DOCUMENT RESUME

ED 235 411 CG 016 944

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TITLE The Prediction of Interest in Health Promotion.
PUB DATE Mar 83
NOTE 25p.; Paper presented at the Annual Meeting of the Southeastern Psychological Association (29th, Atlanta, GA, March 23-26, 1983).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS College Students; *Health Education; *Health Programs; Higher Education; Locus of Control; Motivation Techniques; *Participant Characteristics; Personality Traits; *Predictor Variables; Sex Differences; Socialization; Student Attitudes; *Student Interests; Values

ABSTRACT

Health care providers have become increasingly interested in involving individuals in health promotion activities and programs. To investigate those variables which might predict an individual's interest in becoming involved in health promotion, 84 male and 125 female undergraduates were administered paper and pencil measures to assess their health knowledge, health attitudes, health values, health anxiety, health state, health locus of control orientation, and present involvement in health practices. Subjects indicated their degree of interest in becoming involved in health promotion and the amount of time and effort they would invest in such an endeavor. Correlational and multiple regression analyses revealed that none of the variables, either alone or in combination, were good predictors of intentions to become involved in health promotion. Present involvement was the best predictor, although it only accounted for about 10 percent of the variance. Females were significantly more interested in becoming involved and spending more time and effort than males, but the mean differences were small. The finding that personality characteristics do not meaningfully predict interest in health promotion is congruent with previous research. However, the sex differences were unexpected. This latter finding suggests that health materials, health programs, and health promotion may need to be differentially tailored for the sexes in college age populations. (Author)

The Prediction of Interest in Health Promotion

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Presented at the annual meeting of the Southeastern Psychological Association, Atlanta, Georgia, March, 1983

Abstract

Health care providers have become increasingly interested in involving individuals in health promotion activities and programs. The present study was designed to investigate those variables which might predict an individual's interest in becoming involved in health promotion. Eighty-four male and 125 female undergraduates were administered paper and pencil measures to assess their health knowledge, health attitudes, health values, health anxiety, health state, health locus of control orientation, and present involvement in health practices. Subjects indicated their degree of interest in becoming involved in health promotion and the amount of time and effort they would invest in such an endeavor. Correlational and multiple regression analyses revealed that none of the variables, either alone or in combination, were good predictors of intentions to become involved in health promotion. Present involvement was the best predictor, although it only accounted for about 10% of the variance. Females were significantly more interested in becoming involved and spending more time and effort than males, but the mean differences were small. The finding that personality characteristics do not meaningfully predict interest in health promotion is congruent with previous research. However, the sex differences were unexpected. This latter finding suggests that health materials, health programs, and health promotion may need to be differentially tailored for the sexes in college age populations.

Health care providers have become increasingly interested in how to involve people in health promotion activities and programs. A common operating assumption associated with such programs is that individual's will change their unhealthy activities when they participate in health education or specialized health enhancement programs. Originally, it was thought that individuals would change their behaviors after being informed that their practices were detrimental to their health. Knowledge about health risks was hypothesized to be enough to motivate people to change. However, it became apparent that knowledge per se will not change an individual's behavior (Haggerty, 1977; Henderson, Hall, & Lipton, 1979).

People do not always behave in alignment with their knowledge or expressed attitudes. This phenomenon is well illustrated by a nation wide survey commissioned by the Pacific Mutual Life Insurance Company (1978). In this survey participants rated their health attitudes and their actual health habits. It was found that individual's attitudes and practices are highly incongruent. For example, 46% of the survey participants indicated that they feel overweight yet only 20% of these individuals were dieting at the time of the survey. Furthermore, 53% of the subjects who felt overweight had never dieted.

Social learning theory is one of the approaches that attempts to explain why some individuals continue to indulge in harmful practices despite the knowledge that these habits

may be detrimental to their health. According to this theory, individuals will become involved in those activities which they believe hold the highest reinforcement probability and value. This hypothesis may explain why individuals do not maintain healthy habits when a person believes it would be healthy to do so. Knowles (1972) has pointed out that engaging in health promoting activities means forsaking many of the activities which people enjoy, such as: "over eating, too much drinking, taking pills, staying up at night, engaging in promiscous sex, driving too fast, and smoking cigarettes . . . (p. 59)"; engaging in health promotion, "means doing things which require special effort-exercising regularly, going to the dentist, practicing contraception . . . (p. 59)." Social learning theory predicts that individuals who value their health will be more likely to take responsibility and give up their unhealthy (yet pleasurable) activities than individuals who value or prefer their unhealthy habits over health.

