Title: DEVELOPMENT OF A MODEL TO PREDICT BEHAVIORAL INTENTIONS ABOUT PERSONAL HEALTH PRACTICES

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Dr. Arthur Koski

The purpose of the study was to develop a cognitive model for the prediction of behavioral intentions about personal health practices with the view that the model could be ultimately applied to the practice of health education.

The model formulated hypothesizes that intention to initiate a given personal health practice can be predicted from the following three variables: (1) attitude toward the practice; (2) attitude toward the life situation, (3) preventive health motivation.

The variable values for attitude toward the practice were calculated by means of the following equation:

\[ A_o = \sum_{i=1}^{N} B_i a_i \]

where \( A_o \) = attitude toward the practice \( o \)

\( B_i \) = the strength of belief \( i \) about \( o \); i.e., the probability

that \( o \) is related to a personal value, \( x_i \)
\[ a_i = \text{the evaluative aspect of the belief } i; \text{ i.e., the importance of } x_i \]

\[ N = \text{the number of beliefs about } o \]

Two alternative ways of calculating the variable values for attitude toward the practice were used: one through terminal personal values and related beliefs, the other through instrumental personal values and related beliefs.

The variable values for attitude toward the life situation were calculated by means of the following equation:

\[ A_{s(o)} = \sum_{i=1}^{N} B_i a_i \]

where \( A_{s(o)} \) = attitude toward the life situation in regard to a given health practice, \( o \)

\( B_i \) = the strength of belief \( i \) about \( o \); i.e., the probability that a given situational context, \( s' \), is existent for \( o \)

\( a_i \) = the evaluative aspect of belief \( i \); i.e., the evaluation of \( s' \) in terms of conduciveness to initiating any health practice

\( N \) = number of situational beliefs about \( o \)

The situational contexts used referred to interpersonal support, availability of time and money, etc.

The following equation was used to calculate the variable values.
for preventive health motivation:

\[ \text{PHM} = \text{eff} \times \sqrt{\text{sus} \times \text{ser}} \]

where \( \text{PHM} = \) preventive health motivation

\[ \text{eff} = \text{perceived efficacy of a given health practice to counteract a relevant disease or injury} \]

\[ \text{sus} = \text{perceived personal susceptibility to the disease or injury} \]

\[ \text{ser} = \text{perceived seriousness of the disease or injury} \]

The preventive health motivation variable is identical to the health behavior model developed by Rosenstock and his associates.

The model was tested for two health practices: (1) "to consistently limit the intake of saturated fats (animal fats)", (2) "to always use seat belts (even at low speed)". For each practice a separate sample of college students was used.

The data were collected by means of a single administration of questionnaires to the subjects. After exclusion of those subjects who were already carrying out the practice, simple and multiple correlation coefficients were computed between the three variables and intention to initiate the practice. The multiple correlation coefficients obtained were .71 for the use of seat belts and .59 for the intake of saturated fats. Attitude toward the life situation was the strongest single variable for both practices. The simple correlations coefficients based on the preventive health motivation variable did not reach statistical significance for either practice. Attitude toward the practice, when calculated through instrumental values and related
beliefs, correlated significantly with intention to use seat belts but not with intention to limit the intake of saturated fats. Conversely, attitude toward the practice, when calculated through terminal values and related beliefs, correlated significantly with intention to limit the intake of saturated fats but not with intention to use seat belts.

The results of the study imply that the role of perceptions about life situations as determiners of health behaviors should receive more attention in the practice of health education.
Development of a Model to Predict Behavioral Intentions About Personal Health Practices

by

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DEVELOPMENT OF A MODEL TO PREDICT BEHAVIORAL INTENTIONS ABOUT PERSONAL HEALTH PRACTICES

INTRODUCTION

Purpose of the Study

The purpose of the study was to develop a general cognitive model for the prediction of intentions to initiate personal health practices with the view that the model could be ultimately applied to the practice of health education.

A General Cognitive Model

The word "general" implies that the model should, in principle, be applicable to any personal health practice.

The term "cognitive" implies that the predictor variables of the model concern individuals' subjective views of themselves and their environment in terms which are relevant to initiating personal health practices. The predictor variables were selected to be cognitive in nature because cognitive variables have potential for being modified through educational procedures. The extent to which the variables developed in this study are actually modifiable has to be determined through further studies.
A Predictive Model

The term "prediction" is used in the sense of estimation "with the understanding that estimation is a symmetrical matter in which temporal sequences need not be involved" (Blalock, 1964, p. 43). Thus, no causal inferences can be made on the basis of the findings of the study.

On the other hand, in case it is actually determined that the model has predictive power, there is reason, on the basis of the principle of cognitive consistency (Rokeach, 1970), to make the assumption that an actual forced change in any of the variables of the model will be followed by changes in the other variables. This may happen in any direction among the variables. The direction from the predictor variables to the criterion variable is of interest from the standpoint of practical applications to the field of health education. However, the exact nature of this possible direction of cause and effect must be investigated in separate studies.

In accordance with recent prediction studies in the field of social psychology, (Ajzen and Fishbein, 1969; Rokeach and Kliejunas, 1971) the model does not specify the relative predictive weights of the variables. The assumption is made that the relative predictive weights of the variables vary from one health practice to another and have to be empirically determined.
Development of a Model

The term "development" refers to the processes of formulating, operationalizing, and testing the model. The formulation and operationalization of the model is based upon recent theories in the behavioral sciences, particularly those of social psychology. The model is tested by the technique of correlational analysis. This technique is used because on its basis several important conclusions can be made. If significant correlations between the predictor variable and the criterion variables exist, there is reason to continue the development of the model with empirical designs and some basis to start applying the model, with proper caution, to practical problems.

A Model Concerning Personal Health Practices

The term personal health practice is used in the same sense as Kasl and Cobb (1965) define health behavior: "any activity undertaken by a person who believes himself to be healthy for the purpose of preventing disease or detecting disease in an asymptomatic stage" (p. 246).

The present model is intended to predict personal health practices rather than other aspects of health related behaviors, such as illness behavior or sick-role behavior, for the following reasons:
(1) The function of health education is primarily to promote personal health practices.

(2) Focusing on personal health practices simplifies the problem of this study. Different aspects of health related behaviors may have very different motivational variables influencing them.

A Model Concerning Intentions to Initiate Personal Health Practices

The process of adopting an innovation has been described by Rogers (1962) to involve several stages or steps. In the field of health behavior the corresponding idea has been exhibited by Rosenstock (1966), Zander (1962) and Horn (1968).

Horn (1968) has presented evidence that different motivational forces are involved in the different phases in the process of health decision making. In the light of this evidence the decision was made to focus on one single stage of the change process.

The stage on which the present model focuses is an initial stage referred to as the "stage of evaluation" by Rogers (1962), the stage of "rousing motives" by Zander (1962), or the stage in which "the individual stops ignoring the problem" by Horn (1968). This stage is characterized by Rogers (1962) as follows:

At the evaluation stage the individual mentally applies the innovation to his present and anticipated future situation, and then decides whether or not try it. A sort of "mental trial" occurs at the evaluation stage. If the individual
feels the advantages of the innovation outweigh the disadvantages, he will decide to try the innovation (p. 83).

The present model is intended to simulate, in a systematic and measurable fashion, this type of mental trial. The outcome of the mental trial at this stage is not yet behavior per se -- it is rather a decision or an intention to behave. It was therefore considered that behavioral intention, rather than behavior manifestation, would serve most appropriately as the criterion measure of the model.

It is quite possible that the model would apply to the latter stages of the change process as well and would also predict behavior -- at least to some extent. However, these are problems for later investigations. To simplify the research problem of the present study, the model is aimed at predicting primarily behavioral intentions at an early stage of the change process.

A Model to Apply to Health Education

The term health education is defined in this study as the process of systematically providing learning experiences with the ultimate aim that these experiences would aid individuals to acquire personal health practices. The learning experiences may happen either in the school (school health education) or in the community (community health education).

The model is formulated to contribute to the planning,
implementation and evaluation of health education programs by providing a systematical and measurable "map" of all those relevant cognitions which correlate with intentions to initiate personal health practices. In the process of selecting the variables of the model care was taken to include only cognitive variables having a specific relevance to the task of health education. For instance, a personal norm to engage in an act, although known to correlate with behavioral intentions (Ajzen and Fishbein, 1969; Carlson, 1968) was not selected for the model. The mere knowledge that an individual has a personal norm of a certain intensity about a health practice does not yet offer any suggestions about how to modify the norm through specific learning experiences.

In spite of the ultimate objective of the model to aid in solving practical health education problems, this particular study is aimed at being only the first step toward that direction. For the determination of the real practical applicability of the model further studies will be needed.

**Rationale for the Study**

The basic rationale for the development of the present model is that very few specific guidelines exist for carrying out the task of health education, i.e., arranging learning experiences which would aid individuals to acquire personal health practices.
A commonly stated 'model' about health behavior in the field of health education can be described as follows: Learning experiences in health education are intended to develop positive attitudes toward health and positive health attitudes will bring about changes in personal health practices. This 'model' is general and diffuse in nature and does not suggest specific ways to arrange learning experiences. Moreover, very little empirical evidence exists to support the notion that positive health attitudes actually lead to the adoption of health practices (Mayshark and Richardson, 1963).

A more specific and sophisticated model of health behavior is the Rosenstock model (Rosenstock, 1960, 1961, 1966) developed in the late fifties in the Behavioral Science Section of United States Public Health Service. The Rosenstock model can be subjected to the following criticism in regard to its applicability to health education:

1. Research findings do not universally support the model (Rosenstock, 1966).

2. The model is designed primarily for behaviors related to utilization of health services, not for daily health practices.

3. The model's applicability to health education has received little research attention (Rosenstock, 1966).

Rosenstock (1960) has pointed out that his model, in its present form, taps only a part of the motivational variables influencing
health practices. He also emphasized that continued improvement of theories of behavior will lead to researches that are progressively more complete in illuminating those motives and beliefs of people which determine their health behavior (Rosenstock, 1960, p. 301).

The importance of research along the same direction has also been clearly indicated by Griffiths (1965):

We need to know much more about the components of the learning situation and the change process. Continued theory building and research in motivation, communication and decision process should lead to many new concepts and constructs and thus suggests new ways of meeting present day public health problems. Models for directing change must also be developed and elaborated (p. 28).
THEORETICAL FORMULATION OF THE MODEL

On the basis of recent social-psychological theories, of the Rosenstock model of health behavior, and of practical needs in the field of health education the model is given the following general formulation:

Behavioral intentions to initiate personal health practices (the criterion variable) can be predicted from the following three major variables (the predictor variables):

(1) attitude toward a given health practice;

(2) attitude toward the present life situation; i.e., the perception of how favorable or unfavorable the present life situation is for initiating a given personal health practice;

(3) motivation to counteract perceived threats to health (such as heart disease, cancer, etc.) by initiating a given health practice.

These major variables of the model will be identified hereafter as follows: The criterion variable will be called "intention-about-practice". The attitude toward a given health practice will be called "attitude-toward-practice" and the attitude toward the present life situation will be called "attitude-toward-life-situation". Motivation to counteract perceived threats to health by initiating a health practice will be called "preventive health motivation".
**Attitude-Toward-Practice**

The definition of attitude is adopted from Rokeach (1970):

An attitude is a relatively enduring organization of beliefs around an object or situation predisposing one to respond in some preferential manner (p. 112).

This definition, since it includes both objects and situations, applies both to attitude-toward-practice and attitude-toward-life-situation.

Attitude-toward-practice is included as a variable in the present model for the following reasons:

(1) The concept of attitude has a "central position in social psychology and personality" (Rokeach, 1970, p. 110) and is also commonly used in the field of health education.

(2) There is evidence showing that attitudes and the corresponding behaviors generally show some, although rather low, correlation (Wicker, 1969).

(3) There is evidence showing that attitudes toward objects and the corresponding behavioral intentions generally show significant correlations (Ajzen and Fishbein, 1969; Carlson, 1968).

In the present model attitude-toward-practice is not measured directly but, rather, indirectly through individuals' values and beliefs.

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1 An example of direct attitude measurement is the semantic differential method (Osgood, Suci and Tannenbaum, 1957).
Values

The term value is here used in the same sense as Rokeach (1970) defines it:

I consider a value to be a type of belief, centrally located within one's total belief system, about how one ought or ought not to behave, or about some end-state of existence worth or not worth attaining. Values are abstract ideals, positive or negative, not tied to any specific attitude or situation, representing a person's beliefs about ideal modes of conduct and ideal terminal goals... (p. 124).

Thus defined, values differ from attitudes in many important respects. While an attitude is made up of several beliefs which focus on a specific object or situation, a value is a single belief "that transcendentally guides actions and judgments across specific objects and situations" (Rokeach, 1970, p. 160). Thus, while an individual has thousands of attitudes he has only a few dozens of values.

Rokeach distinguishes between instrumental and terminal values. An instrumental value is a single belief that always takes the following form:

I believe that such-and-such a mode of conduct (for example, honesty, courage) is personally and socially preferrable in all situations with respect to all objects (Rokeach, 1970, p. 160).

A terminal value takes the following form:

I believe that such-and-such an end-state of existence (for example, salvation, world at peace) is personally and socially worth striving for (Rokeach, 1970, p. 160).
Value was chosen as one of the constructs of the model for the following reasons:

(1) Rosenberg (1956, 1960) and Carlson (1956) have demonstrated that values can be utilized in the measurement of attitudes.

(2) Since the number of values is relatively small and since they are centrally located within an individual's belief system, they can be utilized to serve as a common set of anchoring concepts for the measurement of attitudes across different personal health practices. Thus, values contribute to making the model general in nature.

(3) Within various fields the observation has been made that recipients' perception of their values being promoted by an innovation is an essential condition for the adoption of the innovation (Cohen, 1962; Rogers, 1962; Zander, 1962). Consequently, the fact that the model has value as one of its constructs increases the model's potential applicability to health education.

(4) The separation of values and beliefs in the measurement of attitude-toward-practice makes it possible to differentiate between these concepts in the practice of health education. The two concepts may differ in the type of educational procedures required for their modification. Moreover, in their modification quite different ethical considerations may be needed. The separation of values and beliefs
thus offers potential for giving health education more purposeful
direction, both methodologically and ethically.

(5) There is evidence that attitude change is of a more perma-
nent nature when it is in accordance with the individual's values
(Kelman, 1967). In the field of health education this idea has been
emphasized by Griffiths (1965). A model including values can be thus
seen to contribute to a more purposeful planning of learning exper-
iences.

(6) The notion of values as determinants of both attitudes and
behavior has been recently emphasized in the fields of social psychol-
ogy (Rokeach, 1970; 1971b) and public health (Griffiths, 1965; Knutson,
demonstrated an effective technique to modify values and in this way
to change attitudes and behavior. This technique offers new potential
to change health attitudes and practices.

(7) Values form a specific and differentiated set of concepts
which are connected in the present model to the attitude object by
beliefs. In consequence, these beliefs have also a specific and dif-
ferentiated nature and offer a possibility for obtaining a detailed
picture of cognitions underlying intentions about personal health
practices. The detailed set of beliefs suggests specific guidelines
for the provision of specific types of learning experiences for the
purpose of modifying individuals' behavioral intentions. Carlson
(1956) has demonstrated the feasibility of achieving attitude change by persuasive communications directed at these types of beliefs.

Beliefs

The selection of value as one of the constructs of the model restricts the selection of the construct connecting values to the attitude object. In accordance with the works of Rosenberg (1956, 1960) and Carlson (1956) this construct is called instrumentality belief. Rosenberg and Carlson worked mainly with terminal values. On the basis of their definition the instrumentality beliefs related to terminal values are defined as estimates as to whether, and to what extent, the values in question would tend to be achieved or blocked through the initiation of a given personal health practice.

Since the instrumental values are ways of living rather than end-states of existence, the instrumentality beliefs related to instrumental values are defined as estimates as to whether, and to what extent, the expression of the values in question is hindered or promoted through the initiation of a given personal health practice.

Attitude-Toward-Practice Index

The attitude-toward-practice index is obtained on the basis of Fishbein's summation theory (Fishbein 1963, 1967), which in principle, is similar to theories held by other investigators (e.g.,
Fishbein's summation theory states that an attitude toward an object is the function of the individual's beliefs about the attitude object and of the evaluative aspects of those beliefs in accordance with the following equation:

\[ A_o = \sum_{i=1}^{N} B_i a_i \]

where \( A_o \) = the attitude toward object \( o \)

\( B_i \) = the strength of belief \( i \) about \( o \); that is, the probability that \( o \) is related to some other object "\( x_i \)"

\( a_i \) = the evaluative aspect of the belief \( i \); that is, the evaluation of \( x_i \)

\( N \) = the number of beliefs about \( o \)

In the present model values are employed as those concepts \( (x_i) \) in the cognitive structure with which the attitude object \( (o = a \text{ given health practice}) \) is associated. The beliefs \( (i) \) are instrumental in nature. \( B_i \) is the strength of an instrumentality belief and \( a_i \) is the importance of a value.

**Attitude-Toward-Life-Situation**

The term attitude-toward-situation was introduced by Rokeach
In an attempt to clarify the conceptualization of the attitude concept and of the relationship between attitudes and behavior Rokeach proposed that behavior-with-respect-to-the-object-within-a-situation is always a function of at least two interacting attitudes: attitude-toward-object and attitude-toward-situation. The significance of the conceptual and operational separation of attitude-toward-object and attitude-toward-situation is expressed by Rokeach and Kliejunas as follows (1971):

Most investigators who have been concerned with the functional relation between attitudes and behavior have typically focused their attention and measurement procedures on attitude toward-object, across situations, and have typically neglected attitude-toward-situation, across object... This neglect represents a failure to appreciate that an individual always encounters an attitude object in the context of some situation (event, activity, or happening), about which he also has an attitude. Whenever an attitude toward a particular object is activated, this attitude-toward-object will not necessarily be manifested or expressed in behavior in the same way. Its manifestation will vary as the activated attitude-toward-situation will vary. If one focuses only on attitude-toward-object as a predictor of behavior while ignoring the equally relevant attitude-toward-situation as has been the case in countless studies since LaPiere (1934), one is almost guaranteed to observe inconsistencies between an individual's expressed attitude and his behavior (p. 3-4).

Many other writers have emphasized the importance of situational variables in influencing behavior (e.g., Gordon, 1952; Lewin, 1951; Orne, 1969; Pettigrew, 1961; Rotter, 1955). Fishbein (1967) has presented a theory which allows situational influences
to be expressed through each of his three predictor variables, attitude toward an act, social norm concerning the act, and personal norm concerning the act. Ajzen and Fishbein (1969) obtained very high correlations on the basis of this theory. However, Rokeach's theory is preferred for the purposes of the present model for the following reasons:

(1) Rokeach's theory requires no new concepts beyond that of attitude.

(2) Rokeach's theory is more economical to operationalize and use. In the application of Fishbein's theory separate measurements of attitude and the two norms for each specific behavioral act in a specified situation are required.

(3) Rokeach's attitude-toward-situation concept lends itself to further expansion, whereas there appears to be no convenient way to include additional relevant situational information in Fishbein's formulation.

Experimental work with the attitude-toward-situation concept is yet at the beginning stage. The two studies carried out thus far suggest that attitude-toward-situation is of more importance as the determiner of behavior than attitude-toward-object (Rokeach and Kliejunas, 1971; Spaeth and Parker, 1969).

In the light of the evidence of the importance of attitude-toward-situation as a determiner of behavior, it was decided to construct
one of the variables of the present model on the basis of this concept. However, in this study the original formulation of the attitude-toward-situation concept is developed further.

The original formulation of the attitude-toward-situation concept refers to perceptions about a single situational context. The identification, on the part of the researcher, of the most appropriate situational context is, according to Rokeach and Kliejunas (1971), a matter of intuition or educated guess. This formulation proved to be unsatisfactory for the present model in the following respects:

(1) A single situation context may not apply to different health practices and to different target groups.

(2) The selection of a single situational context on the basis of intuition or guess offers great possibilities for error.

(3) It can be argued that in the process of adopting a personal health practice an individual evaluates the totality of his life situation, not just a single situational component.

In order to overcome these problems the concept of attitude-toward-situation was expanded into the concept of attitude-toward-life-situation and a special measurement technique for the expanded concept was adopted.

Instead of being restricted to a single situational context the concept attitude-toward-life-situation is composed of a number of situational contexts. Each of the situational contexts could be
measured separately in order to obtain its attitude-toward-situation value. However, in order to obtain the total attitude-toward-life-situation index the separate attitude-toward-situation values must be combined in a meaningful manner. A major difficulty associated with combining these values is that their relative importance may vary among individuals.

In order to combine attitude-toward-situation values in a meaningful manner a decision was made to utilize Fishbein's summation theory as the method of obtaining the attitude-toward-life-situation index.

