# Healthier Lives through Behavioral and Social Science Research

Office of Behavioral and Social Sciences Research

## List of Acronyms

| | |
|---|---|
| AHRQ | Agency for Healthcare Research and Quality |
| CDC | Centers for Disease Control and Prevention |
| IOM | Institute of Medicine |
| NCCAM | National Center for Complementary and Alternative Medicine |
| NCI | National Cancer Institute |
| NCMHD | National Center on Minority Health and Health Disparities |
| NEI | National Eye Institute |
| NHGRI | National Human Genome Research Institute |
| NHLBI | National Heart, Lung, and Blood Institute |
| NIA | National Institute on Aging |
| NIAAA | National Institute on Alcohol Abuse and Alcoholism |
| NIAID | National Institute of Allergy and Infectious Diseases |
| NIAMS | National Institute of Arthritis and Musculoskeletal and Skin Diseases |
| NIBIB | National Institute of Biomedical Imaging and Bioengineering |
| NICHD | National Institute of Child Health and Human Development |
| NIDA | National Institute on Drug Abuse |
| NIDCD | National Institute of Deafness and Other Communication Disorders |
| NIDCR | National Institute of Dental and Craniofacial Research |
| NIDDK | National Institute of Diabetes and Digestive and Kidney Diseases |
| NIEHS | National Institute of Environmental Health Science |
| NIGMS | National Institute of General Medical Sciences |
| NIH | National Institutes of Health |
| NIMH | National Institute of Mental Health |
| NINDS | National Institute of Neurological Disorders and Stroke |
| NINR | National Institute of Nursing Research |
| OBSSR | Office of Behavioral and Social Sciences Research |
| ODP | Office of Disease Prevention |
| ORWH | Office of Research on Women's Health |

OBSSR

# The Importance of Behavioral and Social Sciences Research to Health

The U.S. Congress established OBSSR in the Office of the Director, NIH, in recognition of the key role that behavioral and social factors often play in illness and health. OBSSR officially began its work on July 1, 1995, with its mission of stimulating behavioral and social sciences research throughout NIH and more fully integrating these areas of research into the NIH health research enterprise, thereby improving the understanding, treatment, and prevention of disease. This publication highlights the goals and accomplishments of OBSSR—and its past, present, and future—as it celebrates its 10th anniversary. Its exclusive focus on the activities of OBSSR does not ignore the long and pervasive commitment to behavioral and social sciences health-related research made by the many NIH Institutes and Centers that preceded the establishment of OBSSR and that continues today.

Everywhere we look, the behavioral and social sciences are making significant contributions to improving our Nation's health and well-being. Behavior change is at the center of the translation of new discoveries in the biomedical, sociobehavioral, and population sciences into practices and policies that span illnesses from childhood asthma to adult depression and diabetes, and issues such as those involving memory and independent living among the elderly. The basic behavioral and social sciences have served as an essential framework upon which biomedical and socioeconomic discoveries have been built.

*Healthier Lives through Behavioral & Social Sciences Research*

OBSSR

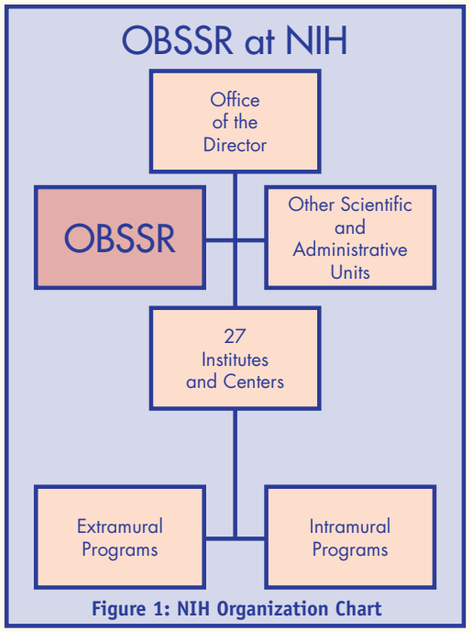



**Figure 1:** OBSSR is one of several program offices established within the Office of the NIH Director, which oversees NIH's 27 Institutes and Centers. The OBSSR Director is an associate director of NIH and leads the Office in its interactions with NIH Institutes and Centers.

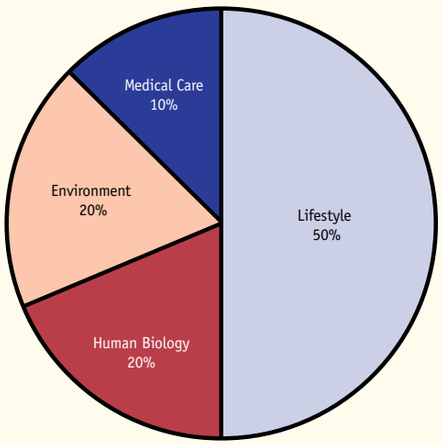



**Figure 2:** Factors that could help avoid premature mortality.

The importance of behavioral and social sciences research to improved health is evident when considering the impacts on health of behavior and social factors such as smoking, physical activity, diet, alcohol consumption, exposure to toxic agents and infectious diseases, motor vehicle and other accidents, use of firearms, violence, sexual behavior, and illicit drug use.

According to analyses of U.S. death certificates, heart disease, cancer, and cerebrovascular disease are the leading causes of death in the United States. Approximately 70 percent of the deaths from these and other diseases can be attributed to individual lifestyle factors (e.g., smoking, poor diet, overeating, inactivity) and other modifiable factors in the environment (e.g., lack of access to health care and healthy foods) that play a significant role in poor health (see figure 2).

A 2000 analysis conducted by CDC shows that the proportion of U.S. deaths attributable to preventable causes declined slightly between 1990 and 2000, from 50 percent to 46.7 percent; reductions also occurred in deaths attributed to alcohol use, microbial agents (infections), and firearms. What is increasingly alarming, however, is the rise in mortality due to poor diet and physical inactivity. The annual number of deaths from these causes rose by 65,000, and, because the full impact on mortality from rising obesity rates may not be apparent, poor diet and physical inactivity likely soon will overtake tobacco use (which causes 450,000 avoidable deaths per year) as the leading preventable cause of death.

Many diseases are linked to behavioral and social factors that are preventable. In addition, researchers have shown that patterns of poverty and low education levels are associated with increased mortality from many causes, some partly due to differential exposure to the factors listed above. These interactions are compounded by social, economic, and behavioral barriers to proper medical care or preventive services, creating higher rates of mortality.

And, although the role of behavior and society in health may be obvious, it is complex. Behavior often is intricately linked in a broader and more dynamic way to socioeconomic factors and individual lifestyle influences as well as to biological factors such as physiology and genes. Health and disease emerge from these interactions over a lifespan of developmental transitions, during sensitive periods (e.g., in utero, puberty), and across generations.

Furthermore, the costs of diseases with behavioral or social components are staggering. According to data collected by the Department of Health and Human Services, direct medical expenditures attributed to smoking, for example, total more than $155 billion per year, and the cost of obesity is well over $139 billion per year spent in direct medical expenses and lost productivity. These escalating costs are not sustainable. They are causing great concern because, with costs projected to rise to 20 percent of the Gross Domestic Product in the near future, health care expenses are threatening America's ability to remain competitive in a global marketplace. Yet one of the most cited statistics in public health is the imbalance of the heavy societal investment in medical care compared with the paucity of health promotion and disease prevention activities resulting from behavioral and social sciences research.

In the last century, life expectancy has extended by an astounding amount—from 47 years in 1900 to 77.5 years in 2003. While medical advances increasingly contribute to living longer and healthier lives, the vast majority of improvements in the **quality of life** have come from changes in our social, economic, and physical environments. Even with these gains, however, much more can be done to understand the role of behavioral and social factors in disease and to use that knowledge to improve the Nation's health.

## Authorizing Legislation Creating

# OBSSR

## (P.L. 103-43)

(a) There is established within the Office of the Director of NIH an office to be known as the Office of Behavioral and Social Sciences Research (in this section referred to as the "Office"). The Office shall be headed by a director, who shall be appointed by the Director of NIH.

(b)(1) With respect to research on the relationship between human behavior and the development, treatment, and prevention of medical conditions, the Director of the Office shall—

(A) coordinate research conducted or supported by the agencies of the National Institutes of Health; and

(B) identify projects of behavioral and social sciences research that should be conducted or supported by the national research institutes, and develop such projects in cooperation with such institutes.

(2) Research authorized under paragraph (1) includes research on teen pregnancy, infant mortality, violent behavior, suicide, and homelessness. Such research does not include neurobiological research, or research in which the behavior of an organism is observed for the purpose of determining activity at the cellular or molecular level.

# Establishing a Focal Point for the Behavioral and Social Sciences at NIH: The History of OBSSR

By the early 1980s it was increasingly obvious that behavioral and social factors not only significantly contribute to health and illness, but also frequently interact with biological factors to influence health outcomes. The growing appreciation of the importance of behavioral and social factors in health and disease was further buttressed by several discouraging health and social trends, including: rising rates of youth violence; increasing obesity and overweight, especially among children; persistently high infant mortality rates; rising rates of homelessness; and persistent health disparities among segments of the population. In addition, the aging of the Baby Boomers has resulted in increases in the incidence of many chronic diseases, such as heart disease, arthritis, and cancer, all of which involve significant behavioral and social factors, not only in their causes but also in the avenues available for their prevention and treatment.

