Research on Mind–Body Interactions and Health

The NIH, through the participating institutes, centers, and offices noted below, invites applications in support of research on mind–body interactions and health. "Mind–body interactions and health" refers to the relationships among cognitions, emotions, personality, social relationships, and health. A central goal of this program is to encourage interdisciplinary collaboration and innovation toward understanding the processes underlying mind–body interactions and health as well as toward the application of such basic knowledge into interventions and clinical practice in the promotion of health and the prevention or treatment of disease and disabilities.

Mind–body research is viewed as one component of health and behavior research. The Public Health Service has documented that many of the leading causes of morbidity and mortality in the United States are attributable to social, behavioral, and lifestyle factors (such as tobacco use, lack of exercise, poor diet, drug and alcohol abuse). Numerous studies have also 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 heart disease and decreased immune system functioning. 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 the NIH has increased efforts to encourage and support research on health and behavior. In 1999, using funds especially appropriated by Congress to the Office of Behavioral and Social Sciences Research (OBSSR), the NIH issued a request for applications (RFA) for Centers for Mind–Body Interactions and Health (OD-99-005) and subsequently awarded five P50 center grants. On 9 January 2003, the NIH issued two related RFAs titled Mind–Body Interactions and Health: Research Infrastructure Program (OB-03-004) and Mind–Body Interactions and Health: Exploratory/Developmental Research Program (OB-03-005). The NIH also commissioned a series of reports from the National Research Council and the Institute of Medicine, which include calls for expansion of interdisciplinary health research on mind–body topics.

Three areas of research are emphasized in this RFA. In addition, special importance is given to mind–body research in diverse racial/ethnic and socioeconomic status populations (e.g., cultural beliefs regarding health, perceived racism and health, distrust of health care systems and health care utilization, perceived disability, health). The formation of multidisciplinary teams to perform the research of this initiative is viewed as essential.

The first area of emphasis is the effect of cognitions or personality (e.g., beliefs, attitudes, values, modes of thinking) and of emotions on physical health. Included is research on social, psychological, behavioral, affective, and biological factors mediating these effects. What are the physiological, behavioral, and social pathways by which beliefs, attitudes, and values or particular stress-management interventions affect health? How do emotions, personality, and cognitions interact to affect health?

The second area of emphasis is determinants or antecedents of health-related cognitions (beliefs, attitudes, values, modes of thinking, decision-making styles). That is, given that some beliefs and attitudes have been shown to affect health, how are these beliefs, attitudes, and values developed, maintained, or changed? Specifically, this RFA will support research that addresses issues such as: What contributes to individual differences in the beliefs, attitudes, and values that affect health and biological processes? How are health-related beliefs, attitudes, and values formed, maintained, and changed? How do social class, family, culture, disability, age, gender, or ethnicity influence health-related beliefs, attitudes, values, or cognitive styles?

The third area of emphasis is how stress influences physical health, including 1) basic research investigating how affect, attitudes, beliefs, and values influence perceived stress, individual differences in the biology of stress, and interactions between stress and behavioral risk factors for disease; 2) behavioral, affective, and biological mediators of the relationship between stress and health or disease; 3) the evaluation of mind–body interventions (e.g., relaxation-based, cognitive therapy, support group) for physical illness and/or biological functioning; and 4) the translation of successful interventions into programs deliverable in clinical settings. These interventions may be examined alone or in conjunction with other stress management techniques.

Issues such as the following would be appropriate here: Through which psychological or physiological pathways do stress management approaches affect health? What are the effective components in successful stress-management practices? Does the combination of various stress management techniques improve outcome? Are particular stress-management interventions more effective for certain individuals, populations, or health outcomes? Can successful stress-management practices be effectively implemented in natural settings? What are the possible economic implications of utilizing stress management interventions? What are the factors that lead to individual differences in how stress is experienced and managed as well as in the health consequences of stress?

Examples of topics of interest specific to the institutes and centers that have joined with the OBSSR in supporting this initiative are:

NIEHS. The NIEHS is particularly interested in stimulating interdisciplinary research that seeks to prevent and reduce morbidity and mortality of environmentally induced diseases. In order to better understand the linkage between exposures to environmental agents and human disease, consideration should be given to behaviors that place individuals at risk of these exposures. The NIEHS is interested in better understanding beliefs, knowledge, and attitudes associated with these exposures, which will help elucidate the sources of body burden and allow scientists to design appropriate and effective strategies to reduce or eliminate exposure from one's environment. With regards to housing and the built environment, where there are multiple environmental stressors (social, chemical, physical, biological), the NIEHS is interested in exploring how these stressors impact health. Of particular interest are new programs that seek to understand how health promotion activities (such as healthier nutritional choices, physical activity) and behavioral change to reduce exposures can mitigate some of the untoward health outcomes in these environments. In general the NIEHS is interested in exploring further the impact of social and economic factors on the health of the community and the individual, especially issues related to minority and immigrant communities, who generally work in high-injury and high-stress jobs and live in substandard housing and environments. It is also important to the NIEHS that these projects are able to communicate and disseminate their findings to have public health and policy impacts.

