POINT OF VIEW

How to measure the value of health

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Abstract

The importance of health to an individual is believed to influence that individual's behavior with respect to their health. This idea is incorporated in several of the theories used to explain health behavior. Measurement of the value or importance of health is frequently omitted, however, from research based on these theories. This omission is due partly to the difficulty of measuring the value of health. The issues, problems and possible solutions to measuring the value of health are discussed.

Introduction

The extent to which health is valued by American society is a matter of some debate. With the increased interest in smoking cessation, exercise and diet, it appears that health has become a very important aspect of American life. However, this increased interest may be confined to a particular segment of the population, mainly middle/upper class Americans between the ages of 25 and 55. Increased media attention to health may reflect the fact that the largest segment of the population is now at or entering an age where health becomes more of a concern. Nevertheless, more Americans than ever are attempting to quit smoking, modifying their diet and deliberately going out for long walks.

There are, however, those who would argue that American behavior indicates a low value of health. Adolescents, in particular, are at a high risk for health-related problems and are expected to be at even greater risk in the future (Millstein, 1989). Bruhn (1989) states, "One reason for the difficulty in getting people to change their health behaviors is that preserving health is not our society's highest value. It competes with many other values, including wealth, power, security, knowledge, and social acceptance." (p. 80). For example, the desire for career success may result in less time for exercise. A fast-paced lifestyle may necessitate more fat-filled fast food instead of healthier, but more time-consuming, meal preparation. The satisfaction of curiosity may lead to use of alcohol and illegal substances.

The argument over whether Americans do or do not value their health reflects the common assumption that individuals will engage in behavior that they believe will enhance the likelihood of achieving their valued goals. This assumption is the cornerstone of many theories of psychology used to explain behavior. For example, social learning theory (Rotter, 1954) incorporates two key constructs— expectancy beliefs and the value of the outcome—in assessing one's behavior potential. The theory posits that if an individual believes that a behavior will lead to a valued outcome in a given situation he or she will be more likely to engage in that behavior if in that situation. If a behavior is designed to improve, enhance or protect one's health, engaging in the

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behavior is more likely to occur if health is a desired outcome or a valued goal.

Behaviors can be 'health-related' without being 'health-directed'. Certain behaviors can result in improved health even though the primary goal may not have been to improve health. For example, the postal agent who walks many miles in order to perform his or her job may enjoy the health benefits of the exercise without valuing health highly. The importance or value of health to the postal agent would not necessarily predict the behavior of going for long walks in this situation. Determining which goals (health, appearance, etc.) motivate behavior is important in designing health promotion campaigns and programs for different populations.

An additional issue is that of proximal versus distal goals. The impact of a behavior on health may be evident much farther into the future than more immediate consequences. Weight management behavior may produce the benefit of an improved appearance more quickly than the benefit of less heart disease. The immediate benefits of engaging in risky behavior may have more of an influence on behavior choices than the long-term consequences on health. Even if health is the more highly valued goal, another important outcome (e.g. excitement) may have more influence on a behavior choice than the goal of health if the benefits for that goal are more likely to occur before the benefits for health.

Health could be viewed as an intermediate goal or as an end in and of itself. In other words, being healthy may facilitate our achievement of other valued goals or may be valued independently of other goals. The degree to which a person enjoys health may be determined by how well that person is able to function with respect to daily tasks. In these terms, health is valued as a means rather than a goal. One maintains one's health in order to achieve other goals rather than simply to be healthy. In all likelihood, health is probably *both* a terminal and an instrumental goal. The degree to which health is valued independently from other desired outcomes varies among individuals. Some may view health solely in terms of whether they can complete their daily tasks; others actively engage in behaviors that enhance their health for the sole purpose of being healthy. Accord-

ing to many theories of health behavior, regardless of whether health is valued for itself or for what it allows one to do, the degree to which it is valued is important.

The complexity of the actual decision-making process in choosing a particular behavior can be lost in the simplicity of social learning theory. At any one point in time, an individual is actually weighing the importance of a number of different goals and evaluating his or her expectancy beliefs for several different behaviors. Different goals and behaviors may conflict with each other or may support each other. Behavior is not so much the function of one set of expectancy beliefs and the value of one goal as it is a function of the evaluation of several sets of expectancy beliefs and the value of a number of outcomes.

