Assessing Hard-to-Measure Cognitive, Intrapersonal and Interpersonal Competencies

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Panelist and Speaker Bios

Bradley Barker is associate professor and youth development specialist in the Institute of Agriculture and Natural Resources Extension 4-H Division at the University of Nebraska-Lincoln. Dr. Barker spent eight years with Nebraska Educational Telecommunications where he was an Interactive Media Producer. Dr. Barker has directed media productions for the CLASS project, the Nebraska Law Enforcement Training Center, and the Nebraska National Guard. Dr. Barker has been the principal investigator on two National Science Foundation Grants to develop the Nebraska 4-H Robotics and GPS/GIS program with the intent to scale-up the program to a national audience. Dr. Barker was also the PI on the National *4-H Robotics: Engineering for Today and Tomorrow* curriculum development grant for National 4-H Council and CSREES. He is currently the PI on the NSF ITEST *Nebraska 4-H Wearable's Technologies* (WearTec) project. Dr. Barker's research interests include the development and evaluation of educational technology systems for STEM education in non-formal learning environments. He is the co-editor of the chapter book *Robots in K-12 Education: A New Technology for Learning* (2012) and has recently co-authored a book chapter titled *Developing an Elementary Engineering Education Program through Problem-Based Wearable Technologies Activities* (2015) to appear in the upcoming chapter book *Handbook of Research on Wearable and Mobile Technologies in Education* edited by Janet Holland. Dr. Barker received his Ph.D. in administration, curriculum and instruction in the area of instructional technology in 2002 from the University of Nebraska-Lincoln.

Kenn Barron is a professor of psychology at James Madison University and co-coordinator of the Motivation Research Institute where the mission is to promote a community of researchers and practitioners dedicated to advancing the study and application of motivation theory. In particular, he and his collaborators focus on developing and evaluating assessment tools to measure motivation, and developing and evaluating interventions to improve motivation. Dr. Barron regularly publishes and presents on topics related to motivation and the scholarship of teaching and learning. He also strives to put his knowledge of motivation into practice in his own teaching by coordinating JMU's Psychology Learning Community (PLC). The PLC is an integrated academic-residential program for first year students. Students take part in a unique introduction to the field of Psychology and jump start to the major through a series of curricular and co-curricular experiences designed specifically for them, while living together in the same residence hall. In 2012, he was named a fellow of the American Psychological Association and one of Princeton Review's Top 300 professors in America. Dr. Barron received his Ph.D. in social/personality psychology from the University of Wisconsin-Madison in 1999, and began working at JMU in 2000.

Sheri Berkeley is an associate professor in the Division of Special Education and disAbility Research at George Mason University. She earned her Ph.D. from George Mason in 2007. Her dissertation study that investigated self-regulation and reading comprehension outcomes for secondary students with learning disabilities was awarded both the *Outstanding Achievement and Academic Excellence for PhD in Education Award* from the Graduate School of Education at George Mason and the *Award for Outstanding Doctoral Level Research* from the Division of Learning Disabilities of the Council for Exceptional Children. Her research continues to focus on understanding how to improve the self-regulation of learning of adolescents with learning disabilities. She is lead author of a recent textbook, "*Maximizing Effectiveness of Reading Comprehension Instruction in Diverse Classrooms*" (2015), and her research has been published in top tier education research journals, including *Exceptional Children, Journal of Special Education, Journal of Learning Disabilities, Learning Disability Quarterly, Remedial and Special Education,* and *Reading and Writing Quarterly*. She is a recipient of Mason's 2015-2016 Emerging Researcher/Scholar/Creator Award for exceptional promise in her discipline.

Bianca L. Bernstein is professor of counseling and counseling psychology in the College of Letters and Science at Arizona State University and affiliate faculty in the School of Social Transformation and the Mary Lou Fulton Teachers College. Dr. Bernstein is Principal Investigator of the *Career*WISE research program, supported by the National Science Foundation since 2006. Her work has focused on the application of psychological science to the academic persistence and career advancement of women in graduate science and engineering programs and the development of evidence-based learning environments for graduate education including online instruction in professional skills. She has served as the dean of ASU's Graduate College, director of NSF's Division of Graduate Education, leader of ASU's extensive Preparing Future Faculty Program, innovator of ASU's Preparing Future Professionals Program, president of the Western Association of Graduate Schools, member of the Board and Executive Committee of the Council of Graduate Schools, and visiting scholar at the Carnegie Foundation for the Advancement of Teaching at Stanford University. She is a fellow of the American Association for the Advancement of Science and has won a number of awards for her work on equity and inclusiveness including the Woman of the Year Award from the American Psychological Association Div. 17 Section for the Advancement of Women, the Outstanding Faculty Mentor Award from the ASU Faculty Women's Association , the Achievement in Gender Equity Award from the ASU Faculty Women's Association , the Award for Contributions to Diversity from the ASU Black Caucus, and the Arizona Governor's Spirit of Excellence Award. Dr. Bernstein holds a bachelor's in psychology from the University of California at Berkeley and graduate degrees in counseling psychology from the University of California at Santa Barbara.

Thomas Brock is commissioner of the National Center for Education Research at the Institute of Education Sciences (IES). In this role, he oversees federal funding for scientific research that addresses major education problems and solutions in the U.S. Much of the research is focused on evaluating the effectiveness of policies and interventions designed to improve education outcomes for students at all levels, ranging from pre-kindergarten to postsecondary education. Prior to IES, Brock led the Young Adults and Postsecondary Education policy area at MDRC, where he and his colleagues focused on developing and evaluating programs designed to increase academic achievement, persistence and completion for students in college. Earlier in his career, Brock evaluated a variety of welfare reform and anti-poverty programs that included

education, job training and case management services targeting low-income adults. Brock has a master's degree in public administration from Columbia University and a Ph.D. in Social Welfare from the University of California, Los Angeles.

