Opportunities for Psychological Scientists at the National Institute of Mental Health

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You may have heard that basic federal research funding for psychological scientists has fallen on hard times. But has it? To examine this question, I consulted the historical data on research and development funding provided in 2007 by the American Association for the Advancement of Science (http://www.aaas.org/spp/rd/guihist.htm). The trends in federal research by discipline show that funding for psychological science has remained low for the past 36 years, whereas federal funding for nearly every other science has increased — in the case of life sciences the increase has been quite dramatic. This profile of federal funding is in sharp contrast to the status of psychology as a hub scientific discipline in terms of its benefit to other disciplines (Boyack, Klavans, & Borner, 2005; Cacioppo, 2007).

The downward trend in recent years in federal funding for research through the National Institutes of Health (NIH) is also evident in this figure. The reduction in inflation-corrected budgets, coupled with the dramatic increase in the number of individuals applying for NIH funding, increases in the mean budget requested, and changes in the opportunities in fields, has led some NIH institutes to reconsider funding priorities. A case in point that has impacted psychological sciences is the National Institute of Mental Health (NIMH). The considerations at NIMH do not preclude the funding of psychological science, but
it is not business as usual at NIMH for psychological science, either. So what is the scoop at NIMH and what is psychological science’s role at NIMH? I am deeply grateful to Thomas R. Insel, director of NIMH, for providing the following interview. In it, Insel describes the goals of NIMH, the funding priorities for his Institute, the role psychological scientists have and can play at NIMH, and his advice to psychological scientists who are considering NIMH as a possible source of research funding. Anyone who is considering an application to NIMH or has written off NIMH as a possible funding source because of rumors they have heard may find Insel’s comments interesting and helpful.

Insel completed his MD at Boston University Medical School and joined NIMH in 1979 as a clinical associate in the clinical neuropharmacology branch. Between 1979 and 1994, Insel held various leadership positions at NIMH. In 1994, he moved as a professor of psychiatry to Emory University, where he continued his groundbreaking work on the neurobiology of complex social behaviors, served as the founding director of the Center for Behavioral Neuroscience, and served as the director of the Yerkes Regional Primate Research Center in Atlanta. Insel was named the director of NIMH in 2002, just as the NIH budget began to stagnate — an issue he continues to contend with.

**As director, what are your goals for the NIMH?**

NIMH is one of 27 NIH institutes and centers, all with a public health mission. NIMH is one of the “disease-specific” institutes, with a focus on reducing suffering from a relatively small number of chronic, disabling disorders. NIMH’s public health mission is to reduce the burden of mental illnesses through research on mind, brain, and behavior. Over the course of the next decade we aim to generate research that will profoundly transform the treatment of, recovery from, and prevention of mental disorders, paving the way toward cures.

With regard to our translational and clinical research portfolios, our goals fall within the context of the “4 Ps” of medical research: increasing the capacity to predict who is at risk for developing disease; developing interventions that preempt the disease process; using knowledge about individual biological, environmental, and social factors to personalize interventions; and ensuring that clinical research involves participation from the diversity of people and settings involved in health care. With regard to our basic science portfolio, our goals focus on promoting discovery in the brain and behavioral sciences to better understand fundamental brain-behavior mechanisms that can be translated to the study of mental disorders. Based on the tremendous progress made to date, we know that mental disorders are brain disorders, but we need much more research from the basic brain and behavioral sciences to fully understand and use this knowledge to predict, preempt and more effectively treat these devastating illnesses.

The most exciting scientific opportunities now are in bridging basic to clinical research and clinical to services research. The science of translation is very much at the heart of biomedical research in terms of moving important basic findings into effective clinical interventions and finding ways to efficiently implement evidence-based treatments into mental health services. For example, we are working to translate the discoveries of cognitive science and cognitive neuroscience studies into robust biomarkers and behavioral indicators for schizophrenia, and we are investigating findings from clinical, behavioral, and social sciences to identify factors that may enhance access to mental health services for underserved populations. At the same time, we have an unprecedented opportunity to apply “reverse translation” — using clinical research results to inform our basic science efforts. For example, the genomic or imaging...
studies conducted with clinical populations are providing valuable data and clues for our basic scientists about potential mechanisms of disorder and targets for interventions.

To sharpen our focus on the methods, questions, and perspectives that will transform diagnosis, treatment, and prevention of mental disorders, NIMH has drafted a strategic plan (http://www.nimh.nih.gov/about/strategic-planning-reports/nimh-draft-strategic-plan.shtml).

NIMH, like all institutes at NIH, has seen increasing numbers of applications, increased costs per application, and a steady or decreasing real-dollar budget for funding grants. What are your priorities during these difficult times, and what do you see to be the funding prospects over the next few years?

This may seem like the worst of times for funding, but we have been through dry periods before, and we have survived them. NIMH recognized that after the NIH budget doubling in the 1990s, we could experience several years of relatively flat budgets. As we enter our fifth year of sub-inflationary budgets, our strategy has been to (a) optimize the number of new awards, (b) focus on new investigators, and (c) stretch the available dollars by reducing new grant awards an average of 10 percent and restricting inflationary increases for out-years of previously funded grants. The completion of several large clinical trials and the access to NIH Roadmap funds has helped us keep success rates fairly constant since the doubling ended in 2003. In Fiscal Year 2007, NIMH funded 620 competing research projects, compared to 599 in 2003, and 98 new investigators, compared to 86 in 2003. Average costs per grant have increased to roughly $350,000, compared to $309,000 in 2003.

