

National Science Foundation
Directorate for Social, Behavioral and Economic Sciences (SBE)
Spring Advisory Committee Meeting Summary
April 3-4, 2014
NSF Headquarters, Stafford I, Room 110

SBE Advisory Committee (AC) Members Present: Dr. Emilio Moran (Chair), Center for Global Change and Earth Observations and Department of Geography, Michigan State University; Dr. Kenneth Bollen, Department of Sociology, University of North Carolina; Dr. John Cacioppo, Center for Cognitive and Social Neuroscience, University of Chicago; Dr. Ruth DeFries, Department of Ecology, Evolution and Environmental Biology, Columbia University; Dr. Morton Ann Gernsbacher, Psychology Department, University of Wisconsin; Dr. J.W. Harrington (via phone) Vice Chancellor for Academic Affairs, University of Washington; Dr. Kaye Husbands Fealing, Humphrey Institute for Public Affairs, University of Minnesota; Dr. Robert Kaplan (*Ex Officio*), Office of Behavioral and Social Sciences Research, National Institutes of Health; Dr. Jon A. Krosnick, Department of Communications, Stanford University; Dr. Joanna Morris, School of Cognitive Science, Hampshire College; Dr. James Olds, Krasnow Institute for Advanced Study, Department of Molecular Neuroscience, George Mason University; Dr. Stanley Presser, Department of Sociology, University of Maryland; Dr. Steven Ruggles, Minnesota Population Center, University of Minnesota; Dr. George Middendorf, Committee on Equal Opportunities in Science and Engineering (CEOSE) Liaison, Howard University.

SBE Advisory Committee Absent: Dr. Christopher H. Achen, Politics Department, Princeton University; Dr. Elizabeth Higginbotham, Department of Sociology, University of Delaware.

NSF Staff in Attendance: Dr. France Córdova, Director; Dr. Cora Marrett, Deputy Director; Dr. Fay Lomax Cook, Incoming SBE Assistant Director (AD); Dr. Joanne Tornow, Acting AD, SBE; Dr. Fae Korsmo, Acting Deputy AD, SBE; Ms. Jeri Mulrow, Deputy Division Director, SBE/National Center for Science and Engineering Statistics (SBE/NCSES); Dr. Katherine Meyer, Acting Deputy Division Director, SBE/Division of Social and Economic Sciences (SBE/SES); Ms. Lisa Jones, Budget Officer, SBE/Office of the AD (OAD); Dr. Jeryl Mumpower, Division Director, SBE/SES; Dr. Mark Weiss, Division Director, SBE/Behavioral and Cognitive Sciences (SBE/BCS); Dr. Amber Story, Deputy Division Director, SBE/BCS; Mr. John Gawalt, Division Director, SBE/NCSES; Dr. Deborah Olster, Senior Advisor, SBE/OAD; Dr. Amy Friedlander, Science Associate, SBE/OAD; Dr. Heather Dean, AAAS Science and Technology Policy Fellow, SBE/OAD; Dr. Bill Badecker, Program Director, Linguistics, SBE/BCS; Dr. Anne Cleary, Program Director, Perception, Action and Cognition Program, SBE/BCS; Dr. Laura Namy, Program Director, Developmental and Learning Sciences, SBE/BCS; Dr. Georgia Kosmopoulou, Program Director, Economics, SBE/SES; Ms. Jill Avalos, Program Assistant, Linguistics, SBE/BCS; Ms. Melanie McGriff-Williams, Secretary, SBE/OAD; Ms. Lisa Jackson, Program Specialist, SBE/OAD; Ms. Clarissa Johnson, IT Specialist, SBE/OAD; and Mr. Philip Johnson, IT Specialist, SBE/OAD.

Note: The meeting was open to the public and representatives of stakeholder groups also attended.

Summary: This was the first semi-annual meeting of the SBE AC in 2014. The agenda covered the following: update on the directorate's activities; report from the SES Committee of Visitors (COV) and the SES response; reports from various SBE AC Subcommittees and the Statistical Sciences at NSF Subcommittee; meeting with the NSF leadership; briefings on NSF activities in Transparency and Accountability, Cognitive Science and Neuroscience and BRAIN (Brain Research through Advancing Innovative Neurotechnologies), and Public Access; and a presentation on a new National Research

Council report, *Proposed Revisions to the Common Rule for the Protection of Human Subjects in Research in the Behavioral and Social Sciences*.

