

Prevention and Health Promotion: Decades of Progress, New Challenges, and an Emerging Agenda

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Daily habits (e.g., smoking, diet, and exercise) and their immediate consequences (e.g., obesity) confer risk for most of the major health problems in industrialized nations. Hence, determinants of these behaviors and their modifications have been central topics in health psychology. Considerable scientific and applied progress has been made, but the field faces important challenges and opportunities in the future. These challenges and opportunities include changes in demographics and patterns of health, the need for a more comprehensive model of the domain of health behavior and prevention, the need to integrate behavioral and psychosocial risk and resilience, the incorporation of new technologies, and addressing a variety of professional and economic barriers to the implementation of prevention in health care.

Key words: prevention, health behavior, risk reduction, psychosocial risk

Throughout its 25-year formal history, health psychology has maintained a major research and applied focus on the role of health behavior in the development and prevention of serious illness and premature mortality. Daily habits (e.g., smoking, exercise and activity, diet, and alcohol use) and their immediate consequences (e.g., obesity) contribute to the development of virtually all of the major sources of morbidity and mortality in industrialized nations (McGinnis & Foege, 1993). Hence, the determinants of these behaviors and interventions designed to improve health behavior have been a central focus of theory, research, and practice in the field.

This sustained attention has produced several notable accomplishments. The description and surveillance of behavioral risk factors and related characteristics (e.g., prevalence of smoking or obesity) has been steadily refined and is now widely available to researchers, health care professionals, and policymakers (Orleans,

Gruman, Ulmer, Emont, & Hollendonner, 1999). The field is guided by several well-articulated and influential theories of health behavior and risk reduction (Elder, Ayala, & Harris, 1999; Smedley & Syme, 2000; Weinstein, 1993; Weinstein, Rothman, & Sutton, 1998), and newer social ecological theories clarify the macrolevel policy and environmental determinants of risky behavior (e.g., Sallis & Owen, 2002). There is also a maturing body of research describing psychosocial risk factors for major sources of morbidity and mortality beyond the traditional behavioral risks such as smoking, diet, and activity levels. These increasingly well-established psychosocial risk factors include social isolation, socioeconomic status (SES), personality characteristics, and negative emotions (Adler & Matthews, 1994), and a growing body of research supports models that identify psychophysiological effects of stress and emotion as the general mechanism underlying their association with disease (Lovallo, 1997).

Although the effects have not always been maintained over periods longer than a year, behavior-change intervention research has produced considerable evidence that risky health behaviors can be changed and health outcomes improved (Dubbart, 2002; Niaura & Abrams, 2002; Orleans, 2000; Wadden, Brownell, & Foster, 2002). A variety of emerging intervention and dissemination approaches promise to increase the beneficial impact of the field's role in prevention by increasing the range of interventions, locations and systems for their implementation, and the levels of analysis on which they are based—from downstream individually based approaches to midstream organizational- and community-based interventions to upstream policy-level strategies (McKinlay & Mauceau, 1999; Smedley & Syme 2000). This latter development reflects a growing and important balance between the traditional clinical focus on individual and small-group-based strategies

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typical of the field's early years and a newer population-based public health orientation (Schneiderman, Speers, Silva, Tomes, & Gentry, 2001). Finally, a well-developed scientific infrastructure supports these ongoing accomplishments and developments. This infrastructure takes the form of substantial and growing amounts of public and private research funding, recognition of this research area across a wide range of scientific fields and health professions, well-respected peer-reviewed outlets for related research, a large and capable pool of scientists, and a growing set of training programs for the future generation of health psychology researchers and practitioners of all sorts.

Although there is good reason for satisfaction and even pride in the accomplishments of the previous 25 years, critical challenges remain. The behavioral health of most industrialized nations, in terms of tobacco use, diet, exercise, and other relevant habits, is far from optimal, suggesting the need for much further work on this general topic. Many trends and changes are under way within the field and beyond it that will shape the future opportunities and challenges in this area of health psychology. In this article, we outline these trends, opportunities, and challenges and discuss their impact on the future of the subdiscipline of health behavior and prevention. We conclude with a discussion of an emerging agenda for education and training, clinical practice and other forms of application, research, and policy. Just as the previous 25 years have provided clear evidence of progress, research and application in the area of health behavior and prevention will undoubtedly play a central role in health psychology, medicine, and public health policy far into the future.