In applying Fishbein's summation theory to the measurement of attitude-toward-life-situation Fishbein's equation is given the following form:

\[
A_{s(o)} = \sum_{i=1}^{N} B_i a_i
\]

where

- \( A_{s(o)} \) = attitude-toward-life-situation (pertaining to a given health practice, o)
- \( B_i \) = the strength of belief i about o; that is, the probability that o is related to a given situational context \( s' \)
- \( a_i \) = the evaluative aspect of belief i; that is, the evaluation of \( s' \)
- \( N \) = number of beliefs about o
The belief (i) is existential in nature. It indicates that a given situational context (s') exists for a given health practice (o). The related concept in the cognitive structure is a situational context (s'). $a_i$ is the perceived favorableness of s' for initiating any health practice.

$a_i$ is measured for any health practice rather than for a given health practice for the following reasons:

(1) In this way both the attitude-toward-practice and attitude-toward-life-situation are measured in an analogous manner.

(2) In this way the model becomes more economical to use; only one measurement of $a_i$ is needed for any number of health practices.

Preventive Health Motivation

Preventive health motivation as a variable of the present model is composed of the three subjective beliefs of the Rosenstock model. The Rosenstock model is based on the field theory of Kurt Lewin (1935) and hypothesizes that a decision to obtain a preventive or detection test in the absence of symptoms will not be made unless the following conditions are satisfied:

1. The individual is psychologically ready to take action relative to a particular health condition. The extent of readiness to act is defined by whether the individual feels susceptible to the condition in question and the extent to which its possible occurrence is viewed as having serious personal consequences.
2. The individual believes that the preventive or detection test in question is both feasible and appropriate for him to use, would reduce either his perceived susceptibility or the perceived severity of the health condition and no serious psychological barriers to the proposed action are present.

3. A cue or stimulus occurs to trigger the response. (Rosenstock, 1966, p. 119)

The level of readiness (susceptibility and severity) provides the energy for action and the perception of the efficacy of a health practice to counteract the threat provides a preferred path of action. Rosenstock (1966) hypothesizes that the combination of these three subjective beliefs could reach a high level of intensity without resulting in overt action unless some instigating event (a cue or stimulus) occurs to initiate the action.

Unfortunately, the cue or stimulus variable has not yet been subjected to careful study. Therefore the Rosenstock model is commonly regarded as being composed of the three subjective beliefs: susceptibility, severity, and efficacy. The Rosenstock model has been tested in several major research studies, which have been critically reviewed by Rosenstock (1966). He finds evidence both for and against the model.

In the present model the three subjective beliefs of the Rosenstock model are combined to make a single index of preventive health motivation in accordance with the procedure introduced by Haefner and Kirsch (1970):

\[ \text{PHM} = \text{eff} \times \sqrt{\text{sus} \times \text{ser}} \]
where PHM = preventive health motivation
eff = perceived efficacy of a given health practice to counteract perceived threats to health
sus = perceived personal susceptibility to the threat
ser = perceived seriousness of the threat

The three major variables of the Rosenstock model are included in the present model for the following reasons:

(1) The Rosenstock model is the best known model of health behavior and has been shown to "account for major variations in behavior in groups of individuals studied in a variety of settings" (Rosenstock, 1966, p. 119).

(2) The model is composed of a small number of elements and is thus economical to measure.

(3) The beliefs included in the model offer potential for educative purposes (Rosenstock, 1966; Kerrick and Heath, 1969).

(4) The inclusion of the major variables of the Rosenstock model in the present model makes it possible to compare the predictive power of the Rosenstock model with that of the present model.

**Intention-About-Practice**

In social psychology the behavioral intention concept is used in two different ways. Some investigators regard behavioral intention as the behavioral component of attitude.
Thus understood, behavioral intention is a stochastic concept which correlates with the cognitive and affective components of attitude, but which does not necessarily correlate with a given specific behavior (Fishbein, 1967). Other investigators use the term to refer to a person's intentions about specific objects under specified conditions (Ajzen and Fishbein, 1969; Carlson, 1968; Dulany, 1961; Fishbein, 1967). In this case behavioral intention does not necessarily correlate with the components of attitude. The evidence obtained by these investigators shows high correlations between behavioral intention and behavior.

Intention-about-practice, as the criterion variable of the present model, is used in the latter sense to refer to a person's intention to initiate a specific health practice under a specific condition. The condition selected for the study is "beginning the practice in the near future".

Ajzen and Fishbein (1969) contend that there should be a high correlation between behavioral intention and behavior. They refer primarily to single social acts such as "going to a party on a Friday night". The correspondence between behavioral intention and behavior may not be so close in the health area. Haefner and Kirsch (1970) found that intentions to have medical checkups were correlated with the corresponding behaviors, but intentions to change
daily living habits bore no relationship to actual behaviors. Apparently, the relationship between behavioral intention and behavior is specific to the health action under question.
OPERATIONALIZATION OF THE MODEL

The concept "operationalization" is used to refer to all those procedures employed to obtain a specific measurable form for the theoretical formulation of the model. The outcome of the operationalization, the questionnaire of the main study, appears in Appendix A.

The subjects for the pilot studies used in the operationalization of the model are drawn from college undergraduates at Oregon State University. The specific characteristics of this population introduce some limitations to the universal applicability of the present questionnaire. In further use of the model this limitation should be taken into consideration by proceeding to operationalize the model in relation to the characteristics of the given population.

The basic measurement technique selected for the operationalization of the model is a seven-point scale between two polar concepts. This measurement technique is identical to the one used in the semantic differential method developed by Osgood (1957) and was selected for the following reasons:

(1) The semantic differential method has been shown to display considerable reliability and validity in a wide variety of measurement situations (Osgood, 1957).

(2) The semantic differential measurement technique has been reliably applied to the measurement of behavioral intentions
(Triandis, 1964) and to the measurement of the probability dimension of beliefs (Raven and Fishbein, 1962).

(3) Messich (1957) has provided evidence supporting the assumption of equal intervals between successive scale positions of the semantic differential. The study of Cliff (1959) has shown that adverbs combine multiplicatively with adjectives and that the adverbial quantifiers 'slightly, quite, and extremely' (which are used in the semantic differential technique) yield approximately equal increasing degrees of intensity.

In this study, the successive scale positions were assigned numbers one to seven. The number seven end of the scale is the one which typically characterizes the concept to be measured. For example, number seven was assigned to the "important" end of the scale "important-unimportant" in the measurement of values and to the "probable" end of the scale "probable-improbable" in the measurement of beliefs.

**Attitude-Toward-Practice**

**Selection of the Value Statements**

The eighteen instrumental and the eighteen terminal values of the Rokeach Value Survey (Rokeach, 1967) were selected to make up the majority of the values used in the measurement of attitude-toward-
practice. Rokeach (1971) reports that both sets of values have been selected through careful analysis to represent the universe of human values. Five extra terminal and three extra instrumental values were added to Rokeach's two original sets of values because of their particular relevance to personal health practices.

The five terminal values added were:

(1) A healthy life (freedom from disease or injury)
(2) A long life (longevity)
(3) Good-looking appearance (having attractive face, body, or clothes)
(4) Physical fitness (having capacity for physical performance)
(5) Physical well-being (feeling of well-being in one's body)

The value "good looking appearance (having attractive face, body, or clothes)" was taken directly from Rosenberg (1956), whereas the other additional terminal values were formulated by the investigator.

The three instrumental values added were:

(1) Health conscious (taking good care of one's health)
(2) Moderate (avoiding extremes)
(3) Persistent (sticking to tasks even though they are difficult)

The value "health conscious (taking good care of one's health)" was formulated by the investigator. The value "persistent" was also formulated by the investigator, but its definition "(sticking to a task
even though it is difficult)" was modified from one of Rosenberg's (1956) value statements. The value "moderate" was taken from White (1966), but its definition "(avoiding extremes)" was formulated by the investigator.

**Measurement of Values**

The values selected were measured in two alternative ways. First, the values were measured on the scale "important-unimportant". This particular scale was selected because it has a high factor loading on the evaluative dimension of the semantic differential and because it is consistent with the instructions preceding the scales: "Judge how important or unimportant these values are to YOU as guiding principles in YOUR life". These instructions were modified from those used in the Rokeach Value Survey (Rokeach 1967).

One of the pilot studies (Appendix D) had shown that the use of evaluative scales, such as "important-unimportant," in the measurement of values tends to yield highly skewed distributions toward the positive ends of the scales. In an attempt to obtain a wider range of responses, an alternative measurement procedure was devised. In this procedure, following the example of White (1966), the respondent rank-orders the values in terms of their importance into seven categories. The number of values in each category is restricted so that an approximately normal distribution of responses is obtained.
The seven categories were assigned numbers one to seven for computation purposes. However, the assumption of equal intervals between successive categories is not supported by research.

**Measurement of the Instrumentality Beliefs**

The instructions preceding the scales measuring instrumentality beliefs were originally designed to aid the respondent to make a "mental trial" of the advantages and disadvantages associated with the beginning of the practice. A pilot study (Appendix C) showed that the beginning of recommended health practices are rarely regarded to hinder the attainment of terminal values or to be in opposition to instrumental values. This indicated that a scale expressing both the advantages and disadvantages associated with health practices might result in a distribution skewed strongly toward the advantage-end.

In order to obtain a wider range of responses, the following procedure was adopted. The instrumentality beliefs were stated positively, i.e., that the beginning of a given health practice would increase one's chances to achieve a certain terminal value or would indicate that a certain instrumental value is being expressed. The strengths of the instrumentality belief were then measured on the scale "probable-improbable". This scale is one of the scales developed to measure the probability dimension of beliefs (Raven and Fishbein, 1962).
Selection of the Situational Contexts

Three pilot studies, designed to obtain perceived motivations associated with health practices, were conducted (Appendices E, F and G). Although the format of the questions in these pilot studies varied, the responses by the subjects helped to identify the following common categories of relevant situational contexts:

1. lack of time to carry out the practice
2. the practice involving expenditure of money
3. practice causing inconveniences or trouble in daily living
4. being under tension or stress when beginning the practice
5. practice fitting poorly into daily schedule
6. physician recommending the practice
7. persons close to one approving or disapproving the practice
8. persons close to one carrying out the practice
9. persons close to one beginning the practice

On the basis of the Rosenstock model, two additional contexts, expressing in a single statement all of the three subjective beliefs, were formulated. One of the statements referred to the near future and the other to some time in the future. From the Smoker's Self Testing Kit (Horn, 1969) an additional situational context concerning
the expectations of health authorities was identified.

**Measurement of the Situational Contexts**

For the measurement of the selected situational contexts in general terms, i.e., how favorable or unfavorable they are for the initiation of any health practice, three major problems had to be solved. First, in spite of instructions to judge the situational contexts in terms of their conduciveness to initiating health practices, subjects frequently responded in terms of their general evaluative meaning. For example, an individual, responding to a questionnaire, indicated that his friends' approval would be positive in terms of helping him begin health practices. A follow-up interview revealed that he had actually meant that his friends' approval is a positive happening in his life, but that it would be neither positive nor negative in terms of helping him begin health practices. The tendency to focus on the general evaluative meaning of the situational context instead of its conduciveness to initiating health practices was minimized (1) by letting the phrase "In terms of helping you begin the practice this situation is" follow the statement of every situational context, and by (2) selecting a measurement scale that would minimize this tendency.

The selection of a scale to minimize the tendency to focus on the general evaluative aspects of the situational contexts was based
on a pilot study (Appendix H) in which students responded to situational contexts on eighteen different scales. The direction, positive or negative, of an individual's response on a given scale was compared to the general direction of his responses on the remainder of the scales related to the same situational context. Two of the eighteen scales "favorable-unfavorable" and "promoting-hindering" were responded to without a single case of contradiction with the general direction of responses. The scale "favorable-unfavorable" was selected because respondents indicated that it was the easier to answer of the two scales.

Second, many individuals did not judge the situational contexts directly but rather in terms of their own general commitment to health practices. For example, an individual had responded on a questionnaire that his friends' disapproval would be favorable for initiating health practices. A follow-up interview revealed the real meaning of his response. He had meant that although he would regard his friends' disapproval as unfavorable in terms of helping him begin health practices, he still would feel committed to beginning health practices. The tendency to respond in terms of general commitment to health practices was minimized by instructing the respondent to focus on a hypothetical situation, in which he had not yet decided whether or not to initiate a hypothetical health practice. It was also emphasized that the neglecting of the hypothetical health
practice would not cause him any problems.

Third, follow-up interviews revealed that many of the respondents, even though instructed to focus on "health practices in general or an average health practice", responded on the basis of specific health practices. This response tendency was minimized by instructing respondents to focus on a hypothetical health practice "which was recently developed and introduced to the public".

Measurement of the Beliefs Related to the Situational Contexts

The instructions preceding the measurement of beliefs related to situational contexts were designed to aid the respondent to make a "mental trial" about the various situational contexts as they relate to a given specific personal health practice. A given belief statement was formulated to express the existence of a given situational context in regard to the health practice. The belief statements were measured on the scale "probable-improbable" (Raven and Fishbein, 1962).

Preventive Health Motivation

The operationalization of preventive health motivation was modified with minor adaptations from the technique of Haefner and Kirscht (1970). Perceived susceptibility to a health threat was measured by responding on a scale to a question regarding the
possibility of getting a disease or health condition in the future. Two variations of this were devised; one referring to the near future and the other to some time in the future. The perception of severity of a health threat was measured by responding on a scale to a question regarding the extent to which a disease or a health condition would have a bad effect on one's life. The perceived efficacy of a given health practice was measured by responding on a scale to a question regarding the extent to which the practice would protect one against a health condition or disease. The subject was instructed, before responding to the above questions, to name a specific health condition or disease related to the practice.

**Intention-About-Practice**

In social psychology, the scale "would-would not" is commonly used for the measurement of behavioral intentions (Ajzen and Fishbein, 1969; Carlson, 1968; Triandis, 1964; 1971). This scale was, however, observed to yield predominantly positive responses to recommended health practices. Therefore, a pilot study (Appendix H) was conducted to obtain more suitable scales for the measurement of intention-about-practice. This pilot study also served to select a set of three scales to increase the reliability of the intention-about-practice measure. In the pilot study, students responded to eighteen scales measuring behavioral intentions. From the eighteen scales
three were selected which showed wide distributions of responses and which correlated substantially with each other. These scales were:

1. will-will not
2. intend-do not intend
3. going to-not going to

These three scales appear in the questionnaire mixed with some "filler" scales. The "filler" scales were used to disguise the association between the selected three scales. The sum of the three scales was used as the measure of intention-about-practice.

**Development of Validity Measures for the Model**

**Attitude-Toward-Practice**

Rokeach has presented the view that a preferential response to an attitude object is due to two independent aspects associated with the attitude object: (1) its being cognitively evaluated as good or bad, (2) its being affectively liked or disliked.

A person may believe... that a particular medicine is good but he dislikes the way it tastes. Conversely, he may believe cigarette smoking is bad, but he enjoys it (Rokeach, 1970, p. 122).

Instead of accepting the evaluative dimension of the semantic differential as a general attitude measure (Osgood, 1957), a pilot study (Appendix J) was conducted to check whether or not independent
cognitive and affective dimensions could be extracted from Osgood's (1957) general evaluative dimension. In the pilot study, students responded to twenty-six scales derived mainly from the evaluative dimension of the semantic differential. The computed correlation matrix indicated that two dimensions, cognitive and affective, could be obtained. Two groups of three scales representing the two dimensions were selected. The selected scales showed the highest correlations within the group and the lowest between the groups. The three scales in each group were:

Cognitive scales:
1. good-bad
2. important-unimportant
3. beneficial-harmful

Affective scales:
1. pleasurable-painful
2. nice-awful
3. pleasant-unpleasant

The discovery of these two independent dimensions necessitated the inclusion of two validity measures for attitude-toward-practice. The sum of the three scales in each group was taken as the validity measure of attitude-toward-practice. The scales of each set, along with some "filler" scales, were listed in a mixed order in the instrument.

**Attitude-Toward-Life-Situation**

The phrase "In terms of helping you begin the practice this
situation is..." was selected as the stimulus for judging the favora-
bleness of the entire life situation for the initiation of a given health
practice. One of the earlier pilot studies (Appendix H) had indicated
that some of the scales of the evaluative dimension of the semantic
differential tended to measure situational contexts in two contradict-
ing manners. Therefore, a pilot study was conducted to select
three scales for the measurement of attitude-toward-life-situation.
In this pilot study, students responded to the stimulus, as presented
above, on twenty-four different scales. The scales selected showed
the highest intercorrelations and correlated highly with the scale
"favorable-unfavorable". The selected three scales were

(1) positive-negative
(2) encouraging-discouraging
(3) hindering-promoting

The scale "favorable-unfavorable" was purposely omitted in
order to prevent the respondent from associating this measurement
with the measurement of the situational contexts. The three scales
selected, along with some "filler" scales, were presented in random
order in the instrument. The sum of the three scales was taken as
the validity measure of attitude-toward-life-situation.
TESTING THE MODEL

Research Tasks and Hypotheses

The research tasks and hypotheses of the main study were

(1) To determine the validity of the model by testing the following hypotheses:

(a) Each of the three major predictor variables, attitude-toward-practice, attitude-toward-life-situation, and preventive-health motivation, correlates significantly with the criterion variable, intention-about-practice.

(b) The criterion variable is more accurately predicted if all three of the predictor variables are taken into consideration through the coefficient of multiple correlation than if predicted from any of the predictor variables alone.

(c) The criterion variable is more accurately predicted if the indexes for attitude-toward-practice and for attitude-toward-life-situation are obtained through Fishbein's equation than through calculating only the sums of the corresponding belief scales.

(2) To examine whether the model can be further developed
by selecting variables and scales which increase the predictive power of the model or economize the model.

(3) To validate the variables of the model to outside criteria by testing the following hypotheses:

(a) The predictor variables of the model also predict perceptions about the extent to which the practice related to the intention is presently being carried out.

(b) Attitude-toward-practice correlates significantly with its validity measure developed in the study.

(c) Attitude-toward-life-situation correlates significantly with its validity measure developed in the study.

(4) To determine the reliability of the variables of the model by test-retest procedure.

(5) To examine whether the obtained correlations could be explained on the basis of "demand characteristics" involved in the study by determining the extent to which subjects actually guessed the true hypothesis of the study and by determining whether the knowledge of the hypothesis would increase obtained correlations.
Testing Procedures

Selection of the Health Practices

The practices selected were not intended to be representative of the universe of personal health practices. They were selected primarily for the purpose of testing the model and therefore had to meet the following criteria:

(1) The health practices selected had to be behaviors not common among the subjects.

(2) The responses of the subjects to the health practices selected had to be distributed over the whole range of the intention-about-practice scales.

A pilot study (Appendix B) was carried out in order to select health practices to meet these criteria. In the pilot study, students responded to nineteen health practices on the scale "I intend-I do not intend". The following five health practices were considered to meet the above criteria:

(1) to limit the intake of saturated fats (animal fats)

(2) to brush teeth after every meal and after every intake of sugars (whenever impractical rinse mouth with water)

(3) to avoid driving when angry or upset

(4) to wash hands before eating
to always use seat belts (even at low speed)

Three of the selected five health practices had to be excluded since enough subjects for only two samples were available. First, the practice "to avoid driving when angry or upset" was excluded since it was inconsistently responded to by many students. Follow-up interviews revealed that subjects focused sometimes on the avoiding aspect of the practice, sometimes on the driving aspect. Finally, the practice related to toothbrushing and that related to washing hands were excluded since they were considered to be of less significance to college students than the remaining two practices. Of the remaining two practices, the one related to the intake of saturated fats was modified by adding to it the word "consistently" to make it more definite. Thus, the two health practices selected for the testing of the model were

(1) TO USE SEAT BELTS (EVEN AT LOW SPEED)
(2) TO CONSISTENTLY LIMIT THE INTAKE OF SATURATED FATS (ANIMAL FATS)

Subjects

Two separate samples of subjects were used in the testing of the model. One sample responded to the practice concerning the use of seat belts, the other to the practice concerning the intake of saturated fats. The samples were selected exclusively for the
The purpose of testing the model and were not intended to be representative of any specific population.

The subjects were members of two undergraduate health courses, "H 160 Personal Health" and "H 170 Personal Health", during the fall term 1971 at Oregon State University. Most of the students taking these courses are freshmen. H 160 is a general university requirement, whereas H 170 is a course serving primarily health and physical education majors.

Among 207 students who participated in the testing of the model, 92 responded to the practice related to the use of seat belts and 95 responded to the practice related to the intake of saturated fats. The remaining 20 responded to the practice related to the use of seat belts but were informed about the true experimental hypothesis and asked to role play "a good subject" by attempting to validate the given hypothesis. The specific instructions given to these 20 students appear in Appendix A.