Expectancy beliefs, including such concepts as self-efficacy (Bandura, 1977) and locus of control (Rotter, 1966), have received more attention in the literature than the construct of the value of the outcome (Wallston, 1991). All too frequently, the value of the outcome to the individual is not included in studies of health behavior which are based on social learning theory. For example, the Health Locus of Control scales (HLC) (B.S.Wallston et al., 1976; K.A.Wallston et al., 1978) were developed to be used in conjunction with a measure of the value of health to the individual. There is no reason to expect that HLC scores alone should predict health behavior (Wallston and Wallston, 1981). There is evidence to indicate that the HLC scales predict health behavior better (or that the relationship between HLC and health behavior is stronger) if health is highly valued. The relationship between HLC and health behavior is not as strong or is non-existent if health is less highly valued (for reviews, see Lau et al., 1986; Wallston and Wallston, 1981, 1982). If a health behavior study based on social learning theory does not include a measure of the value of health to an individual, it inadequately tests the theory.

One reason that the value of health to an individual is not measured is the widespread belief that health is so highly valued that there is no reason to assess its value as an individual difference measure. Accord-

ing to this reasoning, a measure of the value of health to an individual is not expected to have enough variability in its scores to be useful as a predictor. This is, in fact, the explicit reason why Rokeach omitted health as one of the terminal or instrumental values in his widely used Value Survey (Rokeach, 1973).

In addition to the belief that the value of health does not vary among subjects, another reason it is not included in a good portion of the research on health behavior is the difficulty of measuring it. The two most common procedures for assessing health value are (1) Likert scale ratings and (2) ranking procedures. Both types of procedures can provide useful information, but both also have limitations. Lau *et al.* (1986) summarize a number of other types of value measurement techniques including a measure of how much money an individual should spend on health-related issues (Fabrega and Roberts, 1972). Not a lot of work, however, has been done with this strategy. The purpose of this.paper is to highlight the measurement issues and limitations of the common methods and to discuss briefly some alternative measures of the value of health. It is hoped that by doing so health researchers will be in a better position to choose the best measure of health value for their purposes.

Problems and issues

There are numerous problems to be considered when measuring the value of health. First is the issue of social desirability. Valuing health is very much the socially desirable attitude to hold. People who engage in numerous risky behaviors may claim to value health very highly simply because they feel that it is the socially 'correct' response to give. It is important to have a method that circumvents the problem of social desirability response bias. The values that we hold personally can be strongly influenced by societal norms and values. Teasing out the variance which is due solely to wanting to appear socially appropriate from the variance which is due to a true acceptance of socially accepted values is also a problem.

A measure of the value of health should also be assessed according to the difficulty of completing the measure for the targeted population. Some techniques (e.g. ranking ordering 18 or more values) are more difficult than others, or may require a higher degree of verbal ability. Practical considerations of time must also be considered when choosing a health value measure.

Another problem arises when researchers (e.g. Borsky and Sagen, 1959; Battistella, 1971) attempt to measure a belief by measuring behavior instead. The assumption behind this procedure is that those individuals who engage in health protective, preventive or enhancing behavior value health more highly than those who do not. The circularity of this assumption is obvious—those who engage in the behavior 'must' value health and, since they value health, they engage in the behavior. If a measure of behavior is used to predict behavior, very little is added to the explanation of health behavior.

Finally, the definition of health implicit in measures should be carefully considered. The World Health Organization (1990) defines health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmatory" (p. 1). Measures of the value of health may or may not explicitly define health for the respondent. Those that do not define health allow the respondent to use his or her own definition of health. The advantage of not defining health for the respondent is the opportunity to investigate the phenomenological experience of the value of health. The disadvantage is in not knowing precisely what you are measuring (although there probably are some fairly consistent definitions of health across the general public). The theoretical basis of a study, however, may require a clear definition of health and the measurement tool should reflect this definition.

Ranking measures

One of the more commonly used methods to measure the value of health to an individual is to have the individual rank 'health' along with several other goals according to its importance to him or her. Wallston and colleagues (e.g. K.A.Wallston *et al.*, 1976) have modified Rokeach's Value Survey by including

health as one of 10 terminal values (i.e. desired end states of existence) to be ranked. They recommend that this measure be included along with the HLC scales in studies which attempt to predict indices of health behavior.

