

The hardiness characteristic: A motivating factor in adaptation

This article describes the conceptual development and measurement of hardiness as a motivating factor in adaptation. The health-related hardiness concept is further refined to include theoretical and operational indicators that can be used to investigate the effect of hardiness on adaptation to actual and potential health problems. Empirical support is presented for both the direct and indirect effects of hardiness. A valid and reliable instrument has been developed for health-related research with both well and ill populations. Implications for theory and research are discussed with emphasis on contributing to the knowledge base of nursing and developing interventions in practice.

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HUMAN RESPONSES to the same stressor or stressful situation vary markedly as do adaptational outcomes. Adaptation is a complex process involving numerous internal and external factors that influence response and the subsequent level of adaptation established. The hardiness characteristic has been identified as a motivating factor in resolving stressful situations and in adapting to actual health problems.

The concept of hardiness has particular significance for nursing. The profession has defined its major concern as human responses to actual and potential health problems; therefore, to promote adaptive responses in these situations nurses need more knowledge about the effect of hardiness on adaptation. Once nurse scientists understand the effects of hardiness and how it promotes health and adaptation in both well individuals and those with health problems, the implications for nursing practice will be limitless. This article presents the conceptual development and

empirical validity of health-related hardiness in clinical nursing research.

CONCEPT DEVELOPMENT

Much has been written from many points of view about the stress phenomenon. The writings of Selye¹ and Lazarus² were beneficial in laying the foundations for an understanding of physiological and psychological responses to stress in human beings. In an attempt to integrate the more detailed conceptualizations of stress that have been proposed from the biological, psychological, and sociological perspectives, this author defined stress as a generic term, that is, the whole set of physiological and psychological phenomena including the objective event or stressor, the person's perception of the stressor, the conditioning factors or contextual stimuli, the various intervening variables or the residual stimuli, and the manifestations of response to the stressor.

Stress-adaptation models have helped to integrate and coordinate much of the knowledge about stress and have provided various disciplines with a framework for viewing the entire adaptation process from their own perspectives. The Adaptation Nursing Model³ was developed to explain the complexity of human adaptation from a nursing perspective and to provide direction for theory development and research endeavors in the discipline. Major concepts from Selye,¹ Helson,⁴ Lazarus,² and Roy⁵ were incorporated and synthesized in the development of this model.

Adaptation was viewed as a dynamic process between the individual and environment and was considered effective if it promoted the physiological, psychologi-

cal, and social integrity of the person. The process was initiated by the focal stimulus (the objective stressor and the individual's perception of the stressor), and the response to the stressor was influenced by both external and internal factors. Contextual stimuli were defined as events external to the individual such as social support, whereas residual stimuli were the various internal characteristics of the individual such as personality factors. Thus, an individual's adaptation level reflected the effectiveness of adaptive behavior in the physiological, psychological, and social domains and was determined by the type and severity of the focal stimulus and the extent to which existing contextual and residual stimuli were able to mediate its effect.

Variability in adaptation can be attributed to differences in any of the three stimuli. The residual stimuli were the focus of study to identify internal factors that mediated the stress response and promoted adaptation. Antonovsky⁶ proposed that variability in adaptation to stress was related to generalized resistance resources. From an existentialist point of view, Kobasa⁷ identified those resources as hardiness; the personality characteristic that enabled individuals to remain healthy even when confronted with stressful life events or a stressful environment. The hardy person was someone who recognized that life required him or her to use judgment and make good decisions (control), to become actively involved with others in various activities of life (commitment), and to perceive change as ultimately beneficial to personal development (challenge).

A current review of hardiness research⁸ reported 49 studies that supported both the

direct and indirect effects of hardiness on stress. While these findings were a significant contribution to stress research, relevance to the nursing profession was limited due to theoretical concerns about the relationship between hardiness and health, lack of empirical support for the effect of hardiness on adaptation to actual or potential health problems, and unsolved measurement problems.⁹ To overcome these problems, especially in a nursing context, a health-related hardiness concept was proposed.

Synthesis of the health-related hardiness characteristic on adaptation to actual or potential health problems incorporated concepts from existential psychology, coping and adaptation, and developmental tasks of adulthood. The health-related hardiness concept was further refined to

include more specific theoretical and operational definitions that could be used to investigate the effects of hardiness (see Table 1).