Opportunities and Challenges

The demographics of industrialized nations are rapidly changing, as are the specific health-behavior issues facing them. This is likely to result in a different prevention science in health psychology. Concurrent changes in medical science and health care will exert a similar force for change. The new emphases in the field will build on prior theory and research but will require an evolution of the existing models. We describe several of the resulting challenges and opportunities that will shape prevention research and application in the future.

Changing Demographics and Patterns of Health

In the United States, as in several industrialized nations, the increasing average age of the population and its increasing ethnic and cultural diversity have important implications for the type of health problems that confer the greatest burden of morbidity and premature mortality as well as the related economic impact (Siegler, Bastian, Steffens, Bosworth, & Costa, 2002; Whitfield, Weidner, Clark, & Anderson, 2002; Yali & Revenson, 2004). As the population grows older and lives longer, the importance of identifying the modifiable behavioral risks for chronic diseases of middle and later adulthood and the determinants of these behavioral risks will continue to grow. Coronary heart disease, stroke, hypertension, cancer, Type II diabetes, renal disease, and several other diseases are influenced by a variety of health behaviors. Given the age-related increases in the prevalence of these conditions, the importance of behavioral health promotion and prevention will grow. The usual approach to this type of prevention

focuses on modification of these behaviors long before the age of disease onset. However, many of these behaviors confer risk of serious illness well into later adulthood, in that their modification can still be beneficial for older individuals—even if they have established disease. Research on the determinants and modification of health behavior among older adults will become more important as a complement to the traditional research on these issues in younger age groups. Many of the health behaviors that influence the risk of serious illness in middle and later adulthood are often established in late childhood and adolescence, and the determinants of such health behaviors in these age groups are themselves imbedded in a developmental context (Williams, Holmbeck, & Greenley, 2002). Therefore, integration of the concepts and methods in aging and life span development into health-behavior research will be increasingly important because the nature of behavioral risks, their underlying determinants, and the optimal approaches to behavior change will undoubtedly differ across the life span (see Wilcox & King, 1999).

In addition to such efforts to prevent chronic disease, the research and application agenda in this area could be expanded usefully to include preventing or at least minimizing the negative impacts of chronic disease (e.g., functional limitation or emotional distress). Identification and modification of influences on the varying degree of disability and distress that accompany a given disease could facilitate the compression of morbidity (Fries, 2002) and maximize important components of quality of life (Kaplan, 1994). Moreover, health-behavior change has been identified as a central element of effective approaches to chronic-disease management (Wagner et al., 2001). Here again, the incorporation of theory and research in aging and adult development is likely to prove useful because the specific emotional and functional impacts of an illness are likely to differ with age and life stage, as will the determinants of these impacts. As a result, common interests and collaborations both with gerontology and health services researchers focusing on improving care for patients with chronic disease will increase in importance for health psychology in the future.

The prevalence of chronic diseases and the relevant behavioral risk factors vary across ethnic and cultural groups, and the determinants of these behaviors and the effects of related interventions may as well (Whitfield et al., 2002). The growth in the racial-ethnic and cultural diversity of the American population and increasing recognition of disparities in behavioral health risks and treatments provided for them and for the chronic conditions they cause will necessitate an increased emphasis on research with diverse samples as well as increased attention to the critical conceptual and methodological challenges in such research (Landrine & Klonoff, 2001). Also, although the average income in many industrialized nations continues to rise, so does the gap between the richest and poorest segments of society. Given the well-established association between SES and health (Adler & Matthews, 1994; Whitfield et al., 2002), attention to this potential moderator of the prevalence, effects, and determinants of health behavior and effects of various approaches to risk reduction will be an increasingly important focus for research in the future (e.g., Whitlock, Orleans, & Pender, 2002).

