The Science of Broadening Participation at NSF

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The Urgency of Broadening Participation

- THE PROBLEM: Minorities and women are under-represented in the number of STEM graduates and in the STEM workforce

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  1. NIH: "Committee on Underrepresented Groups and the Expansion of the Science and Engineering Workforce Pipeline" (2011)
  2. American Institute for Research (AIR) "Broadening Participation for STEM: A Call to Action" (2012)
  3. Committee on Equal Opportunities in Science and Engineering (CEOSE)
  4. Society of Women Engineers: "Diversity and Inclusion Fuels Innovation in STEM" (2014)
  5. Institute for Broadening Participation: "Building Partnerships to Support Diversity in STEM"

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- U.S. needs to Target programs to increase URGs in STEM.

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- Continuous program evaluation is essential.

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  1. HOW do we do it?
  2. WHAT types of programs/ interventions work?
  3. WHY are some interventions not working?
- Research on the Science of Broadening Participation attempts to answer these questions.

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- Provides scientific evidence that STEM educators, employers, and policy makers need to make informed decisions and design effective programs and interventions.

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- Potentially transformative (i.e., disrupt existing paradigms)

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- Engineering training settings prove hostile for LGB students

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  - Evidence suggests that faculty mentors can help decouple the experience of failure with threats to belong in a scientific community
  - Mentors who provide two-faceted intervention mediate negative responses to critical feedback (Cohen, et al, 1999; Cohen, et al, 2009).

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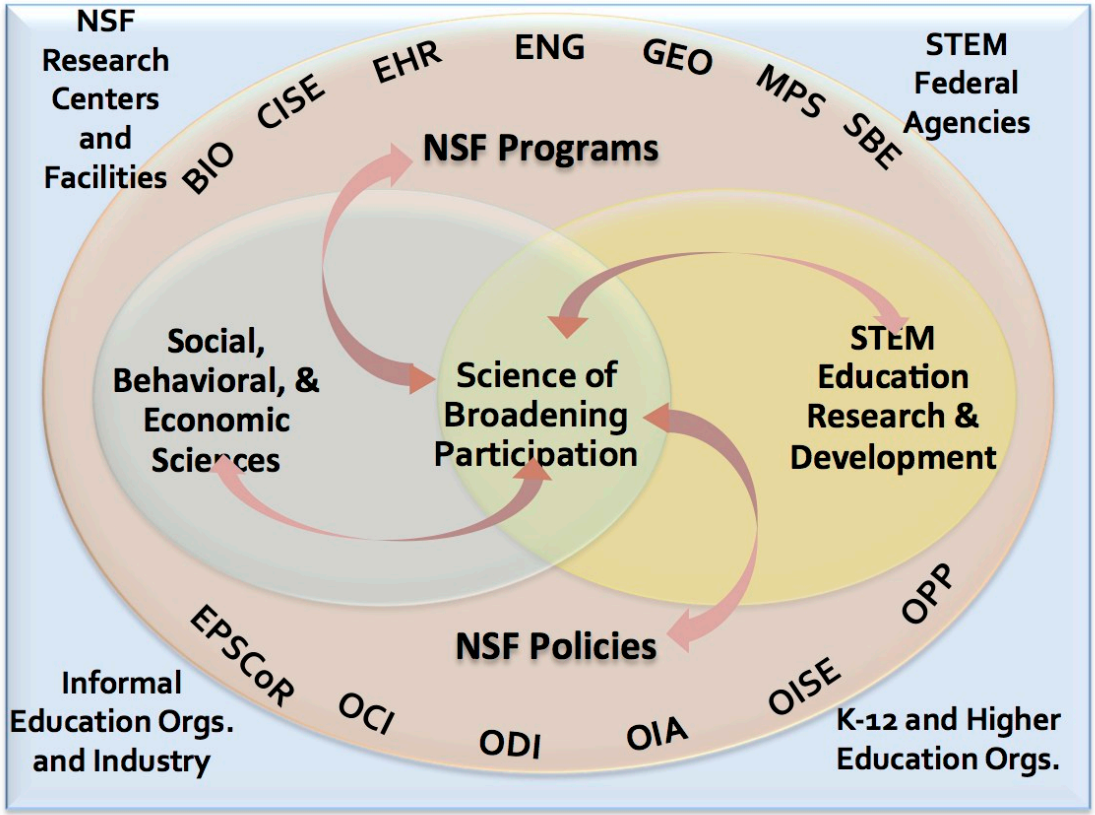
- Colorblind approaches to racial attitude interventions are less effective in reducing bias than those with explicit reference to prejudice (e.g., Richeson & Nussbaum, 2003).
- Diversity training does not lead to greater diversity in senior management (Dover, Major & Kaiser, 2014; Dobbin, et al. 2010).

