

TESTIMONY ON FY 2009 APPROPRIATIONS
for the
NATIONAL SCIENCE FOUNDATION
before the
SUBCOMMITTEE ON COMMERCE, JUSTICE, SCIENCE, AND RELATED
AGENCIES
COMMITTEE ON APPROPRIATIONS
UNITED STATES SENATE

THE HONORABLE BARBARA MIKULSKI, CHAIR
April 18, 2008

Organization: Association for Psychological Science
Witness: Amy S. Pollick, PhD, Director of Government Relations

Summary of Recommendations

- **APS supports the Coalition for National Science Funding recommendation of \$7.326 billion for the National Science Foundation in FY 2009.**
- **We ask for the Committee's support of Section 7018b of the America COMPETES Act (P.L. 110-69) which provides equal consideration for NSF's Social, Behavioral and Economic Sciences Directorate. This will ensure that the behavioral and social sciences share proportionately in the increases received by NSF, which is essential to strengthen the vital role of these sciences in achieving innovation and realizing the full potential of basic research to benefit our Nation.**
- **NSF-funded psychological scientists have won the Nobel Prize and the President's Medal of Science for their groundbreaking work. Greater funding for the SBE Directorate will result in more such breakthroughs and will ensure that the Nation continues as the world's leader in behavioral and social science research and training.**

Mr. Chairman, Members of the Committee: Thank you for this opportunity to present the views of the Association for Psychological Science (APS) on the FY 2009 appropriations of the National Science Foundation (NSF). APS is dedicated to the promotion, protection, and advancement of the interests of scientifically oriented psychology in research, application, teaching, and the improvement of human welfare. Our 20,000 members are scientists and academics at the Nation's universities and colleges. The NSF supports many members of APS, and a great deal of basic research in our field simply could not exist without NSF funding.

The Nation's Premiere Basic Research Enterprise

In the America COMPETES Act of 2007, Congress and the President agreed that basic science research budgets should be doubled. The FY 2008 omnibus appropriation, however, did not provide the necessary funds to keep pace with this goal. The National Science Foundation

received only a 2.5 percent increase for FY 2008, \$364 million less than the President's request. The continued underfunding of NSF constitutes a significant delay in this Nation's science and technology advancement — one we cannot afford in the face of rising global competitiveness.

A renewed commitment to basic research and educational programs at NSF is essential to capitalize on the enormous promise of scientific innovation, to train future scientists, and to ensure the success of multidisciplinary initiatives. The basic science community asks the Committee to make the underlying intent of this Act a reality. The increase we are recommending today, as a member of the Coalition for National Science Funding, is a critical step in offsetting the under-funding that has been a chronic condition for NSF.

The Social, Behavioral and Economic Sciences (SBE) Directorate

It is crucial to recognize the role the behavioral and social sciences play in fostering innovation. The President's Science Advisor and Director of the Office of Science and Technology Policy, John Marburger, has underscored the importance of our discipline in this endeavor, and your colleagues in the House, led by Subcommittee on Research and Science Education Chair Brian Baird, have asked NSF to comply with the statutory requirement in P.L. 110-69, Section 7018b to give equal consideration to the Social, Behavioral, and Economic Sciences (SBE) Directorate.

Under the Administration's budget plan, the SBE Directorate would receive \$233.48 million, 8.5 percent over FY 2008. While this stems the tide of below-average increases in previous years, it is unacceptably disproportionate to other Directorates, which are receiving between 10.3 and 20.2 percent increases. The America COMPETES Act specifically called on NSF not to disinvest in the behavioral and social sciences over the long term. We are concerned about this imbalance, given the enormous potential of behavioral science to address many critical issues facing the Nation, including global competitiveness. To offset previous years' under-funding, we ask the Committee to, at the very least, give the SBE Directorate the 8.5 percent increase the President proposed in this year's NSF budget request. We also ask that the SBE Directorate share proportionately in any such increases ultimately received by NSF.

An Overview of Basic Psychological Research: NSF programs and initiatives that involve psychological science are our best chance to solve the enigma that has perplexed us for so long: How does the human mind work and develop? APS members include many scientists who conduct basic research in areas such as learning, cognition, and memory, and the linked mechanisms of how we process information through visual and auditory perception. Others study judgment and decision-making (which is the focus of a Nobel prize recently awarded to APS Fellow and NSF grantee Daniel Kahneman); mathematical reasoning (the focus of the recent President's Medal of Science awarded to APS Fellow and NSF Grantee R. Duncan Luce); language development; the developmental origins of behavior; and the impact of individual, environmental, and social factors in behavior.