In response to the need for health-related behavioral and social sciences research, in 1993 Congress established OBSSR. NIH already had a long history of funding health-related behavioral and social sciences research, and the results of this work have contributed significantly to our understanding of the basic underlying mechanisms and treatment of mental and physical health and illness. Establishing an office focused on the behavioral and social contributions to mental and physical health and well-being enables NIH to reinforce and leverage existing efforts and develop synergy across multiple Institutes and disciplines.

Since opening its doors in 1995, OBSSR has worked to achieve the goals of its authorizing legislation by effectively highlighting and supporting the scientific opportunities that exist in basic and applied behavioral and social sciences research. OBSSR has been actively addressing its congressional mandate and has encouraged research in the behavioral and social sciences by developing ideas for initiatives and gaining support for them within the NIH community. Although OBSSR does not have grant-making authority, it has been active in organizing and funding (through transfers to NIH Institutes and Centers) 28 trans-NIH research programs, selected samples of which are mentioned in this booklet.

Most NIH Institutes and Centers fund behavioral and social sciences research that is directly related to their missions, although the levels of funding vary. For example, NCI supports research related to tobacco control and cancer screening, treatment, and survivorship, and NHLBI supports research on behavioral and lifestyle factors that contribute to maintaining a healthy heart. Other Institutes, such as NIAAA, NIDA, and NIMH, also have been significant supporters of the behavioral and social sciences. From a noncategorical disease perspective, Institutes such as NIA, NICHD, and NINR have supported sociobehavioral research across the lifespan from pregnancy to old age; research on racial, ethnic, and socioeconomic disparities; and investigations of factors related to health providers and health services delivery. OBSSR also has worked closely with other programs in the Office of the NIH Director that focus on disease prevention, women's health research, AIDS research, and health of minority populations to advance common goals in understanding important issues that cut across the categorical and noncategorical Institutes and Centers. As part of its mission, OBSSR systematically reviews the relevant programs of the mission-oriented Institutes and Centers and tries to identify areas of research that would benefit from cooperative efforts.

## NIH Mission Statement

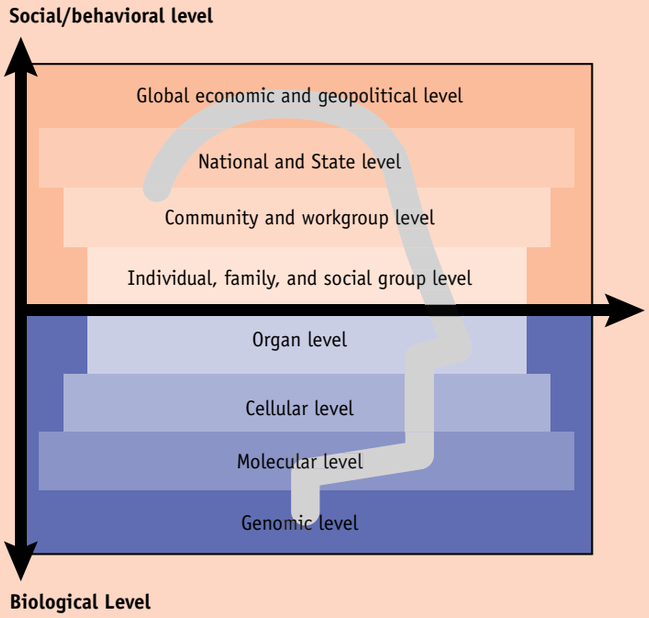
"NIH is the steward of medical and behavioral research for the Nation. Its mission is science in pursuit of fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to extend healthy life and reduce the burdens of illness and disability."

# Growth in Support of the Behavioral and Social Sciences

In 1996, OBSSR's first Director, Dr. Norman B. Anderson, developed a Strategic Plan using a collaborative process involving intramural and extramural NIH staff, extramural researchers in the behavioral and social sciences, scientific and professional societies, and individuals from foundations, societies, and other interest groups. This culminated in the publication of *A Strategic Plan for the Office of Behavioral and Social Sciences Research at the National Institutes of Health* (1997), which has guided the Office for its first decade.

Since the development of this plan, OBSSR has made significant progress in fulfilling each of its mandates, including organizing and sponsoring trans-NIH funding initiatives and major conferences, and co-sponsoring multiple workshops and symposia. The Office also has been particularly active in organizing and sponsoring training institutes and trans-NIH planning groups.

**Figure 3:** Health as a continuum between biological and social factors across the lifespan.




Biological, social, and behavioral factors are each at the root of the majority of our greatest health challenges. As shown in Figure 3, health across the lifespan is a function of many influences that range from the genetic and molecular levels all the way to economic and political levels.

In particular, OBSSR identified five specific scientific areas warranting focused attention: 1) biopsychosocial research; 2) social and cultural factors research; 3) methods relevant to the behavioral and social sciences; 4) studies of behavioral-lifestyle changes; and 5) research on violence. These areas were not intended to encompass all of behavioral and social sciences research; rather they were identified as finite areas where OBSSR's efforts might begin to move the field forward.

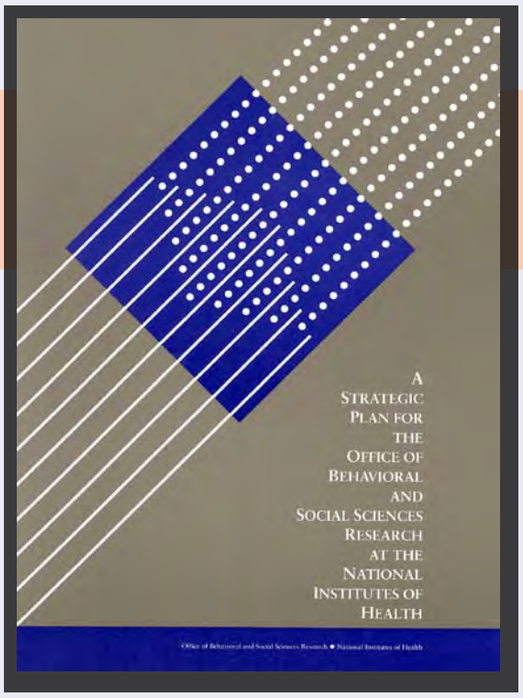
Between 1993 and 2002, the number of NIH R01 grants as a whole increased by 55 percent. Over the same period, growth in the number of projects in the five scientific areas promoted by OBSSR outpaced overall NIH-wide growth. The largest increase was observed in the number of projects focusing on behavioral-lifestyle change (289 percent). The number of methods-related projects more than doubled, as did the number of violence-related research projects. Research on social and cultural factors and health, as well as projects that dealt with biopsychosocial factors, increased by about 65 percent and 67 percent respectively. Overall, the proportion of behavioral and social sciences grants remained steady and comprises about 10 percent of the overall NIH budget.

Part of OBSSR's mission has been to help integrate a behavioral and social sciences perspective across NIH Institutes and Centers. A review of trans-NIH programs shows that several Institutes and Centers strongly support behavioral and social sciences research and many of the remaining Institutes and Centers have made progress over the past few years in supporting behavioral and social sciences investigators.

In addition, the number of behavioral and social sciences investigators participating in the extramural program has increased since OBSSR's creation. In general, there was a 21-percent increase in the number of behavioral and social sciences investigators who successfully competed for and were awarded NIH grants.

About 34 percent of behavioral and social sciences investigators applying for NIH grants were funded in 2000-2002, compared to 36 percent for those in other disciplines during that period. This suggests that behavioral and social sciences investigators are as successful in the extramural program as are their counterparts in other disciplines.

# Achieving our Goals




Three main goals of the Office were identified in OBSSR's first Strategic Plan (1997):

1. increasing the scope and support of behavioral and social sciences research and training;

2. integrating a biobehavioral perspective across NIH by informing the NIH leadership and community about the behavioral and social sciences; and

3. representing the behavioral and social sciences for NIH and improving communication among scientists and with the public.

These goals are as central today as they were 10 years ago. However, although much has been accomplished, there is much more to be done if we are to realize NIH's mission to improve the Nation's health and well-being. The activities through which OBSSR has addressed these goals are explored in the following pages.

# GOAL 1: Increasing the Scope and Support of Behavioral and Social Sciences Research and Training

## Defining and Promoting the Behavioral and Social Sciences

To increase the scope and support of the behavioral and social sciences, OBSSR had to more clearly define health-related behavioral and social sciences research, including the distinctions between basic and applied activities.

*Basic research* includes studies that focus on fundamental behavioral and social mechanisms and processes and biopsychosocial research without direct regard to specific mental or physical diseases or health conditions. *Applied research* in the behavioral, cognitive, and social sciences is designed to predict or influence health outcomes, risks, or protective factors. It also is concerned with the impact of illness or risk for illness on behavioral or social functioning.

In general, applied research can include clinical, community-, and population-based interventions and research that informs policy. It can be divided into five categories: 1) identification and understanding of behavioral and social risk and protective factors associated with the onset and course of illness and with health conditions; 2) effects of illness or physical condition on behavioral and social functioning; 3) treatment outcomes research; 4) health promotion and disease prevention; and 5) institutional and organizational influences on health.