A natural reaction to these tight budget times, unfortunately, is the tendency to avoid risk. But NIMH needs to take risks to support innovation and breakthrough discoveries. With the flat budget, we must not become overly conservative, too risk-averse, or narrow in our investments or vision. The NIH Roadmap has helped us to support innovation through the Pioneer Awards and the New Innovator Awards, some of which have gone to APS members. NIMH has also implemented its own innovation award, identifying high risk-high yield grants with scores outside our funding range that can receive one year of support to obtain additional pilot data.

It is difficult to predict the funding prospects for the next few years, but we do know that the cost of doing science will continue to increase. And we can safely predict that the costs of mental illness to society will continue to increase as health care costs rise. It is important for the public to understand that NIH budgets are investments that will pay off in more effective management of these enormous public health costs.

In what ways has psychological science contributed to your goals for NIMH?

There are countless examples of how psychological science has been critical to NIMH’s mission. Psychological science has been one of the foundations for the Institute, so there is no way to begin to describe the contributions. Let me note two obvious examples. One is research on learning and memory. Therapies like cognitive behavioral therapy are based on principles of learning, memory and cognition discovered by psychological scientists. These treatments are having a profound effect in helping to modify dysfunctional or distorted ways of thinking and remembering that are hallmarks of many mental disorders. Other types of therapies derived in part from basic learning and memory research are helping us treat specific disorders. For example, dialectical behavior therapy has been shown to be an effective
treatment for borderline personality disorder. Therapies like cognitive restructuring or stress inoculation are being used to effectively treat PTSD, hugely important for the wave of returning veterans.

Research on the basic behavioral, physiological and neurobiological implications of stress has also been a critical contribution. The “learned helplessness” paradigm developed by psychologists has become a central means for understanding how stress and environmental factors can lead to depression, anxiety and other disorders. Research on stress experienced during early development also has led to evidence that stress may impact us even at the genetic level.

Perhaps the simplest way to say this is that NIMH has been and continues to be the institute committed to understanding brain and behavior. We have a long way to go in this endeavor. Psychological science, along with cognitive neuroscience, continues to be critical for understanding how information is processed and shaped by perception, attention, and emotion.

*In what ways can psychological science contribute better or differently to these goals in the next few years?*

Our most urgent need is to integrate the methods and perspectives of psychological science with those from neuroscience and clinical research to (a) understand mental events as neural events and (b) effectively and efficiently translate research results from the “bench to the bedside.” Cognitive neuroscience is one of the most exciting areas in science as we begin to understand the circuits involved in complex mental events, from emotion to consciousness. This will not be surprising news to APS members. I also think psychological science has a critical role in our public health mission. For example, we need the perspective and methods from cognitive scientists to help us refine, measure, and understand the cognitive deficits associated with schizophrenia. We need psychological scientists working with neuroscientists and clinicians to better understand the brain-behavior mechanisms and situational factors that determine how moods are regulated. We need to understand behavioral processes and contextual features involved in seeking or not seeking care, and in adherence and non-adherence — why some people seek care and stick with their treatments and why others do not. And we need help from psychological scientists, together with clinical neuroscientists, to develop new ways of classifying mental disorders for research purposes that are based on dimensions of observable behavior and neurobiological measures. Such an approach will facilitate and accelerate understanding of the brain-behavior mechanisms involved in psychopathology.

Among the psychological scientists who have applied for funding to NIMH, some have been trained in the fields of clinical psychology or psychiatry, whereas others have been trained in more traditional fields but have research interests that bear on mental health. What advice would you give to young investigators from each of these backgrounds if they were considering NIMH as a possible source of research funding?

I think this is the best time to be entering research because there are so many exciting opportunities for progress. Also, it is noteworthy that the traditional divide between basic and clinical research training is blurrier than it was a decade ago. Some of the most interesting questions that basic scientists are tackling stem from clinical experience, including “How is Brodmann’s Area 25, which has been shown to be involved in some forms of depression, involved in emotion regulation?” Conversely, clinical observations need to be grounded in basic science and answer questions such as, “How does social
experience, particularly during critical phases of development, alter gene transcription?"

With these and similar observations in mind, my best advice to a young investigator is to read widely, question everything, and determine what you are most passionate about. This is an extraordinary moment when a young person with innovative ideas and research training that facilitates strong scientific inquiry can change the world. Exposure to the methods, perspectives, and knowledge of neuroscience and integrating this with psychological science and/or clinical science is vital. The integration of these perspectives and knowledge holds the keys that will allow us to use the brain to map the mind.

It is this kind of integrative and innovative approach to the science of brain and behavior that we seek at NIMH. Whether the specific research topic is on basic mechanisms, etiology, diagnosis, intervention, or services, young investigators who can integrate perspectives and paradigms, design innovative research, and are interested in translation are desperately needed to improve the lives of millions who suffer from mental disorders.

References