This ranking procedure does, indeed, produce sufficient variance in the value of health among certain populations (e.g. healthy young adults) to enable researchers to discriminate between those who value health highly and those who value other outcomes more highly than health. While it is true that health frequently is one of the most highly ranked values when it is included among a list of values (Ware and Young, 1979), it is not universally ranked as the number one value. Its ranking is dependent on the characteristics of the group doing the ranking. For example, an elderly or chronically ill sample is more likely to rank health more highly than a younger, healthier group (Ware and Young, 1979). As one's health becomes threatened, the value of health to an individual may become more salient and, consequently, more important.

Associated with ranking procedures is the issue of ipsative measurement. A ranking procedure forces individuals to make discriminations among different values. In a sense, such measures reflect 'real life' dilemmas of choosing between goals that all have positive characteristics yet may require us to engage in behaviors that are mutually exclusive or counteracting behaviors. A ranking procedure forces individuals to recognize that choices must be made; all valued goals might not be simultaneously achievable. However, the ranking of one value is dependent to some degree on the ranking of all other values, presenting some problems with the statistical analysis of the data. Also, if one just uses the rank given to health, as is commonly done, as the measure of the value of health, one is essentially left with a one item measure. One item measures are notoriously unreliable (Nunnally, 1972).

Hicks (1970) thoroughly reviews the issues associated with ipsative measurements. He makes a particularly good point when he states, "a single scale, or a combination of scales, from an ipsative score matrix can neither indicate nor contraindicate an absolutely low or high level of any variable or construct measured by the test" (p. 172). In other words, it is not safe to assume that just because someone ranks health lower than other people do, he or she places a lower value on health. The ranked value of health is always in relation to other values. A person who ranks health lower than 'a world at peace' or 'happiness' does not necessarily value health less in an absolute sense than someone who ranks health first. He or she may simply value 'a world at peace' or 'happiness' more.

Another issue with ranking procedures is the choice of items to be ranked with health. The particular values that are placed 'in competition' with health in a ranking measure ought to compete with health in terms of the behavior needed to achieve the values. More highly ranked values (e.g. a world of beauty) may not compete with the value of health for a person's resources. It is possible that one could work toward both goals at the same time, such as by gardening. Some highly ranked values other than health (e.g. inner harmony) may even enhance health-promoting behavior.

Being able to examine the relationship between other values (besides health) and health behavior is one advantage found in measures such as the Wallston et al. adaptation of Rokeach's Value Survey. Kristiansen's (1986) work is a good example of a creative approach to the study of health value and health behavior. Instead of looking at the value of health as a separate entity, she places health in relation to a competing value—that of an exciting life. She has found that relative health value is a better predictor of health behavior than health value alone, at least among a young, healthy population (Kristiansen, 1986).

Kristiansen (1985) has examined the relationship between a variety of health behaviors and values other than health. In a survey of a random selection of individuals in Exeter, England, respondents (N = 113) completed Rokeach's Value Scale with the additional item of health included as well as measures of their preventive health behavior. Kristiansen found that preventive health behavior was positively correlated with 'a world at peace' and 'health', and negatively correlated with 'an exciting life', 'happiness', 'mature love' and 'pleasure'. The

significance of these results is that they support the notion that there may be other reasons or motivations for engaging in health behavior than simply the value of health to the individual.

A different compromise between a rating and a ranking method has been developed by the authors, although the research with the measure is limited at this point. The measure takes the nine other values from the Wallston *et al.* Value Survey and asks the respondent to indicate how much he or she agrees or disagrees with the statement "_____ is more important to me than health" or "Health is more important to me than _____". In each item, a different one of the other nine values is counterpoised to 'health'. The internal consistency of the scale is high (Cronbach's alpha = 0.83), and it correlates 0.33 with a measure of commitment to a healthy lifestyle (from an unpublished Health Hardiness measure developed by Wallston and Abraham) among a sample of 100 university employees. However, much more research is needed on the reliability and validity of this measure before we advocate its wide adoption.

Rating measures

Rating tasks do not suffer from ipsative issues as do ranking tasks. The respondent is allowed to use the full range of whatever scale is provided for any single item. The response given for one item does not automatically have an influence on the possible responses of another item. A disadvantage of such a measure, however, is the possibility of a 'ceiling effect' leading to very low variance. The items for self-rating scales must be chosen carefully to overcome this almost inevitable eventuality.