Behavioral and social sciences contribute to clinical research when the interventions involve diagnostics (e.g., mammograms, prostate cancer screening) or therapeutics (e.g., behavioral, pharmacological and surgical interventions, rehabilitative medicine). These sciences help us improve treatments by providing an understanding of how factors such as the physician/patient relationship, social support, and communications can influence recruitment and motivation to seek treatment, adherence to treatment, follow-up rates, and outcomes.

Examples of areas in which OBSSR has helped define and promote its goals within basic and applied research are described in the following pages.

# Behavioral and Social Processes Research

**Behavioral and social processes research involves the study of human or animal functioning at the level of the individual, small group, institution, organization, or community. The work of Kelly Musick and Robert Mare is illustrative of behavioral and social processes research supported by OBSSR.**

## Research Highlight

Family Structure, Intergenerational Mobility, and the Reproduction of Poverty: Evidence for Increasing Polarization?

*K. Musick and R.D. Mare,*
*University of Southern California*

Most research on poverty and family structure has been conducted at the individual or family level, predicting the income or family behavior of men and women on the basis of their parents' marital histories, socioeconomic status, and other characteristics. This research has shown how poverty and single parenthood are transmitted from one generation to the next, but it has not shown the patterns of intergenerational inheritance in the population over time. Musick and Mare have examined longitudinal patterns of intergenerational inheritance using data from the National Longitudinal Surveys and a model of population renewal that takes into account intergenerational mobility and differential fertility across groups defined by poverty status and family structure. The results suggest that current rates of intergenerational inheritance have little effect on population change over time, appear to account for only a small share of the recent historical change in poverty and family structure, and play no role in exacerbating existing economic disparities by family structure.

This research suggests that changes in the relative number of persons in different family and socioeconomic statuses must be understood in terms of broader social, economic, and cultural developments, such as shifts in the relative economic positions of men and women, ideational changes, and changes in the material aspirations of younger groups. That is, the changes must be looked at largely outside the micro-level effects of family structure on subsequent generations. The research also suggests that intergenerational associations between poverty and family structure at the individual level do not necessarily translate into important population-level changes. Such efforts address the long-term implications of family structure on aggregate-level trends in poverty and family structure.

# Basic Biopsychosocial Research

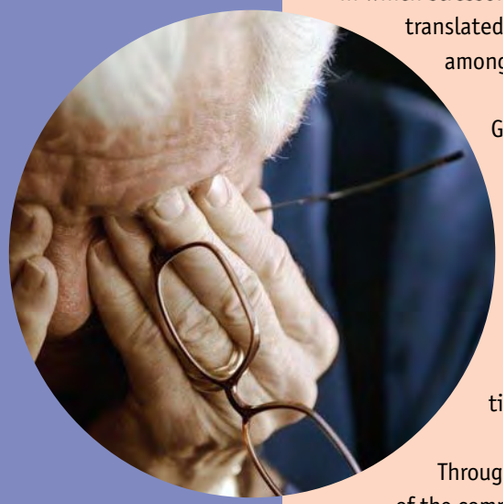
**Basic biopsychosocial research involves the study of the interactions of biological factors with behavioral or social variables and how they affect each other. The research of Ronald Glaser and Janice Kiecolt-Glaser and collaborators provides one example of this area of research, which is supported by OBSSR.**

## Research Highlight

Stress-Induced Immune Dysfunction: Implications for Health

*R. Glaser and J.K. Kiecolt-Glaser,*
*Ohio State University's College of Medicine*

Glaser and Kiecolt-Glaser and colleagues provide a perspective on developments in the field of psychoneuroimmunology (PNI)—and the implications of findings for human health. PNI, through the use of animal and human models, explores how the immune system communicates with the central nervous and endocrine systems (bidirectionally) and how these interactions affect health. Research in this field is providing important evidence about the ways in which stressors and the negative emotions that they generate can be translated into physiological changes, particularly interactions among the central nervous, endocrine, and immune systems.



Glaser and Kiecolt-Glaser have demonstrated important health consequences of stress, including slower wound healing and impaired vaccine responses in older adults; more recently they also have shown that chronic stress substantially accelerates age-related changes in IL-6, a protein that has been linked to some cancers, cardiovascular disease, type 2 diabetes, osteoporosis, arthritis, and frailty. In addition, their work has focused on the ways in which personal relationships influence immune and endocrine function and health.

Through such studies, the field of PNI is improving our understanding of the complex physiological changes that take place in stressful situations and is providing new insights into various clinical applications. Although it likely will be many years before we have a full understanding about how these systems interact, studies undertaken during the past two decades have provided evidence that immune alterations that are stimulated by stressful events can influence health.

# Behavioral and Social Risk Factors

**Behavioral and social risk factors research focuses on identifying and understanding the association of specific behavioral and social factors with mental and physical health outcomes, in particular those that may be health damaging (risk factors) or health promoting (protective factors). The work of Sheldon Cohen and colleagues illustrates the type of research in this area that is supported by OBSSR.**

## Research Highlight

Emotional Style and Susceptibility to the Common Cold

*S. Cohen, W.J. Doyle, R.B. Turner, C.M. Alper, and D.P. Skoner, Carnegie Mellon University*

This study explored whether a "positive emotional style" is associated with resistance to infectious illness. The investigators first measured the extent to which 334 healthy 18-to-54 year olds experienced positive emotions and then intentionally exposed them to a virus that causes the common cold. Those who reported experiencing more positive emotions were less likely to develop a cold when exposed to the virus. A positive emotional style also was associated with less smoking, more exercise, better sleep, and lower levels of the stress hormones epinephrine, norepinephrine, and cortisol, but these differences could not account for why a positive style was associated with resistance to catching a cold. In addition, the study found that, when comparing people who were equally sick as determined by objective markers of disease, those with positive emotional styles reported fewer symptoms than those who experienced fewer positive emotions. This indicates that the tendency to experience positive emotions is associated with a positive bias when interpreting physical sensations that could be signs of illness.

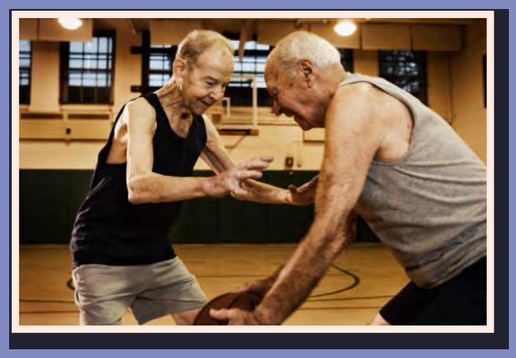
Although the better health practices and lower levels of stress hormones among those with positive emotional styles could not explain why they were more resistant to catching a cold, it is possible that these characteristics may result in a positive style being associated with a lower risk for other diseases. Such research into possible links between emotional styles and disease can help us determine how different emotions may lead to illness and the various pathways that may be involved in disease processes.

# Research on the Effects of Illness or Physical Condition on Behavioral and Social Functioning

**This research explores how illness or disability can influence behavior and a person's ability to function in a social environment—for example, how different ethnic groups approach care giving for family members with Alzheimer's disease and how that affects outcomes.**

# Treatment Outcomes

**Treatment outcomes research involves the design and evaluation of behavioral and social interventions to treat mental and physical illnesses or of interventions focused on ameliorating the effects of illness on behavioral or social functioning. It also includes research on behavioral and social rehabilitation procedures. The work of Susan Hughes provides an example of the type of research in this area that is supported by OBSSR.**



## Research Highlight

Impact of the Fit and Strong Intervention on Older Adults with Osteoarthritis

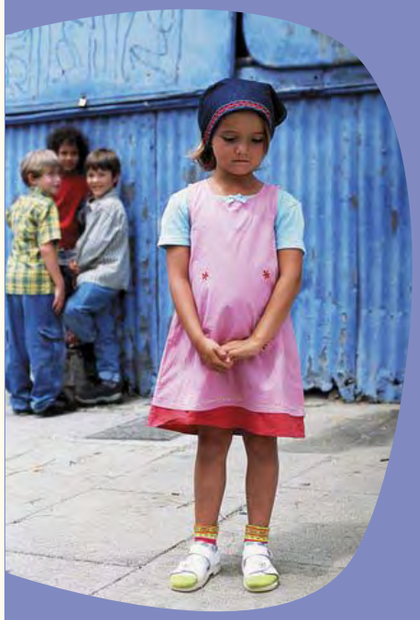
*S.L. Hughes, University of Illinois at Chicago*

To assess the impact of a low-cost, multiple component physical activity intervention for older adults with lower extremity osteoarthritis, a randomized controlled trial compared the effects of a facility-based multiple component training program followed by home-based adherence to a wait list control group. The training program consisted of range of motion, resistance training, aerobic walking, and education—and included group problem solving regarding self-efficacy for exercise and exercise adherence. All training group participants developed individualized plans for post-training adherence.

Relative to the persons in the control group, individuals who participated in the exercise program experienced a significant improvement in exercise efficacy, a 48.5 percent increase in exercise adherence, and a 13.3 percent increase in distance covered in a six-minute walk. These improvements were accompanied by significant decreases in lower extremity stiffness at two and six months after beginning the program. Program participants also experienced a significant decrease in lower extremity pain and a borderline significant improvement in efficacy to adhere to exercise over time at six months after beginning the program. In contrast, persons in the control group deteriorated over time on the efficacy and adherence measures and showed no change on the other measures. These benefits indicate that this low-cost intervention may hold great promise as one of a growing number of public health intervention strategies for older adults in the United States with osteoarthritis.