**Questionnaire**

The questionnaire constructed to test the model included twelve sections which have been listed below in the order in which they appear in Appendix A. Each section listed below will be accompanied by a letter symbol, which can be used to identify the same section in Appendix A. The sections are:
When the questionnaire was administered to the subjects the section "Instructions" began the questionnaire and the sections "Questions Concerning the Extent to Which the Health Practice is Being Carried Out" and "Questions Concerning the Hypothesis of the Study" ended it. The rest of the sections appeared in a completely random order to guarantee that no consistent interaction between two adjacent sections would occur. The order of questions within each section was fixed. In the sections "Terminal Values" and
"Instrumental Values" the order was determined, in accordance with Rokeach's Value Survey (1967), by alphabetizing the value statements. The order of questions was randomized in the remainder of the sections. The direction, to either left or right, of the polar words at each end of the scales was randomly determined to prevent the occurrence of consistent response sets.

The section "Instructions" began with a reference to the purpose of the study: "...to help improve college health courses so that they would be better adapted to the need of individual students." This reference was done for the following reasons:

(1) Orne (1969) has stated that 'college students tend to share "...the hope and expectation that the study in which they are participating will in some material way contribute to science and perhaps ultimately to human welfare in general" (p. 187). This expectation tends to modify subjects' responses. They tend to guess the true hypothesis of the study and to play a "good subject" by validating, consciously or unconsciously, the guessed hypothesis. In this study, this source of error was minimized by an overt statement of a purpose which essentially differed from the true purpose of the study. The stated purpose undoubtedly created "demand characteristics" but not in a direction which would bias the true hypothesis of the study.
The above stated purpose of the study was used as a rationale for requesting the subjects to "show how you really feel about the questions".

The stated purpose of the study was intended to give a basic motivation for the students to complete the questionnaire.

To facilitate the expression of true private opinions, the respondents were instructed not to mention their real names but to devise assumed names. The assumed names were used in the matching of test-retest questionnaires in the determination of reliability.

The instructions how to use the scales were taken, with minor modifications, from the standard instructions used in the semantic differential method (Osgood, 1957). Deviating from the routine procedure of the semantic differential method, a summary of the scale positions was included on the reverse of the pages of the questionnaire for quick reference. In connection with some of the pilot studies, respondents had indicated that they forgot the initial instructions and created frames of reference of their own when responding to the scales. The inclusion of a quick reference to the scale positions was intended to minimize the occurrence of individual frames of reference.

The questionnaire was mimeographed for the text and scales as shown in Appendix A. In the space provided at the top of those pages where reference is made to "the practice", one or the other
of the selected two health practices was indicated. All of the pages making up a complete section were collected together, stapled and provided with an identifying number. All the sections bearing the same identifying number were collected and stapled to make a complete questionnaire booklet.

**Administration of the Questionnaire**

The questionnaire was administered to available sections of H 160 and H 170 during the week before the final examinations, fall term 1971. The class sizes varied from 25 to 40. The instructor of a given section introduced the investigator as a graduate student conducting health-related research at the University. The investigator gave the following instructions: "The test will take about 30-35 minutes. In case anyone does not understand how to respond to the scales he should raise his hand." Thereafter, the questionnaires were distributed to the class. Every other student received a questionnaire concerning the use of seat belts, every other one concerning the intake of saturated fats.

At 25 minutes from the beginning of the class period, the investigator asked for the attention of the class and explained the following points:

(1) "Some of you will finish earlier than others. This is, in part, due to the fact that the questionnaires differ from each
other. This statement was intended to prevent students from trying to complete the questionnaire too rapidly when they saw that some of their classmates were leaving the room.

(2) "Leave your completed questionnaires in this box." The box was placed on the opposite side of the room from the investigator. This was done in order to assure the students that their identity would not be revealed to the investigator after they had left the room.

(3) "Before leaving check that the numbers you have placed on two of the pages of the questionnaires are clear and readable." This statement referred to the pages of the questionnaire in which the terminal and instrumental values are measured by rank-ordering them into seven categories.

(4) "If you feel tired or dizzy right now please feel free to have a couple of minutes break." Only a few students made use of the opportunity to rest.

The time to complete the questionnaires ranged from 20-60 minutes with a median of 35-40 minutes.

One week later during the final examination, volunteers from two sections of H 160 were asked to respond to the questionnaire for the second time. This procedure was followed to obtain retest scores for the computations of the reliability coefficients. The specific instructions for the subjects asked to participate in the retest are presented in Appendix A. Of the 63
students asked to pick up a questionnaire 57 actually did it. Of those who picked the questionnaire 27 returned a completed questionnaire. Twelve students completed the questionnaire immediately after having taken the final examination; 15 returned if during the week.

Treatment of the Data

The treatment of the data collected involved the following steps:

1. The questionnaires were disassembled and separated by sections. Each separate section bore the original questionnaire's identifying number.

2. The sections were scored by hand to facilitate keypunching. The left end of a scale was consistently assigned number one, the right end number seven. The number assigned, if it did not conform to the direction of the scale, was later reversed by a computer program.

3. The scores on the margins were keypunched by sections. Having the same sections keypunched at one time was considered to increase the accuracy and speed of keypunching. Sections which contained any unanswered item were not keypunched.

4. A small sample of keypunched cards was manually checked for accuracy. A very small error rate was indicated.

5. A preliminary computer program edited the keypunched data for valid scores and for completeness. Any section with a score
other than one through seven or containing any unanswered item was rejected. Only one section was thus rejected.

(6) The data were sorted by the identification number so that all the sections bearing the same identification number were brought together.

(7) Another computer program combined all the sections bearing the same identification number into one record and reversed the scores where needed.

(8) The values of the variables were computed from the scores by a third computer program. If a section was missing, the variable involving the section was given the value zero. For instance, all those subjects who indicated that they were already carrying out the practice by not answering the intention-about-practice scales were given value zero for intention-about-practice. Two separate values for attitude-toward-practice were computed, one involving terminal values and the related beliefs and the other involving instrumental values and the related beliefs. The two values were kept separate because there was no previous research indicating that they would correlate with each other.

(9) An independent check of the extent to which the subjects were carrying out the practice was conducted. The check was based on the information the subjects had given in section "Questions Concerning the Extent to Which the Health Practice is Being Carried
Subjects were excluded from further processing involving the variable intention-about-practice on the basis of two criteria: first, anyone who had placed a checkmark on one of the two spaces closest to the always-end of the scale "always-never" measuring the perception of the extent to which the practice was being carried out; second, anyone who indicated by the written report, if contrary to the scale position selected, that he was carrying out the practice most of the time. Subjects carrying out the practice were excluded for the reason that existing behavior might correlate with both the predictor variables and the criterion variable and account for the correlations obtained.

(10) Product-moment correlation coefficients between all the variables (excluding the extent to which the practice was being carried out) were computed separately for both health practices by a statistical analysis package (SIPS). Variable values zero were not included in the computation of correlations. Thus for instance, those having left the intention-about-practice scales unanswered were excluded from all computations of correlations involving intention-about-practice. Those excluded in step (9) were excluded from all of the computations in step (10).

(11) Multiple correlation coefficients for both health practices were computed separately by a stepwise regression analysis program (STEP) for intention-about-practice as the dependant variable.
All those excluded in step (10) were also excluded in this computation. In addition, any subject who had even a single unanswered item per questionnaire was excluded.

(12) Multiple correlation coefficients for both health practices were computed separately by the same program used in step (11) for the extent to which the practice was being carried out as the dependent variable. Since this computation did not involve intention-about-practice, those who had not answered intention-about-practice scales were included. Also those excluded in step (9) were now included. Thus, only those who had even a single missing item per questionnaire concerning the variables involved were excluded.

(13) The tests concerning the significance of the obtained correlation coefficients in comparison to zero correlation and those concerning the significance of the differences between correlation coefficients were computed on the basis of Snedecor and Cochran(1968).

Results

Predictive Validity of the Model

Hypothesis (1) (a): Each of the three major predictor variables correlates significantly with the criterion variable, intention-about-practice. Rows (1-4) in Table 1 contain the correlation coefficients
relevant to this hypothesis. It can be observed that the hypothesis is partly supported by the obtained correlations. Attitude-toward-life-situation correlates significantly with intention-about-practice for both the use of seat belts and the intake of saturated fats. Attitude-toward-practice, when calculated through terminal values and related beliefs, correlates significantly with intention-about-practice for the intake of saturated fats but not with intention-about practice for the use of seat belts. Conversely, attitude-toward-practice, when calculated through instrumental values and related beliefs, correlates significantly with intention-about-practice for the use of seat belts but not for the intake of saturated fats. Preventive health motivation does not correlate significantly with intention-about-practice for either practice.

Hypothesis (1) (b): Intention-about practice is more accurately predicted if all of the predictor variables of the model are taken into consideration through the coefficient of multiple correlation than if predicted from any of the predictor variables alone. Table 1 shows that the multiple correlation coefficients (row 5) are higher than any of the simple correlations for both health practices. For the use of seat belts the multiple correlation coefficient (row 5) is not significantly higher than the simple correlation computed from attitude-toward-life-situation (row 3). The difference between the multiple correlation coefficient and the simple correlation based on attitude-
toward-practice, when calculated through instrumental values and related beliefs, (row 2) approaches significance ($p = .08$) for the use of seat belts. The multiple correlation coefficient is significantly higher than the simple correlation based on attitude-toward-practice, calculated through terminal values and related beliefs, (row 1) or on preventive health motivation (row 4) for the use of seat belts ($p < .05$). For the intake of saturated fats the multiple correlation coefficient (row 5) is not significantly higher than the simple correlation based on attitude-toward-life-situation (row 3) but is significantly higher than the simple correlations based on the remainder of the predictor variables ($p < .05$) (rows 1, 2, and 4).

**Hypothesis (1) (c):** The intention about practice is more accurately predicted if attitude-toward-practice and attitude-toward-life-situation values are obtained through Fishbein's equation than through calculating only the sums of the corresponding belief scales. Rows (6), (7) and (8) compared to rows (1), (2) and (3), respectively, in Table 1 relate to this hypothesis. All of the differences between the respective correlations are in the hypothesized direction. None of the differences, however, reaches statistical significance.
Table 1. Intercorrelations and multiple correlations between the predictor variables and intention-about-practice.

| Row No. | Predictor variables                                      | Intention-about-practice |          |          |
|---------|----------------------------------------------------------|--------------------------|----------|
|         |                                                          | Use of Seat-belts(N)     | Intake of Saturated fats(N) |
| (1)     | Attitude-toward-practice: terminal values and related    | .19 (54)                 | .40** (87) |
|         | beliefs                                                  |                          |          |
| (2)     | Attitude-toward-practice: instrumental values and       | .50** (56)               | .14 (88) |
|         | related beliefs                                          |                          |          |
| (3)     | Attitude-toward-life situation                           | .60** (55)               | .50** (88) |
|         |                                                          |                          |          |
| (4)     | Preventive health motivation                             | .11 (55)                 | .19 (88) |
|         |                                                          |                          |          |
| (5)     | Multiple correlation from                               | .71** (50)               | .59** (71) |
|         | the above variables with                                 |                          |          |
|         | intention-about-practice                                 |                          |          |
| (6)     | Attitude toward practice: only beliefs related to        | .15 (54)                 | .39** (88) |
|         | terminal values                                          |                          |          |
| (7)     | Attitude-toward-practice: only beliefs related to        | .29* (54)                | .13 (89) |
|         | instrumental values                                      |                          |          |
| (8)     | Attitude-toward-life-situation: only beliefs related to  | .56** (55)               | .30** (88) |
|         | situational contexts                                     |                          |          |

*p < .05  
**p < .01
Development of the Model

In order to examine whether the model could be developed further, various modifications in calculating the value for a given predictor variable were compared together in terms of their predictive power.

Rows (1-6) in Table 2 present six different modifications of attitude-toward-practice, when calculated through terminal values and related beliefs, and the respective correlations with intention-about-practice for the use of seat belts and for the intake of saturated fats. No consistent patterns of superior predictive power associated with any of the modifications can be observed in Table 2. None of the differences between the correlations for a given health practice reaches statistical significance.

Rows (7-12) in Table 2 present six different modifications of attitude-toward-practice, when calculated through instrumental values and related beliefs, and the respective correlations with intention-about-practice for both health practices. No consistent patterns of superior predictive power associated with any of the modifications exist. None of the differences between correlations for a given health practice is statistically significant.

In summary, on the basis of rows (1-12) in Table 2, none of the following ways of calculating the value for attitude-toward-
practice is superior or inferior in terms of predicting intention-about-practice: (1) The inclusion of all of the terminal or instrumental values, (2) The inclusion of only nine terminal values or eight instrumental values, (3) The inclusion of only Rokeach's original sets of values, (4) The use of the "important-unimportant" scale, (5) The use of the ranking method.

Rows (13-14) in Table 2 present two different modifications in the calculation of attitude-toward-life-situation values. The respective correlations with intention-about-practice are also shown. No significant differences between the correlations for a given health practice exist. The inclusion or exclusion of the two beliefs expressing the Rosenstock model's essence seems thus to make no difference in terms of predictive power of the variable.

Rows (15-18) in Table 2 present four different modifications in the calculation of preventive health motivation values. The respective correlations with intention-about-practice also appear. The modifications "near future" and "some time in the future" seem to contrast with each other for the two health practices. The intention about the use of seat belts can be predicted more accurately from the modification "some time in the future", whereas the intention about the intake of saturated fats can be predicted more accurately from the modification "near future." The multiplication of preventive health motivation value with the respective situational context
score increases the correlations consistently. However, none of the trends referred to reaches statistically significant levels.
Table 2. Modifications of the predictor variables correlated with intention-about-practice.

<table>
<thead>
<tr>
<th>Row No.</th>
<th>Predictor variables</th>
<th>Intention-about-practice</th>
<th>Use of Seat-belts (N)</th>
<th>Intake of Saturated fats (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Attitude-toward-practice: terminal values and related beliefs:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1)</td>
<td>All values, important-scale</td>
<td>.19</td>
<td>(54)</td>
<td>.40</td>
</tr>
<tr>
<td>(2)</td>
<td>All values, ranking</td>
<td>.20</td>
<td>(54)</td>
<td>.42</td>
</tr>
<tr>
<td>(3)</td>
<td>Nine salient values, important-scale</td>
<td>.26</td>
<td>(54)</td>
<td>.40</td>
</tr>
<tr>
<td>(4)</td>
<td>Nine salient values, ranking</td>
<td>.22</td>
<td>(54)</td>
<td>.38</td>
</tr>
<tr>
<td>(5)</td>
<td>Only Rokeach's values, important-scale</td>
<td>.18</td>
<td>(54)</td>
<td>.37</td>
</tr>
<tr>
<td>(6)</td>
<td>Only Rokeach's values, ranking</td>
<td>.17</td>
<td>(54)</td>
<td>.35</td>
</tr>
<tr>
<td></td>
<td><strong>Attitude-toward-practice: instrumental values and related beliefs:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(7)</td>
<td>All values, important-scale</td>
<td>.50</td>
<td>(56)</td>
<td>.14</td>
</tr>
<tr>
<td>(8)</td>
<td>All values, ranking</td>
<td>.42</td>
<td>(56)</td>
<td>.13</td>
</tr>
<tr>
<td>(9)</td>
<td>Eight salient values, important-scale</td>
<td>.47</td>
<td>(56)</td>
<td>.07</td>
</tr>
<tr>
<td>(10)</td>
<td>Eight salient values, ranking</td>
<td>.42</td>
<td>(56)</td>
<td>.06</td>
</tr>
<tr>
<td>(11)</td>
<td>Only Rokeach's values, important-scale</td>
<td>.51</td>
<td>(56)</td>
<td>.11</td>
</tr>
<tr>
<td>(12)</td>
<td>Only Rokeach's values, ranking</td>
<td>.43</td>
<td>(56)</td>
<td>.09</td>
</tr>
</tbody>
</table>
Table 2. (Continued)

<table>
<thead>
<tr>
<th>Row No.</th>
<th>Predictor variables</th>
<th>Intention-about-practice</th>
<th>Use of Seat-belts (N)</th>
<th>Intake of Saturated fats (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Attitude-toward-life-situation:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(13)</td>
<td>All beliefs</td>
<td>0.60</td>
<td>(54)</td>
<td>0.50</td>
</tr>
<tr>
<td>(14)</td>
<td>Two beliefs excluded</td>
<td>0.49</td>
<td>(54)</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>Preventive health motivation:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(15)</td>
<td>Simple, some time in future</td>
<td>0.11</td>
<td>(55)</td>
<td>0.19</td>
</tr>
<tr>
<td>(16)</td>
<td>Simple, near future</td>
<td>0.04</td>
<td>(55)</td>
<td>0.26</td>
</tr>
<tr>
<td>(17)</td>
<td>Complex, some time in future</td>
<td>0.18</td>
<td>(53)</td>
<td>0.21</td>
</tr>
<tr>
<td>(18)</td>
<td>Complex, near future</td>
<td>0.08</td>
<td>(53)</td>
<td>0.30</td>
</tr>
</tbody>
</table>

Explanations:

All values = all of the 23 terminal or 21 instrumental values were included in the calculation of attitude-toward-practice score.

ranking = the method of measuring values by rank-ordering them into seven categories.

important-scale = the method of measuring values by using the scale important-unimportant

salient = most important values as judged by an individual

Only Rokeach's values = only the eighteen terminal or eighteen instrumental values included in the Rokeach Values Survey (1967) were included in the calculation of attitude-toward-practice value

All beliefs = all of the thirteen beliefs related to situational contexts were included in the calculation of attitude-toward-life-situation value
Table 2 (Continued)

Explanations (Continued)

Two beliefs excluded = all of the beliefs except those two stating that the practice would effectively prevent one from developing a serious disease or injury in the future were included.

Simple = preventive health motivation calculated from the beliefs of efficacy, susceptibility, and seriousness

Complex = preventive health motivation calculated by multiplying the "simple" value with the corresponding situational context value.
Validity of the Model to Outside Criteria

Hypothesis (3) (a): The predictor variables of the model also predict perceptions about the extent to which the practice related to the intention is being carried out.

This hypothesis is based on the theory of cognitive consistency (Rokeach, 1970), which posits that a person strives for consistency within his cognitive system. One element of the cognitive system has been named by Rokeach "cognitions about own behavior" (p. 165). In the present study cognitions about own behavior were measured by asking the subjects to respond to the statement "I am presently carrying out this practice" on the scale "always-never".

Table 3 shows the simple and multiple correlations obtained between the predictor variables and the perception about the extent to which the health practice is being carried out. The correlations in Table 3 are, in most cases, lower than the corresponding correlations in Table 1 and do not reach statistical significance as frequently. However, the multiple correlations in Table 3 (row 5) for both practices are significant and support the above hypothesis.
Table 3. Intercorrelations and multiple correlations between predictor variables and the extent to which the health practice is perceived as being carried out.

<table>
<thead>
<tr>
<th>Row No.</th>
<th>Predictor variables</th>
<th>The extent to which the practice is being carried out</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Use of Seat-belts(N)</td>
</tr>
<tr>
<td>(1)</td>
<td>Attitude-toward-practice: terminal values and related beliefs</td>
<td>.01 (82)</td>
</tr>
<tr>
<td>(2)</td>
<td>Attitude-toward-practice: instrumental values and related beliefs</td>
<td>.10 (82)</td>
</tr>
<tr>
<td>(3)</td>
<td>Attitude-toward-life-situation</td>
<td>.16 (82)</td>
</tr>
<tr>
<td>(4)</td>
<td>Preventive health motivation</td>
<td>-0.05 (82)</td>
</tr>
<tr>
<td>(5)</td>
<td>Multiple correlation from the above four model variables</td>
<td>.31** (82)</td>
</tr>
<tr>
<td>(6)</td>
<td>Validity measure for attitude-toward-practice: cognitive scales</td>
<td>.12 (69)</td>
</tr>
<tr>
<td>(7)</td>
<td>Validity measure for attitude-toward-practice: affective scales</td>
<td>.40** (69)</td>
</tr>
<tr>
<td>(8)</td>
<td>Validity measure for attitude-toward-life-situation</td>
<td>.30* (69)</td>
</tr>
<tr>
<td>(9)</td>
<td>Multiple correlation from the above three validity variables</td>
<td>.43* (69)</td>
</tr>
</tbody>
</table>

* p < .05

** p < .01
Hypothesis (3) (b): Attitude-toward-practice correlates significantly with its validity measure. Rows (1) and (2) in Table 4 show that the correlations between attitude-toward-practice, when calculated through terminal values and related beliefs, and its validity measures, in most cases, do not reach statistical significance. Only the correlation between attitude-toward-practice and its validity measure, measured through cognitive scales, is significant (row 1) for the intake of saturated fats.

Rows (3) and (4) in Table 4 show that when attitude-toward-practice is calculated through instrumental values and related beliefs two of the four correlations with the validity measures are significant. The significant correlations are found for both health practices between attitude-toward-practice, calculated through instrumental values and related beliefs, and the corresponding validity measures, measured through affective scales.

