Honest	4.472	3.0	1	3.972	3.0	1
Imaginative	12.306	14.0	18	12.694	12.0	14
Independent	10.528	12.5	13.5	9.583	9.0	8.5
Intellectual	11.250	13.0	15.5	10.778	12.0	14

TABLE 4-23 (continued)

Value	Males N=36			Females N=36		
	Mean	Median	Rank	Mean	Median	Rank
Logical	11.361	12.5	13.5	12.750	14.5	17
Loving	6.111	5.0	2	5.722	5.0	2.5
Obedient	13.056	13.5	17	12.972	14.0	16
Polite	9.222	9.0	8	10.278	9.5	10.5
Responsible	7.167	7.5	5	6.278	5.0	2.5
Self-Controlled	11.083	11.0	11.5	7.722	7.0	5

The correction factor, T, is calculated by the formula:

$$T = \frac{t^3 - t}{12}$$

where t = the number of observations tied at a given rank.

The first Spearman r was for the terminal values. For the males there were five tied scores. For the females there were four tied scores with one rank (4) having five tied scores. The $\Sigma d_i^2 = 74.50$ (Table 4-24).

$$\text{The } \Sigma X^2 = \frac{5832 - 18}{12} - 2.5$$

$$= 484.5 - 2.5$$

$$= 482.0$$

$$\text{The } \Sigma Y^2 = \frac{5832 - 18}{12} - 11.5$$

$$= 484.5 - 11.5$$

$$= 473.0$$

Substituting these numbers into the formula for the Spearman r yields the following score:

$$r = \frac{482 + 473 - 74.50}{2\sqrt{(482)(473)}}$$

$$= .922$$

The Spearman r for the correlation between the terminal values of males and females was .922.

The same procedure was used to calculate the Spearman r for the instrumental values. The males had four tied scores. The females had four tied scores with one rank (14) having three tied scores. The $\Sigma d_i^2 = 227.12$ (Table 4-25).

TABLE 4-24

TERMINAL VALUE RANKS FOR MALES AND FEMALES (N = 72)

Value	Rank		d_i	d_i^2
	Males	Females		
A Comfortable Life	12.5	12	0.5	.25
An Exciting Life	10.5	14.5	-4.0	16.00
A Sense of Accomplishment	9	8	1.0	1.00
A World at Peace	12.5	9.5	3.0	9.00
A World of Beauty	18	16	2.0	4.00
Equality	14	13	1.0	1.00
Family Security	4.5	4	0.5	.25
Freedom	2	4	-2.0	4.00
Happiness	3	4	-1.0	1.00
Inner Harmony	10.5	9.5	1.0	1.00
Mature Love	7.5	11	-3.5	12.25
National Security	16.5	17.5	-1.0	1.00
Pleasure	15	14.5	0.5	.25
Salvation	1	1	0	0.00
Self-Respect	7.5	4	3.5	12.25
Social Recognition	16.5	17.5	-1.0	1.00
True Friendship	4.5	7	-2.5	6.25
Wisdom	6	4	2.0	4.00
	Tx=2.5	Ty=11.5		Σd_i^2=74.50

TABLE 4-25

INSTRUMENTAL VALUE RANKS BETWEEN MALES AND FEMALES (N = 72)

Value	Rank		d_i	d_i^2
	Males	Females		
Ambitious	3	4	-1.0	1.00
Broadminded	6	8.5	-2.5	6.25
Capable	11.5	18	-6.5	39.06
Cheerful	9.5	10.5	-1.0	1.00
Clean	15.5	12	3.5	12.25
Courageous	7	14	-7.0	49.00
Forgiving	4	6	-2.0	4.00
Helpful	9.5	7	2.5	6.25
Honest	1	1	0	0
Imaginative	18	14	4.0	16.00
Independent	13.5	8.5	5.0	25.00
Intellectual	15.5	14	1.5	2.25
Logical	13.5	17	-3.5	12.25
Loving	2	2.5	-0.5	.25
Obedient	17	16	1.0	1.00
Polite	8	10.5	-2.5	6.25
Responsible	5	2.5	2.5	6.25
Self-Controlled	11.5	5	6.5	39.06
	Tx=2.0	Ty=3.5		Σd_i^2=227.12

$$\text{The } \Sigma X^2 = \frac{5832 - 18}{12} - 2.0$$

$$= 484.5 - 2.0$$

$$= 482.5$$

$$\text{The } \Sigma Y^2 = \frac{5832 - 18}{12} - 3.5$$

$$= 484.5 - 3.5$$

$$= 481.0$$

Substituting these numbers into the formula for the Spearman r yields the following score:

$$r = \frac{482.5 + 481 - 227.12}{2\sqrt{(482.5)(481)}}$$

$$= .718$$

The Spearman r for the correlation between the instrumental values of males and females was .718.

The correlations of .922 and .718 for the terminal and instrumental values, respectively, represent a very high degree of agreement between males and females. The usual procedure when discussing sex differences is to look at differences. However, based on these correlations it appears to be more appropriate to examine sex similarities. Based on these figures, it appears as if the sexes are more alike than different. For example, the top six terminal values for males were Salvation, Freedom, Happiness, Family Security, True Friendship, and Wisdom. The only difference for the females was that Self-Respect replaced True Friendship in the top six. A similar relationship was found with the instrumental values. The top six instrumental values for males were Honest, Loving, Ambitious, Forgiving, Responsible, and Broadminded. The only difference for the females was that Self-Controlled replaced

Broadminded in the top six.

It was also important to examine where the sex differences are. On the terminal values none of the sex differences were particularly large. The biggest difference was the value, An Exciting Life. The median ranking was four positions higher for males than for females. On the instrumental values the males ranked Capable (6.5) and Courageous (7.0) significantly higher. Females ranked Self-Controlled (6.5), Independent (5.0), and Imaginative (4.0) significantly higher.

Is There A Significant Difference In Health Attitudes Between Males and Females?

The sample was first broken down by group and then a t-test was calculated to determine if there were differences in attitudes between males and females. The formula for calculating the t-test for differences between means was presented earlier in this chapter, when research question number 1 was analyzed.

In the control group the mean attitude change score was higher for females than for males. The value for t was 1.06 which was not statistically significant at $\alpha = .05$. Table 4-26 summarizes these results.

In the experimental group the mean attitude change score was slightly higher for males than for females. The obtained value for t was -0.2595 which was not statistically significant at the $\alpha = .05$. Table 4-27 summarizes these results.

TABLE 4-26

t-TEST FOR DIFFERENCES BETWEEN MALES AND FEMALES
IN THE CONTROL GROUP (N = 31)

Sex	N	Mean	Standard Deviation	Variance	t	PROB>|t|
Female	14	112.71	42.85	1835.91		
Male	17	99.82	24.01	576.53	1.06	0.299

TABLE 4-27

t-TEST FOR DIFFERENCES BETWEEN MALES AND FEMALES
IN THE EXPERIMENTAL GROUP (N = 31)

Sex	N	Mean	Standard Deviation	Variance	t	PROB>|t|
Female	22	98.50	32.79	1075.50		
Male	19	100.89	25.02	625.99	-0.26	0.797

V. SUMMARY

The purpose of this chapter was to present an analyses of the collected data. A pilot study was conducted in order to develop the Semantic Differential Health Attitudes Inventory. A description of the sample in this study was provided. The seven research questions developed for this study were analyzed. Most of the analyses done, were done using the SAS computer package and The University of Tennessee computers. Some procedures required hand computations. Tables as well as formulas were provided as appropriate. Interpretations of the data were provided. Conclusions, recommendations, etc. are contained in Chapter V.

CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

I. SUMMARY

Purpose of the Study

The purpose of this study was to determine the relationship between values and health-related attitudes among students in a college-level personal health class. This study sought to identify and describe what values and/or value systems were most related to positive attitude change in college students. The effect of sex and socio-economic status on values and health attitudes was examined. A statistical procedure was used to determine if the degree of teacher-student value agreement was a factor in the student's attitude change.

Importance of the Study

In order to effectively evaluate the health education learning experience it is necessary to have a measuring instrument that is accurate and reliable. This is especially true for health attitudes since the number and variety of possible attitudes can not be possibly measured by a single standardized instrument. This study was concerned with the development of a generalized attitude scale that can be readily and easily modified to measure attitudes accurately and reliably.

It is a generally accepted tenet among health educators that in order to positively affect health attitudes and behaviors it is necessary to consider the needs and interests of the students.

Theoretically a person's values should be a reflection of his needs and interests. If a relationship between values and health attitudes can be established, then it could be possible to measure a student's values and structure learning experiences based on this knowledge. This study attempted to examine this relationship. Data were presented to show the value-attitude relationship, through a direct measure of association, by considering the teacher-student value match, and by controlling for sex differences and socioeconomic status differences.

Procedure Followed

The target population in this study was college students enrolled in a personal health class. In most colleges and universities that have this class, it is designed as a basic lower division health class, primarily for non-majors. For many students it is the only exposure to formal health instruction at the college level. From this population two personal health classes taught by the same teacher were selected. The control group was chosen from among four freshman English classes. The sample was homogeneous with respect to age. There were 41 in the experimental group and 31 in the control group. The sample was equally divided by sex (36 males, 36 females).

A pilot study was conducted for the purpose of selecting adjective pairs for the Semantic Differential Health Attitudes Inventory. Twenty-nine students in a personal health class were given the pilot study instrument. There were 24 concepts and 12 adjective pairs for each concept. The final instrument had 24 concepts and five adjective pairs for each concept for a total of 120 judgments.

The pretest was done at the beginning of the spring semester, 1980, at Western Kentucky University. At this time the students in the control and experimental groups completed the Semantic Differential Health Attitudes Inventory and the Rokeach Value Survey. The teacher of the experimental group completed the Rokeach Value Survey at this time.

The posttest, which was given at the end of the semester, consisted of the Semantic Differential Health Attitudes Inventory. A follow-up was conducted to account for students who had completed the pretest but were absent on the day the posttest was given.

II. FINDINGS

The findings of this research are summarized as follows:

1. The sample was equally divided between males and females.

2. The sample was predominantly middle class.

3. The Rokeach Value Survey was correctly conpleted by all of the respondents.

4. The Semantic Differential Health Attitudes Inventory was correctly completed by 96 percent of the respondents.

5. There were no statistically significant differences in attitude change scores between the experimental and control groups.

6. A regression analysis could not detect a statistical relationship between the attitude change score (dependent variable) and values (independent variables).

7. The median correlation between the teacher and students on the terminal values was 0.25697.

8. Four of the 41 students had a statistically significant (α = .05) correlation with the teacher on the terminal values.

9. The median correlation between the teacher and students on the instrumental values was 0.15170.

10. Seven of the 41 students had a statistically significant (α = .05) correlation with the teacher on the instrumental values.

11. The correlation between teacher-students terminal values and the student's attitude change scores was -0.25422.

12. The correlation between teacher-students instrumental values and the student's attitude change scores was 0.12301.

13. None of the 36 values were ranked significantly higher or lower by the various socioeconomic status levels. The five socioeconomic levels were homogeneous with respect to each of the 36 values.

