

The Primacy of Self-Regulation in Health Promotion

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We are witnessing a divergent trend in the field of health. On the one hand, we are pouring massive resources into medicalising the ravages of detrimental health habits. On the other hand, the conception of health is shifting from a disease model to a health model. It emphasises health promotion rather than mainly disease management. It is just as meaningful to speak of levels of vitality and healthfulness as of degrees of impairment and debility.

Health promotion should begin with goals not means (Nordin, 1999). If health is the goal, biomedical interventions are not the only means to it. A broadened perspective expands the range of health promoting practices and enlists the collective efforts of researchers and practitioners who have much to contribute from a variety of disciplines to the health of a nation.

The quality of health is heavily influenced by lifestyle habits. This enables people to exercise some measure of control over the state of their health. To stay healthy, people should exercise, reduce dietary fat, refrain from smoking, keep blood pressure down, and develop effective ways of managing stressors. By managing their health habits, people can live longer, healthier, and retard the process of aging. Self-management is good medicine. If the huge benefits of these few habits were put into a pill it would be declared a scientific milestone in the field of medicine.

Current health practices focus heavily on the medical supply side. The growing pressure on health systems is to reduce, ration, and delay health services to contain health costs. The days for the supply-side health system are limited. People are living longer. This creates more time for minor dysfunctions to develop into disabling chronic diseases requiring health services. In addition, growing public interest in health matters linked to expensive health care technologies, and the medicalisation of problems of living with aggressive public marketing of drug remedies for them, are adding to the burdensome costs. Demand is overwhelming supply.

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The social cognitive approach, rooted in an agentic model of health promotion, focuses on the demand side (Bandura, 2000, 2004a). It promotes effective self-management of health habits that keep people healthy through their life span. Psychosocial factors influence whether the extended life is lived efficaciously or with debility, pain, and dependence (Fries & Crapo, 1981; Fuchs, 1974).

Aging populations will force societies to redirect their efforts from supply-side practices to demand-side remedies. Otherwise, nations will be swamped with staggering health costs that consume valuable resources needed for national programs.

PRIMACY OF SELF-REGULATION

Individuals continuously preside over their own behavior. Hence, they are a key locus in the development and successful maintenance of health promotive habits. Whatever other factors may serve as guides and motivators, they are unlikely to produce lasting behavioral changes unless individuals develop the means to exercise control over their motivation and health-related behavior.

Maes and Karoly (2005) report the growing shift from the medical management model centered on prescriptive regimens and compliance with them, to a collaborative self-management model. They also identify a corresponding change in the conception of health management in psychological theorising. Trait approaches, that ascribe health behavior to personal characteristics usually represented by clusters of behavior, are being supplanted by process models that focus on psychosocial means and the mechanisms through which they produce their effects.

Health habits are not changed by an act of will. Self-management requires the exercise of motivational and self-regulatory skills. Self-regulation models differ somewhat in particulars but they are rooted in three generic subfunctions. These include self-monitoring of health-related behavior and the social and cognitive conditions under which one engages in it; adoption of goals to guide one's efforts and strategies for realising them; and self-reactive influences that include enlistment of self-motivating incentives and social supports to sustain healthful practices.

Maes and Karoly conceptualise self-regulation in terms of a triadic process by which individuals bring their influence to bear on their health habits. In their goal-guidance model, goal adoption sets the stage for self-directed change; implementation strategies convert goals into productive actions; and maintenance strategies help to sustain achieved behavioral changes. The authors review numerous health-related cognitions that can affect each of the three generic self-regulatory processes. They describe the scales designed to measure them, many of which are cast in trait terms, and evaluate the

empirical evidence for their predictiveness. The article provides a thoughtful, critical overview of the extant body of literature on the role of health-related cognitions in the various self-regulation models.