The control domain of the health-related hardiness concept was defined theoretically as the use of ego resources necessary to appraise, interpret, and respond to health stressors. Appropriate appraisal and interpretation lead to the individual's reliance on internal or external locus of control or both, depending on the health stressor. The appraisal and coping strategies an individual uses in adaptation would represent a commitment to or involvement in health-related activities appropriate to the health stressors. Challenge was defined as the reappraisal of the health stressors as potentially beneficial or rewarding rather than threatening or harmful.

Table 1. Development of the health-related hardiness concept*

Hardiness concept		
Control	Commitment	Challenge
Definition: Exercises control to make good judgment and good decisions	Definition: Actively involved in various activities of life	Definition: Perceives change as ultimately beneficial to development
Measured by absence of powerlessness	Measured by absence of alienation	Measured by absence of need for security
Health-related hardiness concept		
Control	Commitment	Challenge
Definition: Use of ego resources to appraise, interpret, and respond to health stressors	Definition: Appraisal and coping leads to involvement in health-related activities appropriate for dealing with the health stressors	Definition: Reappraisal of health stressors as potentially beneficial
Measured by presence of health locus of control appropriate for responding to health stressors	Measured by presence of commitment to health-related activities as evidenced by individual's behavior	Measured by presence of motivation for health promotion activities when confronted with health stressors

*Hardiness definitions and measurements were based on work performed by SC Kobasa.

MEASUREMENT OF THE CONCEPT

The original hardiness⁷ measure used all or part of five instruments to operationalize the components of hardiness (control, challenge, and commitment). The 71 items were initially selected for use with a sample of well-educated adult professionals, primarily male, who were relatively free of illness.

Limitations of the hardiness scale included theoretical inadequacy and psychometric ambiguity. The use of negative indicators to measure the presence of control, commitment, and challenge created substantial theoretical and empirical problems. For example, developers of the hardiness scale attempted to index a high sense of commitment with the absence of alienation from work and self, and equated a high sense of challenge with a low need for security. Individual test items were too general to be relevant for testing the concepts in individuals who had health concerns or problems. In addition, the original scale was lengthy to administer and difficult to score.

The Health Related Hardiness Scale (HRHS)¹⁰ was developed to better measure the hardiness characteristic in individuals who had an actual or potential health problem. Positive indicators, based on the theoretical definitions created for health-related hardiness, measured the presence of control, commitment, and challenge. The HRHS contained 42 items on a 6-point Likert scale; 18 items measured control, 12 items measured commitment, and 12 items measured challenge. These 18 items were selected from the Multidimensional Health Locus of Control,¹¹ and included state-

ments such as "Having regular contact with a physician is the best way for me to avoid illness" and "If I get sick, it is my own behavior that determines how soon I get well again." Items to measure the commitment and challenge dimensions of hardiness were developed according to the operational definitions of commitment to health-related activities—for example, "Involvement in health support groups will decrease my chance of developing health problems"—and motivation for health promotion—for example, "I am interested in exploring new health care regimens or programs to improve my health."

Content validity of the HRHS was addressed by asking a panel of judges, faculty, and doctoral students with expertise in adult health, to evaluate the representativeness of the control, commitment, and challenge items on the basis of the operational definitions. Agreement among the judges concerning the items that best measured the control, commitment, and challenge dimensions of hardiness was .85 interrater reliability, obtained by interclass correlations of raters.¹² In addition, the same panel evaluated the appropriateness of both the HRHS and Kobasa's Hardiness Scale for measuring the hardiness characteristic. The experts unanimously concluded that the HRHS was the more appropriate instrument.

Results of a pilot study (N = 65 well adults) in which subjects completed both Kobasa's Hardiness Measure and the HRHS indicated better reliability (alpha coefficients) for the HRHS (.80 for the total HRHS, .82 for items measuring control, .74 for items measuring commitment, and .65 for items measuring challenge) than for the Hardiness Measure (.65 for the

total Hardiness Measure, .55 for items measuring control, .58 for items measuring commitment, and .23 for items measuring challenge.) Subsequently, the HRHS was revised to include 40 items (14 to measure control and 13 items each for commitment and challenge) based on the results of a factor analysis ($N = 222$) in which 37 of the original items loaded on 3 factors. Development of new items and refinement of several of the 37 original items were done in consultation with experts in psychometrics and health research. Total scores for the HRHS ranged from 40 to 240, with low scores indicating the presence of hardiness. Until sufficient data from various populations are analyzed to establish norms, the median split of the samples will be used to determine hardiness.

