Diversity in the Social, Behavioral and Economic Sciences

Abstract. This white paper focuses on issues of diversity in a broad sense and offers recommendations aimed at increasing diversity in SBE research. Our primary focus is on the benefits of multiple perspectives and new forms of research partnerships and networks. That is, our approach to diversity is driven not on considerations of fairness or equity alone, but rather by the argument that the quality and relevance of SBE research itself will benefit from diversity. We argue for building on the dramatic progress made in the SBE sciences in recent decades by thoughtfully and strategically increasing the range of our samples, so that boundary conditions on findings can be established, cultural processes can be better understood and application to real world problems can be put on a stronger foundation. We also call for increasing the diversity of the SBE scientists so that the design, methods, materials, theoretical questions and results benefit from multiple perspectives. Accomplishing these goals will require widespread institutional efforts across many of the experimental branches of the social, behavioral and economic sciences.

Authors:
Douglas Medin, Psychology and School of Education and Social Policy, Northwestern U.
    (corresponding author)
Scott Atran, Anthropology, University of Michigan
Megan Bang, TERC; American Indian Center of Chicago
Will Bennis, Psychology, Northwestern University
Steven Heine, Psychology, University of British Columbia
Joe Henrich, Psychology and Economics, University of British Columbia
Ara Norenzayan, Psychology, University of British Columbia
Norbert Ross, Anthropology, Vanderbilt University
Sara Unsworth, Psychology, University of California, San Diego
Sandra Waxman, Psychology, Northwestern University

Co-Signers:
Kathryn Anderson-Levitt, Anthropology, University of Michigan, Dearborn
Robert Axelrod, School of Public Policy, University of Michigan
Michael Baran, Harvard University
H. Clark Barrett, Anthropology, University of California, Los Angeles
Lawrence Barsalou, Psychology, Emory University
Philip Bell, Learning Sciences, University of Washington
Andrea Bender, Psychology, University of Freiberg
Giovanni Bennardo, Anthropology, Northern Illinois University
Brent Berlin, Anthropology, University of Georgia
H. Russell Bernard, Anthropology, University of Florida and NAS
Galen Bodenhausen, Psychology, Northwestern University
Lera Boroditsky, Psychology, Stanford University

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Bryan Brayboy, School of Social Transformation, Arizona State University
Marilynn Brewer, Psychology, The Ohio State University
Susan Carey, Psychology, Harvard University
Ted Cloak, Independent Scholar, Albuquerque, New Mexico
Jeffrey Cohen, Anthropology, The Ohio State University
Michael Cole, Communication, University of California, San Diego
Roy D'Andrade, Anthropology, University of Connecticut
Kathryn Davis, Second Language Studies, University of Hawai'i at Manoa
Margaret Eisenhart , Anthropology, University of Colorado, Boulder
Jeff Elman, Cognitive Science, University of California, San Diego
Michael Fischer, Anthropology, Kent University
Baruch Fischhoff, Social and Decision Sci. & Eng. and Public Policy, Carnegie Mellon U.
Michael Frank, Psychology, Stanford University
Howard Gardner, School of Education, Harvard University
Rochel Gelman, Psychology, Rutgers University
Susan Gelman, Psychology, University of Michigan
Dedre Gentner, Psychology, Northwestern University
Morton Gernsbacher, Psychology, University of Wisconsin, Madison
Lila Gleitman, Psychology and Linguistics, Emerita, University of Pennsylvania
Susan Goldin-Meadow, Psychology, University of Chicago
William M. Goldstein, Psychology, University of Chicago
Louis Gomez, Learning Sciences and Policy, University of Pittsburgh
Jonathan Haidt, Psychology, University of Virginia
Jacquetta Hill, Educational Psychology, Emerita, University of Illinois
Lawrence Hirchfeld, Anthropology and Psychology, New School
Philip Johnson-Laird, Psychology, Princeton University
Eric C. Jones, Anthropology, University of North Carolina, Greensboro
Daniel Kahneman, Psychology and Public Affairs, Emeritus, Princeton University
Frank Keil, Psychology, Yale University
Shinobu Kitayama, Psychology, University of Michigan
David Kronenfeld, Anthropology, University of California, Riverside
Margaret D. LeCompte, Education and Sociology, University of Colorado, Boulder
Carol Lee, School of Education and Social Policy, Northwestern University
John Gatewood, Anthropology, Lehigh University
John Lucy, Comparative Human Development, University of Chicago
Tanya M. Luhrmann, Anthropology, Stanford University
Asifa Majid, Max Planck Institute for Psycholinguistics
Hazel Markus, Psychology, Stanford University
James McClelland, Psychology, Stanford University
Peggy Miller, Educational Psychology, University of Illinois
Walter Mischel, Psychology, Columbia University
Robert L. Moore, Anthropology, Rollins College
Mark Moritz, Anthropology, The Ohio State University
Salikoko Mufwene, Linguistics, University of Chicago
Dr. Carol C. Mukhopadhyay, Anthropology, San Jose State University
Na'ilah Suad Nasir, African American Studies, University of California, Berkeley