THE MODEL OF THEORY BUILDING

The models of self-regulation are founded on the common metatheory that cognitive factors are significant contributors to health behavior. The challenge in this field is to bring theoretical order to the vast array of posited cognitive determinants reviewed by Maes and Karoly. The issues center on theoretical incompatibilities, redundancies of factors given different names, fractionation of the facets of higher-order constructs into seemingly different determinants, evaluation of the unique contribution of factors when tested in concert rather than singly, and the model of theory building that is adopted.

Consider, for example, the incompatibility of the goal-setting practices prescribed by Locke and Latham's (1990) Goal Theory and by Ryan and Deci's (2000) Self-Determination Theory. The goal practices verified empirically by Locke and Latham as providing optimal guides and motivators are regarded by Deci and Ryan as underminers of motivation. Regression analyses reveal redundancy of predictors bearing different names. For example, after the contributions of perceived self-efficacy and self-evaluative reactions to one's health behavior are taken into account, neither intentions nor perceived behavioral control add any incremental predictiveness (Dzewaltowski, Noble, & Shaw, 1990). Factors that predict health behavior when considered singly may not add any unique predictiveness when tested in conjunction with other factors. Meyerowitz and Chaiken (1987) examined four possible mechanisms through which health communications could alter health habits: By transmitting information on how habits affect health; arousing fear of disease; increasing perceptions of one's personal vulnerability or risk; or by raising people's beliefs in their efficacy to alter their habits. Self-efficacy beliefs emerged as the predictor of adoption of healthful practices.

Were one to delve beneath the labels affixed to the cognitive factors and address the redundancies among them, the seeming diversity would probably shrink to a small set of generic factors. They would most likely include knowledge of health risks and benefits of different health practices; perceived self-efficacy that one can exercise control over one's health habits; outcome expectations about the expected material, social, and self-evaluative costs and benefits for different health habits; the health goals people set for themselves and the concrete plans and strategies for realising them; and the perceived sociostructural facilitators and impediments to the changes they seek. Structural models of the paths of influence would specify the

functional dependencies among these key determinants and their direct and mediated effects on health behavior.

ENHANCING THE SCOPE AND SOCIAL UTILITY OF SELF-REGULATORY MODELS

The value of a psychological theory is judged not only by its explanatory and predictive power, but by its operative power to guide psychosocial changes. Most of the self-regulation models focus mainly on predicting health behavior, but they offer little operative guidance how to change and maintain it. In social cognitive theory (Bandura, 2000), the sociocognitive factors that form the prediction model are essentially the same as those that inform the intervention model. The theory provides prescriptive guidance on how to alter the sociocognitive factors governing self-regulation of habits that promote health and those that impair it. The successful translation of theory into practice is illustrated in two large-scale programs of research that have developed new health-promotion models founded on the self-regulatory mechanisms of social cognitive theory.

The self-management model devised by DeBusk and his colleagues (Bandura, 2000; DeBusk et al., 1994) combines development of motivational and self-regulatory skills with computer-assisted implementation. It promotes healthful lifestyles by enabling programs that supplant sedentariness with an active life, foster adoption of healthful nutritional practices, and aid weight reduction and smoking cessation. For each health habit, people are provided detailed guides on how to improve their health functioning. They monitor their health habits, set themselves attainable short-term goals, and report the changes they are making. The computer mails personalised reports that include feedback of progress toward their subgoals. The feedback also provides guides on how to manage troublesome situations, and has participants set new subgoals to realise. Self-efficacy ratings identify areas in which self-regulatory skills must be developed if beneficial changes are to be achieved and maintained. A single implementer, assisted with the computerised implementation system, provides intensive, individualised guidance in self-management to large numbers of people.

In tests of the preventive value of this self-management system (Bandura, 2000), employees in the workplace lowered elevated cholesterol by altering eating habits high in saturated fats. A single nutritionist implemented the entire program at minimal cost for large numbers of employees. This self-management system promotes dietary changes with corresponding reduction in cholesterol in different worksites and clinical settings (Clark, Ghandour, Miller, Taylor, Bandura, & DeBusk, 1997).