14. Attitude change scores did not differ by socioeconomic status levels in the experimental group.

15. Level five (the lowest socioeconomic group) had a statistically significant (α = .05) higher attitude change score than the other four levels in the control group.

16. The correlation between males and females on the terminal values was 0.922.

17. The correlation between males and females on the instrumental values was 0.718.

18. Of the top six terminal values, males and females were in agreement on five of them.

19. Of the top six instrumental values, males and females were in agreement on five of them.

20. There was no statistically significant difference in attitude change scores between males and females in the experimental group.

21. There was no statistically significant difference in attitude change scores between males and females in the control group.

III. CONCLUSIONS

The conclusions are based on the findings from two personal health classes taught by the same teacher. The conclusions presented below are applicable only to this data. No attempt was made to generalize the conclusions beyond this particular sample.

On the basis of the findings, the following conclusions were drawn:

1. It was not possible to identify a value-attitude relationship utilizing the Semantic Differential Health Attitudes Inventory among students enrolled in a personal health class at Western Kentucky University.

2. It was not possible to identify positive attitude changes among students enrolled in a personal health class at Western Kentucky University.

3. The prediction of attitude change scores was not a function of sex or socioeconomic status.

IV. RECOMMENDATIONS

The following recommendations result from the findings, the conclusions, the researcher's knowledge of the problem, and the review of the literature:

1. In a pretest-posttest situation the Rokeach Value Survey

should be given twice and any statistical procedures should use the average value system. This would also be useful to check out the degree of honesty of the responses. A relatively high degree of variability would be an indication that the survey responses were not honest.

2. More than one teacher should be used, if adequate controls can be maintained.

3. Whenever the semantic differential technique is used a pilot study should be done to insure that the bipolar adjectives are appropriate for that sample.

4. Research on the value-attitude relationship should be done in a situation where attitude change is likely to occur. This would include situations where the attitude is either nonexistent, negative, poorly formed, or flexible.

5. Health attitude research should be done with a single content area so that the researcher could be sure that the full domain of a particular set of attitudes could be explored.

6. A follow-up study should be done to determine if there is any latent period between the time health instruction is given and positive attitudes developed.

7. Subconcepts as well as concepts should be measured when using the semantic differential technique.

8. When researching values and attitudes, sex similarities as well as sex differences should be examined.

9. Research into individual differences within a group should be continued. This is based on the idea that there is no such person as the "average person."

10. Research should continue examining teacher characteristics, learner characteristics, and their relationship.

11. Before attitude change research is done, an assessment should be done to determine if attitude change is either necessary or desirable.

CHAPTER VI

REFLECTIONS

The primary purpose of this chapter will be an attempt to speculate about the results of this study. The first section will present ideas about these results, some of which will be subjective, others that have a factual basis. The second section will present philosophical reflections about this and other similar studies.

My initial reaction to the lack of significance in attitude change scores between the experimental and control groups was that there must be something different about the control group. There was a mean attitude change of almost 100 in the experimental group. Since there were 120 judgments this meant that the mean change per judgment was almost one, which on a seven point scale indicates there may have been some change. If this was, in fact, the case, then it should still be possible to find a relationship between values and attitudes in the control group, if such a relationship exists. Yet, nowhere in the data was there even the slightest indication of any relationship between values and health attitudes. For this reason, it is doubtful that there were any attitude change differences between the experimental and control groups.

Another distinct possibility is that there was something wrong with the instruments used. It is highly unlikely that there was any problem with the Rokeach Value Survey. The Rokeach Value Survey is an instrument that is professionally printed and extremely easy to use.

There is almost no way of answering it improperly unless an individual deliberately answers it incorrectly. The literature consistently documents the reliability and useability of the Rokeach Value Survey and there appears to be no basis for disputing this data.

The Semantic Differential Health Attitudes Inventory required that the researcher construct an instrument based upon previously accepted criteria. The development of the Semantic Differential Health Attitudes Inventory closely followed the recommended and widely accepted procedures. The 24 concepts identified were the so-called "major concepts." It is possible that a more accurate measurement of attitudes would have occurred, if the subconcepts would also have been measured. This would probably make the instrument more precise, but it would also have caused the instrument to be too large. It would probably be a good idea to concentrate on fewer "major concepts" and examine them more in-depth perhaps by using subconcepts. If there was a problem with the instrumentation, it almost certainly was with the Semantic Differential Health Attitudes Inventory and probably because it was too imprecise.

Another possibility is that there may be a latent period before an attitude fully develops. The posttest was done during the last week of class. Final examinations were less than a week away and undoubtedly grades and tests were uppermost in the students' minds. The attitudes may not be a factor until the person gets into a situation where the attitude has a chance to be used. What was learned in class may not come to the surface until some situation occurs that requires an attitudinal or judgmental reaction. Unfortunately there is no adequate

method of determining when and if this is likely to occur.

A very real possibility why no relationship between values and attitudes was found was because the value-attitude relationship is quite strong. The findings indicate a very low correlation between the students and the teacher on both the terminal and instrumental value systems. Since the value match between the students and the teacher was quite poor, it is possible that the students did not respond well to the instruction. This would potentially indicate that because the differences between the students and teacher were so great, that the students did not accept the way the teacher was teaching the class. They may have shown an increase in the cognitive area, but not in the attitudinal area. An adequate precedent in the literature does not exist to justify this conclusion, nor is there adequate precedent to reject this conclusion as invalid.

For health educators this is an especially important concern. It is important to provide learning experiences that enhance the cognitive area. The very nature of health education requires more than merely knowing "the facts." What a person thinks about the facts (attitudes) and what a person does with this knowledge (behavior) is also crucial. Health knowledge is essentially meaningless unless this person puts this knowledge into use. If a person's values do have an influence on the utilization of health knowledge, then an effort must be made to understand this relationship.

There is also the possibility that health educators might over react in the opposite direction. So often it is generally assumed that attitudes are "bad" or "negative" prior to formal instruction and

that the health educator in his infinite wisdom can change these attitudes. However, it might be the case that the students already had positive attitudes toward health. In this case, cognitive knowledge would serve to reinforce already positive attitudes. This could be the problem in this study, since it was assumed that attitude change was necessary and desirable.

There is also one other critical issue that this study attempted to develop. This is the importance of looking at the person within the group. There is no such thing as the "average" college student or the "average" black, or the "average" male or any other group. When group means are calculated there is a high degree of variability for that particular characteristic within a group. In addition, the characteristic that is yielding a mean score is probably only one of many characteristics for the group. Yet, we so often deal only in terms of average without considering the needs of those who vary from the mean.

With the use of computers, some of the more complex relationships can be examined on an individual basis. For example, a regression analysis (assuming it is appropriate) allows one to predict that if a certain level of characteristic X exists, what the possible range of characteristic Y might be. This should be especially relevant for values, health attitudes, and behavior. If a relationship between values, health attitudes, and behavior can be adequately identified, then it should be conceptually possible to structure learning experiences based upon this knowledge.

This type of concept is precisely what the emphasis of the value clarification movement in education was and is all about. The values

clarification movement started with the recognition that people are individuals and that they have a need to know and understand their values. The values clarification movement has basically only started, simply because we don't know what happens after the values are clarified. This is one of the major challenges facing health educators in the coming years.

BIBLIOGRAPHY

BIBLIOGRAPHY

Allport, G.W. and Vernon, P.E. A Study of Values. Boston: Houghton-Mifflin, 1931, 11 pages.

Anderson, N.H. "Likableness Ratings of SSS Personality-Trait Words," Journal of Personality and Social Psychology 9:272-279, 1968.

Anderson, S. et al. Encyclopedia of Educational Measurement. San Francisco: Jossey-Bass, Inc., 1975, 515 pages.

Bohrnstedt, G.W. "Reliability and Validity Assessment in Attitude Measurement." In Attitude Measurement. G.F. Summers (Ed.). Chicago: Rand McNally & Co., 1970, 80-99.

Bonjean, C.M., Hill, R.J. and McLemore, D.S. Sociological Measurement: An Inventory of Scales and Indices. San Francisco: Chandler Publishing Co., 1967.

Brinton, J.E. "Deriving an Attitude Scale From Semantic Differential Data." In Semantic Differential Technique. James G. Snider and Charles E. Osgood (Eds.). Chicago: Aldine Publishing Co., 467-473, 1969.

Brown, R.W. "Is a Boulder Sweet or Sour?" In Semantic Differential Technique. James G. Snider and Charles E. Osgood (Eds.). Chicago: Aldine Publishing Co., 85-88, 1969.

Carrol, J.B. "The Measurement of Meaning, by Osgood, Suci, and Tannenbaum." In Semantic Differential Technique. James G. Snider and Charles E. Osgood (Eds.). Chicago: Aldine Publishing Co., 96-115, 1969.

Chisman, F.P. Attitude Psychology and the Study of Public Opinion. University Park, Pennsylvania: The Pennsylvania State University Press, 1976, 253 pages.

Cochrane, R. "Values as Correlates of Deviancy," The British Journal of Social and Clinical Psychology 13(3):257-267, 1974.

Duffy, E. "A Critical Review of Investigations Employing the Allport-Vernon Study of Values and Other Tests of Evaluative Attitude," Psychological Bulletin 37(8):597-612, 1940.

Dukes, W.F. "Psychological Studies of Values," Psychological Bulletin 52(1):24-50, 1955.

Feather, N. "Similarity of Value Systems as a Detrimant of Educational Choice at University Level," Australian Journal of Psychology 23(2):201-211, 1971.

Feather, N. "The Measurement of Values: Effects of Different Assessment Procedures," Australian Journal of Psychology 25:221-231, 1973.

Feather, N. "Values and Income Level," Australian Journal of Psychology 27(1):23-29, 1975.

Feather, N. Values in Education and Society. New York: The Free Press, 1975.

Feather, N. "Value Similarity and School Adjustment," Australian Journal of Psychology 24(2):193-208, 1972.

Feather, N. and Peay, E. "The Structure of Terminal and Instrumental Values: Dimensions and Clusters," Australian Journal of Psychology 27(2):151-164, 1975.

Fodor, J. and Dalis, G. Health Instruction: Theory and Application. Philadelphia: Lea & Febiger, 1974, 144 pages.

Ford, L.H. and Meisels, M. "Social Desirability and the Semantic Differential." In Semantic Differential Technique. James G. Snider and Charles E. Osgood (Eds.). Chicago: Aldine Publishing Co., 172-182, 1969.

Friedman, C.J. and Gladden, J.W. "Objective Measurement and Social Role Concepts via the Semantic Differential." In Semantic Differential Technique. James G. Snider and Charles E. Osgood (Eds.). Chicago: Aldine Publishing Co., 484-492, 1969.

Galli, N. "Foundations of Health Education," Journal of School Health 46:158-165, 1976.

Greenstein, T. and Bennett, R. "Order Effects in Rokeach's Value Survey," Journal of Research in Personality 8:393-396, 1974.

