

Division of Behavioral and Cognitive Sciences

STRATEGIC PLAN



NATIONAL SCIENCE FOUNDATION

Directorate for Social, Behavioral,
and Economic Sciences

November 2011

National Science Foundation
Directorate for Social, Behavioral and Economic Sciences
Division of Behavioral and Cognitive Sciences



Strategic Plan

BCS Strategic Plan

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I. PREFACE

The Division of Behavioral and Cognitive Sciences (BCS), within the Directorate for Social, Behavioral and Economic Sciences (SBE), sets forth a new strategic plan to guide the division's pursuits and activities. The goals of the division align with and flow from the new NSF Strategic Plan and the foundation's goals to Transform the Frontier, Innovate for Society, and Perform as a Model Organization. The BCS strategic plan is designed to be a living document and to be adaptable. The division has received input from its members in the creation of the BCS mission statement, its vision, and its goals, and through an iterative process, the strategic plan has evolved. At its core, the BCS strategic plan is designed to:

- Articulate the division's identity and shared values to itself and to others.
- Set priorities within the division to guide decision-making, resource allocation, and action.
- Provide a plan of strategies to meet objectives and the means by which to assess progress.
- Communicate the division's goals and priorities to others inside and outside of the foundation.

II. OVERVIEW

The Division of Behavioral and Cognitive Sciences (BCS) supports research that develops and advances scientific knowledge about humans. BCS supports and enables fundamental research on the origins, biology, development, function, context, and variability of human behavior, language, and cognition at all spatial and temporal scales, and thereby contributes to the advancement of scientific knowledge. BCS consists of ten standing programs: Archaeology/Archaeometry; Cultural Anthropology; Biological Anthropology; Geography and Spatial Sciences; Documenting Endangered Languages; Linguistics; Cognitive Neuroscience; Perception, Action, and Cognition; Developmental and Learning Sciences; and Social Psychology. Through our work in these programs, we support research that asks such questions as:

How did we become human?

What is the importance of place, time, and space in human activity?

Why do humans respond, behave, and think the way they do?

How and why do humans grow, adapt, change, and learn?

In addition to the ten standing program areas, BCS contributes to cross-cutting and NSF-wide funding opportunities. Scientists supported by BCS are engaged in a wide variety of interdisciplinary research, bringing to bear the findings, theories, approaches, methodologies and analytic techniques of our sciences as they guide and inform a broad range of theoretical and empirical questions. The division works hard to promote interdisciplinary partnerships and to advance the utilization of the knowledge gained from BCS-supported research. BCS partners with agencies in the U.S. and in other countries to promote disciplinary and interdisciplinary scientific collaboration at home and abroad.

The results of BCS-supported research yield insights and knowledge that directly contribute to the NSF mission “to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes” as set forth by the NSF Act of 1950. Research supported by BCS has provided and will continue to provide information, empirical data, and scientific theory that informs the understanding of pressing, important issues such as disaster response, sustainability, poverty, pandemics, prejudice and discrimination, and social and personal well-being. In many cases, the BCS division is the primary mechanism of support within the federal government for the basic behavioral and cognitive science research that is capable of informing policy- and decision-making on such issues.

III. MISSION

The mission of the Division of Behavioral and Cognitive Sciences is to identify and promote excellence within our sciences, to strengthen our scientific workforce, and to enable research that advances basic knowledge and contributes to the enhanced understanding of significant issues.

IV. BCS CORE VALUES

Our goals and actions are based on, and informed by, our shared values and principles.

Dedication to EXCELLENCE...

- In the science we promote and the peer merit review methods we use to identify potential for scientific discovery and innovative and transformative research
- In the conduct of the division, with an emphasis on collaboration and collegiality
- In our service to the scientific community and the public, marked by professionalism, courtesy, and efficiency

Pursuit of INCLUSIVITY...

- In broadened participation within the scientific endeavor
- In the skilled and capable scientific workforce trained and enabled through our support
- In broadened participation within the division, its operations and decision-making

Commitment to INTEGRITY...

- In our actions, marked by transparency, accountability and impartiality
- In our belief in our mission and the mission of the National Science Foundation

V. VISION

The BCS Mission is based on our guiding vision -

To identify, enable, and promote the highest quality basic research in behavioral, cognitive, geographic, and anthropological sciences and to be exemplary in our service to the scientific community and society.

VI. STRATEGIC GOALS

The strategic goals of the Division of Behavioral and Cognitive Sciences align with those of the National Science Foundation.

