National Science Foundation
Support for the
Cognitive Sciences

Joan Maling, Ph.D.
Linguistics Program

Betty Tuller, Ph.D.
Perception, Action & Cognition Program

Behavioral & Cognitive Sciences Division
Directorate for Social, Behavioral & Economic Sciences
National Science Foundation
Overview of Presentation

- Getting to Know the NSF
- How to Get Started
- Specific Programs of Interest
- Proposal Preparation Advice
Introduction to NSF

NSF is a government agency charged with seeking out and funding the best ideas and most capable researchers, for the sake of new knowledge, discovery, and innovation.

Goals and Mission

- To initiate, support and promote scientific discovery
- To advance national welfare and secure national defense
- To support students and science education at all levels

Operations

- Manages $6 billion annual budget
- Annually awards about 10,000 research grants
- Has funded over 170 Nobel prize winners
- Career-long presence in most researchers’ work

# Introduction to NSF

NSF is the only federal agency to support basic research in all scientific disciplines.

<table>
<thead>
<tr>
<th>NSF Does Support:</th>
<th>NSF Does Not Support:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Chemistry</td>
<td>• Clinical work</td>
</tr>
<tr>
<td>• Computer &amp; Information Science &amp; Engineering (CISE)</td>
<td>• Counseling</td>
</tr>
<tr>
<td>• Engineering</td>
<td>• Business</td>
</tr>
<tr>
<td>• Geosciences</td>
<td>• Management</td>
</tr>
<tr>
<td>• Life Sciences</td>
<td>• Social work</td>
</tr>
<tr>
<td>• Mathematical Sciences</td>
<td>• Practice-oriented professional degree programs</td>
</tr>
<tr>
<td>• Physics and Astronomy</td>
<td>• Joint science-professional degree programs (MD/PhD and JD/PhD)</td>
</tr>
<tr>
<td>• Psychology (non-clinical)</td>
<td>• Medical, dental, law, or public health programs</td>
</tr>
<tr>
<td>• Social Sciences (non-clinical)</td>
<td></td>
</tr>
</tbody>
</table>
What NSF Does

• Merit-review system to
  – Support basic research, education and training at all levels
  – Promote public understanding of science, technology, engineering & math (STEM)
  – Ensure a world-class science, engineering and technology workforce for the U.S.

• NSF does not conduct research itself
NSF reviews proposals based on two equally important criteria:

I. Intellectual Merit
- Importance to the field
- Creativity & Originality
- Conception & Organization
- Access to resources
- Transformative potential

II. Broader Impacts
- Training
- Diversity
- Infrastructure
- Dissemination/
  Public Awareness
- Societal Benefits

Including students in research is central to the core values and mission of the National Science Foundation.
Behavioral & Cognitive Sciences

- Cognitive Neuroscience
- Developmental & Learning Sciences
- Perception, Action & Cognition
- Linguistics
- Social Psychology
- Documenting Endangered Languages
- Archaeology
- Cultural Anthropology
- Physical Anthropology
- Geography & Regional Science
Use the NSF website!
www.nsf.gov
Behavioral and Cognitive Sciences (BCS)

About BCS

The Division of Behavioral and Cognitive Sciences (BCS) supports research to develop and advance scientific knowledge about humans spanning areas of inquiry including brain and behavior, language and culture, origins and evolution, and geography and the environment. In addition to the core program areas, BCS sponsors several additional crosscutting and NSF-wide funding opportunities.

Programs and Funding Opportunities

Key: ◆ Crosscutting  [ ] NSF-wide

Anthropological Sciences
- Archaeology and Archaeometry
- Cultural Anthropology
- Cultural Anthropology Scholars Awards
- High-Risk Research in Anthropology (HRAP/A)
- Human Origins (HOMINID)
- Physical Anthropology

Geography and Environmental Sciences
- Dynamics of Coupled Natural and Human Systems (CNH) [ ]
- Geographic and Regional Science

Psychological and Language Sciences
- Cognitive Neuroscience
- Developmental and Learning Sciences (DLS)
- Documenting Endangered Languages (DEL)
- Linguistics
- Perception, Action and Cognition
- Social Psychology
Program Announcements/Program Solicitations

Read Carefully

- Program Goal(s)
- Eligibility Requirements
- Special Requirements
- Deadline/Target Date
- Cognizant Program Director(s)
- Search previous award abstracts
Before Contacting your PO

*Do your homework!*

- Have a fairly clear notion of your research question, how you will propose to answer it, and be able to describe it clearly and succinctly!

- Know what has been done previously on the topic
Contacting your PO

Introduce yourself *via e-mail*

- What’s your training, your expertise?
- What level of appointment do you have? Where?

Summarize your proposed research.

- What is your research question?
- How you will try to answer it?
- Why would anyone care about this question?
Proposal Development

• What do you intend to do?
  • Testable and falsifiable hypotheses
  • Are the proposed experiments tied to the theory?
• Why is the work important?
  – Theoretical/scientific implications
  – Broader impacts
• What has already been done?
  – Targeted literature review
• How are you going to do the work?
  – Do the experiments related to the theoretical questions?
  – Are the facilities sufficient to do the work?
  – Is the level of effort/budget appropriate for the work proposed?
• Will the results tell us something important?
NSF has two review criteria: Both criteria matter!