Lau *et al.* (1986) developed a four-item Likert scale to measure the value of health. The four items state beliefs or attitudes that relate to the importance of health. Correlations between this rating task and a variation of Rokeach's ranking scale were fairly high ($r = 0.62$) among a sample of 326 university undergraduates. The psychometric properties of the Lau *et al.* (1986) scale are encouraging, although the ability of this measure to moderate the relationship between expectancy beliefs and specific health

behaviors is not always straightforward. The explanation for these inconsistencies is that other values apart from health (e.g. attractiveness) may be responsible for motivating certain health behaviors. The authors themselves mention "the importance of considering a variety of values in addition to health as possible motivators of preventive health behavior" (Lau *et al.*, 1986, p. 25). This four-item scale is too limited in scope. It cannot be used to test the relationship between health behavior and values other than health because it only measures health value.

Although 'health value' was not included, Rankin and Grube (1980) compared a value ranking procedure (Rokeach's Value Survey) to a value rating task using the same values. They found the results of these two measurement strategies to be essentially the same. If this is also the case for health value measurements, the question being asked should determine the measurement strategy. For example, if the question deals with how the value of health in relation to other values predicts health behavior, a ranking procedure would be the preferred strategy. However, if the question concerns only the importance of health, a rating procedure might be simpler—both for the respondents and for the data analyst. Also, a wider range of individuals can successfully complete the rating task, and the investigator would not have to confront the problems of ipsative measurements. The ranking procedure, however, is less likely to suffer from a social desirability response bias (provided that the values ranked along with health are equally socially desirable).

Other techniques

Eiser and Gentle (1988) developed a measurement strategy that involves the assessment of the value of a set of goals as well as the value of a set of activities. 'Staying healthy' is one of the assessed goals. A sample of 403 randomly selected persons residing in Exeter, England, responded to a postal survey by indicating on a scale of 1–7 how much each of the goals and activities 'matters' to them. Respondents also rated each activity on how much it would help achieve each of the goals, reflecting how the respon-

dent perceived the relationship between a behavior and a goal. At first glance, this measurement strategy does not appear too different from any other rating task. The contribution that Eiser and Gentle make is in the combination of these measures to produce a single value-expectancy score for each of the activities. By multiplying the values scores for each of the goals by the rating of how much each activity is perceived to facilitate the achievement of each goal, and then summing these multiplicative scores for each activity, one has what Eiser and Gentle call a weighted instrumentality score for each of the health behavior activities. The value of five goals are included in this score rather than simply the value of health.

In a series of multiple regressions, Eiser and Gentle (1988) found that the value of 'staying healthy' did not make any significant independent contribution to explaining intentions to engage in any of the five behaviors. Other values, however, did make an independent contribution: 'an exciting life' and the value of 'having good friends'. As social learning theory would predict, the combined weighted instrumentality score for each of the activities was a significant predictor more frequently than the value of any single goal. The value of the behavior itself for four of the five behaviors contributed the most to explaining the variance in intentions to engage in the behavior. The value of the behavior was significantly correlated with the weighted instrumentality score for that behavior. Thus, behaviors that are perceived to aid in the attainment of valued goals are more important to the individual, as one would expect. The important aspect of this study is the examination of the value of several goals in relation to different health behaviors rather than the single goal of health.

One potentially useful technique that, to our knowledge, has not been used is the semantic-differential (Osgood et al., 1957). A commonly used method to assess the 'meaning' of concepts, the evaluative dimension of the semantic-differential would appear to be an excellent way of assessing the value of health. Health could be rated on a set of bipolar adjectives (e.g. 'good−bad', 'stupid−smart', 'valuable−worthless', etc.) and the ratings would be summed over these evaluative scales to produce an interval level measure of health value. An expansion of this technique would be to assess other values besides health on the same set of bipolar scales, thus enabling the researcher to have the best of both worlds. This latter strategy, however, would be time-consuming and inefficient for many applications in the field. Also, it is sometimes difficult for persons with less education or verbal skills to complete a semantic-differential instrument successfully.