A. NSF Strategic Goal: *Transform the Frontiers*, by supporting scientific discovery, learning, and infrastructure

1. BCS Strategic Goal: *Discovery*

To promote discovery, innovation and excellence within the behavioral, cognitive, geographic and anthropological sciences, and to advance theoretical and basic understanding in core disciplinary and interdisciplinary endeavors.

2. BCS Strategic Goal: *Learning*

To promote education and training in behavioral, cognitive, geographic, and anthropological sciences to ensure that current and future generations will have the scientific knowledge, skills, and capabilities to excel, discover, and innovate.

3. BCS Strategic Goal: *Research Infrastructure*

To promote shared and unique scientific infrastructure, technologies, methods, and tools that will catalyze, democratize, and advance basic research and education.

B. NSF Strategic Goal: *Innovate for Society*, by serving as knowledgeable and trustworthy stewards

BCS Strategic Goal: *Stewardship*

To promote the advancement of science that can inform public policy and contribute to the nation's prosperity and general welfare.

C. NSF Strategic Goal: *Perform as a Model Organization*, through our commitment to organizational excellence

BCS Strategic Goal: *Organizational Excellence*

To achieve our goals by acting with integrity, accountability, and transparency and to be forward-looking, integrative, and inclusive in all actions and activities.

VII. OBJECTIVES AND STRATEGIES

To attain these goals, the BCS Division engages in the following activities:

A. *Transforming the Frontiers*

1. *Discovery* - The activities of the division have, as the ultimate goal, expanding and strengthening the conduct of basic research in the behavioral, cognitive, geographic, anthropological, and related sciences. The division is dedicated to the health of the standing programs of the BCS division and will continue to provide division resources to promote core sciences in programmatic and interdisciplinary competitions. In times of budgetary uncertainty, priorities must be set among the many objectives of the division and the strategies used to pursue them. In order to achieve the strategic goal of *Discovery*, we strive to address the objectives listed below in order of priority with the important exception of the first two. Supporting interdisciplinary and supporting transformative disciplinary research are seen as equal, intertwined, and mutually inclusive objectives. The boundaries of disciplines are becoming more flexible and permeable. What once was considered core science is expanding, as disciplinary science informs and is informed by its linkages to other scientific pursuits. Similarly, what once was considered to be interdisciplinary has become an established core of science building a new foundation of knowledge. The division seeks to pursue the continued integration of strong core disciplinary and interdisciplinary frontiers of science as integral objectives.

Support interdisciplinary research - The behavioral, cognitive, geographic, and anthropological sciences have broad-ranging implications for many scientific questions and can inform the scientific study of important social issues. The division is committed to encouraging and supporting interdisciplinary research that draws on expertise in our sciences. This goal is achieved through a number of strategies. Many programs within BCS support interdisciplinary science within their own program portfolios, reaching out to a broad scientific community. In addition, program officers contribute substantial time and effort to building bridges across programs, divisions, directorates, and domestic and international agencies. They are involved in the creation and implementation of new opportunities to ensure that potential contributions from the behavioral, cognitive, geographic, and anthropological sciences are incorporated. They contribute to cross-disciplinary research competitions and activities, and they create new linkages between sciences through formal and informal discussions. The division will continue and strengthen the efforts of the program officers and will strive to enhance coordination and communication about these efforts. The division will continue to find ways to document involvement of our scientists in interdisciplinary projects across the foundation. The division may enhance support for interdisciplinary science through targeted competitions in areas of mutual interest to multiple programs in order to accelerate research in promising



new lines of inquiry. The division will investigate other formal and informal mechanisms, processes, and organizational structures, to enhance support for interdisciplinary science.

Identifying, encouraging, and supporting cutting-edge, potentially transformative research - Identifying research that transformed a science is possible only with the benefit of hindsight. Predicting which projects might transform science is much more difficult. In



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order to reach a guiding framework, the members of the division will continue to share and discuss our perspectives on potentially transformative research (PTR). The division will maintain and strengthen efforts to reach out to the scientific community in this process, holding ongoing discussions with the SBE Advisory Committee, BCS Committee of Visitors, BCS advisory review panels, members of boards at the National Academy of Science, members of the NSF community, and members and officers of professional organizations, among others. The division will continue to stress the importance of identifying potentially transformative research to potential reviewers and panelists by sending them a “charge to reviewer” letter about such research, by including a discussion of PTR in the

panel orientation, and by presenting and discussing this information in outreach activities to the broader scientific communities. The division will enhance its communication to the scientific community to assure potential principal investigators that we welcome high risk/high impact research and to encourage them to submit projects that may be potentially transformative in nature. Outreach to the community will emphasize not only the judicious use of the EAGER mechanism but also stress that support for PTR is a part of every BCS program’s mission as reflected in their research portfolios.