Further development of the HRHS included pretesting by a research assistant as a project for an instrument development course; findings supported the requirements for readability, clarity, and meaning. In addition, in a sample of 110 adult diabetics, internal consistency (alpha coefficients) was significantly increased since the instrument had been refined on the basis of results of the factor analysis (.86 for the total HRHS as compared to .80). All subscales demonstrated higher alpha coefficients except for the control scale (.78 as compared to .82); this difference can be accounted for by the decreased number of control items. Test-retest reliability was .9 for two weeks and .8 for three months in a sample of 30 of the diabetic subjects. Concurrent validity was established by administering both the HRHS and the 50-item Hardiness Scale to 50 "healthy" adults. The moderate correlation of .54 between the two scales supported the idea

that the HRHS was measuring hardiness but was different from Kobasa's scale. With the same sample of 50 "healthy" adults, correlations between the HRHS and perceived health status, engagement in health promotion activities, and use of social resources were significant whereas correlations between the Hardiness Scale and the same variables were not, thereby supporting the discriminate validity of the HRHS.

EMPIRICAL SUPPORT

Pollock used the HRHS in an investigation of factors that promoted physiological and psychosocial adaptation in 60 chronically ill adults.¹⁰ The sample consisted of three equal-sized groups of adults who had been diagnosed with diabetes mellitus, hypertension, or rheumatoid arthritis for one year or more. Physiological adaptation was measured by one of the following, depending on the subject's diagnosis: Physiologic Adaptation to Diabetes Mellitus Scale (PAD), Physiologic Adaptation to Hypertension Scale (PAH), or Physiologic Adaptation to Rheumatoid Arthritis Scale (PAR). Since it was more appropriate for the chronically ill, the HRHS was used to measure the hardiness characteristic. Psychosocial responses were measured by the Psychosocial Adjustment to Illness Survey.¹³ Data collected from all subjects over a nine-month interval determined their physiological and psychosocial adaptation and the presence of the hardiness characteristic.

The hypothesis that presence of the hardiness characteristic was significantly correlated with adaptation was supported for the diabetic group but not for the

hypertensive or rheumatoid arthritis groups. Pearson correlations for the hardiness characteristic in the diabetic adults revealed significant relationships with physiological adaptation ($r = .43, p < .05$) and psychosocial adaptation ($r = .62, p < .01$). In addition, there was a significant relationship between physiological and psychosocial adaptation for the diabetic group ($r = .39, p < .05$), while for the hypertensive and rheumatoid arthritic groups these adaptations were found to be two independent domains.

This study provided initial support for the direct as well as the indirect effects of hardiness in adaptation to chronic illness. For example, the presence of hardiness significantly influenced role function in the diabetic and hypertensive groups, social support in the arthritic and hypertensive groups, and intrapsychic functioning in the arthritic and diabetic groups. These findings suggest that specific psychosocial activities may be facilitated by the presence of hardiness, thus supporting the indirect effect of hardiness on adaptation. This author recommends investigating the indirect effects of hardiness, such as coping and social support, and the relationships between physiological and psychosocial adaptation in adults with a chronic illness.

In a more recent study, Pollock¹⁴ investi-

gated the physiological adaptation of adults with insulin-dependent diabetes mellitus ($N = 110$) in relation to their coping patterns, hardiness, and sociodemographic characteristics. The following instruments were used to collect data during interviews with the subjects in their homes: HRHS, Physiologic Adaptation to Diabetes (PAD) Scale, and Revised Ways of Coping Checklist and Stress Questionnaire from Folkman and Lazarus.¹⁵ Demographic information, recorded on the Patient Interview Form developed by the investigator, included age, race, sex, social status, marital status, length of time with diabetes, days lost from work in the last year due to diabetes, subjects' involvement in a diabetes education program, and subjects' initiation of any health improvement regimens such as exercise or stress management since time of diagnosis.