Groves, D.L. and Kahalas, H. "An Evaluation System Based Upon Bloom's and Krathwohl's Typologies to Determine Values," College Student Journal Monograph 9(3) Part 2:1-17, 1975.

Grube, J. et al. "Behavior Change Following Self-Confrontation," Journal of Personality and Social Psychology 35:212-216, 1977.

Gulliksen, H. "How to Make Meaning More Meaningful." In Semantic Differential Technique. James G. Snider and Charles E. Osgood (Eds.). Chicago: Aldine Publishing Co., 89-95, 1969.

Handy, R. The Measurement of Values: Behavioral Science and Philosophical Approaches. St. Louis: Warren H. Green, Inc., 1970, 221 pages.

Hays, W.L. Quantification in Psychology. Belmont, California: Brooks/Cole Publishing Co., 1967, 87 pages.

Hays, W.L. Statistics For the Social Sciences. New York: Holt, Rinehart and Winston, Inc., 1973, 954 pages.

Heath, R.L. "Variability in Value System Priorities and Decision-Making Adaptation to Situational Differences," Communication Monographs 43(4):325-333, 1976.

Heise, D.R. "The Semantic Differential and Attitude Research." In Attitude Measurement. G.F. Summers (Ed.). Chicago: Rand McNally & Co., 1970, 235-253.

Hermans, H. Value Areas and Their Development. Amsterdam: Swets & Zeitlinger B.V., 1976, 294 pages.

Hilliard, A.L. The Forms of Value: The Extension of a Hedonistic Axiology. New York: Columbia University Press, 1950, 343 pages.

Hoge, D.R. and Bender, I.E. "Factors Influencing Value Change Among College Graduates in Adult Life," Journal of Personality and Social Psychology 29(4):572-585, 1974.

Homant, R. "Semantic Differential Ratings and Rank-Ordering of Values," Educational and Psychological Measurements 29:885-889, 1969.

Homant, R. and Rokeach, M. "Values for Honesty and Cheating Behavior," Personality 1(2):153-162, 1970.

Jacolie, C.L. "Dilemma for Educators: Values or Valuing," Kappa Delta Pi Record 12(2):50-51, 1975.

Kehoe, J. "Demonstrating the Relationship Between Values and Attitudes as a Means of Changing Attitudes," The Alberta Journal of Educational Research 31(3):207-212, 1975.

Kelly, K. et al. "Social Desirability and the Rokeach Value Survey," Journal of Experimental Research in Personality 6:84-87, 1972.

Kerlinger, Fred N. Foundations of Behavioral Research. New York: Holt, Rinehart & Winston, Inc., 1973, 2nd ed.

Kitwood, T. "On Values and Value Systems: Evidence From Interviews With Adolescents," Educational Research 18(3):223-231, 1976.

Kitwood, T.M. and Smithers, A.G. "Measurement of Human Values: An Appraisal of the Work of Milton Rokeach," Educational Research 17(3):175-179, June, 1975.

Lemon, N. Attitudes and Their Measurement. New York: John Wiley & Sons, 1973, 294 pages.

Maguire, Thomas O. "Semantic Differential Methodology for the Structuring of Attitudes," American Education Research Journal 10(4):295-306, Fall, 1973.

Maslow, A. "Psychological Data and Value Theory." In New Knowledge in Human Values. Abraham Maslow (Ed.). New York: Harper & Row, 119-136, 1959.

Mitchell, J.V. "The Structure and Predictive Efficacy of an Empirical Model of the Value-Attitude System as Postulated by Rokeach," Measurement and Evaluation in Guidance 8(4):229-239, 1976.

Morris, C. Varieties of Human Value. New York: The University of Chicago Press, 1956, 209 pages.

Morsly, G.J. Educational Research. Boston: Allyn & Bacon, Inc., 1978, 390 pages.

Norman, W.T. "Stability Characteristics of the Semantic Differential." In Semantic Differential Technique. James G. Snider and Charles E. Osgood (Eds.). Chicago: Aldine Publishing Co., 168-171, 1969.

Osgood, C.E. "The Nature and Measurement of Meaning," Psychological Bulletin 49:197-237, 1952.

Osgood, C.E. and Suci, G.J. "Factor Analysis of Meaning." In Semantic Differential Technique. James G. Snider and Charles E. Osgood (Eds.). Chicago: Aldine Publishing Co., 42-55, 1969.

Osgood, C.E., Suci, G.J., and Tannenbaum, P.H. The Measurement of Meaning. Urbana: University of Illinois Press, 1957, 342 pages.

Rim, Y. "Values and Attitudes," Personality 1(3):243-250, 1970.

Rokeach, M. The Nature of Human Values. New York: The Free Press, 1973, 438 pages.

Siegel, S. Nonparametric Statistics. New York: McGraw-Hill Book Co., 1956, 312 pages.

Sliepcevich, E. (Director). School Health Education Study: A Summary Report. Washington, D.C., 1964.

Smith, M.B. Social Psychology and Human Values. Chicago: Aldine Publishing Co., 1969, 438 pages.

Smith, P.G. "Knowledge and Values," Educational Theory 26(1):29-39, 1976.

Spranger, E. Types of Men. Paul J.W. Pigors (translator). Max Niemeyer Verlag, 1928.

Szalay, L.B. and Deese, J. Subjective Meaning and Culture: An Assessment Through Word Associations. Hillsdale, New Jersey: Lawrence Erlbaum Associates, 1978, 166 pages.

Thurstone, C.L. "The Measurement of Values," Psychological Review 61(1):47, 1954.

Upchurch, M. "Health Educator--Where Are You?" Educational Horizons 55:9-11, Fall, 1976.

Weisskopf, W. "Existence and Values." In New Knowledge in Human Values. Abraham Maslow (Ed.). New York: Harper & Row, 107-118, 1959.

Wright, J. and Wright, S. "Social Class and Parental Values for Children: A Partial Replication and Extension of the Kohn Thesis," American Sociological Review 41(3):527-537, 1976.

Zajonc. R.B. "Balance, Congruity and Dissonance." In Attitudes. M. Jahoda and N. Warren (Eds.). Baltimore: Penguin Books, Inc., 1966, 375 pages.

APPENDICES

APPENDIX A

ROKEACH VALUE SURVEY

FORM D

VALUE SURVEY

BIRTH DATE_____SEX: MALE_____FEMALE_____

CITY and STATE OF BIRTH_____

NAME (FILL IN ONLY IF REQUESTED)_____

© 1967 BY MILTON ROKEACH

HALGREN TESTS
673 PERSIMMON AVE.
SUNNYVALE, CALIFORNIA 94087

INSTRUCTIONS

On the next page are 18 values listed in alphabetical order. Your task is to arrange them in order of their importance to YOU, as guiding principles in YOUR life. Each value is printed on a gummed label which can be easily peeled off and pasted in the boxes on the left-hand side of the page.

Study the list carefully and pick out the one value which is the most important for you. Peel it off and paste it in Box 1 on the left.

Then pick out the value which is second most important for you. Peel it off and paste it in Box 2. Then do the same for each of the remaining values. The value which is least important goes in Box 18.

Work slowly and think carefully. If you change your mind, feel free to change your answers. The labels peel off easily and can be moved from place to place. The end result should truly show how you really feel.

1	A COMFORTABLE LIFE (a prosperous life)
2	AN EXCITING LIFE (a stimulating, active life)
3	A SENSE OF ACCOMPLISHMENT (lasting contribution)
4	A WORLD AT PEACE (free of war and conflict)
5	A WORLD OF BEAUTY (beauty of nature and the arts)
6	EQUALITY (brotherhood, equal opportunity for all)
7	FAMILY SECURITY (taking care of loved ones)
8	FREEDOM (independence, free choice)
9	HAPPINESS (contentedness)
10	INNER HARMONY (freedom from inner conflict)
11	MATURE LOVE (sexual and spiritual intimacy)
12	NATIONAL SECURITY (protection from attack)
13	PLEASURE (an enjoyable, leisurely life)
14	SALVATION (saved, eternal life)
15	SELF-RESPECT (self-esteem)
16	SOCIAL RECOGNITION (respect, admiration)
17	TRUE FRIENDSHIP (close companionship)
18	WISDOM (a mature understanding of life)

WHEN YOU HAVE FINISHED, GO TO THE NEXT PAGE.

Below is another list of 18 values. Arrange them in order of importance, the same as before.

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	

AMBITIOUS
(hard-working, aspiring)

BROADMINDED
(open-minded)

CAPABLE
(competent, effective)

CHEERFUL
(lighthearted, joyful)

CLEAN
(neat, tidy)

COURAGEOUS
(standing up for your beliefs)

FORGIVING
(willing to pardon others)

HELPFUL (working
for the welfare of others)

HONEST
(sincere, truthful)

IMAGINATIVE
(daring, creative)

INDEPENDENT
(self-reliant, self-sufficient)

INTELLECTUAL
(intelligent, reflective)

LOGICAL
(consistent, rational)

LOVING
(affectionate, tender)

OBEDIENT
(dutiful, respectful)

POLITE
(courteous, well-mannered)

RESPONSIBLE
(dependable, reliable)

SELF-CONTROLLED
(restrained, self-disciplined)

APPENDIX B

SEMANTIC DIFFERENTIAL HEALTH ATTITUDES INVENTORY

Social Security Number_____

SEMANTIC DIFFERENTIAL HEALTH ATTITUDES INVENTORY

Instructions

The purpose of this instrument is to measure the meanings of certain concepts to various people by having them judge each work against a series of descriptive scales. In completing this instrument, please judge the words on the basis of what they mean to you. Each numbered item presents a concept (such as a rock), and a scale (such as high-low). You are to rate the concept on the 7-point scale indicated.

Rock

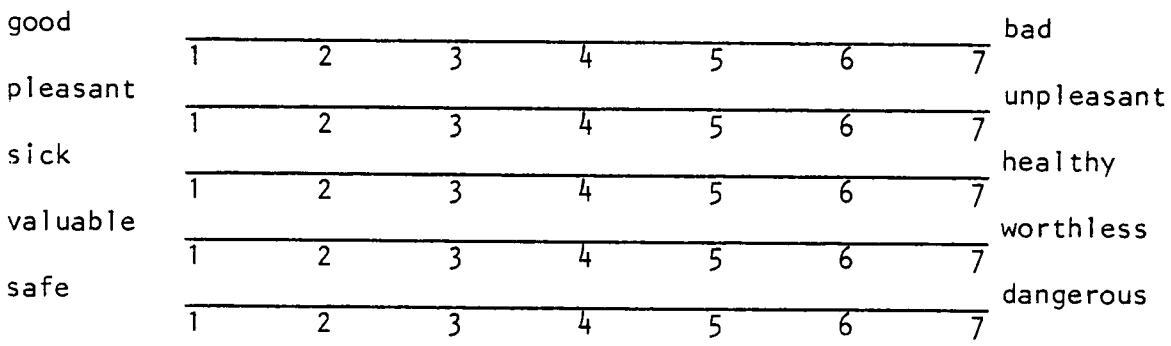
ex. 1.	soft						X	hard
		1	2	3	4	5	6	7
ex. 2.	heavy		X					light
		1	2	3	4	5	6	7
ex. 3.	small			X				large
		1	2	3	4	5	6	7
ex. 4.	sweet				X			sour
		1	2	3	4	5	6	7
					irrelevant			

If you felt that the concept is very closely associated with one end of the scale, check number 7, as in example number 1. If you felt that the concept is quite closely related to one side of the scale, check number 2, as in example 2. If the concept seems only slightly related to one side as opposed to the other, check number 3, as in example number 3. If you consider the scale completely irrelevant, or both sides equally associated, you would check the middle space on the scale, as in example 4.

