Health salience: reclaiming a concept from the lost and found

S. J. Blalock and R. F. DeVellis

Abstract

This paper describes development of a new measure to assess one dimension of health motivation, the salience of health concerns. The new, five-item, measure was administered to 578 women as part of a larger investigation examining the determinants of exercise and calcium consumption. The study used a cross-sectional survey research design. Data were analyzed separately for premenopausal and menopausal women, allowing us to cross-validate our findings in two independent samples. Our findings suggest that the new measure has many desirable psychometric properties. It is internally consistent (Cronbach’s α = 0.85 and 0.86 for premenopausal and menopausal women, respectively). For both samples, factor analysis revealed that over 60% of the total item variance was explained by a single underlying factor. All factor loadings exceeded 0.74. The measure also correlated in predictable ways with measures of other health beliefs, differentiated among women in different stages of change with respect to exercise and calcium consumption, and discriminated between women on the basis of their information-seeking behavior. We discuss the potential applications of this new measure in future research. Hopefully, the measure will facilitate research on the role that health salience plays in the behavior change process.

Introduction

Many theories used to study health behavior assume that the desire to avoid negative health outcomes or experience positive health states motivates individuals to engage in health promoting behaviors (e.g. Rosenstock, 1974; Maddux and Rogers, 1983; Weinstein, 1988). The extent to which individuals may differ in terms of the centrality of health concerns to behavioral choices is rarely examined. Yet, casual observation of individual behavior suggests that such differences do exist. For some individuals, health concerns appear very salient. These individuals are attentive to health communications, consider the possible health effects of different actions and select accordingly from among alternative courses of action. For other individuals, health issues appear less salient. Many people simply take good health for granted and health concerns appear to play a limited role in their behavioral choices.

Developers of the Health Belief Model (Rosenstock, 1974) recognized that individuals may differ in terms of the salience of health and illness concerns. Their attempts to incorporate this concept into the model were aborted, however, when they were unable to devise an adequate operational measure. Becker (1974) reintroduced this concept to the model and labeled it health motivation. Conceptually, *health motivation* was defined as the need or desire to achieve health-related goals. In two separate papers, Becker and his colleagues (Becker, 1974; Becker *et al.*, 1974)
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identified a total of seven different dimensions of health motivation: concern about (salience of) health matters in general, willingness to seek and accept medical direction, intention to comply, positive health activities, physical threat, control over health matters, and attitude toward medical authority. Only the first dimension was identified in both papers.

Champion (1985) developed the first standardized measure of health motivation. She defined this concept as: 'A state of concern (salience) about general health matters which results in positive health activities and willingness to seek and comply with orders which are believed to decrease disease' (Champion, 1985, p. 374). This definition includes several of the dimensions identified by Becker. It blurs the distinctions among those dimensions, however. It also seems to assume that concern about health matters always results in positive health activities. Accordingly, the Champion measure emphasized behavioral items thought to reflect health motivation (e.g. I search for new information related to my health).

This measure has been used in several studies examining behaviors related to breast cancer screening. These studies have found greater health motivation to be associated with more frequent practice of breast self examination (BSE) (Champion, 1985, 1988, 1990; Gray, 1990), greater proficiency in BSE techniques (Champion, 1988) and greater compliance with mammography guidelines (Champion, 1992, 1994).

Kim et al. (1991) adapted Champion's measure to use within the context of osteoporosis prevention. Like Champion, Kim equated health motivation with the practice of health enhancing behaviors. She went further in stating that unlike other constructs in the Health Belief Model 'which relate to beliefs about behavior, health motivation is concerned directly with behaviors'. Most of the items included in the health motivation scale she used assessed behavior directly (e.g. You exercise regularly—at least three times a week).

The various conceptual definitions of health motivation and the measures that have been developed to assess this concept reflect a degree of conceptual drift from the original definition of a need or desire to achieve health-related goals. The purely attitudinal dimension of health motivation identified by Becker [i.e. concern about (salience of) health matters in general] has been confounded with the performance of health enhancing behaviors. This is particularly problematic when one is interested in examining the effect of health motivation on behavior. If the measure used to assess health motivation includes items assessing the same behavior as that of primary interest to the study, it is not surprising that the health motivation and behavioral measures would be associated.

This problem could be avoided if investigators deleted from the health motivation scale items that are closely linked to the behavior(s) they intend to study. Because the measures of health motivation used in different studies would vary, however, this approach would make it difficult to compare findings across studies. An alternative approach is to use a measure that focuses on the attitudinal dimension of health motivation. Thus, we developed a measure to assess a single dimension of health motivation—concern about (salience of) health matters. This paper reports the results of secondary analyses using the measure in a study examining the determinants of exercise and calcium consumption. Data analyses focus on the psychometric properties of this new measure which we label Health Salience.