In this way, issues of ethnic and cultural diversity, SES, and aging share a common set of implications for the future of health behavior and prevention—the increasing importance of contextual competency in research and application (see Yali & Revenson,

2004). Concepts and methods necessary for adequate articulation and testing of models of health behavior and related interventions within the varied contexts arising from these sources of diversity, as well as the implementation of related public health initiatives, will grow in importance. As a result, just as the initial development of the field required multidisciplinary efforts combining psychology, medicine, and public health, additional types of collaboration and training will be important in the future. Women's health was relatively neglected in both traditional medical and biopsychosocial research until recently (Stanton & Gallant, 1995). Although many significant challenges remain in closing the gap between what is known scientifically about men's health versus women's health, considerable progress has been made. Similar attention to ethnicity and culture, SES, and age is keenly needed for a current and comprehensive prevention science, given the demographic changes described above.

To the extent that the field addresses the public health needs of developing nations and nonindustrialized economies, the concepts and methods of prevention science will require still further expansion and modification (Elder, 2001). Many behavioral risks (e.g., smoking and unsafe sexual behavior) are similar to those faced in industrialized nations, but their determinants and the feasibility and effects of interventions are likely to vary in important ways. Further, the prevention of infectious diseases across the life span that are far less common in industrialized economies will require major modifications of existing theory and intervention strategies.

An Expanded Model of Prevention Science

Early models of health behavior and prevention emphasized a single dimension—the stage of disease risk and disease development (e.g., primary, secondary, and tertiary prevention). It is increasingly clear that this view is incomplete. The time course of risk and disease—from the development of risk, through its maintenance in still healthy individuals, to the onset and progression of serious and chronic illness—remains a central dimension, but two additional dimensions are necessary for a complete view of the variety of targets and strategies necessary for a comprehensive prevention science. In the future, prevention science will likely incorporate this expanded focus.

The first dimension to be added describes levels of analysis, as described in the general systems theory (von Bertalanffy, 1968) that comprises the conceptual foundation of the biopsychosocial model (Engel, 1977) so central in health psychology (see Suls & Rothman, 2004). Determinants of health behavior, targets for intervention, and strategies for intervention are increasingly described at all levels from basic biological processes (e.g., the physiology of nicotine addiction and weight regulation); individual psychological processes (e.g., coping skills, stages of change, vulnerability to relapse, and self-efficacy); family and small-group processes (e.g., social support); larger social, cultural, and environmental factors (e.g., norms about health behavior and access to safe settings for exercise); and institutional and public policy factors (e.g., private or public support for health-behavior change, taxes on tobacco, and enforcement of sales policies). For any given health behavior, a comprehensive approach to prevention requires a consideration of all of these levels of analysis and interactions among them. Also, new approaches must integrate cross-disciplinary perspectives (e.g., Abrams, 1999).

The second dimension to be added involves the changing nature of threats to health, the related behavioral risks, their determinants, and the effects of interventions across the life span. The major sources of morbidity and mortality in childhood (e.g., acute illnesses and unintentional injury in the home or in auto accidents) are different from threats to adolescent health (e.g., unsafe substance use and driving, violence, and early and unprotected sexual activity), which in turn are quite different from the threats to health in middle and later adulthood. We think it is obvious that very different behaviors are relevant to these risks (e.g., parental safety practices vs. personal alcohol use), and the same behavior may have overlapping but distinct determinants in different age groups (e.g., adolescent problem drinking vs. adult problem drinking). Therefore, a comprehensive approach to prevention science must explicitly incorporate the dimension of life span development and, as previously noted, the concepts and methods from this area of behavioral science (Siegler et al., 2002; Williams et al., 2002). Consideration of the three-dimensional model of topics and approaches in prevention science composed of (a) the time course of risk, disease, and health outcomes; (b) levels of analysis; and (c) risk and health threats across the life span is likely to encourage attention to a wider range of research topics and applications, with the possible result of a more comprehensive and more useful contribution to public health.