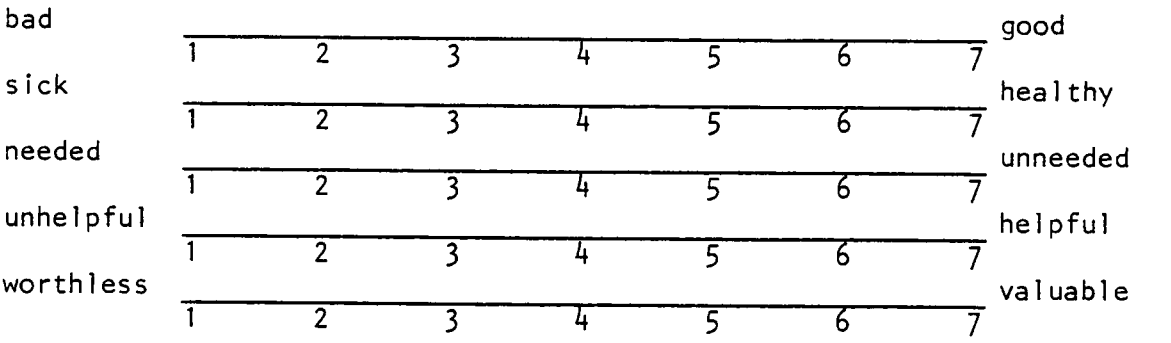
Sometimes you may feel as though you have had the same item before on the test. This will not be the case; every item is different. Do do not look back and forth throughout the test. Also, do not try to remember how you marked similar items earlier in the test. Make each item a separate and independent judgment. Work at a fairly high speed, without worrying or puzzling over the individual items for long periods. It is your first impression that we want.

Of course, some of the items will seem highly irrelevant to you. It was necessary, in the design of this test, to match every concept with every scale at some place, and this is why some items seem irrelevant--so give the best judgment you can and move along.

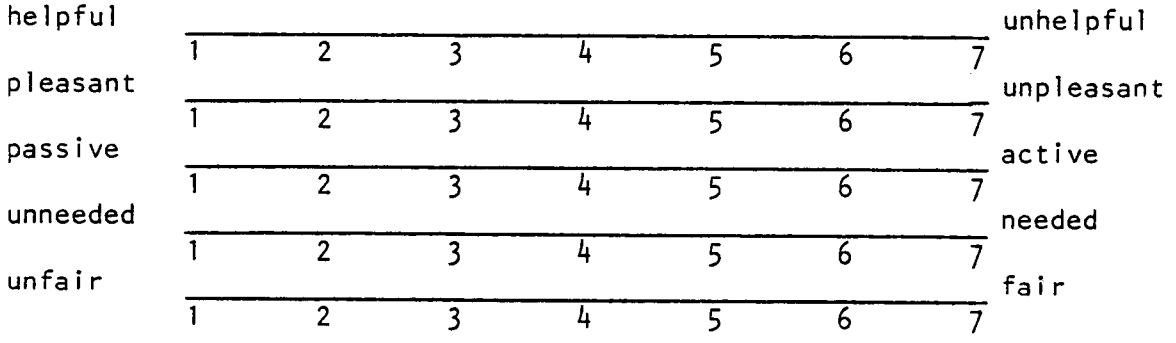
Concept 1: Stress



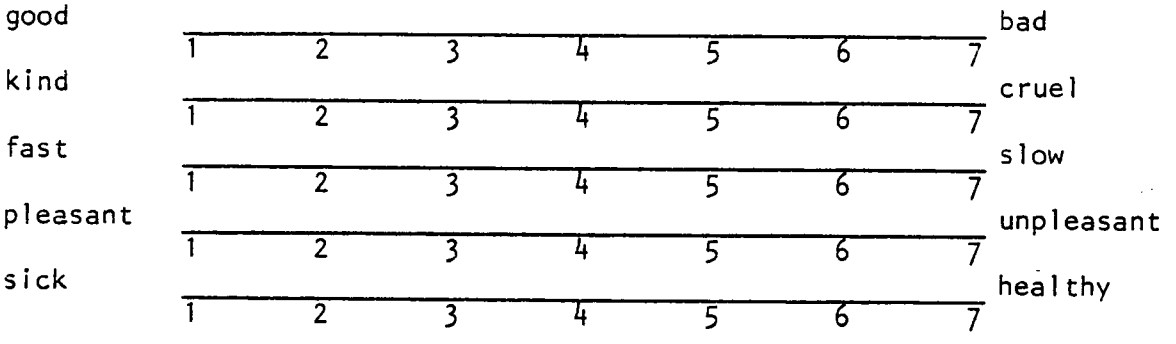
Concept 2: Psychological Counseling



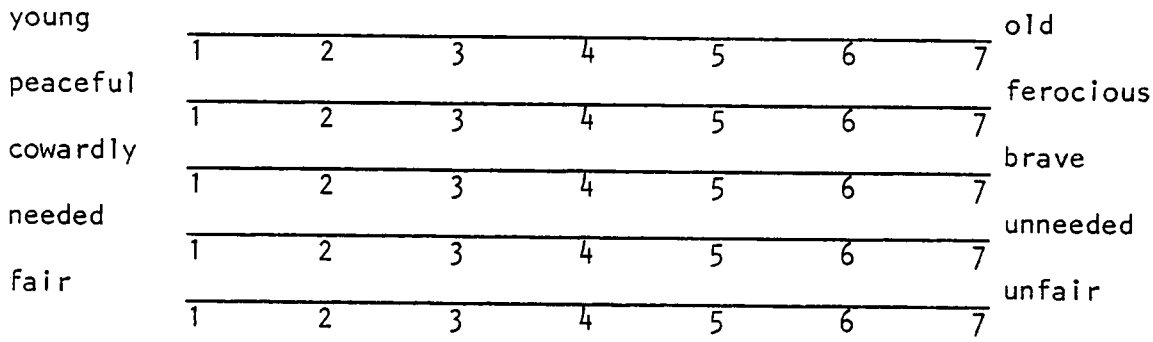
Concept 3: My Responsibility for Environmental Pollution