National Cancer Institute (NCI). The NCI is interested in research that examines how interactions among environmental, psychosocial, immune, neuroendocrine, genetic, and other biological factors affect the disease, its treatment and side effects, and/or outcome. Research may involve cancer detection, prevention, treatment, or survivorship. Examples of relevant topics include host differences, sickness behaviors (such as nausea, fatigue, depression), and biological factors impacting tumor growth or metastasis (such as DNA damage and repair, apoptosis, angiogenesis). Interdisciplinary research and research that includes integrative conceptual models is encouraged.

National Center for Complementary and Alternative Medicine (NCCAM). Mind–body interventions represent one of the major domains of complementary and alternative medicine (CAM). This domain includes CAM practices that intend to facilitate the mind's capacity to affect bodily functions and lessen symptoms of disease. These diverse practices are of interest to NCCAM and include, but are not limited to, various types of meditation, unconventional uses of hypnosis, prayer and other forms of mental healing, and art therapy. In addition, many traditional medical systems, such as traditional Chinese and Ayurvedic medicine, utilize mind–body CAM techniques. NCCAM is also interested in research on the placebo effect and studies on practitioner–patient interactions. Specifically related to this RFA, NCCAM is interested in research involving the types of mind–body interventions described above that can help elucidate how personality, cognitions, emotions, beliefs, and attitudes can affect physical health, as well as how and whether CAM mind–body interventions can enhance healing and reduce the physical manifestations of illness. In addition, certain mind–body interventions, including cognitive/behavioral therapies and various means of stress reduction, which are being adopted in some settings by mainstream medicine, continue to be of interest to NCCAM. NCCAM encourages CAM-related mind–body research that draws upon contemporary tools of neurobiology, neuroimmunology, and neuroendocrinology using state-of-the-art imaging, cellular, biochemical, and molecular approaches.

National Heart, Lung, and Blood Institute (NHLBI). The NHLBI supports behavioral research designed to investigate the relationship between psychosocial factors (such as depression, social support, hostility, stress, emotions) and diseases/disorders of the circulation, respiratory system, blood, and sleep, including the mechanisms that mediate these associations. Other areas include motivational (e.g., beliefs, attitudes, values), emotional, and cognitive processes involved in the formation, change, or maintenance of health-related behaviors. The interactions of these processes with sociocultural and socioeconomic factors are also important. Finally, the study of gene–environment interactions is important. This includes not only the influence of genes on behavior, but also the neurohormonal pathways through which psychosocial factors influence gene expression. In all of these areas, translation of basic research into clinical applications is also encouraged.

National Institute of Dental and Craniofacial Research (NIDCR). The NIDCR encourages studies that investigate mind–body interactions with regard to oral and craniofacial diseases/disorders and dental treatments. Examples include, but are not limited to, studies of the effects of beliefs, affective states, or stress on the immune system as related to the onset, progression, or treatment of oral diseases or conditions such as periodontal diseases, caries, head and neck cancers, temporomandibular

joint and/or muscle disorders, herpetic and aphthous lesions, oral manifestations of HIV infection, or oral mucosal wound healing following oral surgery. Studies identifying linkages between changes in orofacial appearance or function and psychosocial outcomes are also of interest, as are studies of the psychosocial impacts of acquired or congenital craniofacial conditions (e.g., cleft lip/palate) or studies of the range of psychosocial impacts associated with head/neck cancers and ablative or other treatments. The NIDCR also encourages studies that integrate oral biomarkers into the evaluation of effects of stress management or other therapeutic interventions. Changes in salivary composition and flow are examples of oral biomarkers shown to be relevant to stress and its physiological impact. The relative accessibility of the oral cavity provides unique opportunities for noninvasive studies of psychophysiological responses associated with positive or negative life events, acute or chronic stress-inducing conditions, and psychological characteristics or psychiatric conditions.

National Institute on Aging (NIA). The NIA's mission is to improve the health and well-being of older Americans through research. The NIA is interested in a developmental life-course perspective of aging and mind–body effects on acute and chronic health, quality of life, functional capacity, and life expectancy/mortality. Research linking cognitive, affective, and/or perceived events (past, present, or ongoing) to maintenance of health, function, and quality of life in older adults is desired. How diseases common in late life (e.g., hypertension, type 2 diabetes mellitus, osteoarthritis, Alzheimer disease) are modulated by the interactions of physiological and neurological mechanisms with cognitive, affective, perceptual, and social factors experienced by the older individual is of high interest. Research on how mind–body processes affect health disparities is especially encouraged, as is multilevel, multisystem, and interdisciplinary research. Illustrative examples include mind–body effects on longevity; early life experiences mediated via mind–body interactions and their effects on late-life health; the pathways and mechanisms through which mind–body interactions modulate behavior and cognitive function in older individuals; the modulatory effects of age upon mind–body processes, especially in relation to stress and cognitive processes; mind–body effects that are predictive of adherence to and benefit from an intervention; the cumulative effects of stress on the health of the elderly; the impact of optimism, happiness, or a positive attitude on well-being and health; the cognitive impact of social exclusion and disruptions to social functioning on health; the percepts and affective responses to one's socioeconomic and occupational environment and their effects on health; and the cumulative impact of extreme stress on health in low-resource/low-income and in-transition countries.