Hypothesis (3) (c): Attitude-toward-life-situation correlates significantly with its validity measure. This hypothesis is supported by the significant correlations appearing in row (5) in Table 4.
Table 4. **Attitude-toward-life-situation and attitude-toward-practice as correlated with their validity measures.**

<table>
<thead>
<tr>
<th>Row No.</th>
<th>Validity measures</th>
<th>Use of Seat-belts (N)</th>
<th>Intake of Saturated fats (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Validity measure for attitude-toward-practice: cognitive scales</td>
<td>.20 (40)</td>
<td>.46** (64)</td>
</tr>
<tr>
<td>(2)</td>
<td>Validity measure for attitude-toward-practice: affective scales</td>
<td>.06 (40)</td>
<td>.21 (64)</td>
</tr>
<tr>
<td>(3)</td>
<td>Validity measure for attitude-toward-practice: cognitive scales</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4)</td>
<td>Validity measure for attitude-toward-practice: affective scales</td>
<td>.43** (42)</td>
<td>.31* (64)</td>
</tr>
<tr>
<td>(5)</td>
<td>Validity measure for attitude-toward-life-situation</td>
<td>.40** (42)</td>
<td>.42** (68)</td>
</tr>
</tbody>
</table>

* p < .05

** p < .01
Reliability of the Model

The test-retest reliability correlation coefficients for the variables (rows 1-5) of the model and for their validity measures (rows 6-8) are presented in Table 5. All of the correlations, except the one for preventive health motivation, are statistically significant. The test-retest correlation coefficients for the validity measures tend to be consistently higher than those for the corresponding variables of the model. However, the differences in correlations between the model variables and their corresponding validity measures are statistically significant only in one case. The test-retest correlation for the validity measure for attitude-toward-practice, measured through affective scales (row 7), is significantly higher ($p < .05$) than the corresponding model variable, calculated either through terminal values and related beliefs (row 1) or through instrumental values and related beliefs (row 2).
Table 5. Test-retest correlation coefficients for the variables of the model and for their validity measures.

<table>
<thead>
<tr>
<th>Row No.</th>
<th>Variables</th>
<th>Test-retest correlations (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Attitude-toward-practice calculated through terminal values and related beliefs</td>
<td>.55* (21)</td>
</tr>
<tr>
<td>(2)</td>
<td>Attitude-toward-practice calculated through instrumental values and related beliefs</td>
<td>.51* (22)</td>
</tr>
<tr>
<td>(3)</td>
<td>Attitude-toward-life-situation</td>
<td>.51* (18)</td>
</tr>
<tr>
<td>(4)</td>
<td>Preventive health motivation</td>
<td>.31 (24)</td>
</tr>
<tr>
<td>(5)</td>
<td>Intention-about-practice</td>
<td>.94** (18)</td>
</tr>
<tr>
<td>(6)</td>
<td>Validity measure for attitude-toward-practice: cognitive scales</td>
<td>.60** (20)</td>
</tr>
<tr>
<td>(7)</td>
<td>Validity measure for attitude-toward-practice: affective scales</td>
<td>.88** (20)</td>
</tr>
<tr>
<td>(8)</td>
<td>Validity measure for attitude-toward-life-situation</td>
<td>.57** (20)</td>
</tr>
</tbody>
</table>

* p < .05

** p < .01
Demand Characteristics in the Study

Two different questions related to the concept of "demand characteristics" were systematically explored in this study. First, the extent to which subjects were able to guess the true hypothesis of the study was determined by having the subjects respond to the question: "Now after having filled the questionnaire what do you think is the specific research objective (or hypothesis) of this study?"

Second, two specific groups of students with "known" demand characteristics were compared with the entire samples in terms of predictive power. One of the groups was formed from all those whose guesses concerning the hypothesis of the study were identified to be at least somewhat related to the true hypothesis. The other group was composed of 20 subjects asked to role-play a "good subject" and to validate the hypothesis. The comparison of the predictions in the three groups made possible the observation of the effects of the demand characteristic variable on the predictions.

Table 6 presents the subjects' guesses concerning the hypothesis of the study. The guesses have been grouped into seventeen categories by the investigator. None of the guesses could be identified as the true hypothesis of the study. However, five of the categories were identified to be at least somewhat related to the true hypothesis of the study. The number of subjects having given at
least one response related to the hypothesis of the study was 54.

Table 7 presents the correlations between the predictor variables of the study and intention-about-practice for the three groups differing in demand characteristics. The comparison of columns (1) and (3) in Table 7 shows that, in regard to the use of seat belts, those whose guesses were related to the true hypothesis of the study obtain higher correlations than the entire sample. Only one of the differences in correlations in columns (1) and (3), namely that based on attitude-toward-practice (row 1) when measured through terminal values and related beliefs, is statistically significant (p < .05). The comparison of columns (2) and (4) of Table 7 shows a contrary trend in regard to the intake of saturated fats. Those whose guesses related to the true hypothesis of the study obtain, in most cases, lower correlations than the total sample. None of the differences in the respective correlations reaches statistical significance for the intake of saturated fats.

The comparison of columns (1), (3) and (5) for rows (1-4) in Table 7 shows that those given the hypothesis of the study and asked to role-play a "good subject" tend to receive consistently lower correlations than the other two groups. Many of the differences in correlations reach a statistical significance (p < .05). This trend does not exist when columns (1), (3) and (5) are compared for rows (5-7). In summary, those asked to role-play a "good subject"
seem not to be able to do so for the variables of the model, but do it adequately for the validity measures.
Table 6. Subjects' guesses concerning the hypothesis of the study.

<table>
<thead>
<tr>
<th>Category</th>
<th>No. of guesses in category</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) No response or irrelevant response</td>
<td>43</td>
</tr>
<tr>
<td>(2) No idea, do not know</td>
<td>26</td>
</tr>
<tr>
<td>(3) To determine people's attitudes and feelings concerning health practices</td>
<td>17</td>
</tr>
<tr>
<td>(4) *To discover relationships between values and behavior</td>
<td>16</td>
</tr>
<tr>
<td>(5) *To determine reasons and motives underlying health practices</td>
<td>15</td>
</tr>
<tr>
<td>(6) *To discover ways to teach health, to persuade people</td>
<td>14</td>
</tr>
<tr>
<td>(7) To determine to what extent people carry out health practices</td>
<td>26</td>
</tr>
<tr>
<td>(8) *To determine whether or not one's responses are consistent throughout the questionnaire</td>
<td>12</td>
</tr>
<tr>
<td>(9) To determine what people's values are</td>
<td>11</td>
</tr>
<tr>
<td>(10) To discover the significance of health to a person</td>
<td>10</td>
</tr>
<tr>
<td>(11) To determine how the answer depends on the wording of the question or on the position of the question in the questionnaire</td>
<td>6</td>
</tr>
<tr>
<td>(12) To study general psychological attitudes, &quot;feelings about anything&quot;</td>
<td>6</td>
</tr>
<tr>
<td>(13) *To discover what kinds of people carry out or are willing to initiate health practices</td>
<td>4</td>
</tr>
<tr>
<td>(14) To aid the respondent to understand his motives about health</td>
<td>3</td>
</tr>
<tr>
<td>(15) To discover what people think of themselves and about their lives</td>
<td>3</td>
</tr>
</tbody>
</table>
Table 6. (Continued)

<table>
<thead>
<tr>
<th>Category</th>
<th>No. of guesses in category</th>
</tr>
</thead>
<tbody>
<tr>
<td>(16) To determine what conditions affect behavior</td>
<td>3</td>
</tr>
<tr>
<td>(17) Other responses (less than three in a category)</td>
<td>14</td>
</tr>
</tbody>
</table>

| Total no. of responses            | 229                      |
| No. of responses with some relationship to the hypothesis of the study | 61                      |

* Category identified to be related to the hypothesis of the study
Table 7. The correlations of the predictor variables of the model and their validity measures with intention-about-practice in groups varying in "demand characteristics".

<table>
<thead>
<tr>
<th>Row No.</th>
<th>Predictor Variables</th>
<th>All subjects</th>
<th>Intention About Practice</th>
<th>Those whose guesses were related to the hypothesis</th>
<th>Those role-playing a &quot;good subject&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Seat belt (N) (1)</td>
<td>Saturated fats (N) (2)</td>
<td>Seat belts (N) (3)</td>
<td>Saturated fats (N) (4)</td>
</tr>
<tr>
<td>(1)</td>
<td>Attitude-toward-practice: terminal values and related beliefs</td>
<td>.19 (54)</td>
<td>.40 ** (87)</td>
<td>.60 ** (19)</td>
<td>.32 (23)</td>
</tr>
<tr>
<td>(2)</td>
<td>Attitude-toward-practice: instrumental values and related beliefs</td>
<td>.50 ** (56)</td>
<td>.14 (88)</td>
<td>.73 ** (20)</td>
<td>-.22 (24)</td>
</tr>
<tr>
<td>(3)</td>
<td>Attitude-toward-life situation</td>
<td>.60 ** (54)</td>
<td>.50 ** (77)</td>
<td>.73 ** (19)</td>
<td>.44 * (23)</td>
</tr>
<tr>
<td>(4)</td>
<td>Preventive-health motivation</td>
<td>.11 (55)</td>
<td>.19 (88)</td>
<td>-.08 (20)</td>
<td>.04 (24)</td>
</tr>
<tr>
<td>(5)</td>
<td>Validity measure for attitude-toward-practice: cognitive scales</td>
<td>.48 ** (42)</td>
<td>.47 ** (68)</td>
<td>.23 (18)</td>
<td>.43 (20)</td>
</tr>
<tr>
<td>(6)</td>
<td>Validity measure for attitude-toward-practice: affective scales</td>
<td>.54 ** (42)</td>
<td>.30 ** (68)</td>
<td>.64 ** (18)</td>
<td>.26 (20)</td>
</tr>
<tr>
<td>(7)</td>
<td>Validity measure for attitude-toward-life-situation</td>
<td>.44 ** (44)</td>
<td>.52 ** (52)</td>
<td>.68 (18)</td>
<td>.46 * (20)</td>
</tr>
</tbody>
</table>

* p < .05  
** p < .01
CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Predictive Validity of the Model

The present study gave strong support for one of the predictor variables of the model, contradicted one and was inconclusive for the third one. The attitude-toward-life-situation variable was the best predictor in regard to the use of seat belts and in regard to the limiting of saturated fats. This finding is in accordance with the previous research results concerning the attitude-toward-situation concept (Rokeach and Kliejunas, 1971; Spaeth and Parker, 1969). The predictive strength of the attitude-toward-life-situation variable was well demonstrated by the fact that, for both health practices, the predictions based on the entire model were not significantly higher than predictions based only on attitude-toward-life-situation.

The preventive health motivation variable was the weakest of the variables of the model in terms of predictive power. This variable did not reach statistically significant levels for either of the health practices. The research of Haefner and Kirscht (1970) has indicated that the Rosenstock model suits best to practices related to utilization of health services. Thus, a selection of health practices related to the utilization of health services for the testing of
the model might have resulted in statistically significant predictions from the preventive health motivation variable. More research with the present model across a variety of health practices is thus indicated.

Some of the predictions based on the attitude-toward-practice variable were relatively high and statistically significant. However, on the basis of this study, it is not possible to specify which one of the two ways of calculating attitude-toward-practice values, through terminal values and related beliefs or through instrumental values and related beliefs, would be a good predictor for a given health practice. More research will be needed to clarify this problem.

Increased accuracy of prediction associated with the use of Fishbein's equation (e.g. Fishbein, 1967) in the calculation of attitude-toward-practice and attitude-toward-life-situation variables was indicated by the study. However, none of the statistical tests resulted in significant differences in favor of Fishbein's equation. To determine whether Fishbein's equation significantly increases the accuracy of prediction, more research is needed.

Development of the Model

The results from the testing of the model indicated that the attitude-toward-practice variable could be significantly economized by decreasing the number of values used in the measurement and
calculations associated with this variable. There are some indications that preventive health motivation variable's predictive power could be increased by multiplying the variable value by the corresponding situational context score. More research is needed to lend support to this finding.

Validity of the Model to Outside Criteria

The validity of the attitude-toward-life-situation variable to its outside criterion was consistently supported by the study. The validity coefficients of the attitude-toward-practice variable with the corresponding validity measures were, contrary to expectations based on Rosenberg's (1956, 1960) and Carlson's (1956) research, relatively low. More research will be needed to establish the validity of the attitude-toward-practice variable.

For the validation of the criterion variable of the model, intention-about-practice, follow-up studies are needed to show the role of the behavioral intention in the process of initiating health practices. Partial evidence for the overall validity of the model came from the finding that the model was able to predict the extent to which subjects perceived themselves carrying out the given health practice. However, this piece of evidence supports primarily the cognitive integrative properties of the model, not its relation to actual
prospective changes in health behavior.

Reliability of the Model

The test-retest reliability correlation coefficients obtained are rather low in comparison with what is generally regarded as a reliable measuring instrument in the behavioral sciences. The following possible reasons for the low reliability coefficients can be listed: (1) The length of the instrument was mentioned by subjects as having prevented them from responding accurately throughout the entire questionnaire. Particularly, in the retest phase of the study, when the subjects completed the questionnaire in private, the length of the questionnaire could have been a source for inaccurate responses. (2) The conditions in which the completion of the two tests took place were for most students psychologically different from each other. The retest questionnaire was administered to all students during the week of final examinations when mental stress and tension are expected to be greater than at other times during the school term. In addition, some of the students took the retest following completion of a final examination which may have significantly altered the psychological set of the respondents. (3) Some test-retest interaction may have taken place. Some of the subjects indicated that completing the questionnaire made them really think of the health practice under question. Awareness of the practice may have
induced real changes in related perceptions. The fact that intention-
about-practice variable had a very high reliability coefficient does
not, however, support this interpretation. On the other hand, a
possibility exists that induced changes in perceptions were not yet
manifested in intentions. (4) The retest sample sizes were very
limited and thus the correlations obtained could have been very
vulnerable to many sources of error.

In addition to the reasons hypothesized above for the low relia-
bility coefficients, the data suggests that the actual reliabilities of the
model variables are higher than what were obtained. The reliability
coefficients for two of the four measures utilizing the semantic differ-
ential method were of the same magnitude as the coefficients for the
rest of the measures. The semantic differential method has been
shown to yield test-retest correlations .80-.90 (Osgood, 1957).
The assumption can be made that the sources of error which obviously
lowered the reliability coefficients of the measures utilizing the
semantic differential method also lowered the coefficients of the
predictor variables of the model.

**Demand Characteristics in the Study**

The analysis conducted with the purpose of determining the
effects of demand characteristics on the predictions indicated that
demand characteristics do not explain the correlations obtained.
Only a minority of subjects was able to make guesses which bore any relation with the true hypothesis of the study. However, this group did not obtain consistently higher prediction correlations than the entire samples. Those who were given the true hypothesis of the study and asked to role play a "good subject" failed in this task in regard to the model variables. The interpretation can be made that the measurement of the model variables involved so many different scales that subjects were not able to identify the basic variables and to grasp the meanings of single scales in regard to the variables and that conscious efforts to validate the given hypothesis interfered with the existing consistency in individuals' cognitive system. This interpretation is given some support by the finding that, for the validity measures, those role-playing a "good subject" obtained correlations comparable with the entire samples. The meanings of the scales of the validity measures are easier to grasp since they focus on the total affect, rather than separate elements, associated with the variables.

**Recommendations**

The research finding supporting the predictive validity of the attitude-toward-life-situation variable of the model can be interpreted as having direct application to the field of health education. Although the actual susceptibility of the attitude-toward-life-situation variable to educational modification has not yet been demonstrated, the variable shows promise for health education. The variable can be
used to increase the health educators understanding of the perceived	reasons underlying people's willingness or unwillingness to adopt
health practices. The variable also gives plenty of thus far greatly
unused potential for modifying perceptions toward health practices.
The specific beliefs related to the situational contexts give the
health educator specific guidelines concerning the types of learning
experiences that would be needed for the educational modification of
perceptions about life situation.

The inconclusive evidence obtained in regard to attitude-toward-
practice, as measured and calculated through terminal or instru-
mental values and the related beliefs, hinders to some extent the
practical applications of this variable to health education. No sug-
gestions exist thus far in regard to which of the two ways of measur-
ing and calculating the variable would be more suitable for a given
health practice. However, if both ways of calculating attitude-toward-
practice are utilized by a health educator the chances of obtaining
a good predictor of intentions are great, although this procedure is
far from being economical.

The development of scales for the two practically independent
attitude dimensions, affective and cognitive, as well as the develop-
ment of a three-scale instrument for the measurement of attitude-
toward-life-situation offer potential contributions to the practice of
health education. The scales' combined predictive power, as
expressed through the coefficient of multiple correlation, is almost as good as that of the present model. The scales are also economical to administer.

The major disadvantage associated with these scales is that they do not indicate specific guidelines to arrange learning experiences.
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of verbal and overt behavioral responses to attitude objects.
APPENDICES
APPENDIX A

Questionnaire of the Main Study

HEALTH BELIEF SURVEY OF COLLEGE STUDENTS

by

Jukka Laitakari

At Oregon State University

1971
Instructions:

The purpose of the present study is to help improve college health courses so that they would be better adapted to the needs of individual students. The best way you can cooperate in the study is to show how you really feel about the questions to be presented to you. Do not answer in terms of how you think you should feel about the questions or in terms of how you think you are expected to feel about them. Simply indicate YOUR TRUE FEELINGS ABOUT THE QUESTIONS RIGHT NOW! In this way an opportunity is provided to determine the true individual needs and opinions of students.

Do not sign your real name, but devise and write in the space provided below an assumed name (for example: your nick name, a famous person's name, etc.). Please record your assumed name for future reference. Notice that your responses will be analyzed by a person who has no familiarity with your handwriting and who has no connection with the Oregon State University faculty. The results of the study will be available in the University library in the early part of the coming winter term and can be found under the name Laitakari.

Please fill in the following information:

Assumed name: ____________________________, Age: ___ Sex: ______

Class (freshman, sophomore, . . .): __________ Major: __________

On each page of this booklet you will find several concepts to be judged and beneath them scales. Most of the concepts to be judged are in the form of complete sentences. Here is how you are to use the scales:

If you feel that the concept to be judged in very closely related to one end of the scale, you should place your check-mark as follows:

important X:___:___:___:___:___:___ unimportant

OR

important :___:___:___:___:___:___:___ X unimportant

If you feel that the concept is quite closely related to one or the other end of the scale (but not extremely), you should place your checkmark as follows:

improbable ___:X:___:___:___:___:___ probable
improbable __:__:_:_:__:_:_:_:_ probable

If the concept seems only slightly related to one side as opposed to the other side (but is not really neutral), then you should check as follows:

favorable __:_:_:_:_:_:_:_:_ unfavorable

OR

favorable __:__:_:_:_:_:_:_:_ unfavorable

The direction toward which you check, of course, depends upon which of the two ends of the scale seem most characteristic of the thing you're judging.

If you consider the concept to be neutral on the scale, both sides of the scale equally associated with the concept, or if the scale is completely irrelevant, unrelated to the concept, then you should place your checkmark in the middle space:

unimportant __:__:_:_:_:_:_:_:_ important

IMPORTANT: (1) Place your checkmarks in the middle of spaces, not the boundaries:

THIS: NOT THIS:

__:_:_:_:_:_:_:_

(2) Be sure you check every scale for every concept - do not omit any.

(3) Never put more than one check-mark on a single scale.

Notice that a summary of the scale positions has been printed on the reverse of every page of this booklet.

Sometimes you may feel as though you've had the same item before on the test. This will not be the case, so do not look back and forth through the items. Do not try to remember how you checked similar items earlier in the test. Make each item a separate and independent judgement.

Do not worry or puzzle over individual items. It is your first impressions, the immediate "feelings" about the items, that we want. On the other hand, please do not be careless, because we want your true impressions.
A Summary of the Scale Positions

If the concept is very (extremely) closely related to one end of the scale:

\[ \boxed{X} : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ \]

OR: \[ \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : X \]

If the concept is quite closely related to one end of the scale:

\[ \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : X \]

OR: \[ \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \]

If the concept is slightly related to one end of the scale:

\[ \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \]

OR: \[ \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \]

If the concept is neutral on the scale, both sides of the scale equally associated with the concept, or if the scale is completely irrelevant to the concept:

\[ \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \]

\[ \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \]

\[ \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \]

\[ \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \]

\[ \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \]

\[ \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \_ : \]
Do not try to complete the whole form in one sitting. As soon as you begin to feel a little fatigued - as soon as the meanings of the concepts begin to get a little 'fuzzy' in your mind - put this test aside for a moment before continuing.

If you have any doubts at any point of responding to this survey about how to use the scales, please express your doubts to the investigator. If you keep on responding to the scales without really knowing how, you may be doing disservice to the whole study.

Below are several values listed in alphabetical order. Judge how important or unimportant these values are to YOU, as guiding principles in YOUR life.

Notice that the words important and unimportant are placed sometimes to the left, sometimes to the right end of the scales.