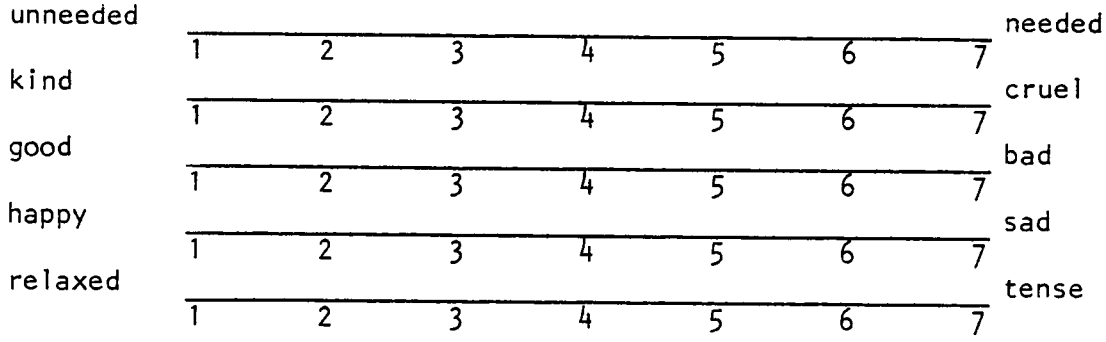
Concept 4: The Aging Process



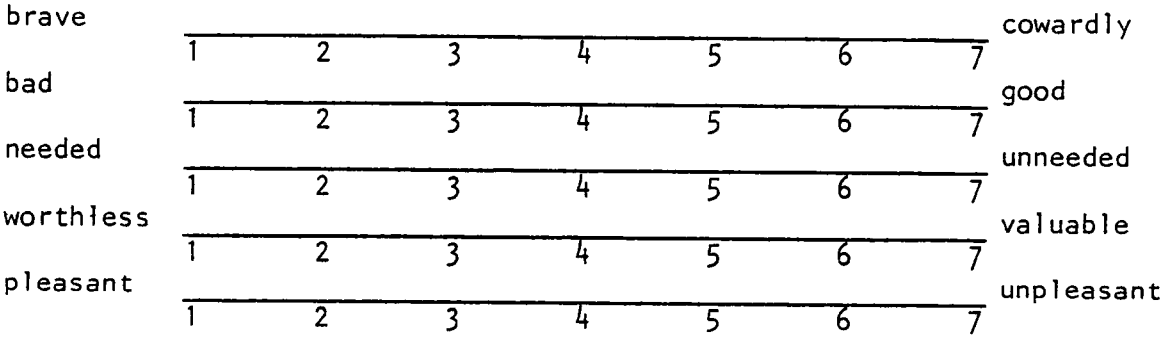
Concept 5: Death and Dying



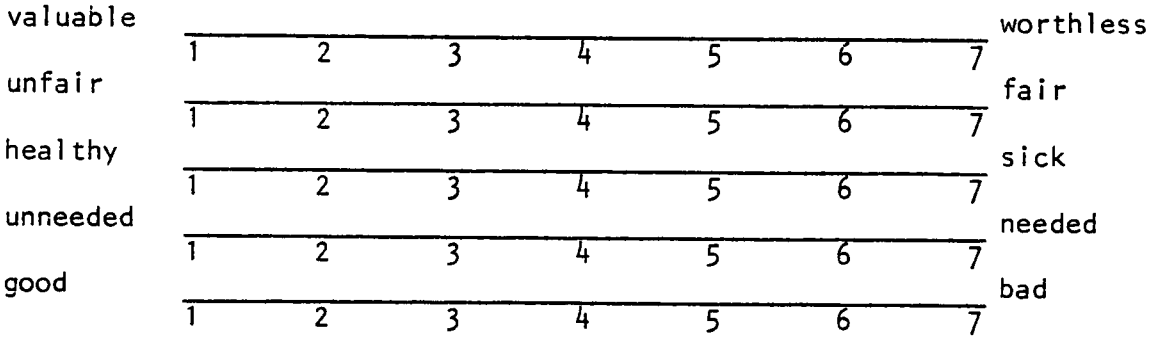
Concept 6: Abortion



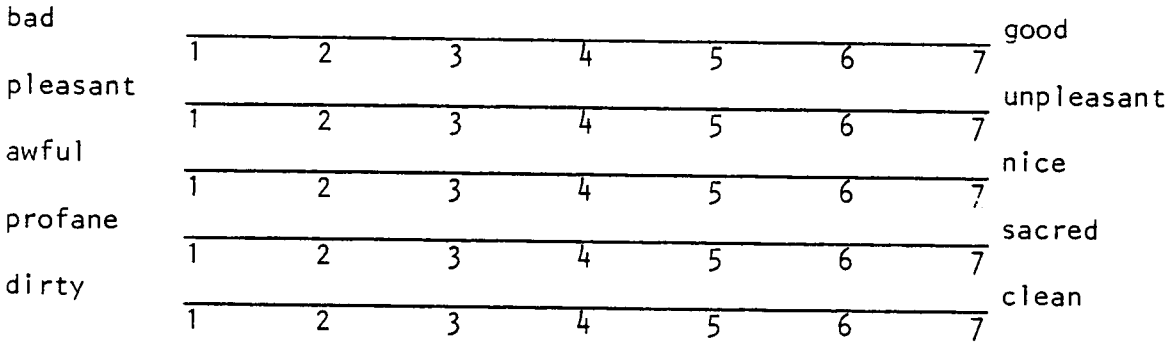
Concept 7: Permanent Birth Control



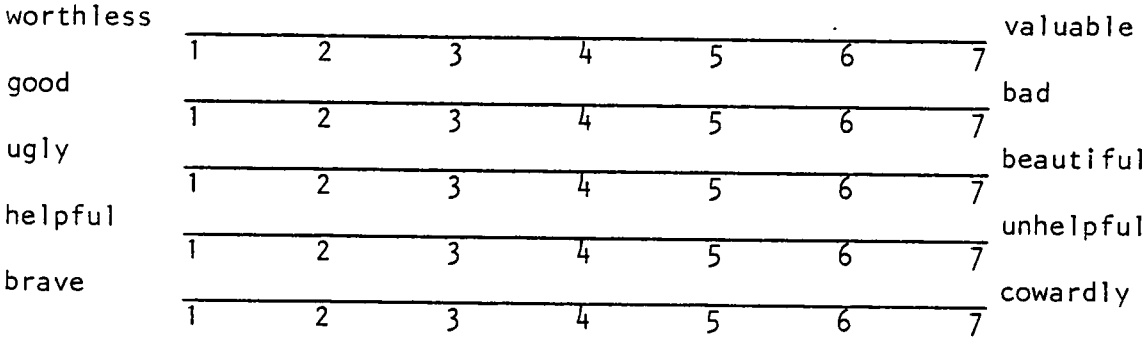
Concept 8: Sex Role Differences



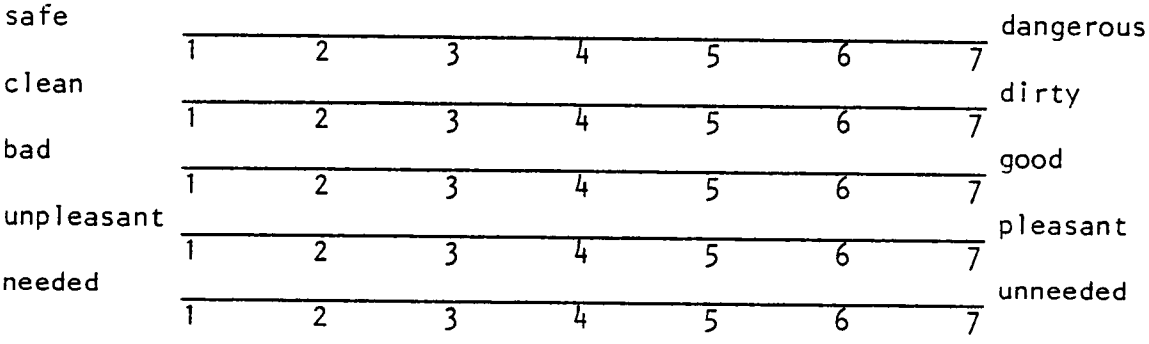
Concept 9: Homosexuality



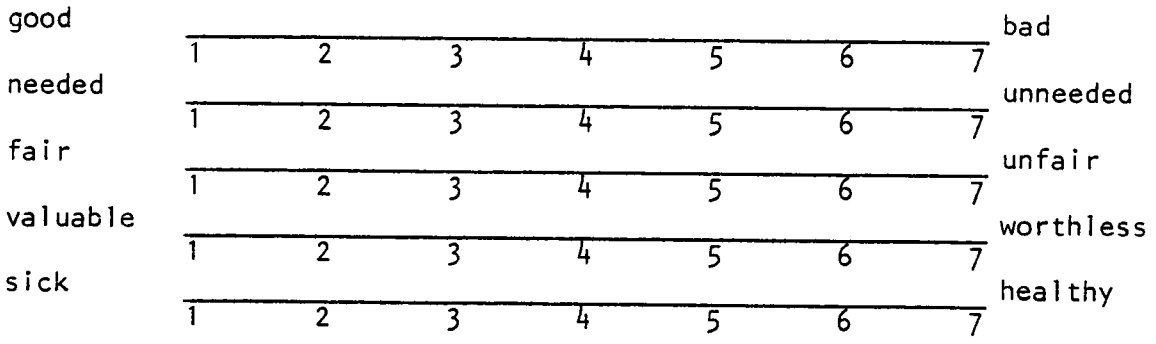
Concept 10: Natural Childbirth (Lamaze)