# Health Promotion and Disease Prevention

**Health promotion and disease prevention research involves the design, implementation, and evaluation of behavioral and social interventions to prevent the occurrence, recurrence, or progression of illness, symptoms, risk factors, or health problems. Health promotion also consists of evaluating procedures that facilitate optimal health functioning, such as research conducted by Mark Fraser and colleagues on the effectiveness of programs for young children in stemming later aggressive behavior and violence.**



## Research Highlight

Social Information-Processing Skills Training to Promote Social Competence and Prevent Aggressive Behavior in the Third Grade

*M.W. Fraser, M.J. Galinsky, P.R. Smokowski, S.H. Day, M.A. Terzian, R.A. Rose, and S. Guo,*
*University of North Carolina at Chapel Hill*

Aggressive behavior and poor peer relationships early in life have been implicated as major precursors of fighting, delinquency, and drug involvement, with recent research suggesting that early behavior problems and peer relations may contribute uniquely to long-term social adjustment. In addition, acceptance by peers appears to buffer the effects of aggressive behavior, while rejection appears to make it worse. Thus, interventions intended to enhance social-emotional skills and to increase peer acceptance may promote positive social development and disrupt the behavioral paths that lead to delinquency, drug use, academic failure, and other social problems.

This school-based study was designed to promote social competence and reduce aggressive behavior by strengthening children's skills in processing social information and regulating emotions. Three successive groups of third graders from two schools participated. In 2000-2001, children received a routine health curriculum; in 2001-2002, students received the Making Choices: Social Problem Solving Skills for Children program; and in 2002-2003, children received Making Choices: Social Problem Solving Skills for Children supplemented with teacher and parent activities. Compared with children in the routine condition, children in both of the Making Choices programs were rated lower on post-test social and overt aggression and higher on social competence. They also scored significantly higher on a post-test of information-processing skills.

The findings suggest that prevention programs can strengthen social-emotional skills and reduce aggressive behavior. The results of this study, which included a diverse sample of children, suggest that school-based prevention programs can strengthen social-emotional skills and produce significant changes in classroom and peer-related behavior. Developing effective strategies in this area is important, because of the difficulties involved in altering the early life experiences of children and the social-environmental conditions that shape them.

# Institutional and Organizational Influences

**Research on institutional and organizational influences on health includes studies of health care and services and of how economic factors, community and neighborhood organization, and families influence health outcomes, health care consumption, and public policy. The work of Kathleen Cagney and colleagues is an example of how both individual and neighborhood factors can affect health.**

## Research Highlight

Racial Disparities in Self-Rated Health at Older Ages: What Difference Does the Neighborhood Make?

*K.A. Cagney, C.R. Browning, and M. Wen, University of Chicago*

Racial differences in self-rated health at older ages are well documented. African Americans consistently report poorer health, even when education, income, and other health status indicators are controlled. In this study, the investigators asked whether neighborhood social and economic resources help to explain the self-reported health differential between African Americans and Whites. Using the 1990 Decennial Census, the 1994-1995 Project on Human Development in Chicago Neighborhoods-Community Survey, and selected years of the 1991-2000 Metropolitan Chicago Information Center-Metro Survey, the investigators examined the impact of neighborhood structure and social organization on self-rated health for a sample of Chicago residents aged 55 and older. Findings indicate that affluence—a neighborhood structural resource—contributes positively to self-rated health and attenuates the association between race and self-rated health. When the level of affluence in a community is low, residential stability is negatively related to health. Collective efficacy, a measure of neighborhood social resources, is not associated with health for the older population that was the subject of the study. This study demonstrates that analyses incorporating individual- and neighborhood-level contextual indicators may further our understanding of the complex association between sociodemographic factors and health.

# Setting a Research Agenda

OBSSR uses several mechanisms to proactively set a research agenda. First, the Office sometimes turns to the independent advice of IOM. For example, in 2000 OBSSR asked IOM to issue recommendations on how NIH can integrate research in the social, behavioral, and biomedical sciences in order to better understand the causes of disease as well as interventions that promote health. The report, *New Horizons in Health: An Integrative Approach*, outlines a set of 10 research priorities for OBSSR's consideration and pays particular attention to research that can support and complement NIH's mission (see box this page).

By addressing the range of interactions among social settings, behavioral patterns, and important health concerns, the report highlights areas of scientific opportunity in which significant investment is most likely to improve national and global health outcomes. OBSSR supported another IOM study published in 2001. *Health and Behavior: The Interplay of Biological, Behavioral, and Societal Influences* reviewed the complex interplay among biological, psychological, and social influences and explored emerging research findings, particularly those related to interventions used at multiple levels that can be employed to improve human health.

**IOM's research priorities include:**

- predisease pathways
- positive health
- gene expression
- personal ties
- healthy communities
- inequality
- population health
- interventions
- methodology, and
- infrastructure.

Second, OBSSR convenes workshops to solicit input in developing its research agenda. Since its inception, OBSSR has convened or co-sponsored 35 conferences and workshops. For example, a 2004 workshop, *Research Designs for Complex, Multi-Level Health Interventions and Programs*, explored the strengths and weaknesses of various study designs considered for use in translational research in complex, multilevel community health interventions. The program was co-sponsored by NIH and CDC, with additional support from AHRQ and in conjunction with the Robert Wood Johnson Foundation.

Finally, OBSSR relies on internal advice from the NIH Behavioral and Social Sciences Research Coordinating Committee to help set the research agenda. All of the NIH Institutes and Centers are invited to participate in the Coordinating Committee, which convenes scientific lectures, seminars, and workshops, prepares reports on the current status and future direction of health and behavior research at NIH, organizes presentations for lay and scientific organizations, and adds behavioral and social research components to NIH initiatives and studies.

# Designing and Coordinating Trans-NIH Funding Initiatives

OBSSR's mission is to make strategic use of its limited resources by identifying topics that are consistent with the missions of multiple NIH Institutes and Centers. The Office places emphasis on research activities of interest to multiple Institutes, and that might not be pursued by any one of them alone. As such, OBSSR plays a leadership role in developing ideas for behavioral and social sciences initiatives and in gaining support for them within and across the NIH Institutes and Centers. Some of OBSSR's research programs are highlighted as follows.

## Preventing Youth Violence

**Although youth violence has long been recognized as a serious public health problem, the 1999 Columbine school tragedy in Littleton, Colorado, and similar events served to elevate research on youth violence intervention to a high priority for the U.S. Congress, the Department of Health and Human Services, and the public at large. In response to this heightened concern, then-NIH Director Harold Varmus convened an October 1999 meeting of an expert panel. Noting that fully two-thirds of the current NIH youth violence research portfolio is etiological and risk factor research, the panel called for more studies of youth violence interventions and strongly encouraged the support of preliminary work to develop interventions prior to large-scale testing. In December 1999, OBSSR announced Research on the Development of Interventions for Youth Violence, the goal of which was to support exploratory research to stimulate investigations of innovative research for youth violence prevention and treatment, service delivery, and maintenance of behavior change. The initiative was sponsored by OBSSR in partnership with NIAAA, NICHD, NIDA, and NIMH.**

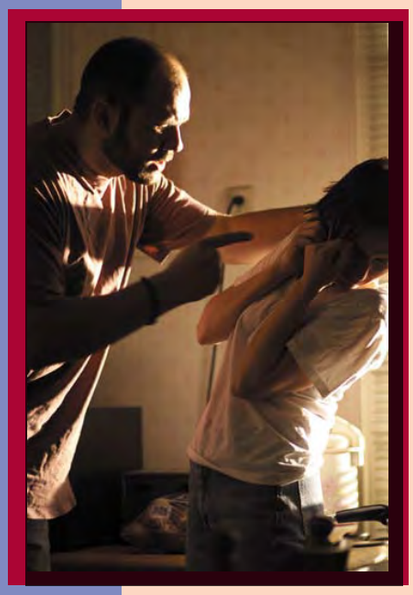
# Violence Against Women and Within the Family

**In January 1996, OBSSR announced a special research program, *Research on Violence Against Women and Violence Within the Family*. The initiative especially encouraged research on the abuse of children and the elderly, partner violence, sexual violence, and perpetrators and victims of multiple episodes of family violence (e.g., abused children who witness parental domestic violence). Coordinated by OBSSR, this program was co-sponsored by the NIH ORWH, the NIH Office of Research on Minority Health, NIA, NIAAA, NIDA, NIMH, the National Institute of Justice, the National Center on Child Abuse and Neglect, and CDC. The work of Jacqueline Campbell and colleagues is an example of the type of research supported through this initiative.**

## Research Highlight

Risk Factors for Femicide in Abusive Relationships:
Results from a Multisite Case Control Study

*J.C. Campbell, D. Webster, J. Koziol-McLain, C. Block, D. Campbell, M.A. Curry, F. Gary, N. Glass, J. McFarlane, C. Sachs, P. Sharps, Y. Ulrich, S.A. Wilt, J. Manganello, X. Xu, J. Schollenberger, V. Frye, and K. Laughon, Johns Hopkins Medical Institutions*



Femicide, or the homicide of women, is the leading cause of death in the United States among African American women ages 15 to 45 years. It also is the seventh leading cause of premature death among women overall. African American women are killed by intimate partners more often than by any other type of perpetrator, with intimate partner homicide accounting for approximately 40 to 50 percent of U.S. femicides. This 11-city study sought to identify risk factors for femicide in abusive relationships by interviewing proxies of 220 intimate partner femicide victims who were identified from police or medical examiner records, along with 343 abused control women. It was found that there are identifiable risk factors for intimate partner femicides, including the perpetrator's access to a gun and previous threat with a weapon, the perpetrator having a stepchild in the home, and estrangement, especially from a controlling partner. The study also identified the variables that are particularly important in the prevention of the lethal incident itself. Other significant risks included stalking, forced sex, and abuse during pregnancy.