An individual's locus of control orientation is also influential in predicting involvement in health promoting activities (Rotter, 1966, 1975; Wallston & Wallston, 1978). Locus of control, as defined by the Wallstons, refers to the belief that outcomes are dependent on either chance or fate, powerful others, or one's own actions. Locus of control beliefs are hypothesized to be relevant personality variables in the decision to become involved in a health program since one

would not expect individuals who believe that health is a matter of good luck, God's wishes, fate, or powerful others (e.g. medical doctors) to be good candidates for a program which stresses that responsibility must be taken to enhance health. But, one may expect individuals who value their health and believe their actions influence their health state, to take responsibility and become involved in health programs.

Many investigations have been carried out to study the relationship between health locus of control, health values, and health related behaviors. This literature has been extensively reviewed by Strickland (1978) and more recently by Wallston and Wallston (1982). In her review, Strickland (1978) concluded that even though the research she reviewed suffered from many methodological weaknesses the results illustrated that locus of control scores often were predictive of later health behaviors. Most of the studies reviewed by Strickland (1978) utilized the Rotter I-E scale (Rotter, 1966) which is a general measure of locus of control not specific to health. The Wallstons (1982) reviewed research projects which were conducted after Strickland's (1978) review. These projects utilized locus of control scales specific to health which purport to be better predictors of health related behaviors than the previously used I-E scale (Rotter, 1966). The purpose of the Wallstons' review was to investigate how Strickland's (1978) conclusions held up to studies which utilized more suitable scales for the prediction

of health related behavior.

The Wallstons' summary of the literature, in view of Strickland's earlier conclusions, was disappointing in that health locus of control beliefs were only correlated weakly to preventive health behaviors. However, most of the research reviewed by the Wallstons exhibit some of the same weaknesses observed by Strickland (1978).

The present study was designed to study whether intentions to become involved in health promotion programs are associated with a constellation of social learning and other variables. viz. an individual's knowledge and attitudes about health, stated preferences and values for activities which may lead to health, locus of control orientations, and other factors, e.g., health fear, and present health state, current involvement in health activities, etc.

Methods

Subjects

Two hundred and nine subjects were recruited from introductory psychology courses at Ohio University. The subject group consisted of 84 males and 125 females with 176 caucasians and 33 noncaucasians. Thirty-one subjects, randomly selected from the original subject pool, were readministered the scales three weeks after the first administration. This second group consisted of 10 males and 21 females, 25 of whom were caucasians and 6 noncaucasians.

Procedure

Subjects were asked to complete a series of paper and pencil tests. The tests were presented in the form of a booklet. Two booklet forms were distributed. Only the order in which the scales were presented to the subjects was altered. The subjects completed the booklets in thirty to ninety minutes. The scales included in the booklets were Form A of the Multidimensional Health Locus of Control scale (Wallston & Wallston, 1978); a value survey (Wallston, Wallston, Kaplan, & Maides, 1976); the Health Activities Value scale-developed for the present study; a Multidimensional Instrument to Identify Health Education Needs for College Students (Lussier, 1970)-modified for the present study; a series of questionnaires and questions developed for the present study which measured anxiety or fears about future illness or disabilities, present health state, intentions to become involved in a health promotion program, time and effort to be expended in a health program, present involvement in health activities; and a shortened ten-item Marlowe-Crowne social desirability scale (Strahan & Gerbasi, 1972). The booklet also included a form in a stamped and self-addressed envelope to be taken home by the subjects. The form consisted of specific requests for further information concerning health and health practices. The mailed responses were treated as a measure of effort.