Tabbye Chavous is professor of education and psychology at the University of Michigan (UM). She received her Ph.D. in community psychology from the University of Virginia. Dr. Chavous' research focuses on social identity processes (race/ethnicity, gender, and social class) among ethnic minority adolescents and young adults in secondary and post-secondary education contexts and implications for students' academic identity development (including academic engagement and motivation), performance and persistence, and psychological adjustment and well-being. Her work also focuses on measurement and impacts of diversity and multicultural climates within secondary and higher education settings. She is a principal investigator and co-director of the UM's Center for the Study of Black Youth in Context, a center funded through the National Science Foundation (NSF) and focused on research, training, and community engagement related to promoting positive development among diverse populations of Black youth and families. Also, Dr. Chavous has secured funding through grants from the National Institutes of Health, the National Science Foundation, and the Spencer Foundation for research projects focusing on racial socialization processes among African American adolescents, psychological and contextual factors affecting college transitions among ethnic minority students; and relationships among racial identity, racial discrimination, and well-being among ethnic minority college students. Dr. Chavous' current NSF-funded project examines race, gender, and academic identification processes among college students pursuing pathways in science, technology, engineering, and mathematics fields. Finally, Dr. Chavous currently serves as associate dean for academic programs and initiatives at the University of Michigan's Rackham Graduate School. As part of her administrative role, she engages in and helps lead efforts related to enhancing diversity and excellence in graduate education, including considering policies and practices for that lead to high quality, diverse student populations, high quality academic experiences for all students, and equitable opportunities for student success.

Marc Chun is an education program officer at the Hewlett Foundation where works to develop and implement grantmaking for the Program's Deeper Learning initiative. He works with the Education Program's Deeper Learning Network, which is a consortium of ten school operators that oversee more than 400 schools in thirty-seven states; the Network serves to demonstrate the effectiveness of educating students in deeper learning skills. Chun also oversees the Program's research agenda. Before joining the Foundation, Chun worked for the Council for Aid to Education, a nonprofit organization based in New York City that measured students' higher order thinking skills. As the director of education, he created and ran a professional development program that promoted curricular and pedagogical reform. He has also worked for the Stanford Institute for Higher Education Research, the Higher Education Research Institute, and The RAND Corporation. Chun earned a Ph.D. in education from Stanford University and completed a postdoctoral fellowship in sociology and education at Teachers College, Columbia University. He has three master's degrees: one in administration and policy analysis from Stanford University; a second in education from the University of California, Los Angeles; and a third in sociology, also from Stanford. He has taught at Stanford University, Columbia University,

Vanderbilt University, and The New School, and has published on topics related to performance assessment and student learning.

Jennifer Cromley is an associate professor of educational psychology in the College of Education at the University of Illinois Urbana-Champaign. Her 2008-2013 NSF-funded project "A multimethod approach to understanding dropout from STEM gateway courses" included measures of entity and incremental self-beliefs (*mindset*), beliefs about the nature of knowledge in biology and chemistry, and measures of sex and race stereotype threat, and their relations to chemistry and biology course grades and retention. Her current IES-funded intervention project "Bootstrapping Achievement and Motivation in STEM: An Integrated Cognitive-Motivational Intervention to Improve Biology Grades", also assesses pre- and post-intervention biology reasoning, as well as interest, self-efficacy, perceived ability, value for and costs of STEM, together with exam and course grades and intention to remain in STEM. A second line of her research concerns comprehension of text and diagrams and other visual representations, their relation to individual differences such as knowledge and spatial skills, and developing methods for teaching students to better comprehend illustrated texts. Cromley is an associate editor of *Cognition & Instruction* and sits on 6 editorial boards including the *Journal of Educational Psychology*, *Contemporary Educational Psychology,* and *Learning and Instruction*. She holds a 2005 Ph.D. in human development from the University of Maryland College Park as well a Certificate in Educational Measurement and Statistics. She was a recipient of a Presidential Early Career Award for Scientists and Engineers in 2010.

Julie Cwikla is the director of Creativity & Innovation in STEM at the University of Southern Mississippi, housed in the Office of the Vice President for Research. She has designed, led, and studied professional learning for mathematics faculty in higher education, directed out-of-school interdisciplinary STEM programs for middle school students and their families, examined very young children's intuitive understanding of fraction concepts, studied teachers' use of handheld technology in STEM classes, designed interdisciplinary lessons for middle and high school classrooms, and developed an educational research program to help organize and align undergraduate programs in engineering. Over the past decade she has also provided professional development courses and workshops for STEM educators K-16 in five different states. She serves as a reviewer for multiple education journals and national organizations such as the American Educational Research Association, the National Science Foundation, and the National Council of Teachers of Mathematics. She is a National Science Foundation Early CAREER Award Recipient. In 2005 she founded Project WetKids with funding from the NSF and continues to serve as its Director. She served as assistant, associate, and full professor in the Department of Mathematics and the Department of Curriculum and Instruction at USM from 2001-2012. She was also the founding director of CISSTEM - The Center for Integrative Studies in Science, Technology, Engineering, and Mathematics at the University of South Alabama in Mobile, Alabama from 2012-2014. Dr. Cwikla holds a doctoral degree in mathematics education, with a minor in applied mathematics from the University of Delaware and studied under the direction of Dr. James Hiebert. She also holds a master's degree in applied mathematics from New York University's Courant Institute of Mathematical Sciences and a bachelor's degree in mathematics and chemistry from Fairfield University.

Eric Deemer is currently an assistant professor in the Department of Educational Studies at Purdue University. His research focuses on academic and career development in STEM, with a particular emphasis on the motivational, sociocultural, and social cognitive factors that foster the pursuit of careers in scientific research among women and underrepresented minorities. Specifically, he seeks to understand how constructs such as self-efficacy, science interest, and both approach- and avoidance-based forms of motivation facilitate or inhibit individuals' intentions to pursue these careers. His research also examines how elements of certain academic contexts, such as science classrooms and research training environments, give rise to the adoption of certain motivational orientations and goals. Toward this end, he recently completed work as primary investigator on a project funded by the National Science Foundation entitled, The Mediating Role of Stereotype Threat and Achievement Goals in the Regulation of Scientific Motivation (2010-2014). This project sought to understand whether college women's perceptions of relational dynamics within their laboratory classroom climates were predictive of greater endorsement of threatening gender stereotypes and, ultimately, decrements in motivation for science. Dr. Deemer is also co-investigator on a research project entitled, The Gallup-Purdue Index, the purpose of which is to explore the extent to which salient aspects of the college experience may be linked to perceptions of social, emotional, financial, and physical well-being. He received his Ph.D. in counseling psychology from the University at Albany, State University of New York in 2008. Prior to joining the faculty at Purdue he spent he spent 4 years as an assistant professor in the Department of Psychology at Louisiana Tech University.