Method

Data were collected as part of a study examining the determinants of exercise and calcium consumption among premenopausal women. Although menopausal women were not a focus of the original investigation, data were obtained from these women as well. Prior to data analysis, we formed two independent samples; one sample limited to premenopausal women, the other including postmenopausal women and women currently going through menopause. All data analyses were conducted for the two groups separately. This analytic
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strategy allowed us to cross-validate our findings on two independent samples.

Subjects

Women were identified from a sample of licensed female drivers, age 35–45, residing in four North Carolina counties. Of 1664 women drawn for the sample, 620 completed data collection procedures. Of these, we excluded 42 women who (1) had osteoporosis, (2) were pregnant or breastfeeding or (3) whose menopausal status could not be determined due to missing data. This left 578 eligible participants. The mean age of participants was 40.1 years. Participants were predominantly white (69.6%), married (71.4%) and well-educated (M = 14.8 years of education). The majority (78.2%) were premenopausal.

Procedure

All data were collected via mailed questionnaire. Each questionnaire packet contained a personalized cover letter, a copy of the questionnaire and a stamped, self-addressed return envelope. Two mailed follow-ups were conducted with non-respondents, 3 and 7 weeks following the initial mailing. Both follow-ups included a replacement questionnaire. Upon return of the questionnaire, participants were mailed a personalized thank-you letter along with an order form describing six different types of written materials about osteoporosis and osteoporosis prevention. These materials were offered at no charge. (A more detailed description of study procedures is provided in Blalock et al., 1996.)

Measures

Health salience

In a small pilot study (N = 48), we administered the six-item Health Motivation scale of the Osteoporosis Health Belief Scale (K. Kim, pers. commun.) and six additional items that we developed (i.e. Keeping healthy is very important to me, I try to take care of my health, I care more about my health than most people care about their health and I don’t cut corners when my health is concerned). We dropped one of the items from the Osteoporosis Health Belief Scale (i.e. I follow recommendations to stay healthy) because it was primarily behavioral in nature. Cronbach’s α for the remaining five-item scale was 0.83. These items form the health salience measure used in the present investigation.

Responses were recorded on a five-point scale with endpoints of 1 = strongly disagree and 5 = strongly agree. We created a composite scale score by computing the unweighted average of responses to the five individual items. In the current study, α for this scale was 0.85 and 0.86 for premenopausal and menopausal women, respectively.

Health beliefs

The questionnaire also included items assessing beliefs about osteoporosis, exercise and calcium consumption. Osteoporosis-specific beliefs included: perceived susceptibility, perceived severity, controllability and concern. Exercise and calcium beliefs included: two types of perceived barriers, concern about adverse health effects and inconvenience; perceived benefits; self-efficacy; subjective norms; and effectiveness for osteoporosis risk reduction. The measure of perceived severity was from the Osteoporosis Health Belief Scale (K. Kim, pers. commun.) and the measures of perceived barriers and perceived benefits were adapted from this instrument. The measure of self-efficacy was adapted from the Osteoporosis Self-Efficacy Scale (Horan et al., in preparation). Most beliefs were assessed by multiple items. All multi-item scales were created by computing the unweighted average of item scores. Cronbach’s α for all the multi-item scales exceeded 0.60 except calcium benefits (α = 0.53 and 0.46 for premenopausal and menopausal women, respectively).

Stage in the precaution adoption process

The precaution adoption process model (Weinstein, 1988) is a stage model of behavior change. Accord-
ing to this model, at a given point in time, an individual will be in one of seven stages with respect to the adoption of a given precaution. The seven stages are: (1) has never heard of the precaution or the health hazard; (2) has heard of the precaution and hazard, but has never considered adopting the precaution; (3) has decided against adopting the precaution; (4) is currently thinking about adopting the precaution; (5) is planning to adopt the precaution; (6) has taken steps to adopt the precaution; and (7) has adopted the precaution and maintained it for a prolonged period of time. We used separate algorithms to classify participants according to their stage in the precaution adoption process with respect to (1) calcium consumption and (2) exercise. Each algorithm used information from multiple questionnaire items. Calcium consumption was assessed using a 24-item food frequency questionnaire based on the work of Block et al. (1986) and a measure derived from the Minnesota Leisure Time Physical Activity Questionnaire (Taylor et al., 1978) assessed exercise level. Other items assessed (1) whether participants were aware that exercise (calcium) was recommended to help prevent osteoporosis, (2) whether participants were thinking about or planning to increase their level of exercise (calcium) and (3) whether participants' level of exercise (calcium) had changed during the past 6 months. Because few women were in Stage 1 for calcium or Stage 2 for exercise, women in these stages were combined for all analyses.