A comfortable life (a prosperous life):
unimportant \[=\ldots=\] important \(1\)

A healthy life (freedom from disease or injury):
important \[=\ldots=\] unimportant \(2\)

A long life (longevity):
unimportant \[=\ldots=\] important \(3\)

An exciting life (a stimulating, active life):
unimportant \[=\ldots=\] important \(4\)

A sense of accomplishment (lasting contribution):
unimportant \[=\ldots=\] important \(5\)

A world at peace (free of war and conflict):
important \[=\ldots=\] unimportant \(6\)

A world of beauty (beauty of nature and the arts):
unimportant \[=\ldots=\] important \(7\)

Equality (brotherhood, equal opportunity for all):
unimportant \[=\ldots=\] important \(8\)

Family security (taking care of loved ones):
important \[=\ldots=\] unimportant \(9\)
Freedom (independence, free choice):  TV
important ___:::___:___:___:___ unimportant (10)

Good-looking appearance (having attractive face, body, or clothes):
important ___:::___:___:___:___ unimportant (11)

Happiness (contentedness):
unimportant ___:::___:___:___:___ important (12)

Inner harmony (freedom from inner conflict):
unimportant ___:::___:___:___:___ important (13)

Mature love (sexual and spiritual intimacy):
important ___:::___:___:___:___ unimportant (14)

National security (protection from attack):
important ___:::___:___:___:___ unimportant (15)

Physical fitness (capacity for physical performance):
important ___:::___:___:___:___ unimportant (16)

Physical well-being (feeling of well-being in one's body):
important ___:::___:___:___:___ unimportant (17)

Pleasure (an enjoyable, leisurely life):
unimportant ___:::___:___:___:___ important (18)

Salvation (saved, eternal life)
important ___:::___:___:___:___ unimportant (19)

Self-respect (self-esteem):
unimportant ___:::___:___:___:___ important (20)

Social recognition (respect, admiration):
unimportant ___:::___:___:___:___ important (21)

True friendship (close companionship):
important ___:::___:___:___:___ unimportant (22)

Wisdom (a mature understanding of life):
unimportant ___:::___:___:___:___ important (23)
Below are the same values as you judged before listed again in alphabetical order. This time your task is to arrange them in the following categories in order of their importance to YOU, as guiding principles in YOUR life.

Each value has been assigned a number. Place the numbers of the values in the spaces associated with the categories. Place only as many values in a given category as there are spaces provided.

The following are the two most important values to me: ___ ___

The following are the three next important values to me: ___ ___ ___

The following are the four next important values to me: ___ ___ ___ ___

The following are the five next important values to me: ___ ___ ___ ___ ___

The following are the four next important values to me: ___ ___ ___ ___

The following are the three next important values to me: ___ ___ ___

The following are the two least important values to me: ___ ___

1. A comfortable life (a prosperous life) 9. Family security (taking care of loved ones)
2. A healthy life (freedom from disease or injury) 10. Freedom, (independence, free choice)
3. A long life (longevity) 11. Good-looking appearance (having attractive face, body, or clothes)
4. An exciting life (a stimulating active life) 12. Happiness (contentedness)
5. A sense of accomplishment (lasting contribution) 13. Inner harmony (freedom from inner conflict)
6. A world at peace (freedom from war and conflict) 14. Mature love (sexual and spiritual intimacy)
7. A world of beauty (beauty of nature and the arts) 15. National security (protection from attack)
8. Equality (brotherhood, equal opportunity for all)
Below are several values listed in alphabetical order. Judge how important or unimportant these values are to YOU, as guiding principles in YOUR life.

Notice that the words important and unimportant are placed sometimes to the right, sometimes to the left end of the scales.

Being ambitious (hard-working, aspiring):
important _____:_____:_____:_____:_____:_____ unimportant (1)

Being broadminded (open-minded):
important _____:_____:_____:_____:_____:_____ unimportant (2)

Being capable (competent, effective):
important _____:_____:_____:_____:_____:_____ unimportant (3)

Being cheerful (lighthearted, joyful):
unimportant _____:_____:_____:_____:_____:_____ important (4)

Being clean (neat, tidy):
important _____:_____:_____:_____:_____:_____ unimportant (5)

Being courageous (standing up for one's beliefs):
unimportant _____:_____:_____:_____:_____:_____ important (6)

Being forgiving (willing to pardon others):
important _____:_____:_____:_____:_____:_____ unimportant (7)

Being health-conscious (taking good care of one's health):
unimportant _____:_____:_____:_____:_____:_____ important (8)
Being helpful (working for the welfare of others):
important __:__:__:__:__:__:__ important (9)

Being honest (sincere, truthful):
unimportant __:__:__:__:__:__:__ important (10)

Being imaginative (daring, creative):
important __:__:__:__:__:__:__ unimportant (11)

Being independent (self-reliant, self-sufficient):
important __:__:__:__:__:__:__ unimportant (12)

Being intellectual (intelligent, reflective):
unimportant __:__:__:__:__:__:__ important (13)

Being logical (consistent, rational):
unimportant __:__:__:__:__:__:__ important (14)

Being loving (affectionate, tender):
unimportant __:__:__:__:__:__:__ important (15)

Being moderate (avoiding extremes):
unimportant __:__:__:__:__:__:__ important (16)

Being obedient (dutiful, respectful):
important __:__:__:__:__:__:__ unimportant (17)

Being persistent (sticking to tasks even though they are difficult):
important __:__:__:__:__:__:__ unimportant (18)

Being polite (courteous, well-mannered):
unimportant __:__:__:__:__:__:__ important (19)

Being responsible (dependable, reliable):
unimportant __:__:__:__:__:__:__ important (20)

Being self-controlled (restrained, self-disciplined):
unimportant __:__:__:__:__:__:__ important (21)
Below are the same values as you judged before listed again in alphabetical order. This time your task is to arrange them in the following categories in order of their importance to YOU, as guiding principles in YOUR life.

Each value has been assigned a number. Place the numbers of the values in the spaces associated with the categories. Place only as many values in a given category as there are spaces provided.

The following is the one most important value to me: __

The following are the three next important values to me: ___ ___ ___

The following are the four next important values to me: ___ ___ ___ ___

The following are the five next important values to me: ___ ___ ___ ___ ___

The following are the four next important values to me: ___ ___ ___ ___

The following are the three next important values to me: ___ ___ ___

The following is the one least important value to me: ___

1. Ambitious (hard-working, aspiring)
2. Broadminded (open-minded)
3. Capable (competent, effective)
4. Cheerful (lighthearted, joyful)
5. Clean (neat, tidy)
6. Courageous (standing up for one's beliefs)
7. Forgiving (willing to pardon others)
8. Health-conscious (taking good care of one's health)
9. Helpful (working for the welfare of others)
10. Honest (sincere, truthful)
11. Imaginative (daring, creative)
12. Independent (self-reliant, self-sufficient)
13. Intellectual (intelligent, reflective)
14. Logical (consistent, rational)
15. Loving (affectionate, tender)
16. Moderate (avoiding extremes)
17. Obedient (dutiful, respectful)
18. Persistent (sticking to tasks even though they are difficult)  
19. Polite (courteous, well-mannered)  
20. Responsible (dependable, reliable)  
21. Self-controlled (restrained, self-disciplined)  

CHECK THAT YOU LISTED EACH VALUE ONLY ONCE

IV

Suppose that you begin the practice stated at the top of this page right now. Predict how the beginning of this practice would affect your life by judging how probable or improbable the following statements are for you.

In case you are already carrying out the practice answer in terms of how you felt when you began the practice.

Notice that the common initial portion of the statements is: "The beginning of this practice would..." Notice also that the words probable and improbable are placed sometimes to the right, sometimes to the left end of the scales.

THE BEGINNING OF THIS PRACTICE WOULD:

Increase my chances to achieve a comfortable life (a prosperous life):
probable   impr probable (1)

Increase my chances for a healthy life (freedom from disease or injury):
probable   impr probable (2)

Increase my chances for a long life (longevity):
improbable   probable (3)

Increase my chances for an exciting life (a stimulating, active life):
improbable   probable (4)

Increase my chances for a sense of accomplishment (lasting contribution):
improbable   probable (5)
THE BEGINNING OF THIS PRACTICE WOULD:

Increase my chances to contribute to world peace (freedom from war and conflict):
improbable ___:___:___:___:___:___ probable

Increase my chances to experience (or contribute to) the world of beauty (beauty of nature of the arts):
probable ___:___:___:___:___:___ improbable

Increase my chances to experience (or contribute to) equality (brotherhood, equal opportunity for all):
improbable ___:___:___:___:___:___ probable

Promote the security of my family (I would be better able to take care of my loved ones):
probable ___:___:___:___:___:___ improbable

Increase my sense of freedom (independence, free choice):
improbable ___:___:___:___:___:___ improbable

Improve my appearance (having more attractive face, body, or clothes):
improbable ___:___:___:___:___:___ improbable

Increase my sense of happiness (contentedness):
improbable ___:___:___:___:___:___ probable

Promote my inner harmony (freedom from inner conflict):
improbable ___:___:___:___:___:___ improbable

Increase my chances for mature love (sexual and spiritual intimacy):
improbable ___:___:___:___:___:___ probable

Increase my chances to contribute to national security (protection from attack):
improbable ___:___:___:___:___:___ improbable

Improve my physical fitness (capacity for physical performance):
improbable ___:___:___:___:___:___ improbable
THE BEGINNING OF THIS PRACTICE WOULD:

Increase my sense of physical well-being (feeling of well-being in my body):
improbable ___:__:__:__:__:__:__:__:__:__:__ probable (17)

Increase my sense of pleasure (being better able to lead an enjoyable, leisurely life):
improbable ___:__:__:__:__:__:__:__:__:__:__ probable (18)

Increase my chances for salvation (saved, eternal life):
probable ___:__:__:__:__:__:__:__:__:__:__ improbable (19)

Add to my sense of self-respect (self-esteem):
probable ___:__:__:__:__:__:__:__:__:__:__ improbable (20)

Increase my chances for social recognition (respect, admiration):
improbable ___:__:__:__:__:__:__:__:__:__:__ probable (21)

Increase my chances for true friendship (close companionship)
probable ___:__:__:__:__:__:__:__:__:__:__ improbable (22)

Increase my chances to achieve wisdom (a mature understanding of life):
improbable ___:__:__:__:__:__:__:__:__:__:__ probable (23)

****

Suppose that you begin the practice stated at the top of this page right now. Predict what the beginning of this practice would indicate about you by judging how probable or improbable the following statements are for you.

In case you are already carrying out the practice answer in terms of how you felt when you began the practice.

Notice that the common initial portion of the statements is: "The beginning of this practice would..." Notice also that the words probable and improbable are placed sometimes to the right, sometimes to the left end of the scales.
THE BEGINNING OF THIS PRACTICE WOULD:

Indicate my being ambitious (hard-working, aspiring):
improbable \(\ldots:\ldots:\ldots:\ldots:\ldots:\ldots:\ldots\) probable (1)

Indicate my being broadminded (open-minded)
probable \(\ldots:\ldots:\ldots:\ldots:\ldots\) improbable (2)

Indicate my being capable (competent, effective):
probable \(\ldots:\ldots:\ldots:\ldots:\ldots\) improbable (3)

Indicate my being cheerful (lighthearted, joyful):
probable \(\ldots:\ldots:\ldots:\ldots:\ldots\) improbable (4)

Indicate my being clean (neat, tidy):
improbable \(\ldots:\ldots:\ldots:\ldots:\ldots\) probable (5)

Indicate my being courageous (standing up for my beliefs):
improbable \(\ldots:\ldots:\ldots:\ldots:\ldots\) probable (6)

Indicate my being forgiving (willing to pardon others):
improbable \(\ldots:\ldots:\ldots:\ldots:\ldots\) probable (7)

Indicate my being health-conscious (taking good care of my health):
improbable \(\ldots:\ldots:\ldots:\ldots:\ldots\) probable (8)

Indicate my being helpful (working for the welfare of others):
probable \(\ldots:\ldots:\ldots:\ldots:\ldots\) improbable (9)

Indicate my being honest (sincere, truthful):
improbable \(\ldots:\ldots:\ldots:\ldots:\ldots\) probable (10)

Indicate my being imaginative (daring, creative):
improbable \(\ldots:\ldots:\ldots:\ldots:\ldots\) probable (11)

Indicate my being independent (self-reliant, self-sufficient):
probable \(\ldots:\ldots:\ldots:\ldots:\ldots\) improbable (12)

Indicate my being intellectual (intelligent, reflective):
probable \(\ldots:\ldots:\ldots:\ldots:\ldots\) improbable (13)
THE BEGINNING OF THIS PRACTICE WOULD:

Indicate my being logical (consistent, rational):
probable ___:___:___:___:___:___ improbable (14)

Indicate my being loving (affectionate, tender):
probable ___:___:___:___:___:___ improbable (15)

Indicate my being moderate (avoiding extremes):
improbable ___:___:___:___:___:___ probable (16)

Indicate my being obedient (dutiful, respectful):
probable ___:___:___:___:___:___ improbable (17)

Indicate my being persistent (sticking to tasks even though they are difficult):
probable ___:___:___:___:___:___ improbable (18)

Indicate my being polite (courteous, well-mannered):
improbable ___:___:___:___:___:___ probable (19)

Indicate my being responsible (dependable, reliable):
improbable ___:___:___:___:___:___ probable (20)

Indicate my being self-controlled (restrained, self-disciplined):
probable ___:___:___:___:___:___ improbable (21)

****

Regard the following hypothetical situation:

Suppose that quite recently a new personal health practice was developed and introduced to the public. On the basis of the information you have received about the practice you feel that you personally could get some health benefit from it; however you feel that neglecting the practice would not cause you any problems.

Suppose further that you have not yet decided whether to begin this new health practice or not. You feel that whether you will begin it or not depends on the particular life situation you would be in.

Listed below are different life situations. Consider the situations separately and independently of each other. Judge how favorable or
unfavorable each of the situations would be in terms of helping you begin the new health practice.

Notice that the words favorable and unfavorable are placed sometimes to the left, sometimes to the right end of the scales.

Suppose that your physician expects you to begin this hypothetical health practice. In terms of helping you begin the practice this situation is:

favorable ___:___:___:___:___:___:___: unfavorable (1)

Suppose that carrying out the practice would be expensive to you. In terms of helping you begin the practice this situation is:

unfavorable ___:___:___:___:___:___:___: favorable (2)

Suppose that some of the people close* to you are already carrying out the practice. In terms of helping you begin the practice this situation is:

unfavorable ___:___:___:___:___:___:___: favorable (3)

Suppose that the practice would fit well in your present life style. In terms of helping you begin the practice this situation is:

favorable ___:___:___:___:___:___:___: unfavorable (4)

Suppose that some of the people close* to you would begin the practice with you. In terms of helping you begin the practice this situation is:

unfavorable ___:___:___:___:___:___:___: favorable (5)

Suppose that the practice would cause you inconveniences in carrying out your daily life. In terms of helping you begin the practice this situation is:

unfavorable ___:___:___:___:___:___:___: favorable (6)

Suppose that health authorities expect people to carry out the practice. In terms of helping you begin the practice this situation is:

favorable ___:___:___:___:___:___:___: unfavorable (7)

* Such as your friends, family members, husband/wife (boy/girl friend).
Suppose that some of the persons close* to you would show approval for your beginning the practice. In terms of helping you begin the practice this situation is:

favorable  ____:____:____:____:____:____:____:____ unfavorable  (8)

Suppose that the practice would prevent you from developing a major disease or injury at some time in the future. In terms of helping you begin this practice this situation is:

unfavorable  ____:____:____:____:____ unfavorable  favorable  (9)

Suppose that you would be under a heavy work or study load. In terms of helping you begin the practice this situation is:

favorable  ____:____:____:____:____:____ unfavorable  (10)

Suppose that the practice would take quite a bit of valuable time from your daily or weekly schedule. In terms of helping you begin the practice this situation is:

favorable  ____:____:____:____:____:____ unfavorable  (11)

Suppose that some of the persons close* to you would show disapproval for your beginning the practice. In terms of helping you begin the practice this situation is:

unfavorable  ____:____:____:____:____ unfavorable favorable  (12)

Suppose that the practice would prevent you from developing a major disease or injury in the near future. In terms of helping you begin the practice this situation is:

unfavorable  ____:____:____:____:____ favorable  (13)

****

*Such as your friends, family members, husband/wife (boy/girl friend).
Judge how probable or improbable the following statements are for you. The word "practice" in the statements refers to the one stated at the top of this page.

In many of the statements you are to predict how the world around you would react if you began this practice at sometime in the near future. In case you are already carrying out the practice, respond to these particular statements in terms of how you felt when you began the practice.

Notice that the words probable and improbable are placed sometimes to the right, sometimes to the left end of the scales.

My physician expects me to begin this practice:
probable   ___:___:___:___:___:___:___ improbable

Carrying out this practice would be expensive to me:
improbable ____:____:____:____:____:____:____ probable

Some of the persons close* to me are already carrying out this practice:
probable   ____:____:____:____:____:____:____ improbable

This practice would fit well in my present life style:
probable   ____:____:____:____:____:____:____ improbable

Some of the persons close* to me would begin this practice with me:
probable   ____:____:____:____:____:____:____ improbable

This practice would cause me inconvenience in carrying out my daily life:
improbable ___:____:____:____:____:____:____ probable

Health authorities expect people to carry out this practice:
probable   ____:____:____:____:____:____:____ improbable

Some of the persons close* to me would show approval if I began this practice:
probable   ____:____:____:____:____:____:____ improbable

* Such as your friends, family members, husband/wife (boy/girl friend.
This practice would prevent me from developing a major disease or injury at sometime in the future:

improbable ___:___:___:___:___:___ probable (9)

A heavy work or study load would interfere with my beginning this practice:

improbable ___:___:___:___:___:___ probable (10)

This practice would take quite a bit of valuable time from my daily or weekly schedule:

probable ___:___:___:___:___:___ improbable (11)

Some of the persons close to me would show disapproval if I began this practice:

improbable ___:___:___:___:___:___ probable (12)

This practice would prevent me from developing a major disease or injury in the near future:

probable ___:___:___:___:___:___ improbable (13)

****

PHM

On this page the word "practice" refers to the one stated at the top of the page; the words "condition or disease" refer to the one that you will indicate below by writing.

To your best knowledge, specify the major health condition or disease that the practice protects people against: _______________________

If the condition or disease did happen to you, how much of a bad effect do you think it would have on your life?

Little or no bad effect ___:___:___:___:___:___ bad effect (1)

Such as your friends, family members, husband/wife (boy/girl friend).
In your judgement, what is the possibility of your getting this condition or disease in the near future?

<table>
<thead>
<tr>
<th>Certain it will happen</th>
<th>Impossible, no chance</th>
</tr>
</thead>
</table>

To what extent would the practice help protect you against this condition or disease?

<table>
<thead>
<tr>
<th>No protection</th>
<th>Complete protection</th>
</tr>
</thead>
</table>

In your judgement, what is the possibility of your getting this condition or disease at some time in the future?

| Impossible, no chance | Certain it will happen |

---

**PHM**

---

**BI**

Respond to the following scales as realistically as possible. The word "practice" refers to the one stated at the top of this page.

In case you are already carrying out this practice, do not respond to the scales, but go on to the next page.

Notice that the words used in structuring the scales make up complete sentences. Notice also that the positive and negative alternatives (e.g. would like to, would not like to) are placed sometimes to the right, sometimes to the left end of the scales.

I am in favor of I am not in favor of

beginning this practice in the near future.

(1)

I do not intend to I intend to

begin this practice in the near future.

(2)

If necessary

I have I have not

the will-power to begin this practice.

(3)

I will I will not

begin this practice in the near future.

(4)
I would not have the determination to begin this practice. (5)

I am not going to begin this practice in the near future. (6)

I would not like to begin this practice in the near future. (7)

I am not determined to begin this practice in the near future. (8)

****

The word "practice" as used on this page refers to the one stated at the top of the page.

**THE PRACTICE IS:**

- strong
- weak
- bad
- good
- pleasurable
- painful
- harmful
- beneficial
- passive
- active
- nice
- awful
- sociable
- unsociable
- unimportant
- important
- pleasant
- unpleasant

**IN TERMS OF HELPING ME BEGIN THIS PRACTICE MY PRESENT LIFE SITUATION IS:**

- weak
- strong
- negative
- positive
- sweet
- bitter
- encouraging
- discouraging
Explain in detail and as realistically as possible to what extent, when and how you presently carry out the practice stated at the top of this page: ____________________________

Rate yourself on the following scale:

I AM CARRYING OUT THIS PRACTICE:

always  ____:____:____:____:____ never

Now after having filled the questionnaire what do you think is the specific research objective (or hypothesis) of this study?

__________________________

Do you have any suggestions as to improving this questionnaire?