Continue development of mechanisms for scientific investigation to inform a science of broadening participation - The BCS division will continue to take the lead in generating and applying scientific data, theory, and methodology to understand the factors that influence participation of underrepresented groups in science, technology, engineering, and mathematics (STEM). The BCS division recently established the science of broadening participation as a budgetary line item and organized a coordinated SBE effort to encourage and identify research that leads to a deeper understanding of the causes and consequences of underrepresentation and assists in informing evidence-based policy. The division will continue to explore ways to promote the evidence-based science of broadening participation within core sciences and in interdisciplinary collaborations. These approaches might include workshops, speaker series, outreach, and new funding opportunities.

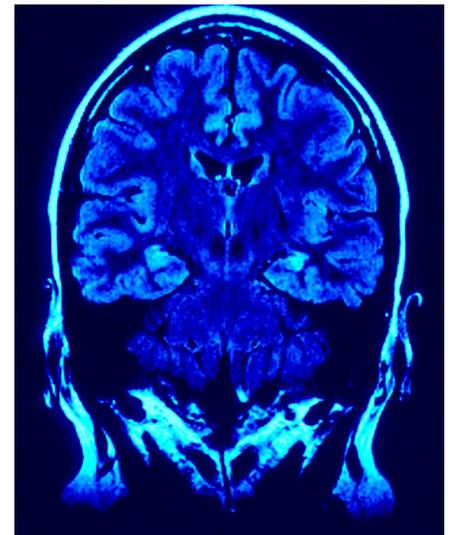
Promote “bigger” science - The science that BCS has supported has been of the highest quality with broad impact. However, that support is limited by the realistic constraints of division resources and program budget concerns. The BCS division will explore the viability of new funding mechanisms for larger-scale, longer-term projects whose ultimate

benefit will be realized only if support can be sustained for longer periods than normally is possible through typical research awards.

2. Learning - The pace of scientific discovery increases with each generation of new scientists. Innovations in analytical and procedural methods, new tools and approaches, and transformations in the nature of scientific theory itself underscore the need for continual commitment to the training and educational needs of our current and future scientists. Furthermore in a time of increasing interdisciplinarity, our scientists must master an increasingly broader array of knowledge, skills, and techniques. The BCS division is committed to enhancing our scientists' skills, abilities, and scientific understanding so that they will grow as agents of scientific discovery.

Promote the training of the next generation of behavioral, cognitive, geographic, and anthropological scientists - The division will continue and enhance its support of students at all stages of education, through mechanisms like Doctoral Dissertation Research Improvement Grants, Research Experience for Undergraduates, and Research Experience for Graduates. The division also promotes training through inclusion of student support in grants to faculty supervisors and through support of student networks at the Science of Learning Centers. The division will continue to encourage the consideration of educational opportunities created by the project in the assessment of a project's broader impacts as part of the merit review process. The division will continue its support of Graduate Research Fellowships in our sciences. BCS will promote other NSF-supported mechanisms such as IGERT, in outreach to our scientific communities, to enhance the representation and participation of our sciences in those programs.

Support and enable the continuation of learning through the duration of professional careers - The BCS division will strive to provide education and training opportunities to enable researchers at all career stages, ranging from early career scientists to senior scholars, to master new areas of scientific inquiry as well as emerging research methods and technologies. The division will explore the use of mechanisms such as training institutes and workshops and consider the development of new mechanisms to allow our scientists to learn new skills and pursue new interests. The division will explore opportunities to educate scientists outside our fields about behavioral, cognitive, geographic, and anthropological sciences as integral aspects of interdisciplinary scientific efforts.



3. Research Infrastructure - Scientific discovery requires research infrastructure. In the behavioral, cognitive, geographic and anthropological sciences, this may involve new technologies, cyber capabilities, data archives, and human resource needs. The BCS division is committed to identifying, supporting, and developing the research infrastructure our sciences need to excel.