Social desirability

Social desirability was assessed by the Marlowe-Crowne Social Desirability Scale (Form C) (Reynolds, 1982). Cronbach's α for this measure was 0.74.

Menopausal status

Participants were classified as premenopausal if (1) they were still having menses, (2) their menstrual cycle was 6 weeks or less, (3) they described themselves as not having started menopause, (4) they had never taken hormones for menopausal symptoms and (5) they had not had a hysterectomy. Women who did not meet all of these criteria were classified as menopausal.

Information seeking

Upon return of the completed questionnaire, we mailed participants an order form describing six brochures about osteoporosis that, upon request, we would send at no charge. Types of information provided by the brochures were: general information about osteoporosis, osteoporosis risk factors, guidelines for calcium consumption, exercise guidelines, estrogen replacement therapy and diagnostic tests. Women who returned the form received a score of '1' on a variable labeled Information Seeking. Women who did not return the form received a score of '0' on this variable.

Results

All analyses were performed separately for premenopausal and menopausal women. We first examined the factor structure of the five items used to assess health salience. We then performed five sets of analyses examining issues related to the construct validity of the health salience scale. Finally, we examined the extent to which scores on the health salience measure may be influenced by social desirability.

Factor analysis of health salience items

To determine if the variance of the five individual health salience items could be explained by a single underlying factor, we used principal components factor analysis. Within each group of women, only one factor had an eigenvalue greater than 1.0. Among premenopausal women, this factor had an eigenvalue of 3.17 and explained 63.4% of the total item variance. Among menopausal women, the factor had an eigenvalue of 3.23 and explained 64.7% of the total item variance. All factor loadings exceeded 0.74.

Construct validity of the health salience scale

Correlations with other health beliefs

Table 1 shows correlations between the health salience scale and other health beliefs. A total of
Table I. Correlations between health salience and other health beliefs for premenopausal and menopausal women

<table>
<thead>
<tr>
<th>Health beliefs</th>
<th>Premenopausal women</th>
<th>Menopausal women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n = 452)</td>
<td>(n = 126)</td>
</tr>
<tr>
<td>Perceived susceptibility</td>
<td>-0.132*</td>
<td>-0.252*</td>
</tr>
<tr>
<td>Perceived severity</td>
<td>0.141*</td>
<td>0.149</td>
</tr>
<tr>
<td>Perceived controllability</td>
<td>0.217***</td>
<td>0.261*</td>
</tr>
<tr>
<td>Osteoporosis concern</td>
<td>0.191***</td>
<td>0.083</td>
</tr>
<tr>
<td>Health concerns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>exercise</td>
<td>-0.231***</td>
<td>-0.317**</td>
</tr>
<tr>
<td>calcium</td>
<td>-0.184***</td>
<td>-0.208</td>
</tr>
<tr>
<td>Inconvenience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>exercise</td>
<td>-0.471***</td>
<td>-0.466***</td>
</tr>
<tr>
<td>calcium</td>
<td>-0.188***</td>
<td>-0.349***</td>
</tr>
<tr>
<td>Benefits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>exercise</td>
<td>0.274***</td>
<td>0.330**</td>
</tr>
<tr>
<td>calcium</td>
<td>0.108</td>
<td>0.262*</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>exercise</td>
<td>0.325***</td>
<td>0.364***</td>
</tr>
<tr>
<td>calcium</td>
<td>0.230***</td>
<td>0.276*</td>
</tr>
<tr>
<td>Precaution effectiveness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>exercise</td>
<td>0.201***</td>
<td>0.115</td>
</tr>
<tr>
<td>calcium</td>
<td>0.123*</td>
<td>0.187</td>
</tr>
<tr>
<td>Subjective norms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>exercise</td>
<td>0.110</td>
<td>0.003</td>
</tr>
<tr>
<td>calcium</td>
<td>0.121*</td>
<td>0.056</td>
</tr>
</tbody>
</table>

*P < 0.01; **P < 0.001; ***P < 0.0001.