Results

To facilitate data analysis, the scores representing intentions to become involved in health promotion were combined with the scores representing the time and effort that individuals stated they intended to expend in such a program. This aggregate measure thus formed a global score of program interest. Pearson product-moment correlation coefficients revealed that there was a positive and significant correlation between program interest and internal locus of control orientation ($r = .1344$, $p < .026$), the Wallstons' health value survey ($r = .2045$, $p < .002$), the Health Activity Value scale ($r = .1580$, $p < .011$), and Lussier's (1970) modified health attitudes scale ($r = .1501$, $p < .015$). The correlation between Lussier's (1970) modified health knowledge scale and program interest was not significant at the .05 level ($r = .1022$, $p < .07$). Thus, four out of the five predicted variables were found to be correlated with program interest. However, the size of the correlations were low and suggest that a weak relationship between these variables and the global score of program interest exists.

Anxiety about future illness was only weakly correlated to program interest ($r = .1558$, $p < .002$) as was present health state ($r = .0895$, $p < .098$). There was, however, a larger positive and significant correlation between program interest scores and present participation in a health program ($r = .3353$, $p < .000$). Individuals engaged in a health promotion program were

characterized by an internal health locus of control and high health values, although the correlations were small. Significant correlations were found between participation in a health program and internal health locus of control orientation ($r = .2196$, $p < .001$) and the Wallstons' health value survey ($r = .2038$, $p < .002$).

Variables concerning health knowledge, health attitudes, locus of control orientations, health values, anxiety of future illness, health state, and present involvement in a health program were entered into a stepwise multiple regression analysis in order to explore which variables or variable combinations were the best predictors of program interest. The parameters of the stepwise regression were set such that all the predictor variables would enter the regression equation.

The best predictor and, consequently, the first variable to be entered into the equation was present involvement in health promotion. Present involvement in health promotion yielded a significant multiple regression (multiple $r = .3265$, $df = 1$, $f = 22.93$, sum of squares = 234.62, residual sum of squares = 2005.22). Present involvement in health promotion accounted for 10.47% of the variance. The standard error for this predictor was 3.19. However, the range of possible points for the program interest score was 12, thus a standard error of $\pm$ 3.19 points may be considered a high error of prediction. It implies that present involvement in health promotion is a

rather inaccurate predictor of program interest.

The remaining variables were far less adequate as predictors of program interest than the single variable representing present involvement in health promotion. Together, the remaining variables accounted for 8.77% of the variance whereas present involvement in health promotion accounted for 10.47%. Even though the remaining variables did not contribute greatly to the prediction of program interest, the inclusion of these variables into the regression equation yielded a significant multiple correlation ($r = .4386$, $\underline{df} = 9$, $f = 4.978$, sum of squares = 431.06, residual sum of squares = 1801.78) and raised the variance accounted for to 19.24%. The remaining variables were entered into the regression equation in the following order: anxiety of future illness, Wallstons' health value survey, health knowledge, internal health locus of control, chance health locus of control, health state, health activity value score, health behaviors. The only variable not entered into the equation because the F level was insufficient was the powerful others locus of control orientation. The fact that the amount of variance accounted by all the predictor variables is low even though the multiple regression is statistically significant implies that the variables being discussed are not strong predictors of program interest.

Two additional stepwise multiple regression analyses were conducted to study the interaction between health locus of

control orientations and health values. The health locus of control scale scores (internal, chance, powerful others) were multiplied with either the Wallstons' health value score or the health activity value score. The two additional multiple regression analyses yielded results almost identical to the analysis described above. The first and best predictor of program interest was present involvement in health promotion which again accounted for 10.47% of the variance. Although the three analyses yielded very similar results, the order in which the variables entered the equation differed somewhat.

This study also was concerned with the amount of time and effort that individuals may be willing to expend in a health program. It was believed that health values would be correlated to the time and effort that individuals stated they would intend to invest in a health promotion program. Positive and significant correlations were found between the Wallstons' health value survey and the time that individuals stated they would invest ($r = .2152$, $p < .002$) and the amount of effort that subjects reported they would expend in health promotion ($r = .1628$, $p < .017$). Similar correlations were found between the health activities scores and the time and effort that subjects reported they would expend in health promotion ($r = .1882$, $p < .006$; $r = .1359$, $p < .038$, repsectively). Although the relationship between health values and the time and effort that subjects expect to invest in health programs are statistically significant

the size of these correlations are again low. As noted previously, health values may not by themselves be good predictors ofeffort in health promotion.