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Sharon Nelson-Barber, Pres., CEO, Pacific Resources for Education and Learning, Honolulu
Elissa Newport, Brain and Cognitive Sciences, University of Rochester
Shaun Nichols, Philosophy, University of Arizona
Richard Nisbett, Psychology, University of Michigan
Scott Page, Complex Systems, Poly Sci, and Economics, U of Michigan; Santa Fe Institute
Nicole Peterson, Anthropology, University of North Carolina, Charlotte
Ann Rosebery, Chèche Konnen Center, TERC
Jennifer Richeson, Psychology, Northwestern University
Barbara Rogoff, University of California, Santa Cruz
Paul "Jim" Roscoe, Anthropology; Climate Change Institute, University of Maine
Alice Schlegel, Anthropology, Emerita, University of Arizona
Pamala Silas, CEO, Amer Indian Sci & Eng Soc; Inst. for Children, Youth & Families, U of AZ
Ray Scupin, Ctr. for Internat. and Global Studies; Anthropology and Sociology, Lindenwood U.
Paul Slovic, Psychology, University of Oregon
Rich Shiffrin, Psychological and Brain Sciences, Indiana University
Richard Shweder, Comparative Human Development, University of Chicago
Edward Smith, Psychology, Columbia University
Elizabeth Spelke, Psychology, Harvard University
Dan Sperber, Paris & International Cognition and Culture Institute, Institut Nicod
Claude Steele, Provost, Columbia University
Eric C. Thompson, Sociology, National University of Singapore
Michael Waldmann, Psychology, University of Goettingen
Beth Warren, Co-Director, Chèche Konnen Center, TERC
Elke Weber, Management and Psychology, Columbia University

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  As NSF contemplates new research initiatives, it does so against a background of decades of remarkable progress. SBE research has experienced methodological, theoretical and empirical progress on a scale that has wide practical applications and sets the stage for future decades of similar progress. Although it is hard to argue with success, we suggest that some strategic midcourse corrections are in order, as outlined below.

  Culture Matters. Although the SBE disciplines aim to understand human thought and behavior in its full range and complexity, they have generally shown a surprising lack of diversity in research practices. For example, broad claims about human psychology and behavior based on narrow samples from Western societies are regularly published in leading journals. A recent analysis of the top journals in six sub-disciplines of Psychology from 2003-2007 (Arnett, 2008) revealed that 96% of participants were from Western industrialized countries. These samples reflect the country of origin of the authors---99% of first authors were at universities in

Western countries. Studies with adults are largely studies of college students attending these same universities and studies with children are largely drawn from the middle-class communities immediately surrounding them.[1]

Although data from these samples are often treated as representing species-general phenomena, this assumption typically remains unexamined. Where generality is examined, it is often found to be unwarranted. A recent extensive review of cultural comparisons involving a wide range of phenomena, including visual perception, judgments of fairness, categorization, spatial cognition, memory, moral reasoning and self concepts (Henrich, et al, 2010) strongly suggests that these "standard" research participants may be unusual or "outliers" compared with the rest of the species. Cross-cultural studies show that claims about basic cognitive phenomena derived from studies with undergraduates often do not generalize well to other populations (e.g., Atran and Medin, 2008). In some cases these differences can be linked to a single variable such as expertise, but in others the differences appear to be based on a complex set of factors implicating different frameworks or epistemological orientations towards the natural world.