Other extensions of the current implicit model in prevention science are likely to be useful in the future. As noted above, greater attention to the nature of health threats, behavioral risks and their determinants, and the effects of interventions across the full range of ethnic and cultural groups and SES, as well as using the full spectrum of downstream, midstream, and upstream interventions will promote a form of prevention science that serves the interests of the public more broadly (McKinlay & Marceau, 1999; Smedley & Syme, 2000). It is increasingly clear that beneficial changes in health behavior are often not seriously considered or attempted by at-risk individuals, and when such initial attempts are successful, the changes are often not maintained for periods longer than 6–12 months (Orleans, 2000). Current efforts toward a comprehensive prevention science that effectively address the full time course of health-behavior change (Weinstein et al., 1998) should receive additional emphasis in the future, as should those that alter policy and environmental determinants to help support and maintain healthy behavior changes (Sallis & Owen, 2002).

Ongoing advances in medical genetics have important implications for the future of downstream individually oriented prevention strategies (see Saab et al., 2004). Specific sources of genetic vulnerability and resilience that moderate the effects of health behavior (e.g., susceptibility to weight gain with excess caloric intake) are likely to be identified. These genetic markers could be useful in identifying subgroups at greater or lesser need for behavioral intervention. Other genetic factors may be identified that influence the acquisition of unhealthy behaviors or resistance to their modification. These factors could guide the development of targeted pharmacologic interventions. It is important to note that health-behavior intervention efforts are typically designed to prevent physical morbidity and premature mortality. However, the simple presence and severity of illness is an incomplete description of health. Subjective well-being is an important component of any comprehensive definition of health but may not command enough attention as an economically important public health outcome,

given limited resources. Nonetheless, functional activity levels, other objective elements of quality of life, and the utilization of health care resources have important economic consequences and can be quantified with sophisticated but readily available methods (Kaplan, 1994). The full value of prevention interventions may be best captured through this type of broad definition of their effects, relative to their costs (Kaplan & Groessel, 2002).

Integrating Behavioral and Psychosocial Risk and Resilience

Traditional behavioral risk factors (e.g., smoking, diet, exercise, and risky drinking) and their modification are typically viewed as separate topics in health psychology from the effects of psychosocial risk factors for physical illness, such as social isolation, interpersonal stress and conflict, personality traits (e.g., hostility or pessimism), and persistent negative emotions (e.g., depression). Although these latter psychosocial risk factors could influence subsequent health through the mechanism of unhealthy lifestyles, psychosocial risk factors generally have significant effects on later morbidity and mortality even when health behavior is statistically controlled (Smedley & Syme, 2000). The prevailing model of the mechanisms underlying the health effects of psychosocial risk factors emphasizes the mediating role of neuroendocrine, cardiovascular, and immunological effects of stress and negative emotion (Lovallo, 1997). This more direct psychobiologic pathway connecting personality, emotional, and social–environmental characteristics with subsequent disease tends to place these risk factors in a different conceptual category than behavioral risks, contributing to a tendency to conceptualize and study these domains separately.

However, the childhood and adolescent equivalents of the psychosocial characteristics that confer risk of physical morbidity and mortality in later adulthood (e.g., social isolation or chronic negative affect) also confer risk for the acquisition of unhealthy behaviors (e.g., tobacco, drug, and alcohol abuse). Although they are typically studied under different labels and with very different methods than in adult psychosocial epidemiology, these same childhood and adolescent psychosocial characteristics also contribute to the development of other undesirable emotional and social outcomes (e.g., emotional distress and disorder, difficulties in school, aggressive and violent behavior, and early and unsafe sexual activity and teen pregnancy). Individual differences in self-esteem, emotional self-regulation, social competence, family functioning, and peer relations are implicated in the array of psychosocial risk factors for physical illness and premature mortality; the development of behavioral risks for these same health outcomes; and the development of other important adaptational outcomes in childhood, adolescence, and early adulthood. The evolving but mature scientific and applied agenda in prevention and health behavior therefore seems to contain important opportunities for connection with the considerably less advanced work on the development and prevention of psychosocial risk for physical diseases.