__________________________

THANK YOU FOR YOUR HELP
Additional Instructions for Those Role Playing a "Good Subject"

These instructions were placed as the cover page of the questionnaire of the major study.

This is an addition to the instructions. Read this carefully!

The specific hypothesis of this study is as follows:

A person's intention to begin a health practice is dependent on the following three factors:
(1) his attitude toward the practice;
(2) his attitude toward the life situation; in other words, how favorable or unfavorable, in his view, his life situation is for beginning the practice;
(3) his perception of the effectiveness of the practice to prevent him from developing a major disease or injury in the future.

Thus, for example, if somebody has a strong positive feeling (attitude) toward a health practice and if he feels that his life situation would be very favorable in terms of helping him begin this practice and if he feels, in addition, that the practice would effectively prevent him from developing a serious disease or injury in the future he would then strongly intend to begin the health practice.

In this study your task is as follows:

Answer the following questionnaire as if you were trying to help the investigator prove the hypothesis as stated above!
Appendix A (continued)

**Additional Instructions for Those Taking the Retest**

Read this carefully after finishing your examination

Your help is again requested for research purposes. In the front part of the classroom you will notice two stacks of envelopes. One of the stacks encloses questionnaires concerning the use of seatbelts, the other concerning the limiting of the intake of saturated fat. After finishing your examination pick up one envelope of the type you filled out last week. Notice that a list of the assumed names used last week and the corresponding practices is enclosed for your reference.

If you have the time, fill in the questionnaire before leaving the classroom. When you return the questionnaire you may claim a reward of £50 for your help.

If you want to, you may also take the questionnaire home and fill it there. **Return the filled questionnaire in one of the following ways:**

1. Leave the questionnaire in its envelope in the campus mail box of any department (or ask the secretary of any department to put it in the campus mail).
2. Bring the questionnaire personally to Waldo Hall 305. In that case you may claim a reward of £50 for your help.
3. You may also return the questionnaire through regular mail. In that case please provide the stamps required.

**IMPORTANT:**

1. Answer the questionnaire under approximately the same conditions as you did the first questionnaire. Thus, for example, answer it at one sitting without major interruptions.
2. Use the same assumed name and respond to the same health practice as you did for the first questionnaire.
3. Answer the items in terms of your immediate feelings and impressions. This questionnaire differs from the first one slightly in certain respects. If you try to remember how you answered the first one and try to answer the same way this time, you will very likely distort your answers.
Appendix A (continued)

You have been selected to represent several hundreds of students in the second measurement. Thus, your responding to the questionnaire is extremely essential for the completion of this research!

We are sorry to trouble you during the busy final week, but we would like to receive your filled response before Friday of this week! Your help is very much appreciated!

Jukka Laitakari

Office: Waldo Hall 305, tel. 754-2686

Home: 840 SW Grove #7, Corvallis, Oregon
Tel. 753-9063 97330
List of assumed names and the corresponding practices:

The use of seat-belts = B
Limiting the intake of saturated fats = F

<table>
<thead>
<tr>
<th>Name</th>
<th>Gender</th>
<th>Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bill Highbarger</td>
<td>F</td>
<td>B</td>
</tr>
<tr>
<td>Brooks Robinson</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Buck Smith</td>
<td>F</td>
<td>B</td>
</tr>
<tr>
<td>Chuck Davenport</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>D. B. Cooper</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Delvas Bozo</td>
<td>F</td>
<td>B</td>
</tr>
<tr>
<td>Don Knapp</td>
<td>F</td>
<td>B</td>
</tr>
<tr>
<td>Flindt</td>
<td>F</td>
<td>B</td>
</tr>
<tr>
<td>Florence Hightingale</td>
<td>F</td>
<td>B</td>
</tr>
<tr>
<td>George</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>George Washington</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Gandle Groove</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Helen S. Baily</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Helen Stevenson</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>J. B. Schwartz</td>
<td>F</td>
<td>B</td>
</tr>
<tr>
<td>Jonette Lang</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Jacques Lewis</td>
<td>F</td>
<td>B</td>
</tr>
<tr>
<td>Jane Doe</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Jim Futnut</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Jimmy the Greek</td>
<td>F</td>
<td>B</td>
</tr>
<tr>
<td>Joe Speed</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Laura Morton</td>
<td>F</td>
<td>B</td>
</tr>
<tr>
<td>Marie Thomas</td>
<td>F</td>
<td>B</td>
</tr>
<tr>
<td>Mary Smith</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Mark Anthony</td>
<td>F</td>
<td>B</td>
</tr>
<tr>
<td>Mene Dover</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Patrucio</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>P</td>
<td>F</td>
<td>B</td>
</tr>
<tr>
<td>Reggie Jackson</td>
<td>F</td>
<td>B</td>
</tr>
<tr>
<td>Rence Petrie</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Scotch</td>
<td>F</td>
<td>B</td>
</tr>
<tr>
<td>Sophomore, M, Engr., 23-B</td>
<td>F</td>
<td>B</td>
</tr>
<tr>
<td>Sophomore, M, B+T, 20-B</td>
<td>F</td>
<td>B</td>
</tr>
<tr>
<td>Spike</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Spiro T. Agnew</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Susan Sotgrass</td>
<td>F</td>
<td>B</td>
</tr>
<tr>
<td>Sydney Defoe</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Vida Blue</td>
<td>B</td>
<td>B</td>
</tr>
</tbody>
</table>
Pilot Study Concerning the Selection of the Health Practices

**Purpose:** The purpose of this pilot study was to obtain responses to a wide variety of personal health practices in order to select those which yield a wide distribution of responses on the intention scales.

**Subjects:** Undergraduate students in the fall term 1971 at Oregon State University from the two courses taking part in the main study were used as subjects. The number of subjects taken from the H 160 class was 44 and from the H 170 class 22. The latter group was also used in the main study approximately three weeks later.

**Procedure:** A questionnaire (p. 113-115) containing nineteen personal health practices to be judged on the scale "I intend- I do not intend" was constructed. The questionnaire was administered to both samples during a regular class hour. The completion of the questionnaire took approximately ten minutes.

**Results:** On the basis of frequency distributions of responses (p. 116-119) five health practices having a wide distribution of responses throughout the scale for both samples were selected for further analysis (see the main study).
Appendix B (continued)

Questionnaire Concerning the Selection of the Health Practices

Survey of Health Practices

This survey is a part of a study designed to help improve college health courses so that they would be better adapted to the needs of individual students. The best way you can contribute to the study is to respond to the following scales in terms of your realistic and honest feelings. Do not sign your name!

The scale positions are as follows:

extremely quite slightly undecided slightly quite extremely
certain certain certain certain certain certain certain

How certain are you that you intend or do not intend to begin the following health practices in the near future?

(If you are already carrying out the practice, do not respond to the scale, but place a checkmark inside the brackets immediately in front of the practice.)

( ) To eat a substantial breakfast with plenty of protein each morning:
I intend I do not intend

( ) To get adequate sleep and rest (so that in the mornings you would feel refreshed and energetic):
I do not intend I intend

( ) To have endurance type of exercise (such as jogging, swimming, bicycling, etc.) at least three times a week:
I do not intend I intend

( ) To eat a balanced diet:
I intend I do not intend

( ) To obtain regular medical checkups:
I do not intend I intend
Appendix B (continued)

( ) To brush teeth after every meal (whenever impractical rinse mouth with water):
I do not intend ___:___:___:___:___:___ I intend ___:___:___:___:___:___

( ) To not smoke cigarettes:
I do not intend ___:___:___:___:___:___ I intend ___:___:___:___:___:___

( ) To keep one's weight down:
I intend ___:___:___:___:___:___ I do not intend ___:___:___:___:___:___

( ) To repress the feelings of negative emotions (such as anger):
I intend ___:___:___:___:___:___ I do not intend ___:___:___:___:___:___

( ) To walk at least one hour each day:
I do not intend ___:___:___:___:___:___ I intend ___:___:___:___:___:___

( ) To limit consumption of sweets:
I do not intend ___:___:___:___:___:___ I intend ___:___:___:___:___:___

( ) To obtain regular dental checkups at least once a year:
I intend ___:___:___:___:___:___ I do not intend ___:___:___:___:___:___

( ) To limit intake of saturated (=animal) fats:
I do not intend ___:___:___:___:___:___ I intend ___:___:___:___:___:___

( ) To avoid driving when under the influence of alcohol (or any other mind altering drug):
I intend ___:___:___:___:___:___ I do not intend ___:___:___:___:___:___

( ) To express positive feelings (such as liking somebody) more openly:
I intend ___:___:___:___:___:___ I do not intend ___:___:___:___:___:___

( ) To brush one's teeth after every meal and after every intake of sugars (whenever impractical rinse mouth with water):
I intend ___:___:___:___:___:___ I do not intend ___:___:___:___:___:___

( ) To avoid driving when upset or angry:
I do not intend ___:___:___:___:___:___ I intend ___:___:___:___:___:___
Appendix B (continued)

(  ) To wash hands before eating:
I intend __:__:_:_:_:_ I do not intend

(  ) To always use seat belts (even at low speed):
I intend __:__:_:_:_:_ I do not intend
Appendix B (continued)

Frequency distributions of responses to various health practices on the intention scale.

<table>
<thead>
<tr>
<th>Health practices</th>
<th>Number of responses on intention Scale</th>
<th>Distribution of the responses on the scale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>I intend I do not intend</td>
</tr>
<tr>
<td></td>
<td></td>
<td>a  b  c  d  e  f  g</td>
</tr>
<tr>
<td>To eat a substantial breakfast with plenty of protein every morning</td>
<td>33</td>
<td>2  3  5  2  7  9  5</td>
</tr>
<tr>
<td>To get adequate sleep and rest (so that in the mornings you would feel refreshed and energetic)</td>
<td>32</td>
<td>2  10  5  4  4  4  3</td>
</tr>
<tr>
<td>To have endurance type of exercise (such as jogging, swimming, bicycling, etc.) at least three times a week</td>
<td>33</td>
<td>4  9  6  2  3  5  4</td>
</tr>
<tr>
<td>To eat a balanced diet</td>
<td>29</td>
<td>4  9  7  4  2  1  2</td>
</tr>
<tr>
<td>To obtain regular medical checkups</td>
<td>31</td>
<td>3  9  10  5  2  0  2</td>
</tr>
<tr>
<td>To brush teeth after every meal (whenever impractical rinse mouth with water)</td>
<td>31</td>
<td>3  5  8  1  3  10  1</td>
</tr>
<tr>
<td>To not smoke cigarettes</td>
<td>25</td>
<td>7  0  0  3  1  2  12</td>
</tr>
<tr>
<td>To keep one's weight down</td>
<td>34</td>
<td>12  13  4  1  1  0  3</td>
</tr>
<tr>
<td>To repress the feelings of negative emotions (such as anger)</td>
<td>35</td>
<td>1  10  8  6  3  4  3</td>
</tr>
<tr>
<td>To walk at least one hour each day</td>
<td>28</td>
<td>6  2  2  4  4  5  5</td>
</tr>
</tbody>
</table>
Appendix B (continued)

Frequency distributions of responses to various health practices on the intention scale (continued).

(Sample from H 160, N = 44)

<table>
<thead>
<tr>
<th>Health practices</th>
<th>Number of responses on intention Scale</th>
<th>Distribution of the responses on the scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>To limit consumption of sweets</td>
<td>36</td>
<td>I intend</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I do not intend</td>
</tr>
<tr>
<td>To obtain regular dental checkups at least once a year</td>
<td>26</td>
<td>6</td>
</tr>
<tr>
<td>To limit intake of saturated (animal) fats</td>
<td>38</td>
<td>8</td>
</tr>
<tr>
<td>To avoid driving when under influence of alcohol (or any other mind altering drug)</td>
<td>25</td>
<td>4</td>
</tr>
<tr>
<td>To express positive feelings (such as liking somebody) more openly</td>
<td>34</td>
<td>6</td>
</tr>
<tr>
<td>To brush one's teeth after every meal and after every intake of sugars (whenever impractical rinse mouth with water)</td>
<td>36</td>
<td>3</td>
</tr>
<tr>
<td>To avoid driving when upset or angry</td>
<td>42</td>
<td>0</td>
</tr>
<tr>
<td>To wash hands before eating</td>
<td>35</td>
<td>3</td>
</tr>
<tr>
<td>To always use seat belts (even at low speed)</td>
<td>35</td>
<td>7</td>
</tr>
</tbody>
</table>

Explanations:

a = extremely certain  
| b = quite certain  
| c = slightly certain  
| d = undecided  
| e = slightly certain  
| f = quite certain  
| g = extremely certain
Appendix B (continued)

Frequency distributions of responses to various health practices on the intention scale.
(Sample from H 170, N = 22)

<table>
<thead>
<tr>
<th>Health practice</th>
<th>Number of responses on intention Scale</th>
<th>Distribution of the responses on the scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>To eat a substantial breakfast with plenty of protein every morning</td>
<td>19</td>
<td>a: 1, b: 3, c: 8, d: 1, e: 1, f: 3, g: 2</td>
</tr>
<tr>
<td>To get adequate sleep and rest (so that in the mornings you would feel refreshed and energetic)</td>
<td>16</td>
<td>a: 3, b: 7, c: 4, d: 1, e: 2, f: 0, g: 1</td>
</tr>
<tr>
<td>To have endurance type of exercise (such as jogging, swimming, bicycling, etc.) at least three times a week</td>
<td>19</td>
<td>a: 4, b: 3, c: 6, d: 1, e: 0, f: 2, g: 3</td>
</tr>
<tr>
<td>To eat a balanced diet</td>
<td>20</td>
<td>a: 2, b: 5, c: 8, d: 2, e: 1, f: 2, g: 0</td>
</tr>
<tr>
<td>To obtain regular medical checkups</td>
<td>20</td>
<td>a: 2, b: 5, c: 4, d: 3, e: 2, f: 1, g: 3</td>
</tr>
<tr>
<td>To brush teeth after every meal (whenever impractical rinse mouth with water)</td>
<td>15</td>
<td>a: 2, b: 4, c: 2, d: 3, e: 1, f: 1, g: 2</td>
</tr>
<tr>
<td>To not smoke cigarettes</td>
<td>11</td>
<td>a: 4, b: 0, c: 0, d: 2, e: 1, f: 1, g: 2</td>
</tr>
<tr>
<td>To keep one's weight down</td>
<td>18</td>
<td>a: 6, b: 7, c: 2, d: 0, e: 1, f: 1, g: 1</td>
</tr>
<tr>
<td>To repress the feelings of negative emotions (such as anger)</td>
<td>19</td>
<td>a: 1, b: 7, c: 6, d: 6, e: 1, f: 1, g: 0</td>
</tr>
<tr>
<td>To walk at least one hour each day</td>
<td>17</td>
<td>a: 2, b: 2, c: 4, d: 5, e: 0, f: 2, g: 2</td>
</tr>
</tbody>
</table>
Frequency distributions of responses to various health practices on the intention scale.

(Sample from H 170, N = 22)  

<table>
<thead>
<tr>
<th>Health practices</th>
<th>Number of responses on intention Scale</th>
<th>Distribution of the responses on the scale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>I intend</td>
</tr>
<tr>
<td></td>
<td></td>
<td>a  b  c  d  e  f  g</td>
</tr>
<tr>
<td>To limit consumption of sweets</td>
<td>22</td>
<td>4  4  6  3  2  0  3</td>
</tr>
<tr>
<td>To obtain regular dental checkups at least once a year</td>
<td>12</td>
<td>5  2  1  2  1  1  0</td>
</tr>
<tr>
<td>To limit intake of saturated (animal) fats</td>
<td>21</td>
<td>2  3  4  5  1  3  3</td>
</tr>
<tr>
<td>To avoid driving when under influence of alcohol or any other mind altering drug</td>
<td>10</td>
<td>5  1  2  0  0  1  1</td>
</tr>
<tr>
<td>To express positive feelings (such as liking somebody) more openly</td>
<td>18</td>
<td>3  5  4  3  0  2  1</td>
</tr>
<tr>
<td>To brush one's teeth after every meal and after every intake of sugars (whenever impractical rinse mouth with water)</td>
<td>18</td>
<td>2  2  3  3  2  4  2</td>
</tr>
<tr>
<td>To avoid driving when upset or angry</td>
<td>20</td>
<td>2  3  3  6  2  2  2</td>
</tr>
<tr>
<td>To wash hands before eating</td>
<td>19</td>
<td>2  3  6  2  2  2  2</td>
</tr>
<tr>
<td>To always use seat belts (even at low speed)</td>
<td>15</td>
<td>2  3  0  3  2  3  2</td>
</tr>
</tbody>
</table>

Explanations:
- a = extremely certain
- b = quite certain
- c = slightly certain
- d = undecided
- e = slightly certain
- f = quite certain
- g = extremely certain
Appendix C

Pilot Study Concerning the Relation of Health Practices to Terminal and Instrumental Values

Purpose: The purpose of this pilot study was to explore how individuals relate three common recommended health practices to terminal and instrumental values.

Subjects: Thirty-five undergraduate students in the summer term 1971 at Oregon State University.

Procedure: A questionnaire including relational statements was administered to the subjects during a regular class period. For terminal value statements the following format was used:

This practice is irrelevant/hinders/promotes a comfortable life (a prosperous life)

For instrumental value statements the following format was used:

This practice is irrelevant/in opposition to/in accordance to being ambitious (hard-working, aspiring)

The subjects were instructed to select one of the three relational phrases and cross out the two others for each statement. The order of the relational phrases was randomly determined for each statement. Each subject completed a questionnaire for one of the following three practices: (1) To walk at least 2-3 miles a day on the average, (2) To use safety belts always when in a moving vehicle, (3) To brush teeth after every meal (whenever impractical rinse mouth with water). The values used were mainly those of the Rokeach Value Survey's (Rokeach 1967) terminal and instrumental values. The investigator had added some health relevant values to Rokeach's original sets. The completion of the questionnaire took approximately 10 minutes.

Results: The frequency distributions of responses to the three relational categories for each value and for each health practice are tabulated on p. 121-123.
Appendix C (continued)

Frequency distributions concerning the relation of health practices to terminal values.

<table>
<thead>
<tr>
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<td>An exciting life</td>
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<td>A sense of accomplishment</td>
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<td>A world of beauty</td>
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<td>4</td>
<td>7</td>
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<td>13</td>
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</table>
Appendix C (continued)

Frequency distributions concerning the relation of health practices to terminal values (cont.).

<table>
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<td>4</td>
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<td>1</td>
<td>1</td>
<td>9</td>
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</tbody>
</table>

Explanations:
- Hind. = the practice hinders the value under question.
- Prom. = the practice promotes the value under question.
- Irr. = the practice is irrelevant to the value under question.
Appendix C (continued)

Frequency distributions concerning the relation of health practices to instrumental values.

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<td>8</td>
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</table>

Explanations: Opp = the practice is in opposition to the value in question. Acc. = the practice is in accordance to the value in question. Irr. = the practice is irrelevant to the value in question.
Appendix D

Pilot Study Concerning the Measurement of Values

Purpose: The purpose of this pilot study was to get a general picture of the measurement of values by obtaining frequency distributions of responses to terminal value statements on a variety of evaluative scales.

Subjects: Seven undergraduate students in the Summer term 1971 at Oregon State University.

Procedure: A questionnaire containing five terminal value statements to be responded to on twenty-six scales was constructed. The value statements were: (1) A comfortable life (prosperous life), (2) An exciting life (stimulating, active life), (3) A long life (longevity), (4) Good looking appearance (having attractive face, body, or clothes), (5) Mature love (sexual and spiritual intimacy). These value statements were considered representative of the twenty-three terminal value statements used in the main study. The questionnaire as shown on p. 125-128 contains only one of the value statements. The scales were drawn, in part, from the evaluative dimension of the semantic differential method (Osgood, 1957), and, in part, were formulated by the investigator.

Results: The frequency distributions of responses to the values are tabulated on page 129.
Appendix D (continued)

Questionnaire Concerning the Measurement of Values

Pseudonym: _______________________

Introduction

We are interested in finding out how people feel about certain general concepts. There are no right or wrong answers. Just respond to the following questions and scales as you personally feel about them right now.

Do not sign your real name but devise (perhaps your nick name, your initials, etc.) and write in the space provided a pseudonym for possible future reference. Your responses will be analyzed by a person who has no connection with the OSU faculty and who has no familiarity with your handwriting.

Age: _____ Sex: _____ Occupation (or status and major as a student):

The instructions how to use the scales follow. Please read these instructions carefully!

****

How to use the scales:

If you feel that the concept to be judged is very closely related to one end of the scale, you should place your check-mark as follows:

important  X:::::: X:::::::::::: X::::::::::::::: unimportant or
important  :::::::: X:::::::::::: X::::::::::::::: unimportant
If you feel that the concept is quite closely related to one or the other end of the scale (but not extremely), you should place your check-mark as follows:

unlikely  

likely

or

unlikely

likely

If the concept seems only slightly related to one side as opposed to the other side (but is not really neutral), then you should check as follows:

successful

unsuccessful

or

successful

unsuccessful

The direction toward which you check, of course, depends upon which of the two ends of the scale seem most characteristic of the thing you're judging.