What's more, basic psychological research supported by NSF and conducted by APS members ultimately has had a wide range of applications, including designing technology that incorporates the perceptual and cognitive functioning of humans; teaching math to children; improving learning through the use of technology; developing more effective hearing aids and speech

recognition machines; increasing workforce productivity; and ameliorating social problems such as prejudice or violence. While this is a diverse range of topics, all these areas of research are bound together by a simple notion: that understanding the human mind, brain, and behavior is crucial to maximizing human potential. That places these pursuits squarely at the forefront of several of the most pressing issues facing the Nation, this Congress, and the Administration.

SBE Directorate Highlights

Research supported by the SBE Directorate has the potential to increase employee productivity, improve decision making in critical military or civilian emergency situations, and inform the public policymaking processes across a range of areas. To give just a few examples:

Developmental and Learning Sciences. This program supports studies that increase our understanding of cognitive, linguistic, social, cultural, and biological processes related to children's and adolescents' development and learning. This kind of research adds to our basic knowledge of how people learn and the underlying developmental processes that support learning. For example, one recently funded study is identifying the cognitive, emotional, and social characteristics that make some children more suggestible than others with respect to legal questioning. The results of these studies will have important implications for developing scientifically sound interviews that produce the most accurate reports from children, and for constructing instruments to detect children who are prone to suggestive factors, which can be adapted for use in schools, mental health, medical, and forensic contexts.

Perception, Action, and Cognition. The perception, action, and cognition program at NSF supports research on these three functions, and the development of these capacities. Topics include vision, audition, attention, memory, reasoning, written and spoken discourse, motor control, and developmental issues in all topic areas. One recent study funded by this program looks at the important role language plays in emotion perception, and understanding the mechanisms by which language might influence emotion perception. This research shows that the emotions you see in others are influenced by what you know about emotion (especially the language that you speak). It may well be the case that people can be taught to become better emotion perceivers, and hence, better communicators.

Cognitive Neuroscience. Cognitive neuroscience, within the last decade, has become an active and influential discipline, relying on the interaction of a number of sciences, including psychology, cognitive science, neurology, neuroimaging, physiology, and others. The cross-disciplinary aspects of this field have spurred a rapid growth in significant scientific advances. The blooming field of social neuroscience is yielding research, for example, on the psychological and neural mechanisms involved in the experience of empathy. Brain imaging is being used to measure the effects of stigma, racial bias, similarity, and past shared experiences between oneself and others. This important research will yield a better understanding of the cognitive and neurological mechanisms involved in empathy as well as our ability to share feelings and care for others. Both the findings and the techniques will be of tremendous value to clinicians as well as other researchers.

Cross-Cutting Behavioral Initiatives at NSF

Cyber-enabled Discovery and Innovation. This new, cutting-edge program supports research on computational thinking, complexity, and interacting systems. NSF expects that this ambitious new undertaking with potentially transformative results will revolutionize the field and shed light onto wide-ranging topics such as emergent phenomena and tipping points in human development. Research into the complexity of social systems will constitute a significant contribution to this endeavor. This investment will help maintain our Nation's expertise in information technology, an essential element for our future competitiveness.

Adaptive Systems Technology. A new interdisciplinary initiative, this program recognizes the essential human element of exciting new technologies and machines. The human-machine interface is crucial to explore if we are going to make the best use of the latest technology. While biologists describe the trajectory from simple to complex systems and chemists explain the processes underlying complex neural organization, cognitive scientists explore how systems compute and behavioral scientists provide insights into how organisms learn and adapt to their environment. By working together, these scientists can reap the benefits of and develop new ideas through collaboration.

Science of Science and Innovation Policy (SciSIP). In 2005, the President's Science Advisor, John Marburger, called for a national "science of science policy," asking for research on innovation and scientific discovery processes, as well as on how policymakers use science to shape policy. In response, NSF created the Science of Science and Innovation Policy (SciSIP) research program. By studying science as a social process, SciSIP's goal is the development of an evidence-based platform for science policy. One example of the kind of ideas materializing from this initiative is the measurement of well-being, which deals with such questions as: How can science policy and science outcomes be evaluated by measuring societal well-being? Can scientific priorities be based on well-being? Does well-being as an outcome lead to different science priorities than considering other outcomes? What about national competitiveness and productivity in relation to science and well-being? Addressing these questions has implications for health and the economy, both of which are linked to well-being.

In closing, I want to note that building and sustaining the capacity for innovation and discovery in the behavioral sciences is a goal of the National Science Foundation. We ask that you encourage NSF's efforts in these areas, not just those activities described here, but the full range of activities supported by the SBE directorate and by NSF at large. Your support will help NSF lay the groundwork for this long-overdue emphasis on these sciences. Thank you. We would be pleased to answer any questions; please contact:

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