Similar opportunities exist for developing useful connections between current prevention science in health psychology and very substantial and important areas of basic and applied research on social and emotional development and prevention in childhood and adolescent mental health. Simply put, researchers interested in preventing emotional disorder and related maladaptive behavior in

this population may have much to offer not only researchers interested in preventing smoking and other unhealthy behavior in adolescence but also for researchers interested in the prevention implications of research linking depression, hostility, and social isolation in adulthood with subsequent cardiovascular disease and premature mortality.

This potential overlap in constructs of interest and common goals creates the opportunity for a broader and more integrated prevention science, focusing on a more comprehensive view of current and future health among children and adolescents. The study of both behavioral risk and psychosocial risk might benefit from importing more aggressively the concepts and methods from basic and applied developmental psychology. Of similar note, applied developmental research on prevention might benefit by adding health behavior (e.g., smoking, diet, and exercise levels) and psychobiologic outcomes (e.g., plasma lipids, blood pressure, and endothelial dysfunction in adolescents) to ongoing or future trials of preventive interventions for more conventional social and emotional outcomes in childhood and adolescence (e.g., academic functioning, peer relations and social competence, and internalizing or externalizing symptoms or disorders). Prevention agendas that are currently conceptualized and funded largely in isolation could be drawn together. Potential breakthroughs from such research are exemplified in ongoing transdisciplinary research into the complex trajectories of youth tobacco use and addiction (Abrams, 1999).

Incorporation of New Technologies

In behavioral medicine and health psychology, the information revolution and a variety of interactive technologies are receiving increasing attention in research and application (Keefe, Buffington, Studts, & Rumble, 2002; Saab et al., 2004). Some of these are older technologies (e.g., telephone) put to new uses (e.g., intervention delivery and maintenance programs), whereas others involve state-of-the-art interactive computer technologies for the delivery of personalized health-behavior assessment and intervention programs. Interactive CD-ROM and computer-based virtual reality approaches have been developed, and their refinement promises to contribute to the widespread availability of low-cost preventive services (Harris, 1995). Research in this area is likely to be supported by a variety of innovative private and public venues.

As noted above, the rapidly expanding technology in medical genetics may soon provide important opportunities to identify subgroups for whom behavioral risk reduction is particularly useful. Such testing and screening processes are already available in several diseases, and there is at least preliminary evidence that the procedures pose both major potential benefits and some possible psychosocial risks (Lerman, Croyle, Tercyak, & Hamann, 2002).

Barriers to Integrated Prevention Science and Health Promotion

Many of the impediments to a more comprehensive and integrated prevention science will be overcome through the natural process of the field's maturation and attempts to accommodate the social and scientific changes described above. This growth and development could be facilitated, however, through changes in the initial training and continuing education of scientists. For example,

greater inclusion of concepts and methods from the allied disciplines described above (e.g., life span development, ethnic and cultural diversity, economics and public policy, health services research, and educational technologies) would hasten progress toward this goal. Further, encouraging new interdisciplinary partnerships through targeted private and public funding could be effective.

Strategies for managing the barriers to progress in comprehensive approaches to prevention in health care may be more difficult to identify and develop. The optimal timeframe for prevention requires a long view of the eventual benefits of interventions with potentially considerable short-term costs. This schedule of the accrual of costs versus benefits is not easily compatible with the practical considerations of much of health care financing. At a period in history in which prevention science has much to offer, current economic trends in health care may frustrate its implementation (see Tovian, 2004). The benefits may be far too distant to warrant the initial expenditures from the perspective of private for-profit corporations, and finding incentives for such services is a significant challenge. As an additional approach, promoting increased consumer demand for such services through public education may provide an indirect route to the creation of institutional incentives. The creation of related mandates in research, training, practice, and reimbursement could also be useful, suggesting a potentially important role for enhanced advocacy for healthy public policy (see McKinlay & Marceau, 1999). To the extent that incentives, demand, and mandates do grow, then the field will face the important but more welcome challenge of creating a variety of elements of the capacity to provide such services. This will entail increased training of health psychologists and allied professionals with skills in the implementation of the expanded preventive services described above in mainstream health care (Whitlock et al., 2002).