If you consider the concept to be neutral on the scale, both sides of the scale equally associated with the concept, or if the scale is completely irrelevant, unrelated to the concept, then you should place your check-mark in the middle space:

obstructing  

helpful

Important:  (1)  Place your check-marks in the middle of the spaces, not the boundaries:

This  Not this

(2)  Be sure you check every scale for every concept—do not omit any.

(3)  Never put more than one check-mark on a single scale.

Sometimes you may feel as though you've had the same item before on the test. This will not be the case, so do not look back and forth through the items. Do not try to remember how you checked similar items earlier in the test. Make each item a separate and independent judgement.
Work at fairly high speed through this test. Do not worry or puzzle over individual items. It is your first impressions, the immediate "feelings" about the items, that we want. On the other hand, please do not be careless, because we want your true impressions.

****
## Appendix D (continued)

### A Comfortable Life
(prosperous life)

| weak          | ___:___:___:___:___:___ | strong         |
| good          | ___:___:___:___:___:___ | bad            |
| meaningless   | ___:___:___:___:___:___ | meaningful     |
| comfortable   | ___:___:___:___:___:___ | uncomfortable  |
| satisfying    | ___:___:___:___:___:___ | unsatisfying   |
| low           | ___:___:___:___:___:___ | high           |
| necessary     | ___:___:___:___:___:___ | unnecessary    |
| ugly          | ___:___:___:___:___:___ | beautiful      |
| painful       | ___:___:___:___:___:___ | pleasurable    |
| unimportant   | ___:___:___:___:___:___ | important      |
| successful    | ___:___:___:___:___:___ | unsuccessful   |
| active        | ___:___:___:___:___:___ | passive        |
| negative      | ___:___:___:___:___:___ | positive       |
| central       | ___:___:___:___:___:___ | peripheral     |
| pleasant      | ___:___:___:___:___:___ | unpleasant     |
| nonessential  | ___:___:___:___:___:___ | essential      |
| kind          | ___:___:___:___:___:___ | cruel          |
| primary       | ___:___:___:___:___:___ | secondary      |
| replaceable   | ___:___:___:___:___:___ | irreplaceable  |
| fast          | ___:___:___:___:___:___ | slow           |
| worthless     | ___:___:___:___:___:___ | valuable       |
| sufficient    | ___:___:___:___:___:___ | insufficient   |
| I like it     | ___:___:___:___:___:___ | I dislike it   |
| dispensable   | ___:___:___:___:___:___ | indispensable  |
| I depreciate it | ___:___:___:___:___:___ | I appreciate it|
| important     | ___:___:___:___:___:___ | unimportant    |
Appendix D (continued)

**Frequency Distributions of Responses Concerning the Measurement of Values**

(Total of 35 responses per scale)

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<th>negative</th>
</tr>
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<td>a  b  c  d e  f  g</td>
<td></td>
</tr>
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<td>strong-weak</td>
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<td></td>
</tr>
<tr>
<td>good-bad</td>
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</tr>
<tr>
<td>meaningful-meaningless</td>
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<td></td>
</tr>
<tr>
<td>comfortable-uncomfortable</td>
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<tr>
<td>satisfying-unsatisfying</td>
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<td>high-low</td>
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</tr>
<tr>
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<td>beautiful-ugly</td>
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</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>active-passive</td>
<td>17  5  6 3 0 0  0</td>
<td></td>
</tr>
<tr>
<td>positive-negative</td>
<td>12 10  4 9 0 0  0</td>
<td></td>
</tr>
<tr>
<td>central-peripheral</td>
<td>4  4 10 12 3 1  1</td>
<td></td>
</tr>
<tr>
<td>pleasant-unpleasant</td>
<td>9 10  5 9 1 0  1</td>
<td></td>
</tr>
<tr>
<td>essential-unnecessary</td>
<td>8  9  7 6 3 1  1</td>
<td></td>
</tr>
<tr>
<td>kind-cruel</td>
<td>10  8  6 8 2 1  1</td>
<td></td>
</tr>
<tr>
<td>primary-secondary</td>
<td>6  5  9 7 2 4  0</td>
<td></td>
</tr>
<tr>
<td>replaceable-irreplaceable</td>
<td>4  6  8 7 5 4  1</td>
<td></td>
</tr>
<tr>
<td>fast-slow</td>
<td>6  4 10 11 1 2  0</td>
<td></td>
</tr>
<tr>
<td>valuable-worthless</td>
<td>14 11  3 3 2 2  0</td>
<td></td>
</tr>
<tr>
<td>sufficient-insufficient</td>
<td>12  4 11 4 2 1  1</td>
<td></td>
</tr>
<tr>
<td>I like it-I dislike it</td>
<td>16  3  8 6 2 0  0</td>
<td></td>
</tr>
<tr>
<td>indispensable-dispensable</td>
<td>6  6  9 6 3 5  0</td>
<td></td>
</tr>
<tr>
<td>I appreciate it-I depreciate it</td>
<td>16  5  5 6 2 1  0</td>
<td></td>
</tr>
<tr>
<td>important-unimportant</td>
<td>13  8  4 6 2 1  1</td>
<td></td>
</tr>
</tbody>
</table>

**Explanations:**

a = extremely
b = quite
c = slightly
d = neutral
e = slightly
f = quite
g = extremely
APPENDIX E

Pilot Study Concerning Perceived Motives Associated With Personal Health Practices-I

Purpose: This pilot study was the first in a series of three studies (see Appendix F and G) conducted to obtain students' free responses concerning their perceived motives associated with health practices. The purpose of this particular study was to let the respondents express themselves freely without guidance concerning the types of motives to be expressed.

Subjects: Twenty-two undergraduate students in the summer term 1971 at Oregon State University.

Procedure: A questionnaire (p. 132) was handed out in the beginning of a regular class period. The completion of the questionnaire took approximately fifteen minutes.

Results: The responses to the questions fell into the following categories as identified by the investigator:
Question 1. Reasons for carrying out a health practice:

<table>
<thead>
<tr>
<th>Reason</th>
<th>No. of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>to prevent a disease</td>
<td>16</td>
</tr>
<tr>
<td>bodily well-being</td>
<td>12</td>
</tr>
<tr>
<td>good-looking appearance</td>
<td>8</td>
</tr>
<tr>
<td>cleanliness</td>
<td>7</td>
</tr>
<tr>
<td>force of habit</td>
<td>4</td>
</tr>
<tr>
<td>to gain self-confidence</td>
<td>2</td>
</tr>
<tr>
<td>to gain mental alertness</td>
<td>2</td>
</tr>
<tr>
<td>respect for others</td>
<td>3</td>
</tr>
<tr>
<td>others do it</td>
<td>1</td>
</tr>
<tr>
<td>to be liked by others</td>
<td>1</td>
</tr>
<tr>
<td>convenient</td>
<td>1</td>
</tr>
<tr>
<td>carrying out a practice less expensive</td>
<td>1</td>
</tr>
</tbody>
</table>

Question 2. Reasons for not carrying out a health practice:

<table>
<thead>
<tr>
<th>Reason</th>
<th>No. of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>negative attitude</td>
<td>9</td>
</tr>
<tr>
<td>lack of time</td>
<td>4</td>
</tr>
<tr>
<td>expensiveness</td>
<td>3</td>
</tr>
<tr>
<td>practice causes inconvenience</td>
<td>3</td>
</tr>
<tr>
<td>lack of will-power</td>
<td>4</td>
</tr>
<tr>
<td>previous failure in trying to begin the practice</td>
<td>1</td>
</tr>
</tbody>
</table>

Feelings concerning the initiation of the practice in the future.

The respondents, in general, indicated the condition under which they would initiate the practice:

<table>
<thead>
<tr>
<th>Reason</th>
<th>No. of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>more interpersonal support</td>
<td>3</td>
</tr>
<tr>
<td>learning to like the practice more</td>
<td>2</td>
</tr>
<tr>
<td>having the means to carry out the practice</td>
<td>2</td>
</tr>
<tr>
<td>feeling more susceptible to a health threat</td>
<td>2</td>
</tr>
<tr>
<td>living a life style giving one more responsibilities</td>
<td>1</td>
</tr>
</tbody>
</table>
Appendix E (Continued)

Pseudonym: ____________________

Questionnaire Used

We are interested in finding out how people feel about certain personal behavior patterns. There are no right or wrong answers. Just respond to the following questions as you personally feel about them at present.

Do not give your real name but devise a pseudonym and write it in the space provided. Your responses will be analyzed by a person who has no connection with the OSU faculty and who has no familiarity with your handwriting.

Age: ____  Sex: ________  Profession: ____________________

1. Name one personal health practice you carry out at present:

________________________________________________________________________

Please list all the reasons, as you see them, for your carrying out this particular practice. In other words, why do you engage in the practice? Please also indicate the relative importance of your reasons (the "whys"): ____________________

________________________________________________________________________

2. Name one health practice that you do not carry out at present:

________________________________________________________________________

Please list all the reasons, as you see them, for your not carrying out the practice. In other words, why do you not engage in this practice? Please also indicate the relative importance of your reasons (the "whys"): ____________________

________________________________________________________________________

Please describe in detail how you feel about carrying out this particular practice in the future? In other words, do you feel that there is any chance of your beginning this practice in the future? How big is this chance? Specifically when and under what circumstances would you begin this practice? ________
Appendix F

Pilot Study Concerning Perceived Motives Associated With Personal Health Practices-II

Purpose: In the first pilot study (Appendix E) respondents had selected practices related predominantly to personal cleanliness. In order to obtain responses pertaining to a wider variety of health practices, a list of health practices was included in the instructions. In addition, separate guiding questions concerning situational motives and the relation of health practices to values were included.

Subjects: Twenty-four undergraduate students in the summer term 1971 at Oregon State University.

Procedure: The first part of a questionnaire, including the instructions and questions one and two, was handed out in the beginning of a class period. When a student had completed the first part it was collected and the second part, including questions three to five, was handed to him. To fill out both of the parts took about twenty minutes. The questionnaire appears on p. 136.

Results: The responses fell into the following categories as formulated by the investigator:
Question 2. The reasons for not carrying out a health practice:

- negative attitude ("I do not like it") 7
- lack of money 5
- unavailability of the means to carry out the practice 4
- lack of time 3
- lack of will-power 3
- causes trouble 2
- too strenuous schedule 2
- inconvenient 2
- laziness 2

Question 3. Situational factors preventing the respondents from carrying out the health practice:

- lack of time 10
- expensiveness 5
- unavailability of means to carry out the practice 3
- tension, fatigue 4
- inconvenient 3
- other people not carrying it out 3
- laziness 1

Question 4. Life situation that would help begin a health practice.

- a physician recommending it 6
- having more time for it 3
- having one's friends carry it out 2

Question 5. Values that would be hindered or promoted by the practice.

- health 7
- good looking, attractive body 3
- expensiveness 1
- dirtyness 1
- happiness 1
- being energetic 1
- personal worth 1
- social recognition 1
- long life 1
<table>
<thead>
<tr>
<th>Question 5 (cont.)</th>
<th>No. of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>- security</td>
<td>1</td>
</tr>
<tr>
<td>- control of situation</td>
<td>1</td>
</tr>
<tr>
<td>- moderation</td>
<td>1</td>
</tr>
</tbody>
</table>
Appendix F (continued)

Pseudonym: __________________

Questionnaire Used

We are interested in finding out how people feel about personal health practices. There are no right or wrong answers. Just respond to the questions as you personally feel about them at present.

Do not give your real name but devise in the space provided a pseudonym for possible future reference. Your responses will be analyzed by a person who has no connection with the OSU faculty and who has no familiarity with your handwriting.

Use the following list of health practices as a possible source for picking up one health practice to be written down as the answer to question #1 and to be used as a reference to the rest of the questions: to get adequate physical activity and exercise; to brush teeth after every meal (when impossible rinse the mouth with water); to obtain regular medical checkups; to limit intake of saturated fats; to obtain regular dental checkups; to avoid driving after drinking; to avoid driving when upset or angry; to use seat belts always when in a moving car; not to smoke.

Age: ____ Sex: ________ Occupation (or status as a student): ____

1. Name one personal health practice you do not carry out at present: __________________________

2. Please list all the reasons, as you see them, for your not carrying out this practice. In other words, why do you not engage in the practice? Please also indicate the relative importance of your reasons (the "whys"): __________________________

3. List all the factors, as you see them, in your present life situation which tend to prevent you from carrying out this practice. __________________________

4. What kind of life situation would help you to begin this practice? Please be as specific as possible: __________________________

5. How does this practice relate to your basic values? In other words, would the practice hinder or promote the attainment of what you personally regard as important in your life? Please be specific: which specific values would be hindered or promoted and to what extent? __________________________
APPENDIX G

Pilot Study Concerning Perceived Motives Associated With Personal Health Practices-III

Purpose: In this pilot study special attention was given to perceived motives related to the initiation of health practices.

Subjects: Twenty-two graduate students in the summer term 1971 at Oregon State University.

Procedure: A questionnaire (p. 138) was handed out in the beginning of a class period. The completion of the questionnaire took about 15 minutes.

Results: The responses fell into the following categories as formulated by the investigator:

- Negative attitude (e.g., "not personally beneficial") 14
- Lack of opportunity to carry out the practice (e.g., "life schedule prevents") 7
- Lack of time 6
- Inconvenient 4
- Lack of will-power 3
- Lack of money 2
- Laziness 1
- A physician not recommending 1
- Cultural bearing 1
Appendix G (Continued)  

Character Name: 

Questionnaire Used

Please answer the following questions as honestly as possible. Try to reveal how things are with you and how you actually feel about them at present.

Do not give your real name but devise and write in the space provided a pseudonym for possible future reference. Your responses will be analyzed by a person who has no connection with the OSU faculty and who has no familiarity with your handwriting.

What we are interested in are people's feelings about health practices that they do not carry out at present. Starting on the next page, several health practices are listed. First answer whether or not you carry out the practice at present. If your answer is yes, put a checkmark in the space provided and jump over to the next practice. If your answer is no (in other words, if you do not carry out the practice at present), put a checkmark in the appropriate space and describe in detail how you feel about beginning to carry it out in the future. Try to be very specific in your description. Do not worry about finishing the whole questionnaire. What is important is to describe at least one practice in detail!

Age: ______ Sex: _______ Occupation: _______________________

Practice: Do you carry it out at present? Yes No

If no, describe in detail how you feel about beginning to carry it out in the future?

To get adequate physical activity and exercise

To brush teeth after every meal

To obtain regular medical checkups

To limit intake of saturated fats

To obtain regular dental checkups

To avoid driving after drinking (or after taking some other mind-altering drug)

To avoid driving when upset or angry

To limit intake of calories
APPENDIX H

A Pilot Study Concerning the Selection of a Scale for the Measurement of Situational Contexts

Purpose: The purpose of this pilot study was to select a scale for the measurement of situational contexts which would show the least contradiction with the general direction of responses on a number of scales. The pilot study was based on the observation, made in the initial phase of the main study, that scales which show contradiction with the general direction of responses are, in most cases, ones which tend to focus the subject’s attention to the general evaluative meaning of the situational context.

Subjects: Twelve undergraduate students in the summer term 1971 at Oregon State University.

Procedure: A questionnaire was constructed containing twelve situational contexts to be responded to on sixteen scales. The situational contexts were formulated by the investigator. The scales were, in part, collected from the evaluative dimension of the semantic differential method (Osgood, 1957) and, in part, developed by the investigator. A list of the situational contexts used and an example of the scales used appear on p. 141-142.

Results: An individual’s response on a given scale to a given situational context was compared to the general
direction of his responses to the same situational context on the remainder of the scales. If the response on the scale under study was toward the opposite end of the scale, as could be judged from the general direction of responses on the remainder of the scales, an inconsistency was counted for the scale. The middle position of the scale was not considered to make the response inconsistent. The number of inconsistencies for the scales were as follows:

<table>
<thead>
<tr>
<th>Scale</th>
<th>No. of inconsistencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>good-bad</td>
<td>5</td>
</tr>
<tr>
<td>facilitating-obstructing</td>
<td>5</td>
</tr>
<tr>
<td>positive-negative</td>
<td>5</td>
</tr>
<tr>
<td>valuable-worthless</td>
<td>4</td>
</tr>
<tr>
<td>successful-unsuccessful</td>
<td>3</td>
</tr>
<tr>
<td>conducive-unconducive</td>
<td>3</td>
</tr>
<tr>
<td>rewarding-punishing</td>
<td>3</td>
</tr>
<tr>
<td>encouraging-discouraging</td>
<td>3</td>
</tr>
<tr>
<td>helpful-obstructive</td>
<td>2</td>
</tr>
<tr>
<td>permitting-not permitting</td>
<td>2</td>
</tr>
<tr>
<td>leading to-leading away</td>
<td>2</td>
</tr>
<tr>
<td>supportive-unsupportive</td>
<td>1</td>
</tr>
<tr>
<td>against-in favor</td>
<td>1</td>
</tr>
<tr>
<td>promoting-hindering</td>
<td>0</td>
</tr>
<tr>
<td>favorable-unfavorable</td>
<td>0</td>
</tr>
</tbody>
</table>

The scale "stable-changeable" was used without any consistency in regard to the general direction of responses in the remainder of the scales.
Appendix H (continued)

Situational Contexts Used in the Selection of a Scale for the Measurement of Situational Contexts

Suppose that your closest friend approves of a specific pattern of behavior. This situation, in terms of being conducive to your behaving in this way, is:

Suppose that you find out that in the near future you are susceptible to a serious condition or disease which, however, could be prevented by starting a specific health practice. This situation, in terms of being conducive to your starting the health practice, is:

Suppose that your acquaintances disapprove of a certain specific pattern of behavior. This situation, in terms of being conducive to your starting the behavior, is:

Suppose that you are under stress from work or study. This situation, in terms of being conducive to your starting a new pattern of behavior, is:

Suppose that your physician recommended you to start a health practice for reasons of your health. This situation, in terms of being conducive to your starting the practice, is:

Suppose that you find out that in the distant future you are susceptible to a serious condition or disease and that, however, this could be prevented by a regular health practice. This situation, in terms of being conducive to your starting the health practice, is:

Suppose that people in your living environment generally approve of a specific behavior pattern. This situation, in terms of helping you behave in this way, is:

Suppose that you are free from stresses in life. This situation, in terms of helping you start a new behavior pattern, is:

Suppose that your closest friend disapproves of a certain specific behavior pattern. This situation, in terms of making you to behave in this way, is:

Suppose that your acquaintances approve a certain way of behaving. This situation, in terms of helping you behave in this way, is:
Appendix H (continued)

Suppose that your closest friend carried out a certain behavior. This situation, in terms of being conducive to your behavior in this way, is:

Suppose that your acquaintances generally behave in a certain way. This situation, in terms of being conducive to your behavior in this way, is:

****

Example of a Situational Context and the Underlying Scales Used in the Selection of a Scale for the Measurement of Situational Contexts*

Suppose that your closest friend approves of a specific pattern of behavior. This situation, in terms of being conducive to your behaving in this way, is:

| good     | ______________| bad            |
| unconducive | ______________| conducive |
| positive   | ______________| negative       |
| against    | ______________| in favor      |
| worthless  | ______________| valuable       |
| promoting  | ______________| hindering      |
| facilitating | ______________| obstructing    |
| successful | ______________| unsuccessful |
| unfavorable | ______________| favorable      |
| permitting | ______________| not permitting |
| unsupportive | ______________| supportive   |
| encouraging | ______________| discouraging   |
| rewarding  | ______________| punishing      |
| leading to | ______________| leading away  |
| helpful    | ______________| obstructing    |
| stable     | ______________| changeable     |

* The instructions how to use the scales were the same as in Appendix I.
Appendix I

Pilot Study Concerning the Selection of Intention-About-Practice Scales

**Purposes:** The purpose of this pilot study was to select three intention-about-practice scales with high intercorrelations and a wide distribution of responses.

**Subjects:** Twenty-nine undergraduate students in the summer term 1971 at Oregon State University.

**Procedure:** A questionnaire (p. 144-148) was administered to the subjects during a regular class period. The completion of the questionnaire took approximately 10 minutes.

**Results:** The frequency distributions and the correlation matrix of the responses are tabulated on p. 148-149.
Appendix I (continued)

**Questionnaire Used in the Selection of Intention-About-Practice Scales**

Pseudonym: ____________

**Introduction**

We are interested in finding out how people feel about personal health practices. There are no right or wrong answers. Just respond to the following questions and scales as you personally feel about them at present.

Do not sign your real name but devise and write in the space provided a pseudonym for possible future reference. Your responses will be analyzed by a person who has no connection with the OSU faculty and who has no familiarity with your handwriting.

Age: _____ Sex: _____ Occupation (or status as a student): _____

The instructions how to use the scales follow. Please read these instructions carefully!