Directorate Update (Dr. Joanne Tornow)

The new NSF Director, Dr. France Córdoba, was sworn in on March 14, 2014. Fay Lomax Cook will become SBE AD in September, 2014. Other staff transitions were announced. Dr. Tornow reported on the Fiscal Year (FY) 2014 budget, which was passed in January, and which did not continue the FY 2013 restrictions on the Political Science program. The NSF FY 2015 budget request was submitted to Congress. SBE priorities and activities include expanding the NCSES Survey of Doctorate Recipients in support of improving graduate training, building a new Science of Learning program as we sunset the Science of Learning Centers, investing in cognitive science and neuroscience, and partnering with the Directorates for Computer and Information Science and Engineering (CISE) and Engineering (ENG) on the new Critical Resilient Interdependent Infrastructure and Systems initiative. Dr. Tornow also announced the release of a solicitation for the new NSF Research Traineeship program for graduate education, which builds upon the past Integrative Graduate Education and Research Traineeship program (IGERT). The Frontiers in Innovation, Research, Science, and Technology Act (FIRST) Act was introduced last month by the House Science Committee as the vehicle for the reauthorization for NSF funding. SBE is closely following that.

Within the Divisions, some highlights included the issuance of several Dear Colleague Letters (DCLs) from BCS, including one in computational cognition, one in forensic science, and one on the causes and impact of youth violence. Also planned are several workshops on computational cognition. SES highlights included the recent White House Conference on Parental Incarceration and its Effects on Children. NCSES published the National Science Board Report, *Science and Engineering Indicators*. The Higher Education Research and Development Survey (HERD) was released and the Survey of Doctorate Recipients will be out next. The Early Career Doctorate Survey will be out late this year. *Exploring What Makes Us Human*, a brochure highlighting SBE-funded research and its benefits, was published in March, 2014. A number of issues were raised in the ensuing discussion, including dissemination of *Science and Engineering Indicators* and how SBE science fared in the IGERT program.

Transparency, Accountability and Portfolio Framework (Dr. Mark Weiss)

In December 2013, the NSF Office of the Director established a Transparency and Accountability Working Group to strengthen the agency's efforts in transparency and accountability. The Working Group was charged with assessing how the Foundation is currently handling portfolios, communication, training, evaluation and other topics related to transparency and accountability and with seeking input on these activities from staff at all levels and across the Foundation. Recommendations from the Working Group include improving the quality of abstracts of NSF awards to make clear to the public the value of the research, and to describing individual awards in the context of portfolios of funded research programs. Several suggestions emerged from the discussion. Portfolios, generally thought about first at the program level, then division, then directorate, might also be looked at in the other direction, i.e., starting with a Directorate-wide view. Examining clustering of awards in order to identify gaps could be helpful. There was a suggestion that context be presented along with online information about individual awards.

Discussion with NSF Leadership (Dr. France Córdoba and Dr. Cora Marrett)

The chairs of the SBE AC Subcommittees on the Future of Survey Research and on Replicability in Science described their respective Subcommittees' recent activities. Dr. Córdoba suggested making reproducibility a topic of discussion across NSF, perhaps by forming a broader committee to look at how

NSF can encourage more robust and replicable research. She also raised the issue of better understanding scientific portfolios and communicating what NSF funds in ways that provide context about the diversity of the research. The importance of collaborations with other agencies and outside groups, basic research, and broadening participation were additional topics that were highlighted.

Report From the SBE Division of Social and Economic Sciences (SBE/SES): Committee of Visitors Report (Dr. Steven Ruggles) and Response (Dr. Jeryl Mumpower)

Dr. Ruggles reported that the SES COV met June 3-5, 2013 to assess the quality of the program operations and address specific questions posed by SBE/SES. These questions included what kind of infrastructure is needed for our vision for the future, what organizational changes might facilitate interdisciplinary work across divisions, how SES could help staff deal with excessive proposal loads, and how well Doctoral Dissertation Research Improvement Grants are working. The overall COV report was very positive, and the COV pointed out many opportunities for interaction with other directorates in order to maximize impact, such as working with CISE on big data issues, or with other directorates interested in environmental issues on population size and the characteristics and behavior that underlie environmental challenges. The COV also encouraged support for global scale research and multi-scale studies. The report included recommendations to move the big SES infrastructure programs into their own cluster, while maintaining disciplinary input. The COV made a number of recommendations related to data sharing and the NSF Data Management Plan requirement. The COV recommended that NSF provide support for data preservation, archiving and dissemination, as well as metadata generation, and to support research on data confidentiality. It suggested that SES pursue opportunities to collaborate across divisions and directorates on integration of data from different sources with different formats and on novel uses of large-scale data sources. Finally, the COV recommended the formation of disciplinary and interdisciplinary research networks focused on basic SES questions such as information security or economic opportunity for young adults, for which SES would act as a data infrastructure manager across programs.