Nicole M. Else-Quest is associate professor and associate chair of Psychology and affiliate associate professor of Gender and Women's Studies at the University of Maryland, Baltimore County. She earned her doctoral degree in psychology at the University of Wisconsin, Madison in 2006. A developmental psychologist with a lifespan perspective, Dr. Else-Quest's research, teaching, and service interests are in diversity and inclusion in education, intersectional approaches, and the development of psychological gender differences across ethnic, socioeconomic, and cultural contexts. She is co-author with Janet Hyde of Half the Human Experience, an undergraduate psychology of women textbook. She has taught CE workshops on teaching diversity and critical thinking to undergraduates and on gender differences/similarities in attitudes and emotions about the self. Dr. Else-Quest regularly teaches undergraduate and graduate courses in the psychology of women, psychology of aging, lifespan development, and research methods. Past research includes meta-analyses of gender differences/similarities in childhood temperament, math attitudes and achievement, and self-conscious emotions. Her longitudinal research with adolescents and their parents in Philadelphia was funded by the National Science Foundation and resulted in publications on ethnic variations in gender differences in academic attitudes and achievement (Psychology of Women Quarterly), gender differences in academic attitudes and achievement in single-sex and mixed-sex schools (American Educational Research Journal), and on ethnic identity socialization and development (Cultural Diversity and Ethnic Minority Psychology). Dr. Else-Quest's current work is focused on the effects of undergraduate diversity courses on implicit and explicit attitudes about gender and aging among undergraduate students, and on the rationale and implementation of quantitative methods for the analysis of intersectionality in psychological research.

Joan Ferrini-Mundy is assistant director of the National Science Foundation (NSF) for Education and Human Resources, a position she has held since February 2011, and is responsible

for the leadership of the NSF Directorate for Education and Human Resources (EHR). She had served the Foundation in a number of capacities since 2007 including as inaugural director (through an Intergovernmental Personnel Act appointment) of the EHR Directorate's Division of Research on Learning in Formal and Informal Settings. From 2007 through 2009, Ferrini-Mundy was a member of the National Science and Technology Council's Subcommittee on Education, and currently co-chairs the Strategic Plan workgroup of the National Science and Technology Council Committee on STEM Education. She is a member of the Mathematics Expert Group of the Programme for International Student Assessment, and in 2007-2008,representing NSF, she served as an ex officio member of the President's National Mathematics Advisory Panel, and co-chaired its Instructional Practices Task Group. From 1999 - 2011 Ferrini-Mundy held an appointment at Michigan State University, where she was a university distinguished professor of mathematics education in the Departments of Mathematics and Teacher Education, and associate dean for Science and Mathematics Education in the College of Natural Science. Her research interests include calculus teaching and learning, mathematics teacher learning, and mathematics and science education policy at the K-12 level. Ferrini-Mundy holds a Ph.D. in mathematics education from the University of New Hampshire. She was elected a fellow of the American Association for the Advancement of Science in 2011.

Amy Grack Nelson is the evaluation and research manager in the Department of Evaluation and Research in Learning at the Science Museum of Minnesota. She has over 13 years of experience carrying out front-end, formative, remedial, and summative evaluations of a wide range of informal science education experiences including exhibits, out-of school time programs, professional development, school outreach, museum programs, curricula, and websites. She has also been involved in a number of national projects conducting research on evaluation in the informal learning field. She was a lead researcher on the project Building Informal Science Education where she worked with a team to code and synthesize over 500 evaluation reports posted to the website informalscience.org in an effort to increase understanding about evaluation in the field of informal science education. Much of Grack Nelson's current work focuses on carrying out validation studies during the development of tools to evaluate common experiences such as citizen science programs and science festivals. She is co-PI on the NSF-funded project Collaboration in the 21st Century where she is part of a team working to develop and validate survey instruments to measure teamwork skills of middle and high-school youth in STEM out-of-school time programs. In addition to her work at the Science Museum of Minnesota, Grack Nelson is an independent evaluator who has provided services to organizations such as the Center for the Advancement of Informal Science Education, Minnesota 4-H, and the Minnesota Department of Natural Resources. Grack Nelson received a B.S. in ecology, evolution, and behavior; M.A. in evaluation studies; and M.S. in environmental education, with a minor in museum studies from the University of Minnesota. She is currently a doctoral candidate at the University of Minnesota in Quantitative Methods in Education with a concentration on evaluation.

James A. Griffin is the deputy chief of the Child Development and Behavior Branch at the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), National Institutes of Health, as well as the director of the Early Learning and School Readiness Program. Prior to his position at NICHD, Dr. Griffin was a senior research analyst in the Institute of Education Sciences (IES) at the U.S. Department of Education. He also served as the

assistant director for the Social, Behavioral, and Education Sciences in the White House Office of Science and Technology Policy and as a Research Analyst at the Administration on Children, Youth and Families. Dr. Griffin holds a B.A. summa cum laude in psychology from the University of Cincinnati and a Ph.D. with honors in child clinical psychology from the University of Rochester. He completed a postdoctoral fellowship in psychiatric epidemiology at the Johns Hopkins University School of Public Health. Dr. Griffin's career has focused on research and evaluation efforts related to service systems and early intervention programs designed to enhance the development and school readiness of children from at-risk and disadvantaged backgrounds. These efforts include several large-scale evaluations of the Head Start program while at ACYF and research on preschool curricula involving geographically diverse child care, Head Start and state pre-kindergarten programs while with IES and NICHD.

Laura Hamilton is a senior behavioral scientist and associate director of RAND Education, a faculty member at the Pardee RAND Graduate School, and an adjunct faculty member in the University of Pittsburgh's Learning Sciences and Policy program. Her research addresses educational assessment, accountability, the implementation of curriculum and instructional reforms, and the use of data for instructional decision making. She has led several large-multi-site studies and is currently leading or co-leading projects examining high school reform, technology-enabled personalized learning, educator evaluation, and the measurement of interpersonal and intrapersonal competencies. She served as a member of the committee that revised the *Standards for Educational and Psychological Testing* and as chair of a What Works Clearinghouse panel on data-driven decision making, and has served on several state and national panels on topics related to assessment, accountability, and educator evaluation. She is currently a member of the NRC Committee on the Evaluation of NAEP Achievement Levels. She also recently competed a term as an editor of the journal *Educational Evaluation and Policy Analysis.* She holds a Ph.D. in educational psychology and an M.S. in statistics from Stanford University.