These findings highlight the importance of the role that health care professionals can play in identifying women at high risk of femicide, by assessing risk factors and, under conditions of extreme danger, acting assertively to inform abused women about their risk of homicide and their need for shelter.

# Adherence

Several research reports and literature reviews point to the continuing need for improving adherence to therapeutic regimens. Adherence rates vary considerably across diseases, treatments, measuring instruments, and populations, with rates ranging from 30 percent to 60 percent. At least 50 percent of persons for whom drugs are prescribed fail to receive the full benefit of treatment because of inadequate adherence. Lack of adherence to therapeutic regimens may result in poorer health for individuals as well as economic costs for their health care organizations and the broader society. With the participation of 12 NIH Institutes and Centers in 2000, OBSSR announced a research program, *Testing Interventions to Improve Adherence to Pharmacological Treatment Regimens*. For example, Dan Morrow and his colleagues are conducting research supported through this initiative.

## OBSSR Collaborators:

| | |
|---|---|
| NCI | NHGRI |
| NHLBI | NIA |
| NIAAA | NIAMS |
| NICHD | NIDCR |
| NIDDK | NIDA |
| NIMH | NINR |

## Research Highlight

Improving Medication Knowledge Among Older Adults with Heart Failure: A Patient-Centered Approach to Instruction Design

*D.G. Morrow, M. Weiner, J. Young, D. Steinley, M. Deer, and M.D. Murray, University of Illinois at Urbana-Champaign*

Older adults with chronic heart failure need assistance with their medications in order to facilitate medication adherence and improve their health outcomes. It is known that adherence decreases in patients who have complicated medication regimens, and recent expert guidelines for the treatment of heart failure recommend that patients receive as many as four to five medications. Furthermore, many older adults with heart failure must regularly administer and manage additional drugs for their other chronic diseases. Although medications have been shown to reduce the morbidity and mortality of patients with heart failure, patients must reliably take them to derive any benefits. A particular concern in the United States is that during the past decade, rates of hospitalization and death have disproportionately increased in elderly patients with heart failure. Recent studies suggest that outcomes of patients with heart failure improve when pharmacists provide patients with education and monitoring. Morrow and colleagues investigated whether patient-centered instructions for chronic heart failure medications increase comprehension and memory for medication information in older adults diagnosed with chronic heart failure. The findings suggest that the patient-centered format may improve the printed medication instructions available in many pharmacies, which should help older adults to better understand how to take their medications. Intervention improved adherence to medications. Although participants with lower health literacy had lower adherence overall, the intervention improved adherence for patients with inadequate as well as adequate literacy levels.

Morrow and colleagues also focus on the relationship between inadequate health literacy among older adults and lower health knowledge, adherence, and health outcomes. They examined predictors of health literacy in this sample of older adults with heart failure and found, as did other researchers, that performance on a standard measure of health literacy declines with age. More interesting, age-related differences on this measure are partly explained by performance on measures of processing speed and working memory. This suggests that age-related declines in health literacy partly reflect age changes in basic cognitive abilities that presumably influence comprehension skills.

# Maintenance of Behavior Change

**In January 2003, OBSSR announced a special initiative, Maintenance of Long-Term Behavioral Change. The goal of this program is to encourage research that examines biopsychosocial processes and tests interventions designed to achieve long-term health behavior change. Coordinated by OBSSR, this five-year research program was co-sponsored by 10 NIH Institutes and Centers. Applications were required to have a focus on tobacco use, exercise, eating habits, alcohol and drug use, inoculation obtainment, disease screening, stress reduction, adherence to health care regimens, or HIV or sexually transmitted infection risk practices. Studies from this initiative are just beginning to collect data; however, a recent review of research conducted by Michael Lowe highlights some preliminary thinking in this area of research.**

## OBSSR Collaborators:

| | |
|---|---|
| ODP | NCI |
| NIA | NIAAA |
| NICHD | NIDA |
| NIDDK | NIMH |
| NINR | NHLBI |

## Research Highlight

Self-Regulation of Energy Intake in the Prevention and Treatment of Obesity: Is It Feasible?

*M.R. Lowe, Drexel University*

As the prevalence of obesity in developed countries continues to steadily increase, the outcomes of obesity prevention programs have been disappointing—most of the weight that people lose through lifestyle interventions is regained within several years. One reason why people may have difficulty losing and maintaining weight may be due to the underlying assumption of most weight control programs that the many components of obesity prevention and treatment programs—behavioral, cognitive, nutritional, physical activity, and interpersonal techniques—are equally important. There is much evidence to indicate, however, that because our evolutionary heritage has made most humans highly sensitive to the availability and nature of food in the environment, it may be unrealistic to expect that better educating and motivating people to make healthier food choices is enough to overcome the combined influence of appetite and an environment that encourages obesity.

The evidence is growing that weight control interventions that focus on the availability, structure, composition, and portion size of foods in the diet improve long-term weight control and that concerted efforts to change the availability and nature of foods may hold much promise for the treatment and prevention of obesity. These efforts could include providing financial incentives for purchasing healthier foods, removing vending machines from schools, manufacturing a greater variety of low-energy-density foods, and in commercial food establishments, providing nutrition information on menu items and including more reduced energy-density choices. Research in this area plays a vital role in health and health care because obesity increases the risk for many diseases and conditions, including hypertension, high cholesterol, type 2 diabetes, coronary artery disease, stroke, and osteoarthritis.

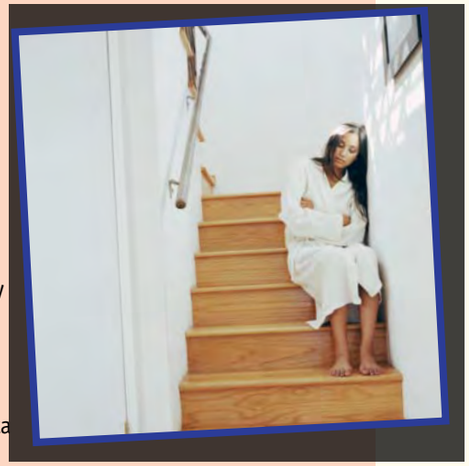
# Pathways Linking Education to Health

**In January 2003, under the leadership of the Office's second Director, Dr. Raynard Kington, and in collaboration with NIA, NCI, and NICHD, OBSSR announced a new research initiative, Pathways Linking Education to Health. The goal of this activity is to increase the level and diversity of research directed at understanding the causal pathways and mechanisms underlying associations between education and health, which can lead to additional and improved prevention and therapeutic intervention strategies for important health problems. Although the projects are still under way, early results from Margaret Ensminger and colleagues highlight the importance of this area of research.**

## Research Highlight

Maternal Psychological Distress: Adult Sons' and Daughters' Mental Health and Educational Attainment

*M.E. Ensminger, S.G. Hanson, A.W. Riley, and H.S. Juon, The Johns Hopkins University*



While several studies have found that depressed mothers are more likely than other mothers to have children with depressed feelings, less research has been conducted on how parental depression influences other outcomes. Ensminger and colleagues examined the relationship of mothers' symptoms of depression and anxiety reported during their offspring's childhood and adolescence with the incidence of depressive disorder and the educational achievements of their adult children. The data are from a longitudinal cohort study of first graders from a neighborhood in Chicago, followed from age 6 to 32 years. The authors controlled for poverty, mothers' education, mobility, family structure, mothers' illness, and children's first-grade classroom behavior and psychological symptoms. These investigators found that mothers' persistent psychological distress was related to later depression for their daughters and lesser educational attainment for their sons. Daughters of mothers with persistent maternal psychological distress had two-and-a-half times the risk of lifetime depressive disorder as did daughters of women without persistent psychological distress. For sons, mothers' psychological distress was not related to depression, but it was related to poorer educational attainment. The researchers concluded that mothers' depressed feelings during the childrearing years relate to their children's educational attainment as well as to their depression in adulthood.

# Mind-Body Interactions in Health

Many of the leading causes of morbidity and mortality in the United States are attributable to social, behavioral, and lifestyle factors (e.g., tobacco use, lack of exercise, poor diet, and drug and alcohol abuse). In addition, numerous studies have documented that psychological stress is linked to a variety of health outcomes, and researchers and public health officials are becoming increasingly interested in understanding the nature of this relationship. Research has shown, for example, that psychological stress can contribute to increased rates of heart disease, decreased immune system functioning, and premature aging. Other research has demonstrated that cognitions, attitudes, beliefs, values, social support, prayer, and meditation can reduce psychological stress and contribute to positive health outcomes. Consequently, over the past decade NIH has increased its efforts to encourage and support health and behavior research, of which mind-body research is one component. Starting in 1999, using funds especially appropriated by Congress to OBSSR, NIH initiated a program establishing Centers for Mind-Body Interactions and Health (see table 1).