SBP at NSF

- SBP is at the intersection of the SBE and education research fields and can inform NSF program design and policies as well as other stakeholders outside the Foundation, including other federal agencies.



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- DCL emphasizes:
  - The importance of SBP research
  - Examples of SBP research questions
  - Identifies SBE & EHR programs for SBP submissions

SBE "Matching Funds" Competition

- SBE has provided matching funds to support SBP research, up to 50% of the award amount, since FY11.
  - FY11: ~$350,000; 4 projects
  - FY12: ~$900,000; 10 projects, 1 supplement
  - FY13: $1 million; 11 projects, 1 supplement
  - FY14: $1 million; 13 projects
  - FY15: $1.5 million; currently accepting project nominations
  - FY16: $1.5 million requested

Programs that Have Received Matching Funds

- **SES**
  - Decision, Risk & Management Sciences
  - Economics
  - Law & Social Sciences
  - Political Science
  - Science of Science & Innovation Policy
  - Science, Technology & Society
  - Sociology
- **BCS**
  - Cognitive Neuroscience
  - Cultural Anthropology
  - Developmental & Learning Sciences
  - Documenting Endangered Languages
  - Social Psychology
- **SMA**
  - Interdisciplinary Behavioral & Social Sciences (IBSS)

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- Jeni Burnette (University of Richmond): An Interdisciplinary Approach for Increasing Female Involvement and Achievement in STEM (IBSS)

Emerging Findings from SBE Matching Funds Research

- Does post-test stereotype activation affect beliefs about math performance?

- Clark, J. et al., (2015), Journal of Personality and Social Psychology; BCS-1226417 (PI: Clark), BCS-1225804 (PI: Barden), Social Psych.

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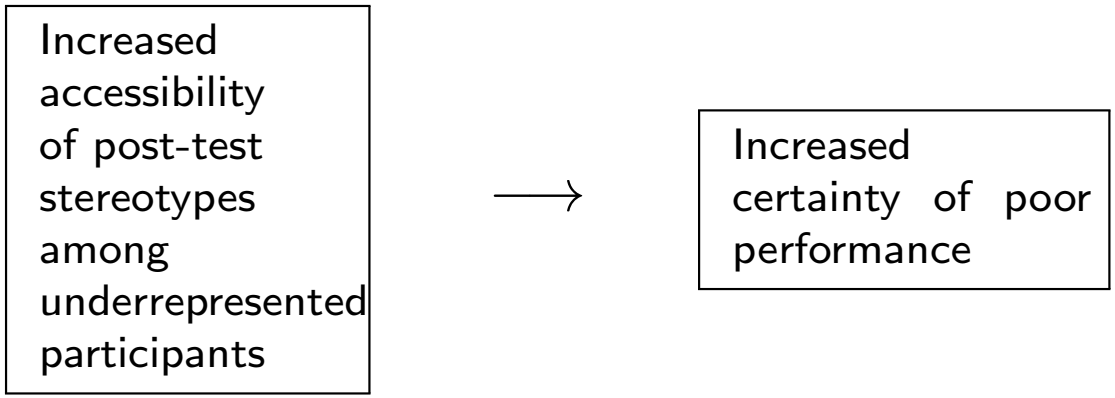