Evan Heit is division director of the Division of Research on Learning, in the Education & Human Resources Directorate of the National Science Foundation (NSF). He has published numerous papers on learning and cognition by adults and children, involving experimentation and computational modeling. Some of this research that is particularly relevant to his work at NSF has been on concept learning, memory, scientific and informal reasoning, metacognition, and math anxiety. Professor Heit is visiting NSF under the Intergovernmental Personnel Act program. His home institution is the University of California, Merced, where he was a founding faculty member. At UC Merced, he served in various roles such as graduate group chair, planning and budget committee chair, and faculty senate chair. He was previously a faculty member at the University of Warwick, in the UK. His academic background is in cognitive science. He holds a BSE in computer science and engineering and a BA in psychology from the University of Pennsylvania, and a PhD in psychology from Stanford University.

Joan Herman is co-director emeritus of the National Center for Research on Evaluation, Standards, and Student Testing at the University of California, Los Angeles. Her research has explored the effects of testing on schools and the design of assessment systems to support school planning and instructional improvement. Her recent work focuses on the validity and utility of teachers' formative assessment practices and the assessment of deeper learning and 21st century

competencies. Dr. Herman is noted in bridging research and practice. She is past president of the California Educational Research Association; has held a variety of leadership positions in the American Educational Research Association, National Organization of Research Centers, and Knowledge Alliance. Dr. Herman is current editor of *Educational Assessment*, serves on the Joint Committee for the Revision of *Standards for Educational and Psychological Testing*, and chairs the Board of Education for Para Los Niños. She is a member of the NRC Board on Testing and Assessment and has served on many prior NRC committees, most recently the Committee on Developing Assessments of Science Proficiency in K-12. She received her Ed.D. in learning and instruction from the University of California, Los Angeles.

Margaret Hilton is senior program officer of the Board on Science Education (BOSE) at The National Academies, where she is conducting a study of Assessing Intrapersonal and Interpersonal Competencies. She recently completed the study, *Enhancing the Effectiveness of Team Science.* Previously, she directed a consensus study that led to the report, *Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century*. This study built on and extended earlier workshops, one focused on future skill demands, another on the intersection between science education and 21st century skills, and another on assessment of 21st century skills. She also directed two large national summits—Community Colleges in the Evolving STEM Education Landscape (in December, 2011) and Assessment of Informal and Afterschool Science Learning (in June, 2012). She contributed to the BOSE report Discipline-Based Education Research, was a primary author of the report, *Learning Science through Computer Games and Simulations*; and directed a study of high school science laboratories. For the NRC Committee on National Statistics, she directed a study of the Occupational Information Network (O*NET), a large database of occupational information. Prior to joining the NRC staff, Margaret was a consultant to the National Skill Standards Board. Earlier, at the Congressional Office of Technology Assessment, she directed studies of workforce training, work reorganization, and international competitiveness. She earned a B.A. in geography, with high honors, from the University of Michigan, an M.A. in regional planning from the University of North Carolina at Chapel Hill, and an M.A. in education and human development from George Washington University.

Paul Horwitz is a theoretical physicist with broad interests in the application of technology to science and math education and assessment. With support from the National Science Foundation, his research has developed a series of interactive computer models and used them to create learning activities that pose problems and monitor students' actions as they attempt to solve them. He was the Principal Investigator on the ThinkerTools Project, which pioneered the use of such games for teaching Newtonian mechanics. RelLab, a simulated "Relativity Laboratory" that he designed, won two EDUCOM Higher Education Software Awards. He also directed the design and implementation of GenScope as well as its successor program BioLogica—multi-level models of genetic processes operating on scales ranging from DNA to populations. Horwitz currently directs the Teaching Teamwork project, which is aimed at evaluating students' ability to work collaboratively and remotely in small teams. The technology for this project consists of a set of simulated electronic circuits that run on multiple computers, linked together over the Internet. Team members are not in direct contact with each other, so they must interact remotely and communicate via text messaging. Each member of the team can affect only his or her portion of the circuit, but because their simulations are linked, actions taken by any single team member

will affect all the others in real time. As the team works to solve a problem that involves the whole circuit, their actions are logged, analyzed, and used to assess the contribution of each team member to the performance of the team as a whole.

Shihong Huang is an associate professor in the Department of Computer & Electrical Engineering and Computer Science at Florida Atlantic University, USA. Her research area is software engineering in general, specifically in self-adaptive software systems, Human Computer Interaction, Brain Computer Interaction in software engineering, and requirements engineering. Her research is supported by NSF, the State of Florida, and industry (e.g., IBM, Motorola, Ericsson, BMW). She has published actively in peer-reviewed journals and conferences. She also has given keynotes and tutorials at international conferences. She is one of the core contributors to the OMG (Object Management Group) International software development standard Essence–Kernel and Language for Software Engineering Methods. Essence was released in November 2014. One of her research supported by NSF is on "Collaborative Research: Transforming the Understanding, Assessment and Prediction of Teamwork Effectiveness in Software Engineering Education using Machine Learning", which is to find out the effectiveness and efficacy of teamwork in global software engineering education. In the past couple of years, Dr. Huang's research interests also include health informatics, particularly on capturing and managing nursing knowledge and practices (this work was granted a U.S. patent in 2014); and computer applications in clinical and therapeutic fields, particularly on computer-based interactive system for children with Asperger's syndrome. Her earlier work dealt with reverse engineering, program comprehension, and software system redocumentation. She has organized or co-organized many international conferences, workshops and panel discussions. She was the general chair of the 24th ACM International Conference on Design of Communication, and was Program Co-Chair of the 9th IEEE International Symposium on Web Site Evolution.

Gül E. Kremer is a professor of engineering design and industrial engineering at The Pennsylvania State University. She has served in several leadership roles within Penn State, including chair of the Engineering Faculty Council, Engineering Caucus Leader, chair of Engineering Curriculum Committee and chair of the University Planning Committee. Dr. Kremer's research interests include applied decision analysis to improve complex products and systems, and engineering education. The results of her research efforts have been presented in various publications (3 books, more than 280 refereed publications). Six of her papers have been recognized with Best Paper awards. She is a Fellow of the American Society for Mechanical Engineers (ASME), and a senior member of the Institute of Industrial Engineers (IIE). She has served as the chair of Design Education and Design for Manufacturing and Lifecycle Technical Committees of the Design Engineering Division of ASME. In addition to her technical work, she has significant contributions to research efforts that are directed toward improving engineering education amidst the challenges and opportunities we face as engineers and educators. Dr. Kremer has degrees in industrial engineering from Yildiz Technical University, an M.B.A. from Istanbul University and a Ph.D. in engineering management from Missouri University of Science and Technology. She has been a National Research Council-US AFRL Summer Faculty Fellow in the Human Effectiveness Directorate from 2002 to 2004, and a Fulbright Scholar (2010-2011). She has been serving as a program director in the National Science Foundation's Division of Undergraduate Education since August 2013.