The presence of hardiness was associated with appraisal of diabetes as either possessing a potentially harmful or beneficial outcome, and with the use of mixed focus (emotion- and problem-oriented) coping strategies. These findings indicated that those subjects who believed they could influence events related to their health, who were committed to appropriate health-related activities, and who were motivated to promote their own health, appraised their chronic illness as one that could benefit or harm them. They used both emotion-focused and problem-focused coping strategies in adapting to their chronic illness. Exclusive use of emotion-focused coping was associated primarily with the appraisal of diabetes as a threat and the absence of the hardiness characteristic. In predicting physiological adaptation for this population, 56% of the

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variance was accounted for by five variables, with harm and benefit appraisals accounting for 17%, mixed focus coping patterns for 14%, and hardiness for 11%. Participation in a diabetes education program accounted for 9% of the variance in adaptation but it would be difficult to distinguish the beneficial effects of this program versus self-selection. Perhaps "hardy" persons were most likely to take advantage of patient diabetic education programs specific to their illness. Length of time since diagnosis of diabetes accounted for 5% of the variance.

Significant results of the diabetes study included support for indirect positive effects of hardiness on physiological adaptation and further support for the reliability and validity of the HRHS. The individuals' perception of the health stressor as well as the coping strategies used was significantly related to the presence of the hardiness characteristic, which in turn predicted adaptation to their chronic illness.

The HRHS was also used in a study of adults who described themselves as healthy ($N = 244$). An interesting characteristic of this sample was that 43% had chronic illnesses including diabetes, various forms of arthritis and collagen diseases, kidney and pulmonary abnormalities, and eating disorders. Pearson correlations of the HRHS and major variables found significant relationships between the presence of hardiness and higher levels of perceived health status ($r = .28, p < .05$), the presence of hardiness and engagement in health promotion activities ($r = .23, p < .05$), and the use of social resources (social support) and the presence of hardiness ($r = .45, p < .05$). The results of this study supported the indirect effects of hardiness,

which significantly influenced the use of social resources in the adaptation process. In addition, the HRHS proved to be an appropriate measure to be used with "well" adults in health-related research.

DISCUSSION

Theoretical

Kobasa's research on hardiness and well adults supported both the direct and indirect effects of hardiness on stress and subsequent illness. Kobasa (personal communication, August 1987) acknowledged that other psychosocial processes, such as coping and social support, may either facilitate or hinder resistance to stress, but suggested that the personality resource of hardiness may very well have a direct effect on the individual's ability to cope or to use social support.

Initially, the investigator tested the direct effects of hardiness on adaptation to chronic illness. Results supported the direct relationship between hardiness and adaptation for the diabetic subjects but not for the hypertensive or rheumatoid arthritic subjects. In subsequent studies using the HRHS, results have supported the moderating (indirect) effects of hardiness.

As indicated in Fig 1, hardiness may indirectly affect adaptation to chronic illness by influencing the individual's perception of the stressor (chronic illness), the coping strategies chosen, or the social resources used. Perception and use of social resources were also significantly related to presence of hardiness in the study of healthy adults.

Another theoretical issue regarding the effects (direct or indirect) of hardiness on

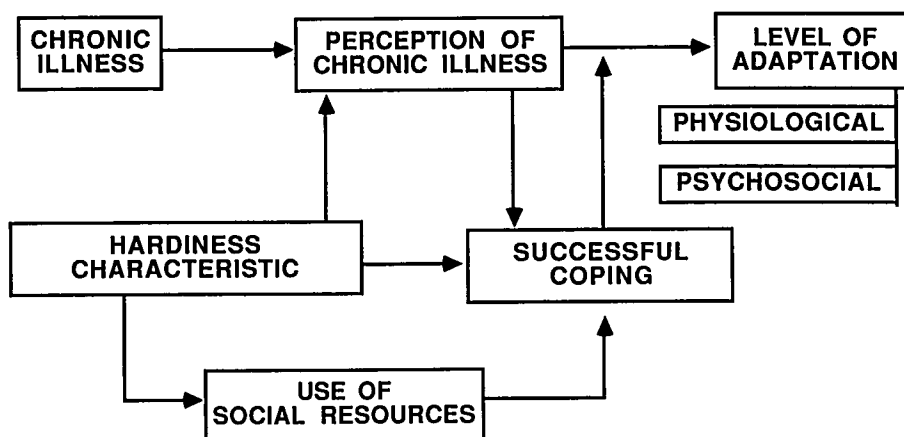


Fig. 1. Moderating effect of hardiness (indirect).