Universality cannot be established simply by number of countries if, for example, only industrially saturated nations are used for data collection. Similarly, cross-national internet samples risk related forms of bias and do not substitute for more systematic sampling using multiple measures.

The same focus on narrow samples is evident in developmental studies. For example, it has been argued that children's understandings of the natural world are initially and necessarily anthropocentric, centered on and organized around humans as the model species. The evidence for this claim comes largely if not exclusively, from urban, middle-class children. Recent work with children from other communities undermines this universalist assumption, suggesting instead that this human-centered perspective is a learned cultural model, acquired in some but certainly not all communities. As another example, phenomena as seemingly straightforward as memory development do not emerge in isolation, but appear to reflect cultural processes including patterns of parent-child conversation which vary substantially across cultures. [2]

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[1] We recognize that for some purposes narrow samples may be appropriate.
[2] Note that we have followed the guidelines of having no more than three references but our claims can be supported with specific citations available upon request.

In short, the over-investment in a narrow sample of humanity is a serious limitation for behavioral research, one that is in urgent need of being remedied. This limitation is both theoretical and practical. Theoretically, it limits the scope of psychological theories to account for the wide range of human behaviors and thinking patterns that occur throughout the world. Because the empirical base in the SBE disciplines derives from a narrow sample, researchers risk either drawing incorrect conclusions about human behavior or taking the uncomfortable stance of stipulating that their results may apply only to undergraduates at major research universities. Practically, this limitation undermines meaningful dialogues and interventions among diverse cultures, an issue that has become increasingly salient as the world has become increasingly interdependent.

We are sympathetic with the fact that the diversity of SBE study populations has been limited for pragmatic reasons: it is inexpensive, fast, and easy to employ students and other nearby samples as research participants. Many if not most of the signatories to this paper have benefited and are benefitting from these samples, and we recognize that pragmatic factors will continue to play a role in SBE research. It is for just this reason that we call for NSF to develop funding initiatives that make diversity of samples more practically achievable.

The limited choice of research participants is often complemented by a limited choice of research methods. Psychology, for example, has often targeted the development of the one "standard" task to elicit certain phenomena. This strategy potentially leads to selection effects on materials and methods that in turn limit the generalizability of findings.

Effects of culture and experience on cognition and behavior are increasingly evident. Some neuroscientists now propose that the very architecture of the human brain is affected by the organization of life-long experience. There has also been a revival of research documenting interconnections between language and thought. Yet another force for change is the large body of research documenting cognitive consequences of East-Asian collectivism versus Western individualism.

Although documenting cultural differences in thought provides powerful counter-examples to cognitive and decision scientists who would prefer to ignore them (to study "only what is universal"), these data are more a beginning point than an end point. "Culture" is a shorthand for situations, practices, representations, etc that need to be specified. *The current challenge is to provide a theoretical framework for analyzing and understanding cultural*

processes and their interrelation with corresponding cognitive and social processes. A comprehensive framework will be one that describes how cultural groups are created and maintained, that is sensitive to across- and within-culture variation, that avoids essentializing 'culture' and that is sensitive to issues of multiculturalism and to variation across contexts.[3] We believe that this should be a much higher SBE priority than is presently the case.

To explore how cognitive and social processes are shaped by life-long experiences, it is essential to employ multiple measures across cultures and contexts, as well as to analyze how such processes are organized and how they interact with content and situations. To assess how cultural processes serve to constitute cognitive and social processes, we need to understand cultural systems of knowledge (i.e., belief systems), including their cognitive, social and ecological constraints and capabilities, which produce and shape cultural knowledge. We also need associated cross-cultural and cross-domain research on child development. On a methodological level we need to address the problem that stimulus materials, procedures and even theoretical frameworks have been subject to selection pressures that make them uniquely suitable for the study populations that have been favored (undergraduates at major research universities and middle class children in surrounding communities) and thereby less suitable for other populations.

"SBE panels should be encouraged to give higher priority to submissions that include study of diverse samples and are explicit about the rationale for their selection of study populations and the groups to which they are generalizing their findings. This change might serve to alert researchers to boundary conditions on their findings and incentivize research with non-standard samples.