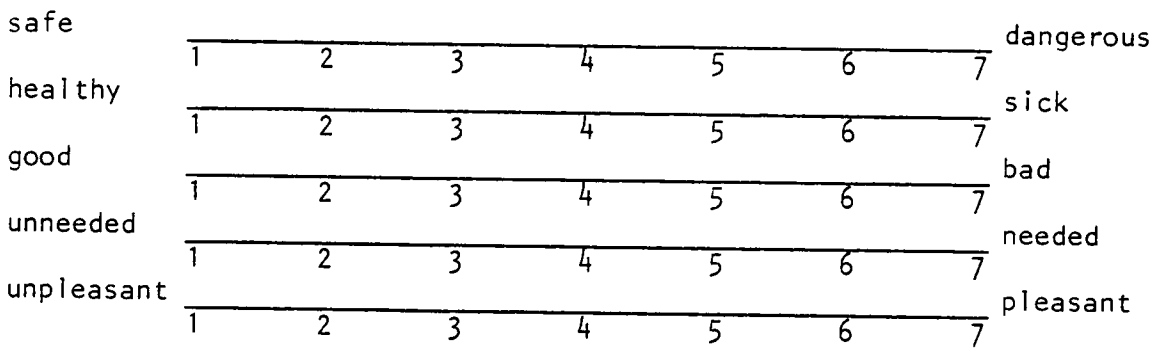
Concept 11: Smoking



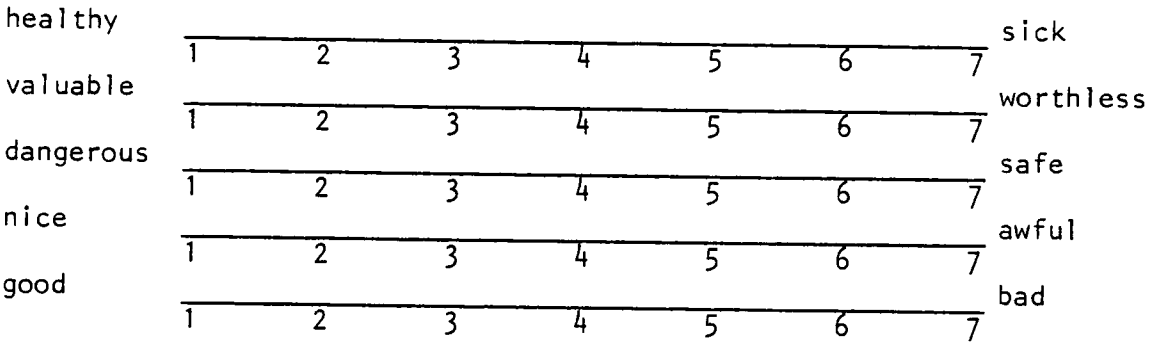
Concept 12: Rights of Non-Smokers



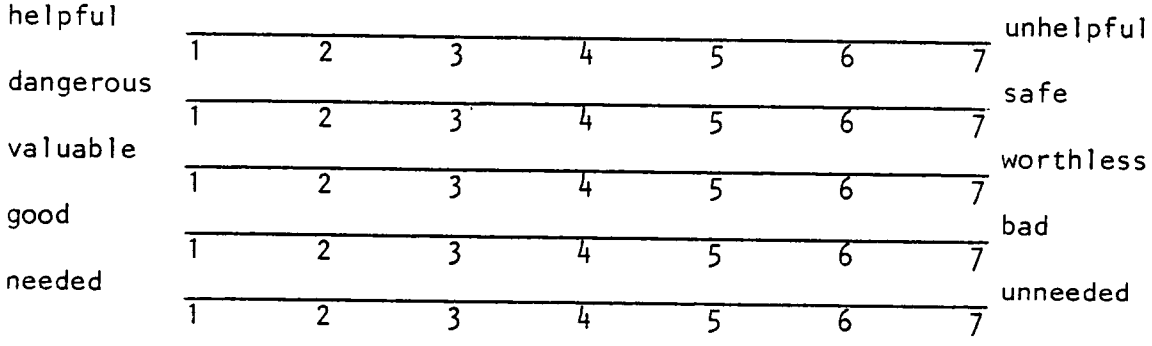
Concept 13: Social Drinking



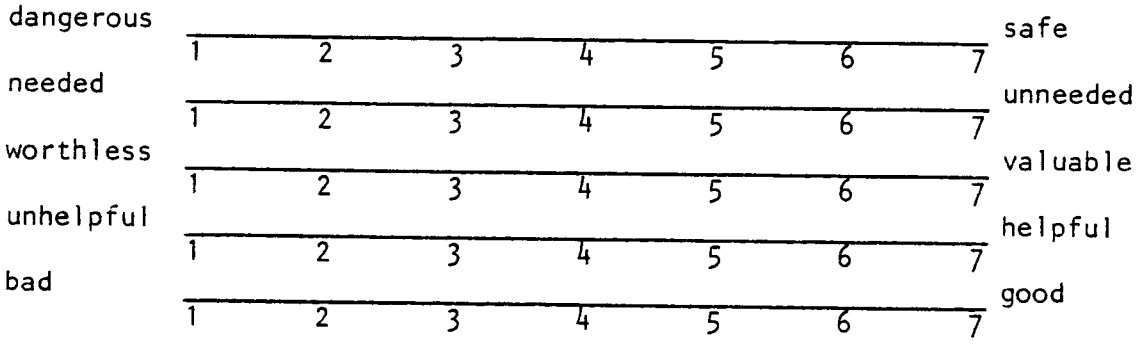
Concept 14: Social Use of Drugs



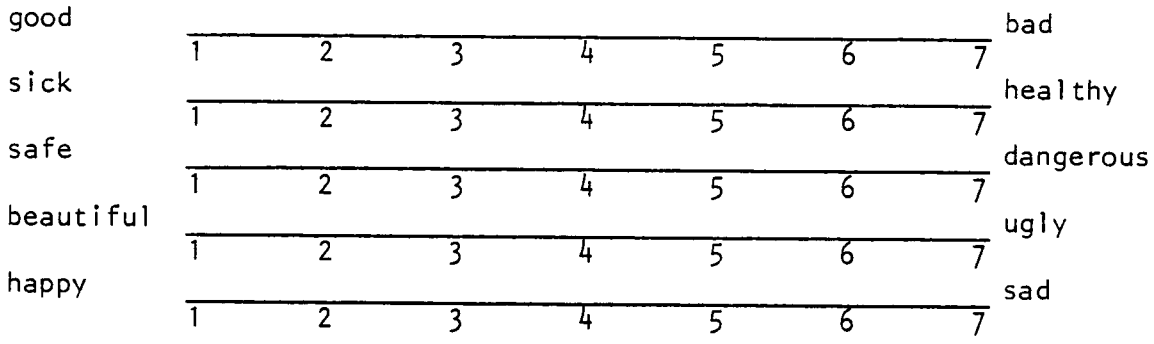
Concept 15: Over-the-Counter Drugs



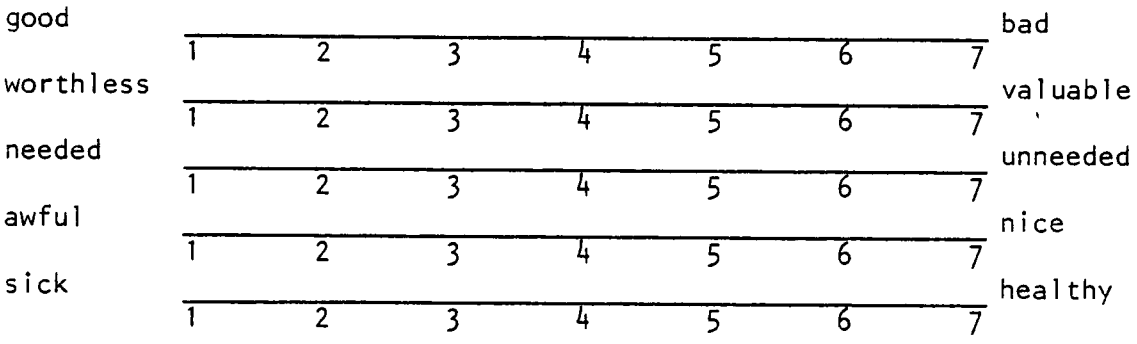
Concept 16: Vitamin Supplements



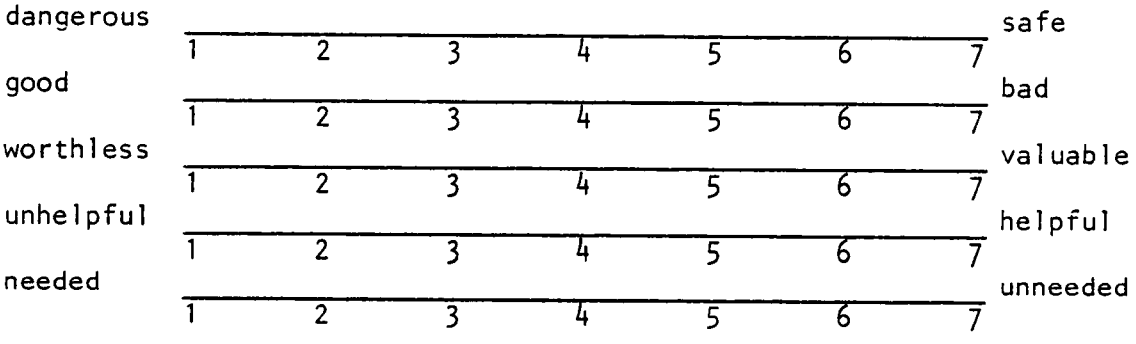
Concept 17: Overweight/Obesity



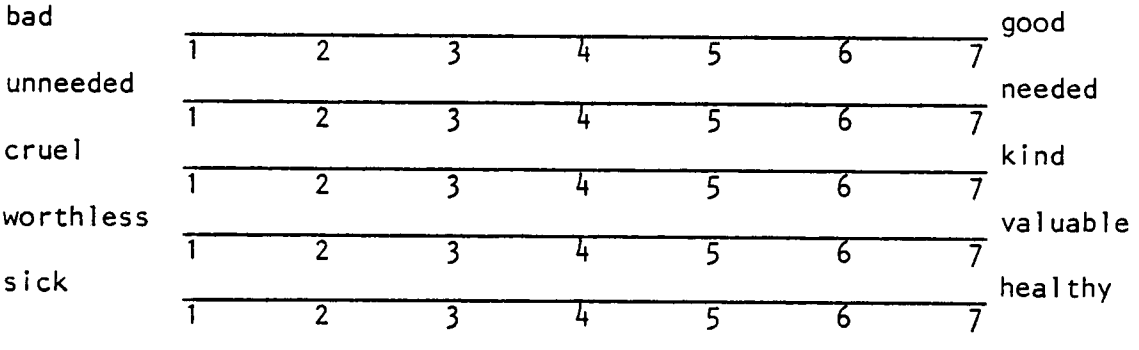
Concept 18: Regular Exercise



Concept 19: First Aid



Concept 20: Immunization and Communicable Disease Prevention



Concept 21: Antibiotics

bad	1	2	3	4	5	6	7	good
safe	1	2	3	4	5	6	7	dangerous
worthless	1	2	3	4	5	6	7	valuable
needed	1	2	3	4	5	6	7	unneeded
helpful	1	2	3	4	5	6	7	unhelpful

Concept 22: Early Detection of Cancer

needed	1	2	3	4	5	6	7	unneeded
helpful	1	2	3	4	5	6	7	unhelpful
safe	1	2	3	4	5	6	7	dangerous
worthless	1	2	3	4	5	6	7	valuable
bad	1	2	3	4	5	6	7	good

Concept 23: Prevention of Heart Disease

worthless	1	2	3	4	5	6	7	valuable
good	1	2	3	4	5	6	7	bad
unneeded	1	2	3	4	5	6	7	needed
dangerous	1	2	3	4	5	6	7	safe
unhelpful	1	2	3	4	5	6	7	helpful

Concept 24: Self-Diagnosis and Self-Medication

helpful	1	2	3	4	5	6	7	unhelpful
good	1	2	3	4	5	6	7	bad
dangerous	1	2	3	4	5	6	7	safe
worthless	1	2	3	4	5	6	7	valuable
unneeded	1	2	3	4	5	6	7	needed

BACKGROUND INFORMATION

The following information would be helpful. I would appreciate your cooperation in providing the following information.

Circle one: Male Female

What is your father's current occupation?_____

What is your mother's current occupation?_____

What is the formal education in years (highest level completed) for:

your father (circle one)	your mother (circle one)
1. postgraduate	1. postgraduate
2. college graduate	2. college graduate
3. college, 1-3 years	3. college, 1-3 years
4. high school graduate	4. high school graduate
5. 10-11 years	5. 10-11 years
6. 7-9 years	6. 7-9 years
7. 0-6 years	7. 0-6 years

APPENDIX C

HOLLINGSHEAD OCCUPATIONAL CLASSIFICATION

HOLLINGSHEAD OCCUPATIONAL CLASSIFICATION

1. Higher Executives of Large Concerns, Proprietors, and Major Professionals.

   A. Higher Executives (value of corporation $500,000 and above as rated by Dun and Bradstreet)

      Bank
         Presidents
         Vice-Presidents
         Assistant Vice-Presidents
      Business
         Directors
         Presidents
         Vice-Presidents
         Assistant Vice-Presidents
         Executive Secretaries
         Research Directors
         Treasurers

   B. Proprietors (value over $100,000 by Dun and Bradstreet)

      Brokers
      Contractors
      Dairy Owners
      Farmers
      Lumber Dealers

   C. Major Professionals

      Accountants (CPA)
      Actuaries
      Agronomists
      Architects
      Artists, Portrait
      Astronomers
      Auditors
      Bacteriologists
      Chemical Engineers
      Chemists
      Clergymen (professional trained)
      Dentists
      Economists
      Engineers (college graduates)
      Foresters
      Geologists
      Judges (superior courts)
      Lawyers
      Metallurgists

Military
Commissioned Officers, Major and Above
Officials of the Executive Branch of Government
Federal
State
Local, e.g. Mayor, City Manager, City Plan Director
Internal Revenue Director
Physicians
Physicists, Research
Psychologists, Practicing
Symphony Conductor
Teachers, Universities, Colleges
Veterinarians (veterinary surgeons)

2. Business Managers, Proprietors of Medium-Sized Business, and Lesser Professionals.

A. Business Managers in Large Concerns (value $500,000)

Advertising Directors
Branch Managers
Brokerage Salesmen
Directors of Purchasing
District Managers
Executive Assistants
Export Managers, International Concerns
Farm Managers
Government Officials, Minor, e.g. Internal Revenue Agents
Manufacturer's Representatives
Office Managers
Personnel Managers
Police Chief, Sheriff
Postmaster
Production Managers
Sales Engineers
Sales Managers, National Concerns
Store Managers

B. Proprietors of Medium Business

Advertising
Clothing Store
Contractors
Express Company
Farm Owners
Fruits, Wholesale
Furniture Business
Jewelers
Poultry Business
Real Estate Brokers
Rug Business

Store
Theatre

C. Lesser Professionals

Accountants (not CPA)
Chiropodists
Chiropractors
Correction Officers
Director of Community House
Engineers (not college graduates)
Finance Writers
Health Educators
Labor Relations Consultants
Librarians
Military
Commissioned Officers, Lieutenant, Captain
Musicians (symphony orchestra)
Nurses
Opticians
Optometrists, D.O.
Pharmacists
Public Health Officers (M.P.H.)
Research Assistants, University (full-time)
Social Workers

3. Administrative Personnel, Owners of Small Business, and Minor Professionals.

A. Administrative Personnel

Advertising Agents
Chief Clerks
Credit Managers
Insurance Agents
Managers, Departments
Passenger Agents, Railroad
Private Secretaries
Purchasing Agents
Sales Representatives
Section Heads, Federal, State and Local Government Offices
Section Heads, Large Businesses and Industries
Service Managers
Shop Managers
Store Managers (chain)
Traffic Managers