Implications of Progress, Trends, and Challenges for a Future Agenda

There are clear implications of these issues for the education and training of health psychologists for future work in health behavior and prevention. In the interdisciplinary curricula that characterizes most graduate training in the field, connections of psychology down to levels of analysis involving physiology and other biomedical processes are generally well represented. These connections historically provided an essential component of the scientific underpinnings of the field, and rapid advances in the study of the pathophysiology of major diseases ensure that this will continue to be an important part of the field. The foregoing discussion makes clear that equal emphasis should be given to connections up to levels of analysis involving social, organizational, cultural, institutional, and economic processes. For both research and practice, training should promote contextual competence (Yali & Revenson, 2004) across a variety of dimensions, especially ethnicity and cultural diversity, SES, and life span development. Given the importance of this knowledge of diversity, it will also be increasingly important to recruit trainees from diverse backgrounds. Such backgrounds and experiences are neither necessary nor sufficient to guarantee contextual competence, but recruitment of trainees of diverse backgrounds does promote the accumulation of a valuable pool of information and involvement. Training programs must

somehow find room in already cramped curricula for new topics (e.g., public health, educational technology, and program evaluation) and maintain the flexibility to accommodate and even encourage rapidly changing interests and emerging content areas. This could create a tension between attention to public safety in the form of training guidelines and accreditation policies, on the one hand, and the need to avoid stifling innovation, on the other hand. Given the complexity of this process, dual degrees, continuing education, and access to advanced mentoring will grow in their importance.

There are similar implications for clinical practice and other forms of application in health services. Here, too, the creation of contextual competence will be an important consideration for the effectiveness of services. Continuing education for practitioners will be increasingly important, given the increasing pace of innovation. Much of current psychological service in health psychology is directed toward the remediation of the negative impacts of chronic disease, but, as described above, efforts to prevent these prevalent and expensive impacts could be a highly valuable addition to the current clinical agenda. In this and other examples of prevention and behavioral health promotion, definitions of practice likely will be expanded to accommodate an increased emphasis on upstream public health and policy approaches, as opposed to traditional individual and small-group clinical services. This will also require the development and expansion of partnerships with other professions in health care. That is, health psychologists might be involved in the development of such interventions and the coordination of their implementation rather than the traditional role of direct service delivery. The development and implementation of interventions for core dimensions of psychosocial risk and resilience could also lead to important advances toward more comprehensive and integrated practices in prevention.

The trends, opportunities, and challenges described above have a variety of implications for research. Collaborations up to levels of analysis involving population-based, organizational, and cultural and economic processes will occur more frequently. Of similar note, new collaborations within psychology will be increasingly important, especially those with psychologists expert in basic and applied developmental psychology, aging and adult development, and concepts and methods in the study of ethnic and cultural diversity. These new types of collaborations will require the cultivation of potentially novel transdisciplinary peer-review processes for funding and publication decisions. Several new topics for research will likely emerge as important: (a) prevention of negative impacts of chronic disease, (b) explication of the positive and negative impacts of new medical screening procedures, (c) implementation of empirically supported preventive interventions in the rapidly changing contexts of standard care, and (d) filling in the insufficiently studied places in the three-dimensional model of the domain of health behavior and prevention described above (i.e., Phase of Risk and Disease Development \times Level of Analysis \times Stage of Life).

In the arena of public policy, development and implementation of strategies for the inclusion of prevention programming in mainstream health care will undoubtedly require complex partnerships between government and private institutions. Mandates for research, training, practice, and reimbursement in transdisciplinary prevention science and care compose a central element of the future agenda in this regard. Mandated surveillance of health

behaviors, relevant prevention interventions, and public health policies could broaden the scope and beneficial impact of health psychology.

Even this brief and at times speculative review illustrates the central role of health behavior and prevention in the future of health psychology. As in the impressive developments of the previous 25 years, these topics will likely represent some of the field's most important challenges and accomplishments in the coming decades. Health psychologists must look beyond current concepts and methods in prevention science to realize this considerable potential, much as the founders of the field looked beyond the traditional limits of medicine, health care, and psychology in their pioneering efforts.

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