National Institute on Alcohol Abuse and Alcoholism (NIAAA). The NIAAA is particularly interested in mind–body interactions as they may impact the prevalence and incidence of alcohol abuse and alcoholism, as they may be disrupted by alcohol use, and as they may play a critical role in recovery from alcoholism. Mind–body interactions of importance include spirituality, motivation, and craving, as well as the effects of stress, alienation, or stigmatization. For example, the role of spirituality in achieving and maintaining sobriety is widely acknowledged, but well-designed research is needed to determine the underlying mechanisms. Such studies may lead to new strategies to improve alcoholism treatment or enhance relapse prevention. We need to understand how mind–body interactions may influence the risk for harmful drinking or contribute to protective factors. Mind–body interactions may also influence progress through stages of change, help-seeking behavior, or readiness for cognitive/behavioral therapy. It is anticipated that such knowledge could be incorporated into more effective means of preventing and treating alcohol disorders among adolescents as well as adult populations. In addition, the NIAAA is committed to reducing alcohol-related health disparities in vulnerable populations. The mind–body interaction may enhance understanding of how reactions to stress, stigma, racism, and discrimination may influence the incidence of alcohol abuse and alcoholism.

National Institute on Drug Abuse (NIDA). Behavioral and social sciences research plays an important role in the NIDA's search for solutions to the complex social and public health problems posed by drug abuse and addiction. These scientific disciplines provide the NIDA with the knowledge necessary to better predict, prevent, and treat drug abuse and addiction problems. The NIDA is interested in supporting research that investigates the role of cognitive and/or emotional variables mediating or moderating the development of drug abuse and addiction from the initiation of drug abuse ("chipping" or occasional drug use), the maintenance or continuation of drug-taking behaviors (chronic abuse, including escalation to compulsive abuse and its associated negative consequences), relapse, and characteristics of sustained abstinence. The study of cognitive and/or emotional factors (e.g., self-regulation, beliefs, self-attributes, perceived risks or benefits) that influence vulnerability or resistance to drug abuse is also of interest. Investigators may study responsivity to acute drug challenge, including the examination of how physiological, motivational, or subjective responses to drugs of abuse are influenced by cognitive and emotional variables (e.g., expectancy, affective state, emotional context). Also appropriate would be studies examining cognitive and emotional variables (e.g., coping, emotional regulation, self-efficacy) in the context of treatment or preventive interventions (e.g., role in adherence or compliance). The study of decisions and other cognitive processes and their associated neural substrates, which give rise to sexual risk behavior, is also an area of research interest. Studies on the influence of physiological indicators of stress, stress perception, or stress reactivity on drug abuse vulnerability or clinical outcome may be included in proposed investigations. The NIDA has an interest in supporting research that investigates the epidemiology, prevention, and treatment of medical, behavioral, health, and other consequences of drug abuse, including but not limited to HIV/AIDS, hepatitis B, and sexually transmitted diseases. Research of interest includes, for example, identifying how drug use affects the sensory perceptual system and cognitive abilities such as planning and organizing in terms of risk behaviors. Given that drug users and their sex partners account for a substantial proportion of new HIV infections in the United States each year, studies to improve understanding of the behavioral, social, and environmental mechanisms that facilitate HIV transmission and other infectious diseases among drug users are welcome. The NIDA's focus on health promotion and disease prevention encourages researchers to investigate strategies for tailoring interventions to optimize their beneficial effects to determine which interventions work, for whom, and under what conditions.

Applicant institutions may request funds to conduct regular research projects (R01). This RFA is restricted to the NIH R01 award mechanism. This RFA is a one-time solicitation. The participating institutes and centers intend to commit at least $3.5 million in fiscal years 2004 or 2005 to fund approximately 11 new grants in response to this RFA. You may request a project period of up to five years. The anticipated award date is September through October 2004. Applications that are not funded in the competition described in this RFA may be resubmitted as new investigator-initiated applications using the standard receipt dates for new applications described in the instructions to the PHS 398 application.

This RFA uses just-in-time concepts. It also uses the modular as well as nonmodular budgeting formats (see http://grants.nih.gov/grants/funding/modular/modular.htm). Specifically, if you are submitting an application with direct costs in each year of $250,000 or less, use the modular format. Otherwise, follow the instructions for nonmodular research grant applications. This program does not require cost sharing as defined in the current NIH Grants Policy Statement at http://grants.nih.gov/grants/policy/nihgps_2001/part_i_1.htm.

The deadline for receipt of letters of intent is 17 November 2004, with 17 December 2004 the deadline for receipt of applications. Applications must be prepared using the PHS 398 research grant application instructions and forms (rev. 5/2001). The PHS 398 is available at http://grants.nih.gov/grants/funding/phs398/phs398.html in an interactive format. Complete information on this RFA is located at http://grants1.nih.gov/grants/guide/rfa-files/RFA-OD-03-008.html.

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