Andrew Krumm is a senior education researcher in SRI International's Center for Technology in Learning and leads the Improvement Analytics group, which builds data intensive research-practice partnerships with educational organizations. Andrew has received funding from the National Science Foundation (NSF), the Institute of Education Sciences (IES), and SRI International to explore the intersection of design research, advanced analytics, and improvement science. For example, with funding from NSF, Andrew is currently developing approaches to measure noncognitive constructs using data from digital learning environments and co-leads a researcher-practitioner partnership that is exploring the links between socioeconomic status and STEM learning outcomes using large, multi-institutional datasets. In partnership with a successful charter management organization, Andrew and his colleagues, with support from NSF, are elaborating the potential for data intensive research approaches to launch continuous improvement processes in schools. With funding from IES, Andrew co-leads two partnerships: one with Clark County School District in Nevada around using improvement science best practices to support English-Language Learners in science instruction and another with the state of Montana's Office of Public Instruction to rapidly develop and refine instructional approaches for improving secondary literacy outcomes.

Patrick Kyllonen is senior research director of the Center for Academic and Workforce Readiness and Success at Educational Testing Service (ETS) in Princeton, N.J. Center scientists conduct innovative research on (a) noncognitive assessment for K-12 and higher education, (b) behavioral assessment for workforce readiness; (c) international large scale assessment (e.g., Program for International Student Assessment; PISA); and (d) 21st century skills assessment, such as creativity, collaborative problem solving, and situational interviews. Dr. Kyllonen received his B.A. from St. John's University and Ph.D. from Stanford University and is author of *Generating Items for Cognitive Tests* (with S. Irvine, 2001); *Learning and Individual Differences* (with P. L. Ackerman & R.D. Roberts, 1999); *Extending Intelligence: Enhancement and New Constructs* (with R. Roberts and L. Stankov, 2008), and *Innovative Assessment of Collaboration* (with A. von Davier and M. Zhu, forthcoming). He is a fellow of the American Psychological Association and the American Educational Research Association, recipient of The Technical Cooperation Program Achievement Award for the "design, development, and evaluation of the Trait-Self Description (TSD) Personality Inventory," and coauthored the National Academy of Sciences reports, *Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century (2012), Measuring Human Capabilities (2014),* and *Assessing Intrapersonal and Interpersonal Competencies* (forthcoming).

Xiaodong Lin, a faculty at Teachers College, Columbia University, studies ways to increase students' motivation to learn, particularly in Science, Technology, Engineering, and Mathematics (STEM) related classes. She designs and studies the impact of different learning environments, instructional activities, and new media on students' motivation to learn and solve challenging problems. A theme throughout Dr. Lin's research is the uses of biographical information or, "people knowledge," to change students' beliefs about achievement and to help them understand their own feelings about hard working and frustration encountered in school (metacognition). This places her work at the intersection of motivation, metacognition, technology, and science education. She finds that making explicit the struggles successful people, namely scientists, experienced prior to success and then scaffolding students to model their behaviors enhances students' ability to deal with challenging learning tasks in STEM. However, this requires

students to feel emotionally connected to the scientists and to recognize their own talents and potential to succeed with effort. Dr. Lin uses a variety of media and methodology (i.e. surveys, interviews, naturalistic observations, empirical studies) in her studies. She hopes that her research will lead to design principles which will allow educators and researchers to create new ways to reduce students' misconceptions about themselves and their social environments and thus to improve motivation to learn. Xiaodong Lin's work has been recognized in a variety of ways, including being selected as the Carnegie Scholar by the Carnegie Corporation of New York in 2004 and receiving the American Educational Research Association Early Career and Outstanding Research awards in 2001 and 2010, respectively. Most recently, she was named the Yellow River Scholar by the Chinese government and served on the expert advisory board of Organization of Economic Cooperation and Development, headquartered in Paris for the EDUCATION 2030 Initiative from 2015 to 2020 and also headed up the Chinese National Panel advising motivating women and minorities to pursue STEM fields from 2014-2018.

Christine Massey is the director of research and education at the Institute for Research in Cognitive Science at the University of Pennsylvania. She is also the director of PENNlincs, which serves as a research and development arm of the Institute, linking recent theory and research in cognitive science to education efforts in public schools and cultural institutions. She has directed a number of major collaborative research and development projects that combine research investigating students' learning and conceptual development in science and math with the development and evaluation of new curriculum materials, learning technology, and educational programs for students and teachers. These projects include development of adaptive mathematics and chemistry learning software based on principles of perceptual learning; science curriculum specifically designed for children in the preschool and early elementary years; robotics curriculum for the middle grades; and kits and exhibit enhancements to support family learning in zoos and museums. She was a member of the cognitive science team for the national *IES Research and Development Center for Cognition and Science Instruction*, funded by the U.S. Department of Education, and of the Study Committee for the NRC study "Defining Deeper Learning and 21st Century Skills." Dr. Massey received her B.A. from Wellesley College with majors in psychology and english. She received her Ph.D. in psychology with a specialization in cognitive development from the University of Pennsylvania. Dr. Massey is an Eisenhower Fellow and has also been a fellow in the Spencer Foundation/National Academy of Education's postdoctoral fellowship program.

Danielle S. McNamara is a professor of psychology in the Psychology Department and senior scientist in the Institute for the Science of Teaching and Learning at Arizona State University. She is an international expert in the fields of cognitive and learning sciences, comprehension, literacy, writing, natural language processing, and intelligent tutoring systems. She develops educational technologies and conducts research to better understand cognitive processes involved in comprehension, knowledge and skill acquisition, and writing. Her research also involves the development and assessment of game-based intelligent tutoring systems (e.g., Writing Pal, iSTART) and natural language processing tools (e.g., Coh-Metrix). Two of her projects, the Writing Pal and iSTART, are computer assisted learning programs designed to improve students' writing and reading comprehension. Much of Dr. McNamara's research employs computational linguistics—such as Natural Language Processing techniques—as a means of analyzing

discourse. Such tools allow for quick, efficient, and reliable analyses of large corpuses of text, which is particularly relevant and valuable when analyzing big data. She has published over 350 papers and secured over 20 million in funding from both federal and private agencies. Her work has been funded by the Institute of Education Sciences (IES), the National Science Foundation (NSF), the Office of Naval Research, the McDonnell Foundation, and the Gates Foundation. She has served as Associate Editor on four journals, International Journal of Artificial Intelligence (ijAIED), TopiCS, the Cognitive Science Journal, and the Journal of Educational Psychology, and has served on review panels for the IES, NSF, NIH, and NICHD. She has also served on the Governing Board for the Cognitive Science Society and currently serves as the president of the Society for Text and Discourse. Her academic background includes a B.A. in linguistics (1982), a M.S. in clinical psychology (1989), and a Ph.D. in cognitive psychology (1992).