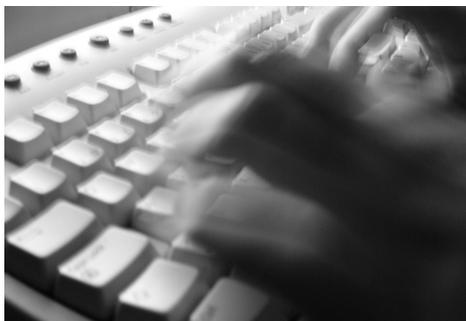
Assess, identify, and define infrastructure needs across the sciences within BCS -

The BCS division will continue to actively engage scientists within and outside of NSF in the discussion of the infrastructure needs of our sciences. The division will continue to solicit input from program officers, the SBE Advisory Committee, BCS Committee of Visitors, BCS advisory review panels, members of boards at the National Academy of Science, and members and officers of professional organizations to ensure that a diversity of viewpoints are surveyed and represented.

Assist in development of infrastructure - The division will continue to advance the development of infrastructure. New mechanisms, structures, and processes that could contribute to the development and dissemination of research infrastructure, including data, will be investigated. The division will advance access to and the dissemination of data and other research materials through such means as central repositories and/or development of more effective means to enable information in varied repositories to be easily brought together for analysis and synthesis. The division will also explore the establishment of research networks or centers to serve as a forum and catalyst for interdisciplinary research as well as a setting for methodological development and a repository for data and research materials.

B. Innovate for Society

Stewardship - In service of the ultimate goal to promote scientific discovery, the members of the BCS division are committed to being exemplary stewards of our sciences.



Promote meaningful and relevant science - In that NSF's mission speaks to addressing societal needs, BCS is attuned to the links between the science we support and its broader impact on society. NSF's peer merit review system rests on two merit criteria – intellectual merit and broader impacts. The division will continue and, where possible, enhance its efforts to ensure that reviewers and panelists consider the possible broader impacts of a proposed project in their evaluation and in their feedback to the principal investigators. The division will continue to promote the discussion of broader impacts within advisory panels, by including the heading in the panel summary template and encouraging program officers to proactively solicit such information. The division will continue to stress the importance of considering a project's broader

impacts, including its benefit to society, its contributions to a scientifically literate populace, and its creation of educational opportunities, in the merit review process.

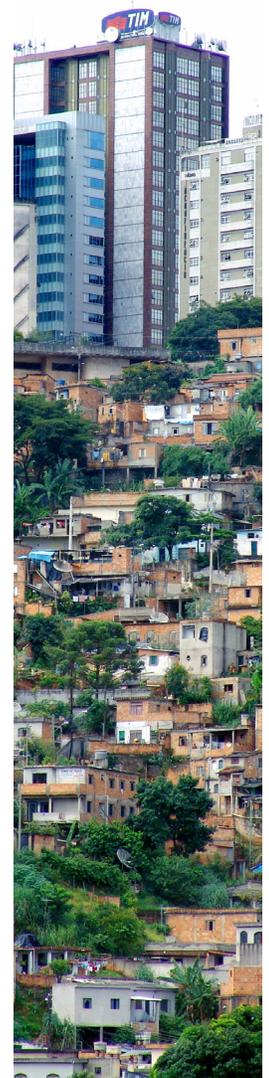
Enhance dissemination of behavioral, cognitive, geographical, anthropological and related sciences within the foundation, within the federal context, and beyond - The division will investigate new ways for BCS to work with other parts of NSF, other federal agencies, and non-government organizations to pursue activities of mutual interest and ensure that fundamental research is a contributor to and beneficiary of such activities. We will also continue to explore the viability of using various media to broaden understanding of social and behavioral science research, including distinguished speakers (within NSF and in other settings), highlights, and facilitation of visits between influential leaders in the federal government, industry, and the academy. The division will continue its efforts to promote the scientific literacy of the general public.

C. Performing as a Model Organization

Organizational Excellence - The staff of BCS take pride in the work that we do at all levels in the division and are dedicated to acting responsibly and with integrity.

Ensure integrity, accountability and transparency in all actions - The division will continue to maintain the highest standards of peer merit review and apply them consistently and objectively. We will maintain and, where possible, enhance the timely consideration of proposals, ensuring proper documentation underlying decisions and providing constructive feedback to PIs. The division will continue to monitor and manage awards conscientiously and with appropriate oversight. The division will continue and strengthen its efforts to evaluate the efficiency of its proposal processing to find areas of possible improvement.