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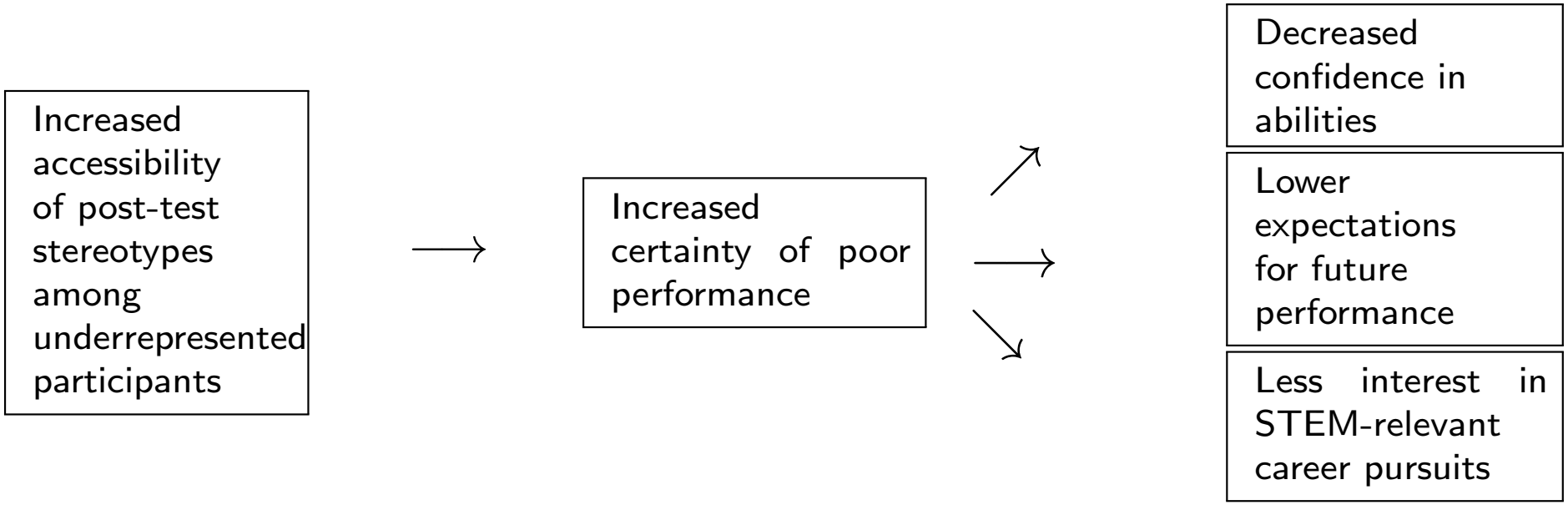

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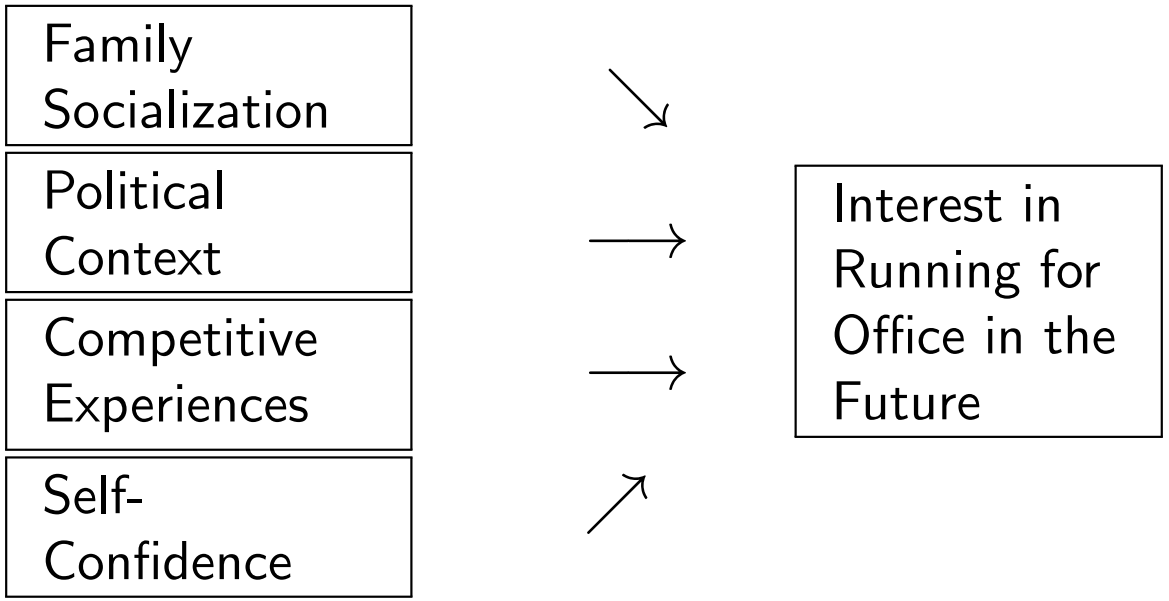

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- Create a SBE Broadening Participation website: resource for PIs, students, and scientific communities

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- Developed a Framework for Action for Broadening Participation

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- Workshop to promote solutions to BP challenges

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3. Expansion/Re-Framing of Directorate-Based BP Efforts: coordination across the Foundation for maximum impact

Questions, Comments, & Discussion

with Dr. Nilanjana Dasgupta