adaptation may involve interactions of other personality characteristics of the individual as well as the nature of the health stressor. Continued refinement of the theoretical model(s) is needed to guide research efforts with the HRHS.

Research

Hardiness has been found to explain variability in human responses to both actual and potential health problems. There is initial support that hardiness may be the personality resource that enables some to adjust and even benefit from stressful environments while others do not. Hardiness may also enable some to cope more effectively with chronic illnesses than others.

While the HRHS was developed to more adequately measure the hardiness characteristic in chronically ill individuals, it is appropriate for use with well individuals. Possession of the characteristics of control, commitment, and challenge in relation to

health may account for successful resistance to the negative effects of stress. The HRHS has been shown to be a valid and reliable instrument in health-related research. Of particular importance is the fact that the domain-specific subscales of the HRHS showed higher predictive validity than the hardiness measure. In addition, items on the HRHS were more relevant to persons with actual or potential health problems. For this reason, subjects related to them better and the result was fewer missing data. While this issue is very practical, it is extremely important in conducting research.

Other interesting issues confronting those in hardiness research include the following:

1. How is hardiness developed and are all three aspects (control, commitment, and challenge) developed at the same time?
2. Should the hardiness domain be expanded by adding other personality dimensions in addition to control,

commitment, and challenge? Candidates for inclusion would be sense of coherence, self-efficacy, motivation, appraisal orientation, and optimism/pessimism.

3. How does life-span development affect hardiness? Does hardiness increase with age or with successful coping with stressors? Is there more than a single pattern of hardiness depending on developmental processes?
4. Can there be too much hardiness, for example, "hyperhardiness"? How can health care providers explain persons who, although rated very high in hardiness, become ill during periods of high stress? Is it beneficial to be low in hardiness during specific stressful situations? To what extent is hardiness a stable personality trait or a situational factor?
5. Can hardiness be taught? This issue is one of the most important for the nursing profession. The Hardiness Institute near Chicago, Illinois, now provides a Hardiness Training Course to help persons increase their personality hardiness.

Nurses need a systematic approach to clinical nursing research involving hardiness. Currently Pollock has two federally funded research projects (1986-1989) investigating the role of hardiness in adaptation to chronic illness. Numerous other research studies are using the HRHS to investigate further the effects of hardiness in well and ill populations. The primary responsibility of researchers using the HRHS is to make data from their projects available with the expectation that synthe-

sis of these studies will contribute to the knowledge base of nursing and will facilitate the development of interventions to be used in nursing practice.

NURSING PRACTICE

The potential value of hardiness to the nursing profession is development and use of interventions based on hardiness research. Initially the HRHS could be used with clients as an assessment tool. Specific interventions would then be indicated, depending on the presence or absence of hardiness. For example, persons low in hardiness may need different kinds of educational and motivational resources to cope effectively with a chronic illness. In addition, nurses would be able to determine who is more susceptible to illness when experiencing stressful situations and could then intervene to prevent or decrease the harmful effects of stress.

If hardiness can be taught, nurses need to implement the necessary instruction with both well and ill clients. Because of their stressful jobs and the associated burn-out that takes place in the clinical setting,¹⁶ nurses themselves may well choose to take advantage of hardiness instruction. Clients with chronic illnesses would also be prime candidates for hardiness instruction in learning to cope with their illness.

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The concept of hardiness has been demonstrated to be a positive mediating variable in the field of stress and illness research, which generally focuses on negative outcome. A valid and reliable instrument has been developed for health-related

research with both well and ill populations. Progress is being made in developing a systematic approach to health-related hardiness research in order to contribute to the knowledge base of nursing. The most

valuable contribution to the nursing profession is the potential for guiding interventions in practice, whether it be the use of existing ones or development of new ones.

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