****

**How to use the scales:**

If you feel that the concept to be judged is **very closely related** to one end of the scale, you should place your check-mark as follows:

- **important**
  - X:____:____:____:____:____
  - unimportant

- **important**
  - ____:____:____:____:____:X

If you feel that the concept is **quite closely related** to one or the other end of the scale (but not extremely), you should place your check-mark as follows:

- **unlikely**
  - :X:____:____:____:____
  - likely

- **unlikely**
  - ____:____:____:____:X:

likely
If the concept seems only slightly related to one side as opposed to the other side (but is not really neutral), then you should check as follows:

successful  __:__::X::___::___ unsuccessful
or
successful  __:__::___:X::__::___ unsuccessful

The direction toward which you check, of course, depends upon which of the two ends of the scale seem most characteristic of the thing you’re judging.

If you consider the concept to be neutral on the scale, both sides of the scale equally associated with the concept, or if the scale is completely irrelevant, unrelated to the concept, then you should place your check-mark in the middle space:

obstructing  __:__::X::___::___ helpful

Important: (1) Place your check-marks in the middle of the spaces, not the boundaries:

This  Not this

____:X::___X___::____

(2) Be sure you check every scale for every concept - do not omit any.

(3) Never put more than one check-mark on a single scale.

Sometimes you may feel as though you’ve had the same item before on the test. This will not be the case, so do not look back and forth through the items. Do not try to remember how you checked similar items earlier in the test. Make each item a separate and independent judgement.

Work at fairly high speed through this test. Do not worry or puzzle over individual items. It is your first impressions, the immediate "feelings" about the items, that we want. On the other hand, please do not be careless, because we want your true impressions.
## Selection of a Health Practice

Indicate whether or not you carry out the following health practices:

<table>
<thead>
<tr>
<th>The health practice</th>
<th>I carry out at present:</th>
<th>I do not carry out at present:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Get adequate physical activity and exercise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Avoid driving when angry or upset</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Brush teeth after every meal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Obtain regular dental checkups</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Limit intake of saturated fats</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Obtain regular medical checkups</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Avoid driving after drinking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Get adequate rest and relaxation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From the above list pick **one** practice which you do not carry out at present. Please write this practice at the top of the next page.

Thereafter, judge the concepts indicated on the page. Notice that you are not to judge the practice as such, rather concepts of which the practice is just one part!
The practice:

I would like to begin the practice in near future

I would not like to begin the practice in near future

I should not begin the practice in near future

I should begin the practice in near future

I am willing to begin the practice in near future

I am not willing to begin the practice in near future

I will not begin the practice in near future

I will begin the practice in near future

It is possible that I begin the practice in near future

It is impossible that I begin the practice in near future

I would not begin the practice in near future

I might not begin the practice in near future

I might begin the practice in near future

I do not intend to begin the practice in near future

I intend to begin the practice in near future

I am in favor of beginning the practice in near future

I am not in favor of beginning the practice in near future

It is true that I might begin the practice in near future

It is not true that I might begin the practice in near future

I would not begin the practice in near future

It is probable that I begin the practice in near future

It is improbable that I begin the practice in near future

I am not going to begin the practice in near future

I am going to begin the practice in near future

It is possible that I begin the practice in near future

I do not begin the practice in near future

It is unlikely that I begin the practice in near future

It is likely that I begin the practice in near future

I am determined to begin the practice in near future

I am not determined to begin the practice in near future

There is a chance that I begin the practice in near future

There is no chance that I begin the practice in near future

I ought to begin the practice in near future

I ought not to begin the practice in near future
Frequency Distributions of Intention-About-Practice Scales \((N = 29)\)

<table>
<thead>
<tr>
<th></th>
<th>positive intention</th>
<th>negative intention</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>would like to-would not like to</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>should-should not</td>
<td>14</td>
<td>5</td>
</tr>
<tr>
<td>willing-not willing</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>will-will not</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>possible-impossible</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>would-would not</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>might-might not</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>intend-do not intend</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>favor-not in favor</td>
<td>14</td>
<td>5</td>
</tr>
<tr>
<td>true-not true that I might</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>would-would not</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>probable-improbable</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>going to-not going to</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>possible that-possible that not</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>likely-unlikely</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>determined-not determined</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>there is a chance-no chance</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
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Explanations:
- a = extremely
- b = quite
- c = slightly
- d = neutral
- e = slightly
- f = quite
- g = extremely
Appendix I (continued)

Correlation Matrix of Behavioral Intention Scales Used in the Development of Intention-About-Practice Measure (N = 29)

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<th>willing—will not</th>
<th>possible—impossible</th>
<th>would—would not</th>
<th>might—might not</th>
<th>intent—do not intend to</th>
<th>true—true that I might</th>
<th>would—would not</th>
<th>going to—going to</th>
<th>possible—possible that not</th>
<th>likely—likely</th>
<th>determined—not determined</th>
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Pilot Study Concerning the Selection of Scales for the Validity Measure of Attitude-Toward-Practice

Purpose: The purpose of this pilot study was to develop a validity measure for attitude-toward-practice.

Subjects: Ten undergraduate students in the summer term 1971 at Oregon State University.

Procedure: A questionnaire (p. 151-153) was constructed for the following six health practices: (1) Avoiding driving when angry or upset; (2) Obtaining regular medical checkups; (4) Limiting the intake of saturated fats; (5) Brushing teeth after every meal (when impractical rinse mouth with water; (6) Obtaining regular physical activity and exercise. The order of the health practices within each questionnaire was randomly determined. The scales used in the questionnaire were obtained largely from the evaluative dimension of the semantic differential method (Osgood, 1957). The questionnaire was administered to the subjects during a regular class period. The completion of the questionnaire took approximately 20 minutes.

Results: The obtained correlation matrix for the scales appears on p. 154.
Introduction

We are interested in finding out how people feel about personal health practices. There are no right or wrong answers. Just respond to the following questions and scales as you personally feel about them at present.

Do not sign your real name but devise and write in the space provided a pseudonym for possible future reference. Your responses will be analyzed by a person who has no connection with the OSU faculty and who has no familiarity with your handwriting.

Age: _____ Sex: _____ Occupation (or status as a student):_____

The instructions how to use scales follow. Please read these instructions carefully!

****

How to use the scales:

If you feel that the concept to be judged is very closely related to one end of the scale, you should place your check-mark as follows:

important  \( X:__:__:__:__ \)  unimportant

or

important  \( __:__:__:__:__:X \)  unimportant

If you feel that the concept is quite closely related to one or the other end of the scale (but not extremely), you should place your check-mark as follows:

unlikely  \( __:__X:__:__:__ \)  likely

or

unlikely  \( __:__:__:__:__:X:__ \)  likely
If the concept seems only slightly related to one side as opposed to the other side (but is not really neutral), then you should check as follows:

\[
\begin{align*}
\text{successful} & \quad \text{X} \\
\text{or} & \\
\text{unsuccessful} & \\
\end{align*}
\]

The direction toward which you check, of course, depends upon which of the two ends of the scale seem most characteristic of the thing you're judging.

If you consider the concept to be neutral on the scale, both sides of the scale equally associated with the concept, or if the scale is completely irrelevant, unrelated to the concept, then you should place your check-mark in the middle space:

\[
\begin{align*}
\text{obstructing} & \quad \text{X} \\
\text{helpful} & \\
\end{align*}
\]

Important: (1) Place your check-marks in the middle of spaces, not the boundaries:

This

Not this

(2) Be sure you check every scale for every concept - do not omit any.

(3) Never put more than one check-mark on a single scale.

Sometimes you may feel as though you've had the same item before on the test. This will not be the case, so do not look back and forth through the items. Do not try to remember how you checked similar items earlier in the test. Make each item a separate and independent judgement.

Work at fairly high speed through this test. Do not worry or puzzle over individual items. It is your first impressions, the immediate "feelings" about the items, that we want. On the other hand, please do not be careless, because we want your true impressions.

****
The practice:

Avoiding driving when angry or upset

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## Correlation Matrix for Evaluative Scales Used in the Development of the Validity Measure of Attitude-Toward-Practice

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<th>safe-dangerous</th>
<th>clean-dirty</th>
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<th>mature-immature</th>
<th>pleasurable-painful</th>
<th>meaningful-meaningless</th>
<th>important-unimportant</th>
<th>positive-negative</th>
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<th>healthy</th>
<th>valuable</th>
<th>worthless</th>
<th>nice-awful</th>
<th>active-passive</th>
<th>sweet-bitter</th>
<th>rewarding-punishing</th>
<th>interesting-boring</th>
<th>hard-soft</th>
<th>easy-difficult</th>
<th>I like-I dislike</th>
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<td>I like-I dislike</td>
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<td>kind-cruel</td>
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<td>beautiful-ugly</td>
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<td>sociable-unsociable</td>
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Appendix K

Pilot Study Concerning the Selection of Scales for the Validity Measure of Attitude-Toward-Life-Situation

Purpose: The purpose of this pilot study was to select three intercorrelating scales for the validity measure of attitude-toward-life-situation.

Subjects: Thirty undergraduate students in the summer term 1971 at Oregon State University.

Procedure: In the constructed questionnaire (p. 156-159) the conduciveness of the life situation for the initiation of a given health practice was evaluated on twenty-four scales. The questionnaire was administered during a regular class period. The completion of the questionnaire took approximately 10 minutes.

Results: The obtained correlation matrix for the scales appears on p. 160.
Appendix K (continued)

**Questionnaire Used in the Selection of Scales for the Validity Measure of Attitude-Toward-Life-Situation**

Pseudonym: __________________

**Introduction**

We are interested in finding out how people feel about personal health practices. There are no right or wrong answers. Just respond to the following questions and scales as you personally feel about them at present.

Do not sign your real name but devise and write in the space provided a pseudonym for possible future reference. Your responses will be analyzed by a person who has no connection with the OSU faculty and who has no familiarity with your handwriting.

Age: _____ Sex: _____ Occupation (or status as a student): _______

The instructions how to use the scales follow. Please read these instructions carefully!

****

**How to use the scales:**

If you feel that the concept to be judged in very closely related to one end of the scale, you should place your check-mark as follows:

<table>
<thead>
<tr>
<th>Important</th>
<th><strong>:</strong>:<strong>:</strong>:<strong>:</strong></th>
<th>Unimportant</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>:</strong>:<strong>:</strong>:<strong>:</strong></td>
<td>X</td>
</tr>
</tbody>
</table>

If you feel that the concept is quite closely related to one or the other end of the scale (but not extremely), you should place your check-mark as follows:

<table>
<thead>
<tr>
<th>Unlikely</th>
<th><strong>:</strong>:<strong>:</strong>:<strong>:</strong></th>
<th>Likely</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>:</strong>:<strong>:</strong>:<strong>:</strong></td>
<td>X</td>
</tr>
</tbody>
</table>

or

<table>
<thead>
<tr>
<th>Unlikely</th>
<th><strong>:</strong>:<strong>:</strong>:<strong>:</strong></th>
<th>Likely</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>:</strong>:<strong>:</strong>:<strong>:</strong></td>
<td>X</td>
</tr>
</tbody>
</table>
If the concept seems **only slightly related** to one side as opposed to the other side (but is not really neutral), then you should check as follows:

```
successful  __:__:X:__:__:successful
or
successful  __:__:__:__:X:__:unsuccessful
```

The direction toward which you check, of course, depends upon which of the two ends of the scale seem most characteristic of the thing you're judging.

If you consider the concept to be **neutral** on the scale, both sides of the scale **equally associated** with the concept, or if the scale is **completely irrelevant**, unrelated to the concept, then you should place your check-mark in the middle space:

```
obstructing  __:__:__:X:__:__:helpful
```

**Important:**

1. Place your check-marks **in the middle of spaces**, **not** the boundaries:

   This      Not this
```
__:X:__:__:X:__:__
```

2. Be sure you check every scale for every concept—do not omit any.

3. Never put more than one check-mark on a single scale.

Sometimes you may feel as though you've had the same item before on the test. This will not be the case, so do not look back and forth through the items. Do not try to remember how you checked similar items earlier in the test. **Make each item a separate and independent judgement.**

Work at fairly high speed through this test. Do not worry or puzzle over individual items. It is your first impressions, the immediate "feelings" about the items, that we want. On the other hand, please do not be careless, because we want your true impressions.

****
Selection of a Health Practice

Indicate whether or not you carry out these health practices:

<table>
<thead>
<tr>
<th>The health practice:</th>
<th>I carry out at present:</th>
<th>I do not carry out at present:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Get adequate physical activity and exercise . . . . . .</td>
<td></td>
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<tr>
<td>2. Avoid driving when angry or upset . . . . . . . . .</td>
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<tr>
<td>3. Brush teeth after every meal .</td>
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<td>4. Obtain regular dental checkups</td>
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<td></td>
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<tr>
<td>5. Limit intake of saturated fats</td>
<td></td>
<td></td>
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<tr>
<td>6. Obtain regular medical checkups</td>
<td></td>
<td></td>
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<tr>
<td>7. Avoid driving after drinking</td>
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<tr>
<td>8. Get adequate rest and relaxation</td>
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</tbody>
</table>

From the above list pick up one practice you do not carry out at present. Please write this practice at the top of the following page. Thereafter, judge the concept appearing below the practice. Notice that you are not judge the practice as such, rather a concept of which the practice is just one part!
The practice:
My present life situation in terms of helping me begin this practice:

<table>
<thead>
<tr>
<th>good</th>
<th>bad</th>
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<tbody>
<tr>
<td>strong</td>
<td>weak</td>
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<tr>
<td>obstructive</td>
<td>helpful</td>
</tr>
<tr>
<td>difficult</td>
<td>easy</td>
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<tr>
<td>punishing</td>
<td>rewarding</td>
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<tr>
<td>favorable</td>
<td>unfavorable</td>
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<tr>
<td>active</td>
<td>passive</td>
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<tr>
<td>comfortable</td>
<td>uncomfortable</td>
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<tr>
<td>harmful</td>
<td>beneficial</td>
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<tr>
<td>conducive</td>
<td>unconducive</td>
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<tr>
<td>negative</td>
<td>positive</td>
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<tr>
<td>against</td>
<td>in favor</td>
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<tr>
<td>valuable</td>
<td>worthless</td>
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<tr>
<td>possible</td>
<td>impossible</td>
</tr>
<tr>
<td>hindering</td>
<td>promoting</td>
</tr>
<tr>
<td>facilitating</td>
<td>obstructing</td>
</tr>
<tr>
<td>unsuccessful</td>
<td>successful</td>
</tr>
<tr>
<td>permitting</td>
<td>forbidding</td>
</tr>
<tr>
<td>unsupportive</td>
<td>supportive</td>
</tr>
<tr>
<td>encouraging</td>
<td>discouraging</td>
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<tr>
<td>leading away</td>
<td>leading to</td>
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<tr>
<td>pleasant</td>
<td>unpleasant</td>
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<td>important</td>
<td>unimportant</td>
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<tr>
<td>meaningless</td>
<td>meaningful</td>
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## Appendix K (continued)

**Correlation Matrix for Evaluative Scales Used in the Development of the Validity Measure of Attitude—Toward-Life—Situation**

|                     | good-bad | strong-weak | helpful-obstructive | easy-difficult | rewarding-punishing | favorable-unfavorable | active-passive | comfortable-uncomfortable | beneficial-harmful | conducive-unconductive | positive-negative | in favor-against | valuable-worthless | possible-impossible | promoting-hindering | facilitating-obstructing | successful-unsuccessful | permitting-forbidding | supportive-unsupportive | encouraging-discouraging | leading-to-leading away from | pleasant-unpleasant | important-unimportant | meaningful-meaningless |
|---------------------|----------|-------------|---------------------|----------------|---------------------|-----------------------|----------------|--------------------------------|-------------------|--------------------------|-------------------|-----------------|---------------------|-------------------|----------------------|-----------------------|-----------------------|-------------------------|------------------------|------------------------|----------------------|
| good-bad            | 1        | .70         | .69                 | .72             | .80                 | .39                   | .34            | .50                               | .63               | .70                      | .67               | .67             | .64                 | .69               | .72                   | .51                   | .57                   | .64                     | .66                   | .61                   | .44                   | .35                   | .56                   |
| strong-weak         |          | 1           | .68                 | .69             | .57                 | .71                   | .50            | .15                               | .48               | .73                      | .77               | .70             | .68                 | .70               | .70                   | .66                   | .68                   | .82                     | .75                   | .53                   | .38                   | .37                   | .48                   |
| helpful-obstructive |          |             | 1                   | .84             | .67                 | .85                   | .70            | .24                               | .58               | .83                      | .81               | .86             | .78                 | .82               | .86                   | .84                   | .72                   | .74                     | .79                   | .81                   | .65                   | .27                   | .42                   | .50                   |
| easy-difficult      |          |             |                      | .58             | .75                 | .57                   | .05            | .46                               | .69               | .78                      | .85               | .61             | .66                 | .81               | .67                    | .69                    | .61                   | .75                     | .81                   | .53                   | .25                   | .32                   | .35                   |
| rewarding-punishing |          |             |                      | .74             | .51                 | .54                   | .70            | .69                               | .65               | .74                      | .71               | .65             | .67                 | .63               | .49                    | .67                    | .67                   | .48                     | .45                   | .51                   | .77                   |                      |                      |
| favorable-unfavorable|         |             |                      | .68             | .40                 | .60                   | .86            | .88                               | .86               | .83                      | .80               | .91             | .86                 | .80               | .76                    | .78                    | .85                   | .67                     | .38                   | .47                   | .59                   |                      |                      |
| active-passive      |          |             |                      | .05             | .45                 | .70                   | .69            | .77                               | .77               | .70                      | .66               | .55             | .82                 | .80               | .58                    | .60                    | .58                   | .63                     | .54                   | .14                   | .65                   | .41                   |                      |
| comfortable-uncomfortable |   |            |                      |                 |                     |                       |                |                                   |                   |                          |                   |                 |                     |                   |                        |                       |                        |                          |                      |                      |                       |                      |
| beneficial-harmful  |          |             |                      |                 |                     |                       |                |                                   |                   |                          |                   |                 |                     |                   |                        |                       |                        |                          |                      |                      |                       |                      |
| conducive-unconductive |       |             |                      |                 |                     |                       |                |                                   |                   |                          |                   |                 |                     |                   |                        |                       |                        |                          |                      |                      |                       |                      |
| positive-negative   |          |             |                      |                 |                     |                       |                |                                   |                   |                          |                   |                 |                     |                   |                        |                       |                        |                          |                      |                      |                       |                      |
| in favor-against    |          |             |                      |                 |                     |                       |                |                                   |                   |                          |                   |                 |                     |                   |                        |                       |                        |                          |                      |                      |                       |                      |
| valuable-worthless  |          |             |                      |                 |                     |                       |                |                                   |                   |                          |                   |                 |                     |                   |                        |                       |                        |                          |                      |                      |                       |                      |
| possible-impossible |          |             |                      |                 |                     |                       |                |                                   |                   |                          |                   |                 |                     |                   |                        |                       |                        |                          |                      |                      |                       |                      |
| promoting-hindering |          |             |                      |                 |                     |                       |                |                                   |                   |                          |                   |                 |                     |                   |                        |                       |                        |                          |                      |                      |                       |                      |
| facilitating-obstructing |       |             |                      |                 |                     |                       |                |                                   |                   |                          |                   |                 |                     |                   |                        |                       |                        |                          |                      |                      |                       |                      |
| successful-unsuccessful |       |             |                      |                 |                     |                       |                |                                   |                   |                          |                   |                 |                     |                   |                        |                       |                        |                          |                      |                      |                       |                      |
| permitting-forbidding |         |             |                      |                 |                     |                       |                |                                   |                   |                          |                   |                 |                     |                   |                        |                       |                        |                          |                      |                      |                       |                      |
| supportive-unsupportive |       |             |                      |                 |                     |                       |                |                                   |                   |                          |                   |                 |                     |                   |                        |                       |                        |                          |                      |                      |                       |                      |
| encouraging-discouraging |       |             |                      |                 |                     |                       |                |                                   |                   |                          |                   |                 |                     |                   |                        |                       |                        |                          |                      |                      |                       |                      |
| leading-to-leading away from | |             |                      |                 |                     |                       |                |                                   |                   |                          |                   |                 |                     |                   |                        |                       |                        |                          |                      |                      |                       |                      |
| pleasant-unpleasant |          |             |                      |                 |                     |                       |                |                                   |                   |                          |                   |                 |                     |                   |                        |                       |                        |                          |                      |                      |                       |                      |
| important-unimportant |       |             |                      |                 |                     |                       |                |                                   |                   |                          |                   |                 |                     |                   |                        |                       |                        |                          |                      |                      |                       |                      |
| meaningful-meaningless |       |             |                      |                 |                     |                       |                |                                   |                   |                          |                   |                 |                     |                   |                        |                       |                        |                          |                      |                      |                       |                      |