Conclusions

We have attempted to describe some of the common approaches to measuring the value of health, pointing out where they are useful and where they fall short. We have also suggested alternative strategies, many of which have received little or no attention, which need to be carefully investigated as potential methods for assessing this important construct. In discussing these measurement issues and strategies, we hope we have provided some assistance to the reader in determining which measurement strategy or strategies will best suit his or her purposes. We also have identified some gaps in the research in this area that need to be addressed. Ultimately, the extent to which we value our health is a prime determinant of whether or not we will survive and the quality of our survival.

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References

Bandura,A. (1977) Social Learning Theory. Prentice-Hall, Englewood Cliffs, NJ.

Battistella,R.A. (1971) Factors associated with delay in the initiation of physicians' care among late adulthood persons. American Journal of Public Health, 61, 1348−1361.

Borsky,P.N. and Sagen,O.K. (1959). Motivations toward health examinations. American Journal of Public Health, 49, 514−527.

Bruhn,J.G. (1988) Life-style and health behavior. In Gochman,D.S. (ed.), Health Behavior: Emerging Research Perspectives. Plenum, New York.

Eiser,J.R. and Gentle,P. (1988) Health behavior as goal-directed actions. *Journal of Behavioral Medicine*, **11**, 523–535.

Fabrega,H. Jr and Roberts,R.E. (1972) Social psychological correlates of physician use by economically disadvantaged Negro urban students. *Medical Care*, **10**, 215–223.

Hicks,L.E. (1970) Some properties of ipsative, normative, and forced-choice normative measures. *Psychological Bulletin*, **74**, 167–184.

Kristiansen,C.M. (1985) Value correlates of preventive health behavior. *Journal of Personality and Social Psychology*, **49**, 748–758.

Kristiansen,C.M. (1986) A two-value model of preventive health behavior. *Basic and Applied Social Psychology*, **7**, 173–183.

Lau,R.R., Hartman,K.A. and Ware,J.E. (1986) Health as a value: methodological and theoretical considerations. *Health Psychology*, **5**, 25–43.

Millstein,S.G. (1989) Adolescent health: challenges for behavioral scientists. *American Psychologist*. **44**, 837–842.

Nunnally,J.C. (1972) *Educational Measurement and Evaluation*. McGraw-Hill, New York.

Osgood,C.E., Suci, G.J. and Tannenbaum,P. (1957) *The Measurement of Meaning*. University of Illinois, Urbana.

Rankin,W.L. and Grube, J.W. (1980) A comparison of ranking and rating procedures for value system measurement. *European Journal of Social Psychology*, **10**, 233–246.

Rokeach,M. (1973) *The Nature of Human Values*. Free Press, New York.

Rotter,J.B. (1954) *Social Learning and Clinical Psychology*. Prentice-Hall, Englewood Cliffs, NJ.

Rotter,J.B. (1966) Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs*.

80, (1, Whole No. 609).

Wallston,B.S., Wallston,K.A., Kaplan,G.D. and Maides,S.A. (1976) Development and validation of the health locus of control (HLC) scale. *Journal of Consulting and Clinical Psychology*, **44**, 580–585.

Wallston,K.A. (1991) The importance of placing measures of health locus of control beliefs in theoretical context. *Health Education Research, Theory and Practice*, **6**, 251–252.

Wallston,K.A. and Wallston,B.S. (1981) Health locus of control scales. In Lefcourt,H.M. (ed.), *Research with the Locus of Control Construct*. Academic Press, New York, Vol. 1.

Wallston,K.A. and Wallston,B.S. (1982) Who is responsible for your health? The construct of health locus of control. In Sanders,G.S. and Suls,J. (eds), *Social Psychology of Health and Illness*. Erlbaum, Hillsdale, NJ.

Wallston,K.A., Wallston,B.S. and DeVellis,R. (1978) Development of the multidimensional health locus of control (MHLC) scales. *Health Education Monographs*. **6**, 160–170.

Wallston,K.A., Maides,S. and Wallston,B.S. (1976) Health-related information seeking as a function of health-related locus of control and health value. *Journal of Research in Personality*. **10**, 215–222.

Ware,J.E. and Young,J (1979) Issues in the conceptualization and measurement of value placed on health. In Mushkin,S.J. and Dunlop,D.W., (eds), *Health: What is it Worth?* Pergamon, New York.

World Health Organization (1990) Constitution of the World Health Organization. *United National World Health Organization: Basic Documents*, **38**, 1–18.