Matthew Ohland is a professor of engineering education at Purdue University. He has been a facilitator for Tau Beta Pi's award-winning Engineering Futures program since 1996 and has delivered 116 seminars to 2409 students around the country. He has also delivered faculty development workshops to local, national and international audiences. Along with his collaborators, he has been recognized for his work on longitudinal studies of engineering students with the William Elgin Wickenden Award for the best paper published in the Journal of Engineering Education in 2008 and 2011, the best paper in IEEE Transactions on Education in 2011, multiple conference Best Paper awards, and the Betty Vetter Award for Research from the Women in Engineering Proactive Network. The CATME Team Tools developed under Dr. Ohland's leadership and related research have been used by 464,840 students of 9079 faculty at more than 1484 institutions in 66 countries, and were recognized with the 2009 Premier Award for Excellence in Engineering Education Courseware and the Maryellen Weimer Scholarly Work on Teaching and Learning Award. He is a Fellow of ASEE and IEEE. He has received teaching awards at Clemson and Purdue. Dr. Ohland is an ABET program evaluator and an associate editor of IEEE Transactions on Education. He was the 2002-2006 president of Tau Beta Pi. He earned Ph.D. in civil engineering from the University of Florida, M.S. degrees in materials engineering and mechanical engineering from Rensselaer Polytechnic Institute, and a B.S. in engineering and a B.A. in religion from Swarthmore College.

Frederick L. Oswald is a professor in the Department of Psychology at Rice University, specializing in industrial and organizational psychology, individual differences, and psychometrics. In particular, Dr. Oswald's extensive history of publications and large-scale grant-funded projects deal with developing psychological tests of individual differences (e.g., cognitive ability, personality traits, situational judgment, job knowledge and skills, and biographical data) administered to people in organizational, educational and military settings, examining them for their reliability, validity and subgroup differences (e.g., testing for measurement invariance and differential prediction by gender, race/ethnicity). Substantively, his work deals with defining, modeling and predicting organizational outcomes (e.g., job performance, turnover) and employment outcomes (e.g., job and workforce readiness), and educational outcomes (e.g., student achievement and success) from these measures. Statistically, his methodological work in meta-analysis, structural equation modeling, and applied predictive modeling (with complex data, messy data and big data) also informs personnel selection issues and psychological testing in the research and legal arenas. In addition to his research program, Dr. Oswald currently serves as associate editor for four journals (*Psychological Methods*,

Research Synthesis Methods, *Journal of Research in Personality*, and *Journal of Management*) and he serves on ten editorial boards (*Journal of Applied Psychology, Personnel Psychology, Personnel Assessment and Decisions, Military Psychology, Journal of Business and Psychology, International Journal of Testing, International Journal of Selection and Assessment, Organizational Research Methods*). He is a fellow of the Society of Industrial and Organizational Psychology (SIOP, APA Division 14), Evaluation, Measurement, and Statistics (APA Division 5), and the Association for Psychological Science.

Ana Luz Porzecanski is director of the Center for Biodiversity and Conservation (CBC) where she oversees strategic planning, project development, and fundraising, and a multidisciplinary staff of over 20 who are leading conservation research and capacity development initiatives around the world. She is a conservation biologist with experience in scientific research, science education, teaching, professional training, and capacity development at multiple scales. Her primary interests relate to understanding biodiversity - particularly the Neotropical biota and socio-environmental systems - and how to sustain these effectively for the future through evidence-based management and effective capacity development. Since 2010 she also directs the CBC's Network of Conservation Educators and Practitioners which produces peer-reviewed, open, multi-language educational resources, and seeks to advance conservation education, research, and practice worldwide. To this end, Dr. Porzecanski trains educators on scientific teaching approaches and leads experimental education research on the development of critical thinking and other key skills in undergraduate students. Dr. Porzecanski obtained her undergraduate degree in biological sciences from the Universidad de la República, Uruguay, and her Ph.D. degree from Columbia University, where she carried out research on the systematics and historical biogeography of South American aridland birds, as well as on international environmental policy issues. She teaches conservation biology and evolution at Columbia University and New York University, where she is an adjunct faculty member.

Barbara Schneider is the John A. Hannah chair and University distinguished professor in the College of Education and Department of Sociology at Michigan State University. Dr. Schneider is the principle investigator of the College Ambition Program, a study that tests a model for promoting a STEM college-going culture in 15 high schools that encourages adolescents to pursue STEM majors in college and occupations in these fields. She is also co-principal investigator of the Michigan Consortium for Educational Research, collaboration between the Michigan Department of Education, Michigan State University, and the University of Michigan created to assess the impact of the Michigan Merit Curriculum on college enrollment. Most recently she is the recipient of a NSF international award to study how to increase science engagement and learning in chemistry and physics high school classrooms. Dr. Schneider also worked for 18 years at the University of Chicago, holding positions as a Professor in Sociology and Human Development and as a senior fellow at NORC. She continues to be the principal investigator of the Center for Advancing Research and Communication in STEM at NORC. Her research focuses on how the social contexts of schools and families influence the academic and social well being of adolescents as they move into adulthood. Professor Schneider has published 15 books and over 100 articles and reports on family, social context of schooling, and sociology of knowledge. She received her Ph.D. from Northwestern University. She also currently serves as past president of the American Educational Research Association and a fellow of the

American Association for the Advancement of Science as well as the National Academy of Education.

Heidi Schweingruber is the director of the Board on Science Education at the National Research Council (NRC). She co-directed the study that resulted in the report *A Framework for K-12 Science Education* (2011) which is the first step in revising national standards for K-12 science education. She served as study director for a review of NASA's pre-college education programs completed in 2008 and co-directed the study that produced the 2007 report *Taking Science to School: Learning and Teaching Science in Grades K-8*. She served as an editor on the NRC report *Mathematics Learning in Early Childhood: Paths to Excellence and Equity (2009)*. She co- authored two award-winning books for practitioners that translate findings of NRC reports for a broader audience: *Ready, Set, Science! Putting Research to Work in K-8 Science Classrooms (2008)* and *Surrounded by Science (2010)*. Prior to joining the NRC, Heidi worked as a senior research associate at the Institute of Education Sciences in the U.S. Department of Education where she administered the preschool curriculum evaluation program and a grant program in mathematics education. Previously, she was the director of research for the Rice University School Mathematics Project an outreach program in K-12 mathematics education, and taught in the psychology and education departments at Rice University. Heidi holds a Ph.D. in psychology (developmental) and anthropology, and a certificate in culture and cognition from the University of Michigan.