B. Small Business Owners

Art Gallery
Auto Accessories
Awnings

Bakery
Beauty Shop
Boatyard
Brokerage, Insurance
Car Dealers
Cattle Dealers
Cigarette Machines
Cleaning Shops
Clothing
Coal Business
Contracting Businesses
Convalescent Homes
Decorating
Dog Supplies
Dry Goods
Engraving Business
Feed
Finance Companies, Local
Fire Extinguishers
Five and Dime
Florist
Food Equipment
Food Products
Foundry
Funeral Directors
Furniture
Garage
Gas Station
Glassware
Grocery, General
Hotel Proprietors
Jewelry
Machine Brokers
Manufacturing
Monuments
Music
Package Stores (liquor)
Paint Contracting
Poultry
Real Estate
Records and Radios
Restaurant
Roofing Contractor
Shoe
Signs
Tavern
Taxi Company
Tire Shop
Trucking
Trucks and Tractors
Upholstery

Wholesale Outlets
Window Shades

C. Semiprofessionals

Actors and Showmen
Army, Master Sergeant
Artists, Commercial
Appraisers (estimators)
Clergymen (not professionally trained)
Concern Managers
Deputy Sheriffs
Dispatchers, Railroad
Interior Decorators
Interpreters, Courts
Laboratory Assistants
Landscape Planners
Morticians
Navy, Chief Petty Officer
Oral Hygienists
Physiotherapists
Piano Teachers
Publicity and Public Relations
Radio, TV Announcers
Reporters, Court
Reporters, Newspapers
Surveyors
Title Searchers
Tool Designers
Travel Agents
Yard Masters, Railroad

D. Farmers

Farm Owners (large)

4. Clerical and Sales Workers, Technicians, and Owners of Little Businesses

A. Clerical and Sales Workers

Bank Clerks and Tellers
Bill Collectors
Bookkeepers
Business Machine Operators, Offices
Claims Examiners
Clerical or Stenographic
Conductors, Railroad
Factory Storekeepers
Factory Supervisors
Post Office Clerks

Route Managers
Sales Clerks
Sergeants and Petty Officers, Military Service
Shipping Clerks
Supervisors, Utilities, Factories
Supervisors, Toll Stations

B. Technicians

Dental Technicians
Draftsmen
Driving Teachers
Expeditor, Factory
Experimental Tester
Instructors, Telephone Company, Factory
Inspectors, Weights, Sanitary, Railroad, Factory
Investigators
Laboratory Technicians
Locomotive Engineers
Operators PBX
Proofreaders
Safety Supervisors
Supervisors of Maintenance
Technical Assistants
Telephone Company Supervisors
Timekeepers
Tower Operators, Railroad
Truck Dispatchers
Window Trimmers (stores)

C. Owners of Little Businesses

Flower Shop
Grocery
Newsstand
Tailor Shop

D. Farmers

Owners (medium)

5. Skilled Manual Employees

Auto Body Repairers
Bakers
Barbers
Blacksmiths
Bookbinders
Boilermakers
Brakemen, Railroad
Brewers
Bulldozer Operators

Butchers
Cabinet Makers
Cable Splicers
Carpenters
Casters (founders)
Cement Finishers
Cheese Makers
Chefs
Compositors
Diemakers
Diesel Engine Repair and Maintenance (trained)
Diesel Shovel Operators
Electricians
Engravers
Exterminators
Firemen, City
Fitters, Gas, Steam
Foreman, Construction, Dairy
Gardeners, Landscape (trained)
Glass Blowers
Glaziers
Gunsmiths
Gauge Makers
Hair Stylists
Heat Treaters
Horticulturists
Linemen, Utility
Linotype Operators
Lithographers
Locksmiths
Loom Fixers
Machinists (trained)
Maintenance Foremen
Linoleum Layers (trained)
Masons
Masseurs
Mechanics (trained)
Millwrights
Moulders (trained)
Painters
Paperhangers
Patrolmen, Railroad
Pattern and Model Makers
Piano Builders
Piano Tuners
Plumbers
Policemen, City
Postmen
Printers
Radio, Television Maintenance
Repairmen, Home Applicances
Rope Splicers
Sheetmetal Workers (trained)

Shipsmiths
Shoe Repairmen (trained)
Stationary Engineers (licensed)
Stewards, Club
Switchmen, Railroad
Tailors (trained)
Teletype Operators
Tool Makers
Track Supervisors, Railroad
Tractor-Trailer Trans.
Typographers
Upholsters (trained)
Watchmakers
Weavers
Welders
Yard Supervisors, Railroad
Small Farmers
Tenants Who Own Farm Equipment

6. Machine Operators and Semiskilled Employees

Aides, Hospital
Apprentices, Electricians, Printers, Steam Fitters, Toolmakers
Assembly Line Workers
Bartenders
Bingo Tenders
Bridge Tenders
Building Superintendents (construction)
Bus Drivers
Checkers
Coin Machine Fillers
Cooks, Short Order
Deliverymen
Dressmakers, Machine
Elevator Operators
Enlisted Men, Military Services
Filers, Sanders, Buffers
Foundary Workers
Garage and Gas Station Attendants
Greenhouse Workers
Guards, Doorkeepers, Watchmen
Hairdressers
Housekeepers
Meat Cutters and Packers
Meter Readers
Operators, Factory Machines
Oilers, Railroad
Practical Nurses
Pressers, Clothing
Pump Operators
Receivers and Checkers
Roofers

Set-Up-Men, Factories
Shapers
Signalmen, Railroad
Solderers, Factory
Sprayers, Paint
Steelworkers (not skilled)
Stranders, Wire Machines
Strippers, Rubber Factory
Taxi Drivers
Testers
Timers
Tire Moulders
Trainmen, Railroad
Truck Drivers, General
Waiters-Waitresses ("better places")
Weighers
Welders, Spot
Winders, Machine
Wiredrawers, Machine
Wine Bottlers
Wood Workers, Machine
Wrappers, Stores and Factories
Farmers
   Small Tenants Who Own Little Equipment

7. Unskilled Employees

Amusement Park Workers (bowling alleys, pool rooms)
Ash Removers
Attendants, Parking Lots
Cafeteria Workers
Car Cleaners, Railroad
Carriers, Coal
Countermen
Dairy Workers
Deck Hands
Domestics
Farm Helpers
Fishermen (clam diggers)
Freight Handlers
Garbage Collectors
Grave Diggers
Hod Carriers
Hog Killers
Hospital Workers, Unspecified
Hostlers, Railroad
Janitors (sweepers)
Laborers, Construction
Laborers, Unspecified
Laundry Workers
Messengers
Platform Men, Railroad

Peddlers
Porters
Relief, Public, Private
Roofer's Helpers
Shirt Folders
Shoe Shiners
Sorters, Rag and Salvage
Stage Hands
Stevedores
Stock Handlers
Street Cleaners
Struckmen, Railroad
Unemployed (no occupation)
Unskilled Factory Workers
Waitresses ("hash houses")
Washers, Cars
Window Cleaners
Woodchoppers

Farmers
   Sharecroppers

APPENDIX D

MEDIAN TEST RESULTS FOR EACH VALUE

BY SOCIOECONOMIC STATUS

TABLE D-1

EXPECTED AND OBSERVED CELL FREQUENCIES FOR A COMFORTABLE LIFE (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 7	E = 14.5 O = 17.5	E = 10.5 O = 10.5
Number Below the Median	E = 10.5 O = 14	E = 14.5 O = 11.5	E = 10.5 O = 10.5
Total	21	29	21

Median = 11.0

$\chi^2 = 1.786$

TABLE D-2

EXPECTED AND OBSERVED CELL FREQUENCIES FOR AN EXCITING LIFE (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 9.5	E = 14.5 O = 15.0	E = 10.5 O = 13.5
Number Below the Median	E = 10.5 O = 11.5	E = 14.5 O = 15.0	E = 10.5 O = 7.5
Total	21	29	21

Median = 12.0

$\chi^2 = 0.972$

TABLE D-3

EXPECTED AND OBSERVED CELL FREQUENCIES FOR A SENSE OF ACCOMPLISHMENT (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 8.0	E = 14.5 O = 15.0	E = 10.5 O = 10.5
Number Below the Median	E = 10.5 O = 13.0	E = 14.5 O = 14.0	E = 10.5 O = 10.5
Total	21	29	21

Median = 9.0

$\chi^2 = 0.618$

TABLE D-4

EXPECTED AND OBSERVED CELL FREQUENCIES FOR A WORLD AT PEACE (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 14.0	E = 14.5 O = 13.0	E = 10.5 O = 8.0
Number Below the Median	E = 10.5 O = 7.0	E = 14.5 O = 16.0	E = 10.5 O = 13.0
Total	21	29	21

Median = 10.0

$\chi^2 = 1.922$

TABLE D-5

EXPECTED AND OBSERVED CELL FREQUENCIES FOR A WORLD OF BEAUTY (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 9.5	E = 14.5 O = 10.5	E = 10.5 O = 11.0
Number Below the Median	E = 10.5 O = 11.5	E = 14.5 O = 18.5	E = 10.5 O = 10.0
Total	21	29	21

Median = 15.0

$\chi^2 = 1.644$

TABLE D-6

EXPECTED AND OBSERVED CELL FREQUENCIES FOR EQUALITY (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 12.0	E = 14.5 O = 16.5	E = 10.5 O = 6.5
Number Below the Median	E = 10.5 O = 9.0	E = 14.5 O = 12.5	E = 10.5 O = 14.5
Total	21	29	21

Median = 12.0

$\chi^2 = 2.014$

TABLE D-7

EXPECTED AND OBSERVED CELL FREQUENCIES FOR FAMILY SECURITY (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 13.5	E = 14.5 O = 9.5	E = 10.5 O = 12.0
Number Below the Median	E = 10.5 O = 7.5	E = 14.5 O = 19.5	E = 10.5 O = 9.0
Total	21	29	21

Median = 6.0

$\chi^2 = 2.796$

TABLE D-8

EXPECTED AND OBSERVED CELL FREQUENCIES FOR FREEDOM (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 8.0	E = 14.5 O = 15.0	E = 10.5 O = 12.0
Number Below the Median	E = 10.5 O = 13.0	E = 14.5 O = 14.0	E = 10.5 O = 9.0
Total	21	29	21

Median = 5.5

$\chi^2 = 0.832$

TABLE D-9

EXPECTED AND OBSERVED CELL FREQUENCIES FOR HAPPINESS (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 7.0	E = 14.5 O = 16.0	E = 10.5 O = 10.5
Number Below the Median	E = 10.5 O = 14.0	E = 14.5 O = 13.0	E = 10.5 O = 10.5
Total	21	29	21

Median = 6.0

$\chi^2 = 1.322$

TABLE D-10

EXPECTED AND OBSERVED CELL FREQUENCIES FOR INNER HARMONY (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 7.0	E = 14.5 O = 21.0	E = 10.5 O = 8.5
Number Below the Median	E = 10.5 O = 14.0	E = 14.5 O = 8.0	E = 10.5 O = 12.5
Total	21	29	21

Median = 10.0

$\chi^2 = 4.460$

TABLE D-11

EXPECTED AND OBSERVED CELL FREQUENCIES FOR MATURE LOVE (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 10.0	E = 14.5 O = 12.5	E = 10.5 O = 11.0
Number Below the Median	E = 10.5 O = 11.0	E = 14.5 O = 16.5	E = 10.5 O = 10.0
Total	21	29	21