## OBSSR Collaborators:

| | |
|---|---|
| NCI | NCCAM |
| NHLBI | NIDCR |
| NIMH | NIA |
| NIAAA | NIDA |
| NICHD | NIEHS |

## Table 1: Mind-Body Centers Funded by OBSSR Since 1999

| | |
|---|---|
| Columbia University | Mind-Body-Behavioral Medicine Clinical Trials Infrastructure |
| Johns Hopkins University | Center for Mind-Body Research |
| New York University School of Medicine | Development of a Mind-Body Center at NYUSOM |
| Ohio State University | Center for Stress and Wound Healing |
| Rutgers The State University of New Jersey | Center for the Study of Health Beliefs and Behavior |
| University of California-Berkeley | Social Disparities in the Early Neurobiology of Stress |
| University of California-Los Angeles | Mind/Brain/Body Interactions in Stress-Related Disorders |
| University of Miami | Center for Psycho-oncology Research |
| University of Michigan | Center on Social Inequalities, Mind and Body |
| University of Michigan | Michigan Interdisciplinary Center on Social Inequality, Mind, and Body |
| University of North Carolina-Chapel Hill | Gastrointestinal Biopsychosocial Research Center |
| University of Pittsburgh Medical Center and Carnegie Mellon University | Understanding Shared Psychobiological Pathways |
| University of Pittsburgh/ Carnegie Mellon University | Pittsburgh Mind-Body Center II |
| University of Rochester | Rochester Center for Mind-Body Research |
| University of Texas Medical Branch | Psychoneuroimmunology, Stress, and Healthy Aging in Hispanics |
| University of Utah | Utah Center for Exploring Mind-Body Interactions |
| University of Wisconsin | Mechanisms of Mind-Body Interaction: Emotion Interface |

# Collaborating With and Assisting NIH Institutes and Centers

**OBSSR frequently works collaboratively across NIH in developing and funding research initiatives that have strong behavioral and social sciences components, especially when the issues, such as obesity, health disparities, or the effective implementation of health interventions, span the missions of several Institutes and Centers.**

**Diabetes Prevention Program.** One of NIDDK's major clinical trials, the Diabetes Prevention Program, compared the effectiveness of diet and exercise to that of the widely prescribed drug metformin in preventing the development of type 2 diabetes in people with impaired glucose tolerance. The program found that over the three years of the study, diet and exercise sharply reduced a person's chances of developing diabetes. Participants in the lifestyle intervention group—those receiving intensive counseling on effective diet, exercise, and behavior modification—reduced their risk of developing diabetes by 58 percent. This reduction was greater than that achieved through pharmaceutical treatment. This finding was true across all participating ethnic groups and for both men and women. Lifestyle changes worked particularly well for participants aged 60 and older, reducing their risk by 71 percent. The program's striking results tell us that millions of high-risk people can use diet, exercise, and behavior modification to avoid developing type 2 diabetes.

The importance of understanding the successes and failures of behavioral adherence of people who enroll in treatment protocols led to an ancillary Diabetes Prevention Program study supported by OBSSR, which included the monitoring of mood, general adjustment, stress, family functioning, social resources, and key aspects of intervention support throughout the trial and how these related to participant compliance to the study protocol.

# Mechanisms of Physical Activity Behavior Change

**In 2003, OBSSR assisted NCI and several other NIH partners in supporting a research program to increase the knowledge base necessary to develop effective physical activity interventions in children, adolescents, adults, and older adults. Specifically, this initiative sought to elucidate the psychosocial, environmental, and physiological factors involved in the causal pathways that lead to physical activity behavior change. OBSSR is co-funding three of the program's projects, including the work of Yvonne Michael.**

## Research Highlight

Environmental Influences on Change in Elderly Walking

*Y. Michael, Oregon Health and Science University*

Physical activity is an integral component of healthy aging among older adults. The social and built characteristics of the neighborhood environment influence this population's ability to walk and engage in moderate exercise. Interventions designed to enhance physical activity in this population have not assessed the environmental factors that influence changes in physical activity behavior. Understanding modifiable environmental factors that affect physical activity behavior is necessary for developing effective interventions that increase walking and moderate physical activity among older adults. The two goals of this research are to quantify the moderating effect of neighborhood accessibility on change in walking behavior and to evaluate the mediating effect of social cohesion on change in walking activity. Neighborhood accessibility, a component of the built environment, is being measured using geographical information systems. Social cohesion, a neighborhood-level psychosocial resource, is defined by high levels of social trust and shared values. To achieve the research goals, existing data from a neighborhood-based walking intervention for older adults is being linked to measures of neighborhood accessibility. The results of this research are an important first step in understanding the factors that lead to a successful physical activity intervention program among the elderly. The use of existing data from a unique intervention study makes this study feasible and economical. Neighborhood-based interventions that target social cohesion will result in greater levels of physical activity among seniors and, as a consequence, they will contribute significantly to increased physical health in the elderly, including the prevention or delay of the onset of disability.

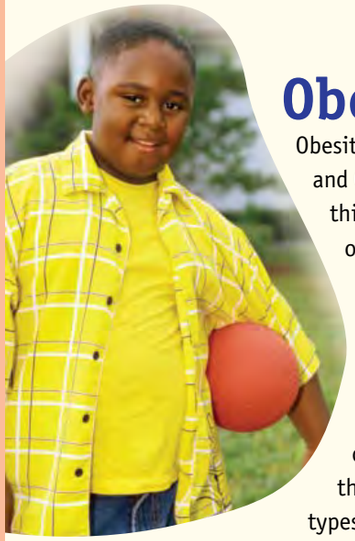
**Advances in behavioral and social sciences research on health depend on a foundation of basic theory and knowledge that provides an understanding of social structures, the dynamics of social and cultural processes, and the ways in which individuals are located in and interact with their physical environments and social structures. Sociodemographic constructs, including race, ethnicity, gender, age, and socioeconomic status, are widely used in studies of the etiology of health and disease. However, their utility depends on cultural, geographical, and historical contexts. Ana V. Diez-Roux and collaborators are conducting research that illustrates the importance of this area of investigation.**

## Research Highlight

Acculturation and Socioeconomic Position
as Predictors of Coronary Calcification in a Multi-Ethnic Sample

*A.V. Diez-Roux, R. Detrano, S. Jackson, D.R. Jacobs, Jr.,*
*P.J. Schreiner, S. Shea, and M. Szklo, University of Michigan*

Coronary calcium recently has been identified as a biochemical marker of subclinical coronary heart disease. Diez-Roux and colleagues used a data subset from the Multi-Ethnic Study of Atherosclerosis, a population-based cohort, to study coronary calcification by investigating acculturation and socioeconomic position as predictors of coronary calcification in non-Hispanic Whites, non-Hispanic Blacks, Hispanics, and Chinese residing in the United States. Coronary calcium was assessed by chest CT scan. Being born outside of the United States was associated with a lower incidence of calcification in Blacks and Hispanics after adjusting for age, sex, income, and education. The number of years spent in the United States was positively associated with the prevalence of calcification in non-U.S.-born Chinese and non-U.S.-born Blacks. Low education was associated with a higher prevalence of calcification in Whites, but with lower prevalence of calcification in Hispanics. U.S. birth and time in the United States also were positively associated with the extent of calcification in persons with detectable calcium. The investigators concluded that acculturation and socioeconomic factors are associated with differences in the prevalence and amount of coronary calcification in Whites, Chinese, Blacks, and Hispanics.



## Obesity

Obesity has become a major focus of public health efforts at the national, state, and local levels, and OBSSR has worked with several other NIH Institutes on multiple initiatives aimed at tackling this growing public health crisis. For example, in 2004 OBSSR collaborated with NICHD and other Institutes on a childhood obesity study that is testing intervention programs delivered in primary care practices, including dental practices. The interventions aim to improve the dietary and physical activity behaviors of pediatric patients to prevent excessive weight gain and promote weight loss in children who are at risk for obesity or who already are obese. Also in 2004, OBSSR collaborated with NIEHS, several other Institutes, and CDC on a new initiative to stimulate research on the built environment and obesity. One intended outcome of this activity is the development of models of health-promoting communities that provide access to a wide variety of healthy foods and that encourage recommended types and levels of physical activity. These community-based environmental interventions will serve as models for the management and prevention of overweight, obesity, and comorbidities.