Encourage and enable professional development - The division supports the career development of its members. We will continue in our commitment to the development of administrative staff through opportunities such as the creation of Individual Development Plans for staff members, support for training opportunities, attendance at appropriate conferences, and encouragement for their advanced education. By enhancing the skills and abilities of the administrative staff, they will contribute to the increased efficiency and integrity of the division's processes. The division also fully supports the development of the program directors in BCS to ensure that they remain current in their field and are in a position to recognize cutting-edge science. Within its budgetary constraints, BCS will provide program officers, through their Independent Research and Development Plans



and other means, the time and resources needed to attend conferences in their area of research, to participate in training opportunities that advance their scientific knowledge and skills, and to pursue and publish their own scientific program of research. BCS will also encourage program officers to take advantage of training opportunities in enhancing their leadership and management skills. The division will ensure that training and development opportunities for program officers are equitable and fair regardless of their employment status, whether permanent staff, visiting scientist, federal temporary employee, or IPA.

Respond flexibly to changing organizational needs -

The division is committed to continual monitoring and re-assessment of its performance and operations to better meet changing organizational needs. As science and society change, so must the foundation. For example, as the boundaries between disciplines grow more malleable, it may be in the best service to our sciences and to the foundation to consider other organization structures within the division.

The division is open to considering new and alternative approaches to the management of science, including the ways programs are structured and relate to each other. The division is already experimenting with program officer positions that are more interdisciplinary and less tied to one particular program. The division will continue to respond flexibly to changing needs within the sciences, society, and the foundation.



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VIII. PERFORMANCE ASSESSMENT AND ACCOUNTABILITY FRAMEWORK

The Division of Behavioral and Cognitive Sciences is committed to meeting the strategic goals and objectives outlined above. However, we realize that limited human and financial resources, as well as time constraints, prohibit us from accomplishing all fully and to the same degree. Difficult choices will have to be made and priorities will have to be set within the realistic constraints of divisional resources. The division has outlined a strategic framework of the appropriate means to identify the division's priorities in goals and in action. The division will continue to consult with program directors, administrative staff, other members of the SBE directorate including the Office of the Assistant Director, and members of the scientific communities and professional organizations in setting these priorities, as appropriate.

The Division of Behavioral and Cognitive Sciences is uniquely positioned in its ability to meet its objectives and goals. The scientific staff of BCS has scientific knowledge, skill, and expertise that is directly relevant to the activities we pursue. Some have extensive training in survey and assessment methods, and that contributes to our goals of accountability. Others can apply their theoretical understanding to promoting and evaluating the division's success at creating an inclusive and diverse organizational culture. Others still can bring their scientific methods and theory to bear on understanding of effective mechanisms for broadening participation. The perspective of the human sciences can directly contribute to the pursuit of our strategic goals and the assessment of our progress.

Assessment of our progress is key to our shared values of integrity, particularly in terms of accountability and responsibility. To demonstrate and enhance our transparency, we welcome guidance and input from the scientific community, as evidenced in part by the posting of the BCS Strategic Plan on the BCS webpage. The National Science Foundation has a tradition of relying on external reviews and evaluations to strengthen NSF processes, and the Division of Behavioral and Cognitive Sciences reflects this tradition in its own assessment plans.

For each strategic goal, the division considers multiple possible indicators of performance for each related objective.

A. Transforming the Frontiers

1. Discovery

- Expand and strengthen the conduct of basic research in the psychological, anthropological, geographic, and related sciences

Indicators might include:

- Evaluative metrics provided by Committee of Visitors
- Data on merit review process such as award trends and funding rates that can be used to develop a database to establish baselines
- Highlights of scientific accomplishments and review of annual and final reports on research progress.
- Notable publications and other recognition of the scientific and broader impact of the supported research
- Support interdisciplinary research

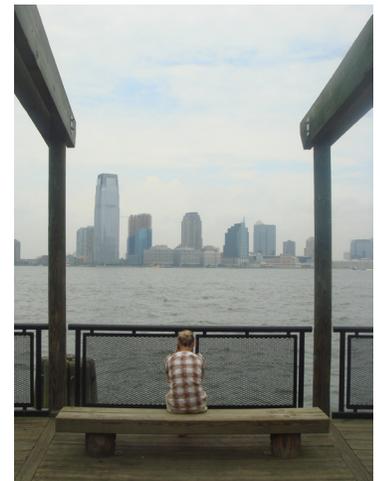
Indicators might include:

- Data on involvement of scientists from BCS in research across the foundation and the establishment of a team to develop the mechanism for tracking this data
- Existence of newly developed tools and procedures for soliciting and reviewing interdisciplinary proposals
- Number of interdisciplinary competitions to which the BCS contributes human and financial resources

- Identifying, encouraging, and supporting cutting-edge, potentially transformative research

Indicators might include:

- Number of Early Concept Grants for Exploratory Research (EAGERs) supported
- Number of highlights identified as potentially transformative
- Degree to which panel summaries attend to the potential for the project to be transformative
- Degree to which serious consideration is given to research proposals that receive bi-modal reviews or are otherwise noted by reviewers to be risky but potentially impactful.