In a large randomised control trial, Haskell and his associates (Haskell et al., 1994) used the self-management system to promote lifestyle changes

in patients suffering from coronary artery disease. This places them at high risk of heart attacks. At the end of four years, those receiving medical care by their physicians showed no change or they got slightly worse. In contrast, those aided in self-management by nurse implementers achieved big reductions in multiple risk factors: They lowered their intake of saturated fat, lost weight, lowered their bad cholesterol, and raised their good cholesterol, exercised more, and increased their cardiovascular capacity. The program also altered the physical progression of the disease. Those receiving the self-management program had 47 per cent less build-up of plaque on their artery walls. They also had fewer coronary events, hospitalisations, and deaths.

In another randomised control trial, the effectiveness of the self-management system was compared in hospitals against the standard medical post-coronary care in patients who have already suffered a heart attack (DeBusk et al., 1994). At the end of the first year, the self-management system was more effective in reducing risk factors and increasing cardiovascular functioning than the standard medical care. In the clinical management of heart failure (West et al., 1997), patients who had the benefit of the self-management system exhibited, a year later, improvements in functional status, diet, and pharmacologic adherence as well as reductions in physician visits, emergency room visits, and hospitalisations for heart failure and other causes.

The self-management system is well received because it is individually tailored to people's needs. It provides continuing personalised guidance that enables people to exercise control over their own change. It is a home-based program that does not require any special facilities, equipment, or group meetings plagued with high drop-out rates. It can serve large numbers of people simultaneously under the guidance of a single implementer. It is not constrained by time and place. It combines the high individualisation of the clinical approach with the large-scale applicability of the public health approach. It provides valuable health promotion services at low cost.

We need to enhance the scope, productivity, and social utility of our health promotion models. In the applications described above, the computer is used as a coordinating and mailing system to guide self-directed change and to provide feedback of progress. By linking the interactive aspects of the self-management model to the Internet, one can vastly expand its availability to people wherever they may live, at whatever time they may choose to use it.

The social utility of self-management systems can be enhanced by a step-wise implementation model. In this approach, the level and type of interactive guidance is tailored to people's self-efficacy beliefs, self-management capabilities, and motivational preparedness to achieve desired changes. The first level includes people with a high sense of efficacy and positive outcome expectations for behavior change. They can succeed with minimal guidance to accomplish the changes they seek.

Individuals at the second level have self-doubts about their efficacy and the likely benefits of their efforts. They make half-hearted attempts to change and are quick to give up when they run into difficulties. They need additional support and guidance by individualised interactive means to see them through tough times. Much of the guidance can be provided by telephone or via the Internet.

Individuals at the third level believe that their health habits are beyond their personal control, they are convinced of the futility of effort, and are highly skeptical of the value of behavioral changes. They need a great deal of personal guidance in a structured mastery program. Progressive successes build belief in their ability to exercise control and bolster their staying power in the face of difficulties and setbacks.

Identifying cognitive predictive factors of health behavior without effective guides on how to change them will not do much to improve human health. We know from psychosocial applications in other domains of functioning that powerful treatments that enable people to gain some measure of control over their lives override the influence of negative predictors (Bandura, 1997).

We need to make creative use of the revolutionary advances in interactive technologies. People at risk for health problems typically ignore preventive or remedial health services. For example, young women at risk of eating disorders resist seeking help. But they will use Internet-delivered guidance because it is readily accessible, convenient, and provides a feeling of anonymity. Studies by Taylor, Winzelberg, and Celio (2001) attest to the potential of these types of self-management programs. Through interactive guidance, adolescents and young women reduced dissatisfaction with their weight and body shape, altered dysfunctional attitudes, and rid themselves of disordered eating behavior.