Median = 9.0

$\chi^2 = 0.324$

TABLE D-12

EXPECTED AND OBSERVED CELL FREQUENCIES FOR NATIONAL SECURITY (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 13.0	E = 14.5 O = 13.0	E = 10.5 O = 8.5
Number Below the Median	E = 10.5 O = 8.0	E = 14.5 O = 16.0	E = 10.5 O = 12.5
Total	21	29	21

Median = 15.0

$\chi^2 = 1.136$

TABLE D-13

EXPECTED AND OBSERVED CELL FREQUENCIES FOR PLEASURE (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 9.0	E = 14.5 O = 15.0	E = 10.5 O = 11.0
Number Below the Median	E = 10.5 O = 12.0	E = 14.5 O = 14.0	E = 10.5 O = 10.0
Total	21	29	21

Median = 13.0

$\chi^2 = 0.472$

TABLE D-14

EXPECTED AND OBSERVED CELL FREQUENCIES FOR SALVATION (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 14.5	E = 14.5 O = 14.5	E = 10.5 O = 8.0
Number Below the Median	E = 10.5 O = 6.5	E = 14.5 O = 14.5	E = 10.5 O = 13.0
Total	21	29	21

Median = 4.0

$\chi^2 = 2.124$

TABLE D-15

EXPECTED AND OBSERVED CELL FREQUENCIES FOR SELF-RESPECT (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 10.5	E = 14.5 O = 15.0	E = 10.5 O = 12.0
Number Below the Median	E = 10.5 O = 10.5	E = 14.5 O = 14.0	E = 10.5 O = 9.0
Total	21	29	21

Median = 7.0

$\chi^2 = 0.174$

TABLE D-16

EXPECTED AND OBSERVED CELL FREQUENCIES FOR SOCIAL RECOGNITION (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 10.0	E = 14.5 O = 11.0	E = 10.5 O = 14.0
Number Below the Median	E = 10.5 O = 11.0	E = 14.5 O = 18.0	E = 10.5 O = 7.0
Total	21	29	21

Median = 14.5

$\chi^2 = 2.034$

TABLE D-17

EXPECTED AND OBSERVED CELL FREQUENCIES FOR TRUE FRIENDSHIP (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 13.5	E = 14.5 O = 13.0	E = 10.5 O = 11.0
Number Below the Median	E = 10.5 O = 7.5	E = 14.5 O = 16.0	E = 10.5 O = 10.0
Total	21	29	21

Median = 6.0

$\chi^2 = 1.032$

TABLE D-18

EXPECTED AND OBSERVED CELL FREQUENCIES FOR WISDOM (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 11.0	E = 14.5 O = 13.0	E = 10.5 O = 10.5
Number Below the Median	E = 10.5 O = 10.0	E = 14.5 O = 16.0	E = 10.5 O = 10.5
Total	21	29	21

Median = 7.0

$\chi^2 = 0.180$

TABLE D-19

EXPECTED AND OBSERVED CELL FREQUENCIES FOR AMBITIOUS (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 8.5	E = 14.5 O = 15.5	E = 10.5 O = 10.0
Number Below the Median	E = 10.5 O = 12.5	E = 14.5 O = 13.5	E = 10.5 O = 11.0
Total	21	29	21

Median = 6.0

$\chi^2 = 0.472$

TABLE D-20

EXPECTED AND OBSERVED CELL FREQUENCIES FOR BROADMINDED (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 7.5	E = 14.5 O = 18.0	E = 10.5 O = 7.5
Number Below the Median	E = 10.5 O = 13.5	E = 14.5 O = 11.0	E = 10.5 O = 13.5
Total	21	29	21

Median = 9.0

$\chi^2 = 2.560$

TABLE D-21

EXPECTED AND OBSERVED CELL FREQUENCIES FOR CAPABLE (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 10.0	E = 14.5 O = 15.0	E = 10.5 O = 10.0
Number Below the Median	E = 10.5 O = 11.0	E = 14.5 O = 14.0	E = 10.5 O = 11.0
Total	21	29	21

Median = 12.5

$\chi^2 = 0.066$

TABLE D-22

EXPECTED AND OBSERVED CELL FREQUENCIES FOR CHEERFUL (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 7.5	E = 14.5 O = 13.5	E = 10.5 O = 13.0
Number Below the Median	E = 10.5 O = 13.5	E = 14.5 O = 15.5	E = 10.5 O = 8.0
Total	21	29	21

Median = 10.0

$\chi^2 = 1.526$

TABLE D-23

EXPECTED AND OBSERVED CELL FREQUENCIES FOR CLEAN (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 12.0	E = 14.5 O = 14.5	E = 10.5 O = 8.0
Number Below the Median	E = 10.5 O = 9.0	E = 14.5 O = 14.5	E = 10.5 O = 13.0
Total	21	29	21

Median = 12.0

$\chi^2 = 0.814$

TABLE D-24

EXPECTED AND OBSERVED CELL FREQUENCIES FOR COURAGEOUS (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 12.5	E = 14.5 O = 15.5	E = 10.5 O = 8.0
Number Below the Median	E = 10.5 O = 8.5	E = 14.5 O = 13.5	E = 10.5 O = 13.0
Total	21	29	21

Median = 11.0

$\chi^2 = 1.048$

TABLE D-25

EXPECTED AND OBSERVED CELL FREQUENCIES FOR FORGIVING (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 14.5	E = 14.5 O = 12.0	E = 10.5 O = 9.0
Number Below the Median	E = 10.5 O = 6.5	E = 14.5 O = 17.0	E = 10.5 O = 12.0
Total	21	29	21

Median = 7.0

$\chi^2 = 2.170$

TABLE D-26

EXPECTED AND OBSERVED CELL FREQUENCIES FOR HELPFUL (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 11.0	E = 14.5 O = 16.0	E = 10.5 O = 8.0
Number Below the Median	E = 10.5 O = 10.0	E = 14.5 O = 13.0	E = 10.5 O = 13.0
Total	21	29	21

Median = 9.5

$\chi^2 = 0.780$

TABLE D-27

EXPECTED AND OBSERVED CELL FREQUENCIES FOR HONEST (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 11.5	E = 14.5 O = 10.5	E = 10.5 O = 13.0
Number Below the Median	E = 10.5 O = 9.5	E = 14.5 O = 18.5	E = 10.5 O = 8.0
Total	21	29	21

Median = 3.0

$\chi^2 = 1.800$

TABLE D-28

EXPECTED AND OBSERVED CELL FREQUENCIES FOR IMAGINATIVE (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 6.0	E = 14.5 O = 17.0	E = 10.5 O = 12.0
Number Below the Median	E = 10.5 O = 15.0	E = 14.5 O = 12.0	E = 10.5 O = 9.0
Total	21	29	21

Median = 12.5

$\chi^2 = 2.574$

TABLE D-29

EXPECTED AND OBSERVED CELL FREQUENCIES FOR INDEPENDENT (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 8.0	E = 14.5 O = 17.0	E = 10.5 O = 11.0
Number Below the Median	E = 10.5 O = 13.0	E = 14.5 O = 12.0	E = 10.5 O = 10.0
Total	21	29	21

Median = 10.5

$\chi^2 = 1.056$

TABLE D-30

EXPECTED AND OBSERVED CELL FREQUENCIES FOR INTELLECTUAL (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 12.5	E = 14.5 O = 15.0	E = 10.5 O = 7.5
Number Below the Median	E = 10.5 O = 8.5	E = 14.5 O = 14.0	E = 10.5 O = 13.5
Total	21	29	21

Median = 12.0

$\chi^2 = 1.256$

TABLE D-31

EXPECTED AND OBSERVED CELL FREQUENCIES FOR LOGICAL (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 9.0	E = 14.5 O = 16.5	E = 10.5 O = 12.0
Number Below the Median	E = 10.5 O = 12.0	E = 14.5 O = 12.5	E = 10.5 O = 9.0
Total	21	29	21

Median = 13.0

$\chi^2 = 0.704$

TABLE D-32

EXPECTED AND OBSERVED CELL FREQUENCIES FOR LOVING (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 11.5	E = 14.5 O = 16.0	E = 10.5 O = 7.5
Number Below the Median	E = 10.5 O = 9.5	E = 14.5 O = 13.0	E = 10.5 O = 13.5
Total	21	29	21

Median = 5.0

$\chi^2 = 1.110$

TABLE D-33

EXPECTED AND OBSERVED CELL FREQUENCIES FOR OBEDIENT (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 12.0	E = 14.5 O = 12.5	E = 10.5 O = 8.0
Number Below the Median	E = 10.5 O = 9.0	E = 14.5 O = 16.5	E = 10.5 O = 13.0
Total	21	29	21

Median = 14.0

$\chi^2 = 1.090$

TABLE D-34

EXPECTED AND OBSERVED CELL FREQUENCIES FOR POLITE (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 12.0	E = 14.5 O = 13.0	E = 10.5 O = 12.0
Number Below the Median	E = 10.5 O = 9.0	E = 14.5 O = 16.0	E = 10.5 O = 9.0
Total	21	29	21

Median = 9.0

$\chi^2 = 0.750$

TABLE D-35

EXPECTED AND OBSERVED CELL FREQUENCIES FOR RESPONSIBLE (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 10.5	E = 14.5 O = 15.5	E = 10.5 O = 8.5
Number Below the Median	E = 10.5 O = 10.5	E = 14.5 O = 13.5	E = 10.5 O = 12.5
Total	21	29	21

Median = 6.0

$\chi^2 = 0.448$

TABLE D-36

EXPECTED AND OBSERVED CELL FREQUENCIES FOR SELF-CONTROLLED (N = 71)

SES Level	1 & 2	3	4 & 5
Number Above the Median	E = 10.5 O = 9.5	E = 14.5 O = 13.5	E = 10.5 O = 11.0
Number Below the Median	E = 10.5 O = 11.5	E = 14.5 O = 15.5	E = 10.5 O = 10.0
Total	21	29	21

Median = 9.0

$\chi^2 = 0.182$

VITA

Stephen Eric Bohnenblust was born in Baltimore, Maryland, on April 26, 1948. He graduated from high school in June, 1966 and entered Geneva College in Beaver Falls, Pennsylvania, in September, 1966. In June of 1970, he was graduated from Geneva College with a Bachelor of Science in Biology. In the fall of 1970, he enrolled at Ball State University in Muncie, Indiana. In 1971, he was graduated from Ball State University with a Master of Arts in Health Education.

In 1971, he began his teaching career as a Health Educator in the Central Square School District in Central Square, New York. In 1974, he went to Western Kentucky University as an Instructor in the Department of Health and Safety. He was later promoted to Assistant Professor.

In 1978, he went to The University of Tennessee, Knoxville, to begin work on the Doctor of Education degree. In August of 1980, he received the Doctor of Education degree with a major in Health Education and collateral areas in Curriculum and Instruction and in Statistics.

He is married to the former Sandra Priddy of Middletown, Indiana. They have one son, Stephen, Jr.