A positive and significant correlation was expected between health values and the amount of effort which subjects exhibited by mailing back a take home sheet. The sheet consisted of requests for further information concerning health issues. Whether a take home sheet was returned by a subject was found to be positively and significantly correlated with that subject's Wallstons' health value score ($r = .1416$, $p < .021$) and health activities value score ($r = .1737$, $p < .006$). These correlations suggest that there is a statistically significant relationship between health values and effort in seeking health information as demonstrated by the return of take home sheets.

The return of the take home sheet by an individual also was significantly and positively correlated with that subject's program interest score ($r = .1579$, $p < .011$). A t-test was calculated to study the possible effect that an individual's interest in health promotion programs had on his or her decision to return the take home sheet. A significant t-test was found between subjects who stated an interest in becoming involved in a health promotion program and subjects who did not express an interest in health promotion programs ($t = 2.18$, $df = 205$, p .05; mean number of take home sheets returned by subjects interested in health promotion = 1.40, mean number of take-home

sheets returned by subjects not interested in a program = 1.24). This finding lends support to the hypothesis that individuals who express an interest in health promotion programs also will exhibit more effort related to health seeking.

Gender and race effects. T-tests were calculated to study the possible effects that sex and race may have had on an individual's response set. No differences were found for caucasians and noncaucasians. Statistical differences were found between males and females when scores representing health knowledge, health state, interest in becoming involved in a health program, and willingness to expend time and effort in health promotion were compared. Females scored significantly higher than males in each of these variables (see Table 1). Although the differences were statistically significant, the differences in means were not large.

Insert Table 1 about here

Retest reliability analysis. Pearson product-moment correlations were computed to compare the scores obtained by subjects during the original administration of the scales with the scores obtained on a sub-sample of these subjects during a re-test administration three weeks later. The correlations are summarized in Table 2. The correlations ranged from .4902 which may be considered unacceptable to .8573 for health behaviors which may

be considered adequate.

Insert Table 2 about here

Social desirability. Generally, the scales representing health knowledge, health attitudes, health values, health locus of control orientations, anxiety of future illness, present health state, present involvement in health promotion programs, and health behaviors were not found to be highly correlated to the social desirability scale (see Table 3). Although four of the scales were correlated to the social desirability score, the correlations were low which suggests that social desirability did not greatly influence how subjects responded to the scales.

Insert Table 3 about here

Discussion

One of the primary objectives of this study was to investigate whether health knowledge, health attitudes, locus of control orientations, and health values were able to predict an individual's willingness to become involved in a health promotion program. It was believed that those variables which would identify subjects interested in health promotion also would predict how much time and effort these individuals would

be willing to expend in such a program.

The results of this study only lend marginal support to these notions. Statistically significant relationships were found between intentions to become involved in health promotion and the Wallston, Maides, and Wallston's (1976) health value survey, the health activity value scale, and the health attitude's scale. Positive and statistically significant correlations also were found between the time and effort that subjects stated they would invest in a health promotion program and their scores on both the Wallstons' health value survey and the health activities value scale. However, all the correlations obtained were low, ranging from .13 to .22. These low correlations are comparable in magnitude to the correlations cited by Wallston and Wallston (in press) with reference to the relationship between health locus of control orientations and preventive health behaviors. The mean scores of the multidimensional health locus of control for the subjects of this study also were very similar to the mean scores attained by a similar student population (Wallston & Wallston, in press). Given these similar results, one may conclude that the findings of the present study are representative of the results generally found in this area. Although the correlations are statistically significant, they may be too low to be useful in predicting those individuals who may become involved in a health promotion program.

From social learning theory, it was hypothesized that the interaction between the multidimensional health locus of control scales and the two health value scales (Wallstons' health value survey and health activities scale) would predict program interest even if these two variables did not predict program interest independently. To analyze the predicted value of these interactions, the multidimensional health locus of control scores were multiplied by the scores of the Wallstons' health value survey and the scores of the health activities value scale. Each interaction was introduced into a stepwise multiple regression analysis. The results for the regression analyses were similar to the results for the variables studied independently. The multiple regression analyses were statistically significant, although the amount of variance accounted for by the interactions was small. This means that even though the interactions yield statistically significant results, they do not contribute much to the prediction of program interest. These findings, in conjunction with the results discussed above, suggest that health locus of control beliefs and health values are not good predictors of program interest regardless of whether they are studied independently or in interaction. Health values also do not seem to be instrumental in predicting the amount of time and effort that individuals will be willing to invest in a health promotion program.