I. Intellectual Merit:
- Importance to the field
- Qualifications of PI(s)
- Creativity/originality
- Conception and organization
- Access to resources
- Transformative Potential

II. Broader Impacts:
- Training
- Diversity
- Infrastructure
- Dissemination/Public Awareness
- Societal Benefits
What Makes a Proposal Competitive?

• Original ideas
• Sound scientific rationale/theoretical basis
• Critical approach
• Likely high impact
• Succinct, focused project plan
• Experience in essential methodology
• PILOT DATA ***
• Clarity concerning future direction
• Knowledge of subject area / relevant lit review
• Realistic timeline
Grant Proposal Guide (GPG)
Submission: FastLane or Grants.gov

- Information source – “Proposal Status”
- Access to Reviews
- Post-Award:
  - Requests and Notifications
  - Annual reports
Don’t forget:

• Talk to your Sponsored Research Office EARLY (they submit parts or all of the grant proposal, especially the budget)

• Up-to-date IRB (human subjects) or IACUC (animals) approval with the same title as the grant proposal.
Common Criticisms

- No compelling rationale (no theoretical framework)
- No preliminary data (proof of concept)
- Experiments don’t relate to the theory
- Results could have alternative explanations
- Over-ambitious
- Insufficient detail
- If the experiments “work,” what will we really have learned?
You’ve been awarded the grant!

• CELEBRATE!
• Don’t gloat.
• Read the reviews for constructive suggestions
You Have Been Declined--

- You are in the majority (70-90%).
  - Never enough money to fund all the good proposals (3 times through is not unusual)
  - The preparation, application, revision, and resubmission experience is a chance to learn.
You Have Been Declined—How to Gain from the Experience

You get to see all Reviews and a “Panel Summary”

Ask yourself and others:

– Do the reviews give guidance for shaping the research in future proposals?
– Did the reviewers misunderstand your intentions?
– Was the proposal submitted to the wrong NSF program?
– The panel discussion is as important as single reviews.
– Your PO or faculty mentors can help you interpret the reviews.
The mazes were too easy, so now they have me running through bureaucracies and looking for grants.
Perception, Action & Cognition (PAC)

- Supports basic research on human cognitive and perceptual functions
- Topics include, but are not limited to:
  - Attention
  - Memory
  - Spatial Cognition
  - Language Processing
  - Perceptual and Conceptual Development
  - Visual, Auditory, and Tactile Perception
  - Reasoning
- Research supported by the program encompasses a broad range of theoretical perspectives such as Symbolic Computation, Connectionism, and Dynamical Systems
Linguistics Program

Supports scientific research of all types that focuses on human language as an object of investigation

• Syntactic, semantic, morphological, phonetic, and phonological properties of individual languages and of language in general

• Social and cultural factors in language use, variation, and change
Scientific research that focuses on human language as an object of investigation:

- Psychological processes involved in the use of language
- Development of linguistic capacities in children
- Acoustics of speech and the physiological and psychological processes involved in the production and perception of speech
- Biological bases of language in the brain
Cognitive Neuroscience

- Program supports highly innovative interdisciplinary proposals
- Proposals should aim to advance a rigorous understanding of how the human brain supports:
  - thought
  - perception
  - affect
  - action
  - social processes
  - and other aspects of cognition and behavior, including how such processes develop and change in the brain and through evolutionary time.
Developmental & Learning Sciences

• Supports studies that increase our understanding of cognitive, social, and biological processes related to children and adolescents’ learning in formal and informal settings

• Supports research on learning and development that:
  – incorporates multidisciplinary, multi-method, microgenetic, and longitudinal approaches
  – develops new methods and theories
  – examines transfer of knowledge from one domain to another
  – assesses peer relations, family interactions, social identities, and motivation
  – examines the impact of family, school, and community resources
  – assesses adolescents’ preparation for entry into the workforce
  – investigates the role of demographic and cultural characteristics in children’s learning and development
You (almost) have your Ph.D. What now?

- Arctic Research Opportunities
- Postdoctoral Fellowships in Polar Regions Research
- International Research Fellowship Program (IRFP)
Postdocs: International Research Fellowship Program (IRFP)

- Provides grants for American scientists within two years of receiving Ph.D. to do research outside of US; must have Host/Sponsoring Scientist
- NSF Solicitation 06-582
- Target date is second Tuesday in September every year
- 30 to 35 awards annually
- Contact: Susan Parris sparris@nsf.gov
You (almost) have your Ph.D. What now?

- Minority Postdoctoral Research Fellowships
- Intelligence Community Postdoctoral Research Fellowships
- Marshall Scholarships (UK)

If you request funding to support postdoctoral researchers, you MUST include a description of the mentoring activities!!!