Official Written Testimony in Support of
Fiscal Year 2020 National Science Foundation Appropriations and Language

Submitted to the House Subcommittee on Commerce, Justice, and Science, and Related Agencies;
Committee on Appropriations
United States House of Representatives

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On behalf of the Society for Industrial and Organizational Psychology (SIOP), we are pleased to provide this written testimony to the House Appropriations Subcommittee on Commerce, Justice, and Science, and Related Agencies for the official record. **In this testimony, SIOP urges the Subcommittee to consider two requests: provide $9 billion for the National Science Foundation (NSF), including strong support for the Directorate for Social, Behavioral, and Economic Sciences (SBE), in the fiscal year (FY) 2020 appropriations process; and include report language to encourage NSF to more rigorously implement the science of team science in the agency's funding strategies for large-scale and multi-disciplinary research projects.**

Appropriations Support

SIOP is a community of nearly 10,000 members worldwide with a common interest in promoting the research, practice, and teaching of industrial and organizational (I-O) psychology to enhance human well-being and performance in organizational and work settings. SIOP provides a platform for scientists, academics, consultants, and practitioners to collaborate, implement, and evaluate cutting-edge approaches to workplace challenges across sectors.

SIOP and its members recognize and appreciate the challenging fiscal environment in which we, as a nation, currently find ourselves; however, we also have evidence that federal investment in social and behavioral science research directly and positively impacts the U.S. economy, national security, and the health and well-being of Americans.

Through SBE, NSF supports basic research to develop a scientific evidence base for improving the performance, effectiveness, management, and development of organizations and the workforce. The methods, measurements, and theories developed through this federal investment enhance business practices, policy-making, and interprofessional collaboration. The evidence base derived from basic research in the science of organizations is applied throughout the public and private sectors. For example, federal research agencies across the government, including the Department of Defense (DOD), National Aeronautics and Space Administration (NASA), the Department of Justice (DOJ), NSF, etc. invest in I-O research that enhances organizational effectiveness and human performance. Findings from this work also improve the effectiveness of the private sector and federal workforces.

Additionally, new pressures to address privacy, performance, and safety in the workplace have further expanded the need for federal investment in social and behavioral science research, especially in I-O psychology, emphasizing the importance of the entire work system in addition to the individual. Cybersecurity threats, subtle and formal discrimination, talent shortages in technical jobs, displacement, and a host of other recent events and conditions have catalyzed the development and application of new methodologies for studying how people think and behave in the workplace.

SIOP also supports NSF's dedication to its "10 Big Ideas,"[1] including *Work at the Human-Technology Frontier*, which seeks to address and improve human-technology interactions as workplaces integrate and adapt to artificial intelligence, automation, machine learning, and beyond. In addition to developing these technologies, successful implementation relies on understanding human learning at various stages of life, and improving education and training to appropriately use these technologies.

With funding assistance from NSF and other federal agencies, the field of I-O psychology has developed data-driven methods to predict successful teams, address workplace dysfunction, improve the work experience of individuals, and enhance job performance and employee engagement. Use of this rich knowledge and understanding has informed and benefitted both private companies and the public workforce. Continued federal support for I-O psychology keeps its knowledge and expertise in the public domain and enhances shared workplace efficiency and understanding of worker well-being at all levels. Other applications of I-O psychology include: improving airline safety through Crew Resource Management, transitioning veterans and service members to civilian jobs, managing age diversity in the workplace, accounting for the technology-enabled workforce, and mitigating the impact of furloughs on the federal workforce, among many others.

Given NSF's critical role in supporting fundamental research and education across science and engineering disciplines, SIOP supports an overall FY 2020 NSF budget of $9 billion. SIOP requests robust support for the NSF SBE Directorate, which funds important research studies, enabling an evidence base, methodology, and measurements for improving organizational function, performance, and design across sectors and disciplines.

<u>Science of Team Science</u>

Recently, I-O psychologists with expertise in SciTS have been engaging with NSF program officers and leadership to ensure their findings are fully ingrained in the agency's new models and approaches for funding cross-disciplinary science and/or large-scale research projects (e.g. Engineering Research Centers; Science and Technology Centers; Convergence Accelerators). SIOP feels this is important because as NSF increasingly encourages and promotes team science, taking additional steps to ensure evidence-based team science is considered in multi-partner initiatives would improve communication between researchers, productivity, efficiency and cost-effectiveness.

NSF has funded several team science studies through the Directorate for Social, Behavioral, and Economic Sciences (SBE), and program officers across directorates have expressed interest in leveraging team science to improve multi-disciplinary awards, including participating in one-on-one conversations with SIOP experts and inviting them to present on NSF panels. SIOP appreciates NSF's interest in learning more about leveraging SciTS to improve programs and collaborations at the agency. Appropriations report language to further encourage this interest would build on existing momentum and catalyze meaningful action.

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[1] National Science Foundation-proposed "10 Big Ideas"
(https://www.nsf.gov/about/congress/reports/nsf_big_ideas.pdf?dm_i=1ZJN,4FGWL,E29O0Q,GB891,1)

For further reference, SIOP members served on the National Academies' Committee on the Science of Team Science, which produced the 2015 report on this topic: https://www.nap.edu/catalog/19007/enhancing-the-effectiveness-of-team-science. Also, slides and recordings from NSF's 2018 Accelerating Engineering Research Center Preparedness Workshop can be found at: https://ercbiennial.asee.org/2018-pgw/program/. SIOP members Drs. Steve Kozlowski and Kara Hall present on team science.

Requested Report Language

Team Science – The Committee encourages NSF to continue to seek ways to implement the science of team science as the agency develops new models and approaches for funding large-scale and cross-disciplinary science. In particular, the Committee encourages NSF to ensure that it is implementing the recommendations from the 2015 National Academies of Sciences, Engineering, and Medicine report, *Enhancing the Effectiveness of Team Science*[2].

Thank you for the opportunity to offer SIOP's support for NSF. Please do not hesitate to contact SIOP should you have any questions. Additional information is also available at www.siop.org.

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[2] https://www.nap.edu/catalog/19007/enhancing-the-effectiveness-of-team-science