The COV examined the review process in SES and made several suggestions. These included streamlining the review analysis process by program officers, reducing the number of reviews in cross-disciplinary proposals, increasing disciplinary diversity on panels, triaging proposals that have no chance of funding based on the *ad hoc* and panelist reviews, adopting review management and rating software developed for peer review journals, and eliminating the ability of reviewers to give split scores. The COV also discussed changing the COV template to cover the entire division rather than each program.

Response: Dr. Mumpower reported that SES agreed with the COV's recommendations, including those on data sharing, data citation, data curation, confidentiality, interoperability, and capacity building. The resulting discussion centered on the split scoring of proposals and on clustering infrastructure programs.

The AC voted to accept the COV report.

Public Access (Dr. Amy Friedlander)

In February 2013, the White House Office of Science and Technology Policy (OSTP) asked agencies with Research and Development portfolios of at least \$100 million to develop plans to increase public access to scientific publications and data. In response to the memo, a steering committee and working groups on publications and data were formed, and SBE took the lead to assess the needs across NSF. This effort paralleled the work of two interagency working groups on publications and data. A plan was produced for NSF, recently submitted for comments, and will be resubmitted for approval in May, 2014. A decision was made not to build a new NSF system to manage publications, but rather, to explore existing services

that could be adapted for NSF use. A primary concern for NSF is minimizing burden on program officers and investigators. There are also issues of internal and external communications and protecting the role of the peer review of scholarly journals as the record of science. The NSF Data Management Plan requirement largely meets the intent of the OSTP memo, and NSF plans to build on what we have gradually, rather than change everything at once, but we will have to prepare for change in the coming years in both technology and policy. The AC can help this effort by suggesting ways in which public access concerns can be addressed in COV reports and how NSF can partner with others, including publishers and scholarly societies, which play important roles.

Report from Statistical Sciences at NSF (StatSNSF) Subcommittee (Dr. Ken Bollen)

This temporary Subcommittee under the Directorate for Mathematical and Physical Sciences (MPS) was charged with examining the current structure of support of the statistical sciences (broadened to data science) within NSF and to provide recommendations for NSF to consider. The Subcommittee is reaching out to solicit feedback before the final report is released in May or June. The challenges for NSF articulated in the draft report include the growth of data science, its fragmentation across directorates, research quality, and the multidisciplinary nature of data science. Recommendations address the multidisciplinary challenges of data science and training, education of the next generation of data scientists, and requirements in proposals to ensure that data are properly managed. Discussion focused on advance data analysis plans and issues of reproducibility, specifically exploratory versus confirmatory research.

Proposed Revisions to the Common Rule for the Protection of Human Subjects in Research in the Behavioral and Social Sciences

Dr. Jeanne Rivard (National Research Council, NRC) and Dr. Julia Lane (American Institutes for Research) reported on a consensus study to inform the current efforts of the federal government to revise the regulations on the protection of human subjects, which were last revised in 1991. Recommendations included clarifying the definition of "human-subjects research", defining categories of IRB oversight that include "excused" research, improving the informed consent process to allow for greater flexibility to investigators and IRBs, better protecting the privacy and security of human subjects' data, and improving the IRB process. A main goal was to give guidance to IRBs so that they could move away from a default of not approving research and clarify what research might be "excused" or "expedited". The [report](#) was distributed to the AC. Discussion focused on the difference between "excused" and "expedited" research and on confidentiality. Dr. Tornow clarified that this is the report from the NRC, which is providing recommendations to the federal government as it considers revising the regulations. The regulations have not yet been revised, and an interagency working group co-chaired by Dr. Tornow is working on the revised regulatory text, which will be published as a Notice of Proposed Rulemaking for additional public comment. There was also discussion on the committee recommendation that there should not be a requirement for re-consent for future use of preexisting de-identified research data.

Report from the SBE AC Subcommittee on Replicability in Science (Dr. John Cacioppo)

The Subcommittee held a workshop on February 20-21, 2014 that brought together researchers, journal editors, science administrators, institutional administrators, and funding agency staff to discuss the challenge and make recommendations to address the issue of scientific replicability. The panels addressed the scope and magnitude of the problem; recommendations for scientific practice; education and training; editorial/journal policies and procedures; institutional policies and procedures; and funding agency opportunities and policies. The committee is drafting a workshop report. There was discussion of the difference between reproducibility and replicability and the importance of replicating and extending results. The AC was also concerned about the pressures faced by researchers to publish, which can lead

to the use of questionable research practices. Improving methodological and statistical training will be important.