The need for diversity at all levels. Scientific research involves much more than a few methodological canons about the need for precision in measurement, proper controls, replicability and such. It is a complex endeavor involving a series of choices about which problems deserve to be studied and which populations, procedures, contexts and measures are optimal. It is just these sorts of research practices where diverse perspectives and values are important.

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[3] We use "culture" in a broad sense, incorporating, for example, socioeconomic status and religious orientations.

Diverse perspectives and values affect choice of methods and what is studied, often leading to new important findings. For example, the entry of female scientists into studies of primate social behavior led to novel insights into both female and male behaviors. Other analyses reveal the complementary perspectives that American, Japanese and Indian scientists have brought to primatology. Deficits in cultural diversity among populations and among scientists may create blind spots. Many areas of human behavior, such as family ties, food and eating, some key emotions such as shame and humiliation, religion, and ethnicity (as opposed to race) tend to be under-valued and under-studied by scientists who themselves are unrepresentative of the world's population at large. In short, people do not—and indeed cannot—shed their cultural practices and perspectives at the door when they engage in scientific research. *We believe that another SBE priority should be encouraging and supporting efforts to increase the diversity of the SBE scientist population.*

Inter-disciplinary collaborations are another means of broadening perspectives. This requires a willingness to embrace a wider range of methods than typically are found within any one SBE discipline. For example, psychology might need to become more attuned to and conversant with field methods, ethnographic observations and design research. Cultural psychology would benefit by complementing traditional experimental methods with more descriptive research, including field observations. Many important findings in cultural psychology started with researchers who had direct and prolonged experience among distinct cultural groups and the benefit of the associated hypothesis-development component of SBE research has been significantly undervalued. Furthermore, the complex interplay of cognitive and social factors will require rethinking our models of culture and cognition as complex emergent phenomena. This will make further investment into more complex agent-based modeling efforts necessary.

There are computational models that provide formal proofs that increasing the diversity of orientations in collaboration can even trump ability in problem solving. The sociology of science tends to converge on accuracy when different biases or errors cancel each other out, but this is less likely to happen when the very lack of diversity leads to correlated error.

Real World Relevance. All of the above aspects of diversity are vital to the SBE sciences if they are to help address the problems that humankind faces over the next several decades, for example, resource constraints (land, water, oil), climate change, rising population levels and

demographic pressures. We need to understand the cognitive and social factors that underlie seemingly intractable cultural conflicts, which will be increasingly resource conflicts couched in ideological and religious terms.   A further challenge is that the internet and its progeny are redefining collective boundaries and personal identities by creating new kinds of social interaction, new patterns of social structure, new ways of knowledge acquisition and management, with consequences that are difficult to foresee. The SBE sciences should prioritize efforts to understand these changes and explore their implications for cultural survival, national security and global peace.

Some suggest that answers to these challenges lie with technology, but this assumption is questionable, without being supported by a body of behavioral and social sciences research aimed at understanding such forms of change. To address these challenges will require our best SBE sciences grounded in diversity, not a science limited by an overweighting on convenience samples.

Priorities for more diverse SBE sciences: Recommendations

1. A high priority for the SBE sciences should be the understanding of cultural processes, broadly construed, and their interrelation with corresponding cognitive and social processes.

2. NSF should provide incentives to encourage applications that include diverse study samples. For example, higher priority could be given to PI's who explicitly justify their choice of study population(s), and are explicit about the groups to which they are generalizing their findings, and discuss both arguments and evidence underlying these generalizations.

3. Another NSF priority should be to support and encourage efforts to increase the diversity of the SBE scientist population.

4. Given the strong pragmatic forces favoring convenience samples and the equally pragmatic challenges that accompany efforts to use a broader range of samples, NSF should explore incentives, forms of support and initiatives to encourage research diversity efforts. This may include fostering novel research partnerships, developing and supporting sustained research networks, and training PI's for doing cultural research.

5. NSF might also instruct panelists to give higher priority to applications that include diverse samples and an expanded Broader Impacts section discussing real world relevance. This priority may incentivize research with non-standard samples, inform questions

regarding boundary conditions of findings, and begin to reveal the cultural landscape of human cognition and behavior.

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