- Notable publications and other recognition of the scientific and broader impact of the supported research
- Continue development of mechanisms for scientific investigation to inform a science of broadening participation

Indicators might include

- Evaluative metrics provided by Committee of Visitors
- Programmatic support of science related to broadening participation
- Development and implementation of new mechanisms and opportunities to promote the science of broadening participation

- Promote “bigger” science

Indicators might include:

- Evaluative metrics provided by Committee of Visitors
- Data on merit review process such as award trends and funding rates
- Highlights and review of annual and final reports
- Newly developed mechanisms and opportunities to support larger scientific research projects

2. Learning

- Promote the training of the next generation of behavioral and cognitive scientists

Indicators might include:

- Support of workshops, training institutes, and other means to secure community participation
- Support for students in grants awarded programmatic funding
- Support for Faculty Early Career Development (CAREER) awards
- Support for Doctoral Dissertation Research Improvement Grants (DDRIG) awards as well as Research Experiences for Undergraduates (REU) and Research Experiences for Graduates (REG) supplements
- Division support of the Integrative Graduate Education and Research Traineeship Program (IGERT) and Graduate Research Fellowships (GRF) program
- Continued support of students participating in the Science of Learning Centers



- Ensure continuation of learning through the duration of professional careers

Indicators might include:

- Support of workshops, training institutes, and other means to secure community participation

- Development of new mechanisms that address ongoing development needs in the scientific workforce
- Division support of IGERT and Graduate Research Fellowships programs
- Continued support of scientific networks through the Science of Learning Centers

3. Research Infrastructure

- Assess and define infrastructure needs across the sciences within BCS

Indicators might include:

- Discussions with advisory committee, committee of visitors, and other groups of scientific experts
- Division support of and participation in workshops to plot future infrastructure needs and possibilities
- Evaluations of infrastructure requests in BCS proposals to Major Research Instrumentation

- Assist in development of infrastructure

Indicators might include:

- Division support of and participation in workshops to plot future infrastructure needs and possibilities
- Degree to which infrastructure development and support is achieved through programmatic research grants.
- Evaluation of annual and final reports for successful development of scientific infrastructure
- Development of new funding mechanisms, tools and procedures to support infrastructure development
- Evaluation of Data Management Plans as they contribute to scientific infrastructure

B. *Innovate for Society*

1. Stewardship

- Promote meaningful and relevant science

Indicators might include:

- Degree to which submitted external reviews, panel summaries, and review analyses discuss the merit review criterion of broader impacts
- Degree to which discussion of broader impacts includes consideration of impact on society and relevance to societal needs
- Degree to which BCS outreach stresses broader impacts along with intellectual merit to potential principal investigators and potential reviewers

- Enhance dissemination of behavioral and cognitive science within the foundation, within the federal context, and beyond

Indicators might include:

- Development of new tools and outlets, and/or more efficient use of existing outlets
- Participation in SBE Distinguished Speaker Series
- Participation of members of the division on cross-directorate and interagency groups
- Development of joint solicitations between agencies

C. *Perform as a Model Organization*

1. Organizational Excellence

- Ensure integrity, accountability and transparency in all actions

Indicators might include:

- Evaluative metrics provided by Committee of Visitors
- Ensure proposal recommendations are well-justified and appropriately documented
- Analysis of program management trends, including dwell time and out-year commitment

- Encourage and enable professional development for all

Indicators might include:

- Support for staff to attend training opportunities
- Development of Individual Development Plan/Independent Research and Development Plans for staff members
- Attendance and participation in professional conferences
- Scientific presentations and publications by division members

- Respond flexibly to changing organizational needs

Indicators might include:

- Participation in division-wide and directorate-wide discussions about organizational structures
- Establishment of working group to examine workload and workflow issues

Division of Behavioral and Cognitive Sciences

Programs:

- Archaeology/
Archaeometry
- Biological
Anthropology
- Cultural
Anthropology
- Geography &
Spatial Sciences
- Cognitive
Neuroscience
- Developmental &
Learning Sciences
- Documenting
Endangered
Languages
- Linguistics
- Perception,
Action & Cognition
- Social Psychology