The medical gatekeepers of health services are ill-equipped to promote health by psychosocial means. They acknowledge a low sense of efficacy to alter detrimental health habits (Hyman, Maibach, Flora, & Fortmann, 1992), so they either ignore the problems or substitute pills for behavior change. With further development of interactive Internet-based models, gatekeepers will have the option of prescribing effective self-management programs that can improve the health of those they serve.

The weight of disease is shifting from acute to chronic maladies. The self-management of chronic diseases is another example of the use of self-regulatory and self-efficacy theory to develop cost-effective models with high social utility. Biomedical approaches are ill-suited for chronic diseases because they are devised mainly for acute illness. The treatment of chronic disease must focus on self-management of physical conditions over time.

Lorig devised a generic self-management model in which patients are taught pain control techniques, self-relaxation, and proximal goal-setting combined

with self-incentives as motivators to increase level of activity (Holman & Lorig, 1992). Participants are also taught problem-solving, self-diagnostic skills, and how to take greater initiative for their health care in dealings with health personnel. These skills are developed by modeling self-management skills, providing guided mastery practices, and informative feedback.

In the self-management of arthritis, the program is implemented in groups in community settings by leaders who lead active lives despite their arthritis. In follow-up assessments with arthritic patients, the program retards the biological progression of disease, raises perceived self-efficacy, reduces pain, decreases the use of medical services, and improves health behavior, health status, and quality of life (Lorig, 1990; Lorig & Holman, 2003; Sobel, Lorig, & Hobbs, 2002). Both the baseline self-efficacy beliefs and the efficacy beliefs instilled by the self-management program predict the health outcomes.

Achievement of widespread health benefits requires merging the unique contributions of three models, each drawing on a different knowledge base. The first is a theoretical model that provides the guiding principles. The second is a translational and implementation model that converts theoretical principles into effective health practices. The third is a social diffusion model to promote widespread adoption of successful practices by functional adaptation to different life circumstances. Global applications of social cognitive theory illustrate the fusion of these three models (Bandura, 2004b).

The generic self-management model devised by Lorig lends itself readily to widespread applications. It can be adapted with supplementary components to different chronic diseases (Lorig et al., 1999). It promotes diverse improvements in health in ethnic participants such as Spanish-speaking ones suffering from arthritis (Lorig, Gonzalez, & Ritter, 1999) and those at risk for diabetes (Lorig, Ritter, & Gonzalez, in press; Lorig, Ritter, & Jacquez, in press). Major HMOs have adopted this model and integrated it into mainstream health care systems (Lorig & Holman, 2003; Lorig, Hurwicz, Sobel, & Hobbs, in press).

It is being widely disseminated internationally as well. England has adopted it as part of its National Health Service. The National Health Board of Denmark is in the process of integrating it into their health system, and it is being widely applied in Australia, where it is central to their chronic disease management policy. In a randomised control trial in China involving diverse chronic conditions (Dongbo, McGowan, Yi-e, Lizhen, Huiqin, Jianguo, Shitai, Yongming, & Zhihua, 2003), the generic self-management program achieved the same type of health benefits as elsewhere. It raised self-regulatory efficacy, fostered health-promoting behavior, improved health status, and reduced hospitalisations. The generalisability of a self-regulatory model to health promotion is further verified by Clark and her colleagues in a randomised control trial in school-based applications in China for children

with asthma (Clark, Gong, Kaciroti, Yu, Wu, Zeng, & Wu, in press). It improved asthma management in the home, reduced hospitalisation and school absenteeism, and improved academic performance. Efforts are being made to disseminate this program to schools.

Our field does not profit from its theoretical advances because, for the most part, it lacks creative translational and social diffusion models. These are the vital, but weakest, links in the field of health promotion. Much attention is devoted to the development and predictive validity of self-regulation theories but surprisingly little to their social utility. Theories are predictive and operative tools. In the final analysis, the evaluation of a science of self-regulation for health promotion will rest heavily on its social utility.

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