Lee Shumow is a distinguished teaching professor in educational psychology at Northern Illinois University. She has utilized both observational methods and the experience sampling method in numerous studies. Shumow has published articles on students' motivation and learning in science and mathematics and on the role of out-of-school contexts in fostering students' school adjustment. Since 2008, she has been a principal investigator, co-PI and research scientist on four NSF funded projects together with her colleague, Dr. Jennifer Schmidt. Prior to that time she designed and implemented research studies and intervention projects funded by the National Institutes of Health, the Honda Foundation, the Eisenhower Grants Program, the Sony Foundation, the National Education Association, and the American Association of Colleges for Teacher Education. Shumow has served on the advisory boards for several projects related to STEM learning in and out of school. She teaches research and data collection methods to graduate students and adolescent development to both graduate and undergraduate students. She is an author of recent book for middle and high school science teachers based on research findings. The book provides important practical information and resources to science teachers. She is the mother of two scientists.

Gale M. Sinatra is a professor of education and psychology at the Rossier School of Education at the University of Southern California. She heads the Motivated Change Research Lab, the mission of which is understanding the cognitive, motivational, and emotional processes that lead to attitude change, conceptual change, and successful STEM learning. Sinatra's model of conceptual change learning (see Sinatra, 2005) describes how motivational factors contribute to the likelihood that individuals will change their thinking about a scientific topic. She spent 10 years on the faculty of University of Utah in teaching and learning and 10 years as a professor of educational psychology at University of Nevada, Las Vegas, where she also served as interim dean of Graduate Education. She is the past editor of the APA Division 15 journal, *Educational*

Psychologist. She is past vice president of AERA's Division C, Learning and Instruction and she is a Fellow of both APA and AERA. She received her B.S., M.S. and Ph.D. in psychology from the University of Massachusetts, Amherst.

Susan Rundell Singer is division director in the Division of Undergraduate Education at NSF and Laurence McKinley Gould Professor, in the Biology and Cognitive Science Departments at Carleton. She is a nationally recognized leader in undergraduate education and plant biology. A developmental biologist who studies flowering in legumes and also does research on learning genomics, Susan is an American Association for the Advancement of Science (AAAS) fellow and received both the American Society of Plant Biology teaching award and Botanical Society of America Charles Bessey teaching award. She directed Carleton's Perlman Center for Learning and Teaching, was a National Science Foundation (NSF) program officer in Biology, and is a co-author of the *Vision and Change in Undergraduate Biology* report, as well as two introductory biology texts. She has served on numerous boards, including the NSF Education and Human Resources Federal Advisory Committee, Biological Sciences Curriculum Study Board, the American Society of Plant Biology Education Foundation, and the Botanical Society board of directors; was a member-at-large for the AAAS Education Section; participates in the Minnesota Next Generation Science Standards team; and was a member of the National Academies' Board on Science Education. She has participated in six National Academies studies, including chairing the committees that authored *America's Lab Report, Promising Practices in STEM Undergraduate Education* and *Discipline-based Education Research: Understanding and Improving Learning in Undergraduate Science and Engineering*. Currently she is improving undergraduate education through her leadership at NSF and across Federal agencies, implementing the undergraduate goals of the *Federal Science, Technology, Engineering, and Mathematics 5-year Strategic Plan*. . In addition to a PhD in biology from Rensselaer, she completed a teacher certification program in New York State.

Gregg Solomon is currently a program director at the National Science Foundation where he manages research on learning and education programs in the Division of Research on Learning as well as agency-wide programs such as the Cyberlearning, Integrated Neural and Cognitive Systems, and Science of Learning programs. He is also engaged in portfolio analyses for funding programs in education research. Solomon is a certified secondary school teacher in the Commonwealth of Pennsylvania and was the founding director of Academia Nuts, a tutoring company that specialized in training at-risk youths to excel on scholastic aptitude tests. His own research focuses on the characteristics of experts and novices, conceptual change in children's understandings of biology, matter, and rational number, cross-cultural studies (in the U.S. and Africa) of race and social identity, neuropsychological studies of Executive Functions in the elderly and patients with Alzheimer's disease, and, most recently, the nature of cross-disciplinary interactions, especially between cognitive science and educational research communities. Solomon received his Ph.D. from the Department of Psychology at Harvard University and was a postdoctoral fellow in the Department of Brain and Cognitive Science at MIT, awarded by the Cognitive Studies for Educational Practice program of the James S. McDonnell Foundation. He served on the faculties at both Harvard and MIT just prior to joining NSF and was also a research fellow in the Centre de Recherche en Epistémologie Appliquée at the Ecole Polytechnique in Paris.

Brian Stecher is a senior social scientist at the RAND Corporation, an associate director of RAND Education, and a professor at the Pardee RAND Graduate School. His research focuses on measuring educational quality and evaluating education reforms, with a particular emphasis on assessment and accountability systems. He has directed prominent national and state evaluations of No Child Left Behind, mathematics and science systemic reforms, and class size reduction. His measurement-related expertise includes test development (prototype performance assessments for teacher certification, hands-on science tasks for middle school students), test validation (the quality of portfolio assessments in Vermont and Kentucky), and the use of assessments for school improvement (formative and interim assessments, the quality of classroom assessments, and measures of interpersonal and intrapersonal competencies). Stecher has presented findings to policymakers at the state and national level, to practitioners, and to the public. He is a member of the NRC Board on Testing and Assessment, and has served on several BOTA committees, most recently the Committee on Incentives and Test-Based Accountability. He has published widely in professional journals and is currently a member of the editorial board of Educational Assessment. He received his Ph.D. from the University of California, Los Angeles.