32 correlations were examined. All were in the expected direction and 23 were significant at P < 0.01. The strongest associations were with exercise inconvenience, perceived benefits and self-efficacy. Greater health salience was associated with lower ratings of exercise inconvenience and higher ratings of exercise benefits and self-efficacy. In both groups of women, greater health salience also was associated with: (1) lower perceived susceptibility to osteoporosis, (2) greater perceived controllability of osteoporosis, (3) fewer concerns about the adverse health effects of exercise, (4) lower calcium inconvenience and (5) greater calcium self-efficacy.

**Stage in the precaution adoption process**

Next, we examined whether the health salience scale was able to discriminate among women in different stages of the precaution adoption process. In general, we expected higher levels of health salience to be exhibited by women in more advanced stages of the precaution adoption process. To examine this issue, we used analysis of variance followed by Student-Newman–Keuls tests to identify differences between specific stages. As shown in Table II, health salience was associated with both exercise and calcium stage among premenopausal as well as menopausal women. For exercise, women who were in the acting and maintaining stages of the precaution adoption process exhibited greater health salience than women in the earlier stages. For calcium consumption, women in the planning, acting and maintaining stages exhibited higher levels of health salience compared to women in earlier stages. The pairwise comparisons involving calcium were significant only in the larger premenopausal group, however.

**Information seeking**

Next, we examined whether the health salience scale was able to discriminate between women who either did or did not seek information about osteoporosis. We expected women who sought information to exhibit greater health salience. Our findings confirmed this expectation. Among premenopausal women, the mean for health salience was 3.88 for women who sought information compared to 3.76 for women who did not [t(450) = 2.14, P < 0.05]. Similar findings were obtained among menopausal women [M's = 3.90 and 3.68, for information seekers and non-seekers, respectively, t(124) = 1.69, P < 0.10].

**Relationship of health beliefs to behavior as a function of health salience**

Finally, we hypothesized that the health belief measures would explain a greater percentage of the variance in behavior (i.e. level of exercise activity and calcium consumption) among women for whom health concerns were more salient. To examine this issue, we stratified both samples (i.e. premenopausal and menopausal) on the basis of median splits to form Low Health Salience and High Health Salience subgroups. Because the continuous measures of exercise activity and calcium consumption were not normally distributed, we
Table II. Means for health salience by calcium and exercise stage for premenopausal and menopausal women

<table>
<thead>
<tr>
<th>Stage</th>
<th>Calcium</th>
<th>Exercise</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Premenopausal</td>
<td>Menopausal</td>
</tr>
<tr>
<td>(1/2) Unengaged</td>
<td>3.60&lt;sup&gt;*&lt;/sup&gt;</td>
<td>3.60&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
<tr>
<td>(3) Rejected</td>
<td>3.51&lt;sup&gt;a&lt;/sup&gt;</td>
<td>3.59&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>(4) Deciding</td>
<td>3.71&lt;sup&gt;a&lt;/sup&gt;</td>
<td>3.46&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>(5) Planning</td>
<td>4.02&lt;sup&gt;b&lt;/sup&gt;</td>
<td>4.08&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>(6) Acting</td>
<td>4.00&lt;sup&gt;b&lt;/sup&gt;</td>
<td>4.04&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>(7) Maintaining</td>
<td>3.95&lt;sup&gt;b&lt;/sup&gt;</td>
<td>3.90&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Model F (d.f.)</td>
<td>7.81** (5,441)</td>
<td>2.59* (5,118)</td>
</tr>
</tbody>
</table>

Within each column, cells with different superscripts are significantly different from one another at \( P < 0.05 \).

\* \( P < 0.05; \) \** \( P < 0.001 \).

converted these measures to ranks and used the ranks in subsequent analyses.

In separate analyses for the Low and High Health Salience subgroups, we regressed exercise activity on the ten health belief measures (i.e. four osteoporosis-specific beliefs and six exercise-specific beliefs). Among premenopausal women, the model explained 28.8% of the variance in exercise activity in the High Health Salience subgroup \([F(10,193) = 7.79, P < 0.0001]\) compared to 15.7% in the Low Health Salience subgroup \([F(10,229) = 4.27, P < 0.0001]\). Among menopausal women, the model also explained more variance in the High Health Salience subgroup compared to the Low Health Salience subgroup, 47.3% \([F(10,44) = 3.96, P < 0.001]\) versus 36.2% \([F(10,56) = 3.17, P < 0.003]\), respectively.