## Social Work Practice and Concepts in Health

In 2005, along with 10 Institutes and Centers, OBSSR initiated a program to encourage innovative, theory-driven empirical research on social work practice, concepts, and theory as they relate to the NIH public health goal of improving health outcomes for persons with medical and behavioral disorders and conditions. Areas of interest include studies that characterize the usual and/or "best" practices of social workers and how these relate to health outcomes; studies establishing the efficacy and effectiveness of health-related interventions and services delivered by social workers; aspects of health-related social work services that are unique to specialty health care settings (e.g., clinics, hospitals, nursing homes, hospices) and nonspecialty health care settings (e.g., social service agencies, schools, jails and prisons); the nature and impact of routine prevention or clinical practice; and factors related to successful dissemination and implementation of social work services and interventions with proven effectiveness. This initiative is consistent with NIH's plan for social work research, building on previous efforts of NIA, NIAAA, NCI, NIDA, and NIMH, and following the recommendations of IOM in its 1998 report *Bridging the Gap Between Practice and Research: Forging Partnerships with Community-Based Drug and Alcohol Treatment, and Health Services* (1998).

### OBSSR Collaborators:

| | | | | |
|---|---|---|---|---|
| NCI | NHLBI | NIA | NIAAA | NICHD |
| NIDA | NIMH | NINR | ODP | ORWH |

# Strengthening the Next Generation of Investigators in the Behavioral and Social Sciences

**Providing opportunities and environments that encourage and sustain careers in behavioral or social sciences research is central to OBSSR's mission. Since 1997, OBSSR has organized numerous trans-NIH initiatives to foster the training and advancement of behavioral and social scientists and to promote interdisciplinary research.**

- In 1999, OBSSR sponsored the workshop *Qualitative Methods in Health Research*, which resulted in a published report with recommendations on preparing grant applications involving qualitative methods.
- In 2002, OBSSR sponsored the *Workshop on Interdisciplinary Training in the Behavioral, Social, and Biomedical Sciences* to explore opportunities and barriers to training in interdisciplinary research.
- Since 2001, OBSSR has sponsored the *Summer Institute on Design and Conduct of Randomized Clinical Trials Involving Behavioral Interventions*, which provides a thorough grounding in randomized clinical trials to researchers and health professionals interested in developing competence in the planning, design, and execution of clinical trials involving behavioral interventions.

No physician's education would be complete without an understanding of the role played by behavioral and social factors in human health and disease, knowledge of the ways in which these factors can be modified, and an appreciation of how personal life experiences influence physician-patient relationships.

IOM, *Improving Medical Education: Enhancing the Behavioral and Social Science Content of Medical School Curricula (2004)*

- In 2004, OBSSR, in collaboration with seven Institutes and Centers, established an annual *NIH Summer Institute for Social Work Research*. In 2004, the *Summer Institute* focused on the design and conduct of qualitative and mixed method research for social work researchers and other health professionals interested in developing competence in the planning, design, and execution of these research methods. In 2005, the *Summer Institute* addressed essential conceptual, methodological, and practical issues involved in planning and carrying out research on the impact of social work interventions on outcomes, health behavior, and treatment. The intent of the annual *NIH Summer Institute* is to facilitate greater success for junior investigators who plan to develop NIH grant applications for research in this area.

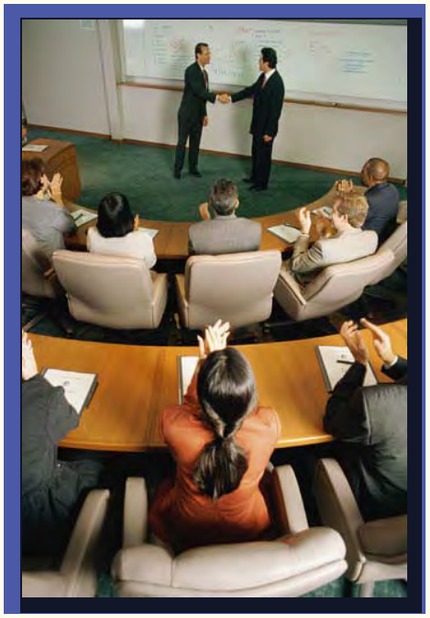
- In 2004, OBSSR and five other Institutes and Centers announced the availability of Career Development Awards to support individuals interested in enhancing their medical education through behavioral and social sciences content and curricula. The Curriculum Development Award in Behavioral and Social Sciences in Medical Schools involves the development of enhanced courses, curricula, and education designed to increase medical students' knowledge and skills in the behavioral and social sciences related to health. A second objective is to provide curriculum and other products for dissemination to other medical schools as well as to other kinds of health care professional schools. The third objective is to foster health-related research and careers in the behavioral and social sciences within medical school settings. This initiative followed on the recommendations of the IOM 2004 report, *Improving Medical Education: Enhancing the Behavioral and Social Science Content of Medical School Curricula*.

- OBSSR shares NIH's long-existing concern about the under-representation of minority scientists participating in biomedical and sociobehavioral research and has developed activities to promote their participation. In 1999, OBSSR designed a website to expand the promotion efforts

of the NIH research supplement training program (mentorminorities.od.nih.gov). OBSSR seeks to ensure that a concentration of researchers will address the behavioral and social factors that are important in improving the public's health, especially in under-represented populations. The site, still in operation, creates a link between under-represented students and faculty eligible for support through the NIH Research Supplements to Promote Diversity in Health-Related Research Program. In addition, it establishes a central resource for students and faculty, as well as researchers, who are seeking information on NIH research training opportunities in the behavioral and social sciences. Through this program, investigators with NIH grants may receive research support for under-represented populations on their grants. To facilitate the use of this program among behavioral and social scientists, the OBSSR web page links under-represented students and faculty with potential mentors.

# GOAL 2: Integrating a Biobehavioral Perspective across NIH by Informing the NIH Leadership and Community about Behavioral and Social Sciences Research

OBSSR's creation was, in part, a recognition that behavioral and social factors not only contribute significantly to health and illness, but also frequently interact with biological factors to influence health outcomes. A more complete understanding of illness and health is gained through research integrating social, behavioral, and biomedical science. OBSSR's task is to foster this perspective and to assist NIH Institutes and Centers in implementing it throughout their research and training programs.



The NIH Behavioral and Social Sciences Research Coordinating Committee (BSSR-CC), with representation from across NIH, is charged with serving as an advisory body to the OBSSR Director and with serving as a point of coordination among the Institute and Center directors, OBSSR, NIH staff, and the external scientific community. A central activity is ongoing education and communication achieved through lecture series and conferences.

**Lecture Series**

In conjunction with the BSSR-CC, OBSSR invites behavioral and social sciences researchers to inform NIH staff and the general public about significant developments in the field through a series of monthly scientific lectures, seminars, symposia, and workshops (see tables 2 and 3).

## Table 2: Spring 2006 Behavioral and Social Sciences Seminar Series

***Loving Family Relationships and Oxytocin: New Human Findings***
Kathleen Light, Ph.D.
University of North Carolina at Chapel Hill
January 26, 2006

***Aging and Cognitive-Cortical Plasticity***
Arthur F. Kramer, Ph.D.
University of Illinois at Urbana-Champaign
March 7, 2006

***Mind and Body Back Together Again: Brain Serotonin and Cardiovascular Risk***
Stephen Manuck, Ph.D.
University of Pittsburgh
April 21, 2006

***Deadly Inequality: Uninsured Ethnic Minorities Living with Life-Threatening Illness***
Gaylene Becker, Ph.D.
University of California, San Francisco
May 16, 2006

***How Children Shape Language: Language Acquisition and Emergence of Signed and Spoken Languages***
Elissa Newport, Ph.D.
University of Rochester
June 15, 2006

## Table 3: OBSSR Conferences

OBSSR has sponsored several large NIH-wide conferences, many of which have resulted in new funding initiatives or publications, such as supplements to journals or books. Examples of conferences

1996 ***Creating New Paradigms for Collaboration in Biology, Oral Clinical Research, and the Sociobehavioral Sciences***, co-sponsored with NIDCR

1997 ***Substance Abuse and AIDS: Research from the Behavioral and Social Sciences***, co-sponsored with the NIH Office of AIDS Research and NIDA

1998 ***Bridging Biology and Behavior: The Influence of Maternal Care on the Development of Behavioral and Endocrine Responses to Stress***

1999 ***Biology of Stress Symposium***, co-sponsored with NIGMS

2000 ***Toward Higher Levels of Analysis: Progress and Promise in Research on Social and Cultrual Dimensions of Health***

2001 ***Economic Perspectives on Health Disparities Symposium***, co-sponsored with NCMHD

2002 ***Racial/Ethnic Bias and Health: Scientific Evidence, Methods, and Research Implications***

2004 ***Research Designs for Complex, Multi-Level Health Interventions and Programs Workshop***, co-sponsored with CDC, with additional support from AHRQ and the Robert Wood Johnson Foundation

2004 ***Symposium on Mindfulness Meditation and Health***, co-sponsored with NHLBI and NIDA

# GOAL 3: Improving Communication among Scientists and with the Public

Improved communication among health scientists, and between scientists and the public, is crucial to advancing behavioral and social sciences research and improving health. OBSSR has developed a communications plan involving activities aimed at

1) improving communication and information exchange among behavioral and social scientists;

2) improving communication between sociobehavioral and biomedical scientists;

3) increasing the dissemination of behavioral and social sciences findings to the public and to health care providers;

4) improving media coverage of behavioral and social sciences research; and

5) ensuring that policymakers are kept abreast of developments in these fields.

OBSSR communicates in a variety of ways with the general public, members of Congress, and the scientific community.

- Congress has expressed strong interest in and consistent support for basic and applied behavioral and social sciences research. Through briefings and testimony before congressional committees, and NIH reports to Congress, OBSSR keeps Congress informed of recent developments in the behavioral and social sciences and OBSSR activities.