NSF Activities Related to Cognitive Science and Neuroscience and the Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative (Dr. Amber Story)

In response to Congressional encouragement to create a crosscutting theme in cognitive science and neuroscience, NSF released a Dear Colleague Letter in FY 13. In addition, OSTP chartered the Interagency Working Group in Neuroscience (IWGN), which now involves approximately 20 federal agencies, and is co-chaired by NIH and SBE/BCS Deputy Division Director Amber Story. The IWGN has released its report identifying priorities for accelerating neuroscience research through enhanced cooperation, collaboration and communication. In April 2013, the President announced the BRAIN Initiative, which spans multiple federal agencies and private entities and will “accelerate the development and application of new technologies that will enable researchers to produce dynamic pictures of the brain that show how individual brain cells and complex neural circuits interact at the speed of thought.”

John Wingfield, the AD in the BIO Directorate and Dr. Tornow from SBE established a Steering Committee on Understanding the Brain, which oversees two working groups, the existing Accelerating Integrative Research in Cognitive Science and Neuroscience Group and the more focused BRAIN Initiative Working Group. Four multiyear goals that have emerged from these groups’ discussions: developing innovative technologies, experimental approaches, theories and models to integrate across scales and disciplines; identifying fundamental relationships among neural activity, cognition and behavior; understanding brain responses and adaptation to a changing environment with implications for plasticity and recovery; and training a new trans-disciplinary, globally competitive workforce in neuroscience and neuroengineering. A recent Dear Colleague Letter issued by the Directorate for Biological Sciences (BIO) called for EAGER proposals to study neural circuitry underlying cognition and behavior. NSF now has an “Understanding the Brain” website listing all NSF activity related to the BRAIN Initiative. The AC discussion touched on the issue of replicability in neuroscience research, opportunities for collaborations among SBE scientists, mathematicians and computer scientists and the use of high performance computing. One identified challenge is to articulate an end-goal for cognitive science and neuroscience research. Many AC members expressed interest in the mapping between neural systems and behavior.

Report from the SBE AC Subcommittee on Advancing SBE Survey Research (Dr. Jon Krosnick)

A draft report from the Subcommittee has been issued in which recommendations were made on best practices in survey research and topics for future research on survey methods. As survey response levels fall, it is important to consider the best ways to conduct this research, which could include better training of interviewers, sharing information about best practices, and potentially combining resources for the survey programs within SBE. Discussion included providing information about best practices to the public, who can now do surveys online. Regarding the idea of combining under one program officer the various survey research supported by SBE, SBE staff noted that these surveys use different methods and are done through different partners, and therefore, a centralized decision-making process for these may not benefit all, though it could save SBE money. AC members were asked to review the report and send comments to Dr. Krosnick.

Report from the SBE AC Subcommittee on the Science and Practice of Broadening Participation in STEM (Dr. Kaye Husbands Fealing and Dr. George Middendorf, CEOSE liaison)

Dr. Kaye Husbands Fealing presented data showing that the percentage of women and underrepresented minorities earning PhDs in certain STEM fields has remained low. Still lacking is a firm understanding of why groups are underrepresented or what interventions work best to ameliorate the problem. There are multiple calls to action for improving diversity in the workforce. SBE is interested in doing more work in the Science of Broadening Participation (SBP) and charged an AC subcommittee in 2012 with better understanding the issue and identifying opportunities. As many members of the subcommittee have or soon will rotate off the AC, it will need to be reconstituted with new members.

Dr. George Middendorf, the representative from CEOSE, discussed what CEOSE has done in the past few years, including providing biannual reports to Congress and analyzing NSF data on the STEM workforce diversity. He suggested that the data could be improved to help us better understand what factors lead to success in making the workforce more diverse. More could be done to understand how disability affects success as well. CEOSE has recommended that "NSF implement a bold new initiative focused on broadening participation of underrepresented groups in STEM, similar in concept and scale to NSF Centers, that emphasizes institutional transformation and system change, collects and makes accessible longitudinal data, defines clear benchmarks for success, supports the translation, replication and expansion of successful broadening participation efforts, and provides significant financial support to individuals who represent the very broadened participation we seek." The ensuing discussion focused on persons with disabilities, fixing the "leaky pipeline" with early interventions, and obtaining better data. One potential partner in discussing broadening participation is the Science of Science Policy Interagency Working Group, which could be tapped to provide NSF with recommendations for supporting a science for broadening participation. Professional organizations should also be a part of the discussion. SBE is considering partnering with EHR and with other government agencies as well.

Recognition of Outgoing SBE Advisory Committee Members (Dr. Tornow)

Drs. Gernsbacher, Presser, Husbands Fealing and Kaplan were presented with tokens of appreciation as they are completing their service on the SBE AC.

Agenda and dates for future meetings, assignments and concluding remarks (Dr. Tornow)

The fall meeting for the SBE AC is scheduled for October 30-31, 2014. Potential future agenda items include: the Science of Broadening Participation, additional existing Subcommittee updates, neuroscience and the BRAIN Initiative, the future of Science of Learning, and the SBE portfolio. Recommendations for new AC members were requested.