We performed a parallel set of analyses with calcium consumption as the dependent variable. Among premenopausal women, the model explained 25.9% of the variance in calcium consumption in the High Health Salience subgroup \([F(10,189) = 6.60, P < 0.0001]\) compared to 14.4% in the Low Health Salience subgroup \([F(10,225) = 3.77, P < 0.0001]\). Among menopausal women, however, the model explained slightly more variance in the Low Health Salience subgroup than in the High Health Salience subgroup, 25.7% \([F(10,53) = 1.84, P < 0.08]\) versus 20.1% \([F(10,43) = 1.08, \text{NS}]\), respectively.

Correlation between health salience and social desirability

Finally, we observed low correlations between the health salience scale and the Marlowe–Crowne Social Desirability Scale. Among premenopausal women, the correlation between these measures was 0.193 \((P < 0.0001)\) and among menopausal women it was 0.147 (NS). The larger of these correlations indicates that less than 4% of the variance in health salience scores is shared with social desirability.

Discussion

This paper describes a new measure to assess one dimension of health motivation, the extent to which individuals are concerned about health matters in general. To avoid confusion with the more general concept of health motivation, we have labeled this new measure health salience. Our findings suggest that the measure has many desirable psychometric properties. It is internally consistent, appears to tap a single underlying construct and correlates in predictable ways with measures of other health beliefs. For the most part, hypotheses tested to examine the measure’s construct validity were supported. Finally, the measure appears to be minimally influenced by social desirability.

Unlike existing measures of health motivation (Champion, 1985; Kim et al., 1991), the new
measure does not include items that assess behavior directly. Rather, it focuses on the attitudinal dimension of health motivation identified by Becker (1974). We believe this results in a major advantage over existing measures because, when examining the relationship between health motivation and health behavior, it eliminates the problem of artificially inflating the magnitude of the relationships observed.

The new measure has many potential research applications. For example, it can be used to determine whether individuals for whom health concerns are quite salient are more likely than others to (1) engage in health enhancing behaviors, (2) seek information about health-related issues and (3) remember the content of health messages to which they have been exposed. The measure also could be used to refine and test hypotheses concerning the relationship of health beliefs to health behavior. Many health behaviors (e.g. exercise) are motivated by non-health concerns (e.g. concerns about appearance). Consequently, much of the variance in health behaviors is not explained by health beliefs. Among individuals for whom health concerns are quite salient, however, health beliefs are likely to explain a greater proportion of the variance in behavior. Thus, research examining the possibility that health salience moderates the relationship of health beliefs to health behavior may help clarify the nature of the belief–behavior relationship.

The new measure also could be used in intervention studies to determine if intervention effects are dependent on participants' initial level of health salience. In addition, interventions could be tailored to each participant's initial level of health salience. Messages that focus on health issues (e.g. prevalence, severity) could be targeted toward individuals for whom health is a salient concern. For other individuals, messages could either aim at increasing health salience or focus on other factors likely to motivate the behavior of interest.

Although we examined the new measure in a study focused on osteoporosis prevention, the measure could be used to predict a wide range of preventive or screening behaviors. We believe health salience is especially important in relation to behaviors that are volitional and that are likely to be motivated primarily by health concerns (e.g. obtaining influenza immunization, adherence to mammography guidelines). Health salience is likely to play a less important role in predicting behaviors that are mandated (e.g. seat belt use) or often are motivated by non-health concerns (e.g. weight control). In addition, the measure may be less useful in studying the behavior of individuals with chronic health problems (e.g. cancer). Some items in the measure (e.g. I am very health conscious) may have different meanings to these individuals. Before the measure is used among individuals with chronic health problems, its psychometric properties among these individuals must be examined.

One strength of the new measure is also a limitation. Because the measure assesses general health salience, it can be used in many health contexts. In using the measure, however, researchers should keep in mind that based on family history, personal experience and any number of other factors, certain health problems (e.g. cancer, diabetes) may be more salient than others. Thus, in some cases, it may be desirable to develop measures of health salience that are specific to the health problem of interest.

Another limitation of the study should be noted. Although potential participants were identified via a random sample of licensed drivers, the participation rate in the study was low and self-selection biases resulted in a sample that was quite well educated. It also seems likely that health salience may have been higher among participants than non-participants. To the extent that self-selection biases resulted in a highly motivated sample, relationships between health salience and other measures would be attenuated. Thus, the relationships observed in this study may underestimate the role health salience plays in individuals' behavioral choices. This possibility remains to be examined in more representative samples.

In conclusion, much is still unknown about the process of behavior change and the factors that influence this process. Although the concept of
health salience has received little attention to date, we believe it may play an important role. We hope that availability of the measure described in this paper will stimulate both a theoretical reassessment and further research concerning the effect health salience may have on individuals’ behavioral choices.

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