- OBSSR staff deliver presentations to the lay public about the importance of behavioral and social issues in health and health research and to students about careers in the behavioral and social sciences.

- OBSSR and other NIH staff routinely make presentations at behavioral and social sciences professional and scientific meetings about OBSSR-sponsored research, the Office and its mission, and the NIH grants process.

- OBSSR is supporting a committee of the Society of Behavioral Medicine to establish an ongoing review of developments in evidence-based behavioral medicine interventions. The goal is to disseminate the findings to scientific, clinical, educator, and student communities.

- OBSSR staff members routinely publish their work and report on the activities of the Office in journals, book chapters, and intra-NIH publications.

# FUTURE DIRECTIONS

*Without health, there is no happiness.*
**Thomas Jefferson**

**Scientists increasingly are exploring the underlying mechanisms linking biology, behavior, and physical and social environments. To this end, the behavioral and social sciences have much to offer the American public in improving health. Although OBSSR has accomplished much in its short tenure, there is much left to do to if we are to realize fully the contributions of the behavioral and social sciences. Several trends highlight the types of problems that are amenable to behavioral and social sciences research:**

- Health disparities continue to exist, requiring public policies informed by behavioral and social sciences research.

- While the importance of diet and exercise for health is clear and successful interventions for short-term weight loss and increased physical activity exist, behavior change researchers must continue to explore how to initiate and maintain healthy lifestyles.

- Even though research supports pediatric recommendations of having infants sleep on their backs to prevent Sudden Infant Death Syndrome, there is a growing trend for parents to put babies on their stomachs so that they will sleep more quietly.

- A government survey revealed that 43 percent of Americans with emphysema continue to smoke after they are diagnosed. The survey also reported that 22 percent of people with asthma, 21 percent of stroke victims, and 20 percent of people with cardiovascular problems say they continue to smoke.

- Stress affects the development and course of heart disease, hypertension, and stroke. How we cope with stress, including our social relationships, influences our future health. Yet, the effects of stress are not being adequately recognized, nor are there sufficient efforts to reduce its impact.

# The Need for More Basic, Transdisciplinary, and Translational Research

Nearly every contemporary public health problem involves phenomena that can be informed by existing and developing knowledge based in the social and behavioral sciences. The social and behavioral sciences are an integral component of NIH's mission. There are enormous opportunities in the basic and applied sciences to understand brain, mind, social stressors, biology, genomics, and behavior in physical and mental illnesses. Opportunities also abound in the area of informatics and communications technologies. The behavioral and social sciences can be instrumental in developing interactive, tailored communications for health promotion, in improving adherence to treatment regimens and reducing medical errors, and in improving the management of chronic disease such as diabetes, asthma, and heart failure.

Transdisciplinary research is defined as a process by which collaborators work jointly on a problem from the outset, using a shared conceptual framework that draws together discipline-specific theories, models, methods, and measures into a new synthesis. It is an approach being adopted in many areas as a promising strategy to address complex, multidetermined health problems.

The insights of the past several decades have provided a much better appreciation of the fact that conditions such as heart disease, cancer, stroke, diabetes, and even injuries are essentially the pathophysiologic endpoints of a complex interplay of an individual's experiences in numerous domains of influence, including genetic predisposition, social circumstance, physical environment, behavior, and medical care. A particularly exciting undertaking for the years ahead will be learning how these factors interact to shape a person's health future and how the factors might be controlled to improve that person's health prospects.

For example, environmental exposures and behavioral and social patterns may determine whether a gene is expressed. Social circumstances can affect the nature and consequences of a person's behavioral choices. Genetic predispositions affect the health care that people need, and social circumstances affect the health care they receive.

Integrated approaches to understanding health require the development and advancement of research tools and practices in all disciplines, including the social and behavioral sciences. Transdisciplinary research is one promising strategy for addressing these complex, multifaceted issues. To this end, OBSSR is engaged in NIH's emphasis on transdisciplinary research, which only grows in importance as the complexity of the issues increases, requiring richer perspectives using more advanced tools, statistical methods, and sampling time frames.

# THE DREAM OF HEALTHIER LIVES THROUGH BEHAVIORAL AND SOCIAL SCIENCES RESEARCH — David Abrams, Ph.D.

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## Everyone dreams of living a healthy, satisfying, and long life. Imagine a world informed by the behavioral and social sciences in which:

- Primary prevention occurs across the entire lifespan—neonates start life with optimal nutrition and no exposure to toxic substances such as alcohol or tobacco. Children and adolescents eat nutritious foods, get plenty of exercise, are screened for early interventions, and are supported in their social and emotional development without fear of abuse, violence, or lack of access to quality mental and physical health care.

- Rates of HIV-AIDS incidence plummet, as risky practices are better understood and as more HIV-infected pregnant mothers are motivated to be tested and take the medications known to prevent mother-child transmission.

- Retirement means living an active and fulfilled life, free of concerns about memory loss, medication coverage, and premature disability. Men and women of all socioeconomic and educational levels can retire with the energy and faculties to read their favorite novels, teach at their grandchildren's schools, take a stroll down memory lane, and still be able to enjoy tilling their vegetable gardens.

- Doctors have time and incentives to really know each of their patients and to treat each as a whole person, in a patient-centered manner that respects his or her culture and values, fosters health literacy, and empowers self-care and a shared responsibility for prevention, early detection, and disease management.

- The health care delivery system and third-party payers are redesigned to reinforce, reward, and track the delivery of quality evidence-based sociobehavioral interventions along with biomedical care. Likewise, medical students, medical residents, and faculty receive more specific training in psychosocial and community medicine practices and research.

- Policies, social values, and economic incentives are aligned to address the many causes of health disparities, and these disparities are eventually eliminated.

# What are the challenges involved in achieving this dream?

Critical challenges face our national health agenda, including aging Baby Boomers and chronic diseases, juxtaposed against rising demand for services, unhappy health care providers, and unsustainable costs of providing quality care for all. Health disparities remain pervasive, and the gap could easily widen.

About 70 percent of our health outcomes involve behavior at the individual, group, or societal levels. The obesity and diabetes epidemics are examples of recent unintended consequences of societal changes. Every day, our societal structures (e.g., the built environment, health care policies, the food industry) and our lifestyles either promote or attenuate our well-being. Heart disease, depression, HIV/AIDS, addictions, cancer, arthritis, tobacco use, aging, memory, and access to care and medical practice—all of these health experiences and emerging public health problems are influenced by the social and physical environments in which we live, and they include yet transcend the biomedical sciences. Converging evidence suggests patterns of preventable disease, and even health disparities arise from malleable environmental, sociobehavioral, and economic causes. As we learn more about our genes and the biological vulnerabilities we all have to certain kinds of lifestyles and exposures to pathogens, we see how critically important it is to ensure that we create less toxic lifestyles, neighborhoods, communities, and societies.

# How can the behavioral and social sciences move us toward the dream of a healthier future?

**The behavioral and social sciences address these challenges across the care continuum, from primary prevention, screening, and diagnosis to chronic disease management. The extraordinary knowledge base of the behavioral and social sciences provides us with the opportunity to take an integrated systems approach to tackling health's grand challenges. Three examples illustrate some future directions:**

## 1. Science of dissemination.

Robust basic and applied knowledge from the behavioral and social sciences exists to prevent, reduce, and manage mental and physical conditions. We must now take what has been learned and put it into widespread practice and policy. We need to invest in a new rigorous science of dissemination, implementation, and policy. Accelerating the science of dissemination and implementation of health information and practices can have enormous impact on health and well-being, since small changes in behavior, adopted across a large population, in multiple domains, and early in life, can result in large long-term payoffs for personal and societal well-being.

## 2. Transdisciplinary integration.

The causes of chronic diseases are neither solely genetic nor solely environmental. Biological, behavioral, social, and environmental components all play a role. Animal and human models show that sociobehavioral factors, such as early life stress or lack of nurturing, can powerfully influence gene expression, with lifelong negative consequences. To spearhead further progress, we need transdisciplinary integration across the biomedical and behavioral and social sciences. Results from this partnership will better guide personalized medicine and national policies. It will permit us to tailor socioenvironmental and behavioral changes to be more "user friendly" to our genes by reducing specific exposures that prematurely damage our brains, bodies, organs, and DNA. We need a new foundation of basic science that integrates concepts, measures, and methods from basic sociobehavioral sciences and emerging ideas from systems biology.

## 3. Informatics and communications.

Extraordinary advances are being made in computer sciences, informatics, imaging, and communications. The behavioral and social sciences are moving forward with systems thinking, dynamic modeling, and knowledge synthesis, opening up opportunities for great progress in health outcomes. We need to capitalize on informatics and communications technologies to improve health literacy, empower individual self-care, provide 24/7/365 access to tailored health information and interventions, enhance decisionmaking and support, and improve the quality and accuracy of health care delivery.

**The causes and solutions of preventable disease burden and excess expense to society are as much in the domain of the behavioral and social sciences as in the biomedical ones. As the knowledge base accumulates, it will become clear that greater emphasis on the basic and applied behavioral and social sciences can make dreams come true — dreams of healthy individuals living in healthy communities within health-supporting social systems and policies.**

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