Although the results of this study and studies like it are

discouraging, it is worth noting that some of the scales that are being used may not be psychometrically adequate. For example, after three weeks the test-retest correlation for the internal locus of control scale of the Wallstons' Multidimensional Health Locus of Control instrument was only .49. This low correlation suggests that the scale may not be very stable. The test-retest correlations for the chance orientation and powerful others orientation were .58 and .53 respectively. The test-retest coefficient for the Wallstons' value survey was .65. These correlations suggest that some of the problems in this area of research may be due to the poor reliability of the scales used.

The best predictor of interest in health promotion programs proved to be whether an individual already was involved in some form of health promotion behavior. This finding is congruent with Mischel's (1968, 1977) contention that in general, an individual's future behaviors may be predicted from his or her past behaviors in the same or similar situations. The results described above suggest that an individual's interest in health programs may be predicted more accurately from his or her past behaviors than from self reported attitudes and beliefs. Mischel (1977, 1979) has postulated that individuals may respond differently in different situations. Thus, it may be important for health care providers to investigate how individual's behaviors vary with different situations. By understanding

this relationship, it may become possible to predict the situations in which individuals will decide to become involved in health promotion.

Conclusions

Involvement in health promotion is a complex process and likely involves a number of factors. The present study found that males and females differ in their interest for health promotion activities. Females were more knowledgeable and more willing to become involved in health programs than males. These differences suggest that health program promoters and designers may need to vary their program characteristics depending on whether they are targeting males or females.

Although the present study does not suggest how health programs should be tailored and how individual's decisions to become involved in health programs may be predicted, it does suggest that predictions based on personality characteristics such as health locus of control and health values should be abandoned. Predictions based on past and present behavior may be more accurate and useful. Only when more complex models using behavior x situation x special subject characteristics emerge will it be possible to predict interest and degree of participation in health promotion activities with any practical degree of specificity.

Table 1

T-tests: Sex Differences

Scale or Variable	Female Mean	Male Mean	df	t-test
Health knowledge	10.48	9.70	207	1.95*
Health state	4.32	3.89	207	2.58**
Intentions to become involved in health program	1.84	1.58	204	4.30**
Time to be expended in program	3.31	2.77	168	3.09**
Effort to be expended in program	3.51	3.09	175	2.28*
Global program interest score	7.84	5.96	207	4.02**

* $p < .05$

** $p < .01$

Table 2

Retest Reliabilities for All Scales

Scale/Variable	Retest Correlation
Wallston health value	0.6520**
Internal locus of control	0.4902*
Chance locus of control	0.5798**
Powerful others locus of control	0.5272**
Health attitudes	0.7936**
Health knowledge	0.6668**
Health behaviors	0.8573**
Health activity value score	0.8331**
Global health anxiety score	0.7737**
Global health state	0.5794**
Social desirability	0.7749**
Intentions to become involved in health program	0.7863**
Time willing to expend in health program	0.5023*
Effort willing to expend in health program	0.6577**
Present involvement in health program	0.5575**
Global program interest	0.7719**

* $p < .01$

** $p < .001$

Table 3

Correlations between Social Desirability and Other Scales

Social Desirability Correlated With:	Correlation
Health knowledge	-0.1758*
Health attitudes	-0.0518
Internal locus of control	0.0472
Chance locus of control	0.0391
Powerful others locus of control	0.0633
Wallstons' health value score	0.1172**
Health activity value	0.1599*
Global anxiety score	-0.1940*
Global health state	-0.0749
Intentions to become involved in health program	0.0725
Time willing to expend in health program	-0.0217
Effort willing to expend in health program	-0.0740
Present involvement in health program	-0.0277
Global program interest	0.0464

* $p < .01$

** $p < .05$

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