Barry S. Stein is chair and professor of psychology at Tennessee Technological University. He is also co-director of the Center for Assessment & Improvement of Learning. He has authored and coauthored numerous articles on learning, problem solving, and critical thinking throughout his career. He is coauthor of the *Ideal Problem Solver: A guide for improving thinking, learning and creativity*. He is the principal investigator for three National Science Foundation Grants to refine and disseminate the Critical thinking Assessment Test (CAT). Over 250 higher education institutions across the country have collaborated in the dissemination of the CAT instrument and there is growing body of research that is using the CAT instrument to identify high impact educational practices that improve students' critical thinking and problem solving skills. Dr. Stein has given numerous keynote addresses, presentations, and workshops on assessing and improving critical thinking across the country for colleges and universities, various accrediting associations such as the Southern Association of Colleges and Schools, the Higher Learning Commission, the Western Association of Schools and Colleges, ABET, and other organizations such as the Association of American Colleges and Universities, the American Association for the Advancement of Science and the National Science Foundation. He received his Ph.D. from Vanderbilt University in cognitive psychology and his B.S. degree in psychology from Pennsylvania State University.

Elsa Q. Villa is a research assistant professor at The University of Texas at El Paso (UTEP) sharing her appointment between the UTEP Office of Research and Sponsored Projects and the UTEP College of Education where she is director of the Center for Education Research and Policy Studies. Holding permanent secondary teaching certification in the State of Texas for secondary mathematics and science, Villa has taught at numerous levels: grades 7 through12, community college, and university in the disciplines of mathematics, science, education, engineering, and computer science. Villa has also taught mathematics and science methods courses for elementary and secondary pre-service teachers. Villa currently leads the NSF-funded grant *Latinas in Computer Science and Engineering*, an investigation of identity and agency of undergraduate Latina students. Villa has led and co-led STEM grants from corporate foundations and state and federal agencies, and has numerous publications in refereed journals and edited

books. Her research interests include communities of practice, gender, STEM teacher education, transformative learning, and identity. Villa received her Ph.D. in curriculum and instruction from New Mexico State University; she received her Master of Science degree in Computer Science and Master of Arts in Education from UTEP.

Charles Wallace is an associate professor and director of undergraduate studies in the Computer Science Department at Michigan Technological University. His research and teaching activities lie broadly in the area of software engineering; more specifically, he is interested in how humans can better understand the software they build and use. This has led him to a wide variety of projects: applications of formal methods to problems in programming languages and parallel computing; pattern based approaches to effective communication in software teams; software usability and accessibility issues for underrepresented user constituencies. Dr. Wallace leads the Breaking Digital Barriers group, which seeks to strengthen digital literacy skills among senior citizens. Through the local outreach program it has conducted for the last four years, the group has identified recurring themes in the stories of older citizens developing digital skills. Team members from computer science and cognitive & learning sciences are developing a socio-technical approach to developing wayfinding skills among older computer users, through a scaffolded adaptive web navigation tool in conjunction with small-group active learning sessions. This project has received extensive attention statewide and nationwide; in 2015, Dr. Wallace was invited to report on it in 2015 at the White House Conference on Aging and at a Congressional hearing. He received a B.A. in linguistics from the University of Pennsylvania in 1989, an M.A. in linguistics from the University of California, Santa Cruz in 1992, and a Ph.D. in computer science & engineering from the University of Michigan in 1999.

Ming-Te Wang is an associate professor of psychology and education and research scientist at the Learning Research and Development Center at the University of Pittsburgh. He is a trained developmental psychologist and has extensive experience conducting school-based research by using qualitative and quantitative methods. His research interests have centered in the development and testing of broader theoretical models of the relationship between contextual and psychological factors and child development and using mixed methods designed to evaluate complex developmental pathways from childhood to adolescence. Currently, his research focuses on four domains: (1) the measurement of school engagement and non-cognitive skills, (2) the independent and conjoint effects of multiple ecological systems on children's achievement motivation and engagement, (3) the impact of school climate, peer network, and family socialization on the behavioral, social, and emotional development of youth from diverse socioeconomic and cultural backgrounds, and (4) the impact of school-based interventions targeting children's academic skills and developmental problems. Dr. Wang's work is noteworthy in that it emphasizes the interplay of developmental processes across both academic and social domains in children, and situates these processes within school, family, and community ecological contexts. His work has been published in a range of leading psychology and education journals including *Child Development, Psychological Science, Developmental Psychology, Journal of Research on Adolescence,* and *American Educational Research Journal.*

Xueli Wang is an assistant professor in the Department of Educational Leadership and Policy Analysis at the University of Wisconsin-Madison. Her research centers on two interconnected threads: (1) community college students' educational expectations, pathways, and success, and

(2) student participation and success in STEM fields of study. Wang's work has been published in numerous academic journals, such as American Educational Research Journal, Educational Evaluation and Policy Analysis, Educational Researcher, Teachers College Record, Journal of Higher Education, Research in Higher Education, and Community College Review. For her research and teaching, Wang has received major awards from prominent national organizations. She was named a Young Academic Fellow by the Institute of Higher Education Policy and the Lumina Foundation in 2011, an Early Career Scholar of Color by the American Educational Research Association in 2013, and a winner of the 2014 Charles F. Elton Best Paper Award by the Association for Institutional Research. Earlier in 2015, she received the Barbara K. Townsend Emerging Scholar Award, a prestigious award by the Council for the Study of Community Colleges, recognizing an early-career scholar for "superior accomplishment in new discovery related to community college research that contributes to the professional body of knowledge about community colleges; demonstrated excellence in teaching, advising and/or mentoring; and, integration of knowledge to teaching and service." Having directed two large-scale mixed-methods research projects funded by the National Science Foundation, Wang has extensive training and experience in survey design, advanced quantitative methods involving large-scale longitudinal databases, as well as qualitative and mix-methods research. Currently, Wang serves as PI on "Expanding STEM talent through upward transfer: Factors influencing transfer in STEM fields of study from two-year to four-year institutions." In this four-year, longitudinal mixed methods study supported by the National Science Foundation, Wang works with her team to examine individual, motivational, learning, and contextual factors shaping the educational trajectories of Wisconsin's two-year college students beginning in STEM fields of study.

Joanna Wolfe is author of the textbook *Team Writing* and Director of the Global Communication Center at Carnegie Mellon University where she is also faculty in the English department. She has published multiple articles on interpersonal and written communication in engineering, teamwork, and gender and communication. Her current project seeks to identify the *tacit knowledge* (assumptions, habits, and strategies that individuals know but usually cannot articulate explicitly) that professional female engineers have learned about how to communicate in a male dominated setting. The goal is to convey this information to undergraduate engineering women so they can access it as a resource before they encounter troublesome situations that make them question their competence or status in the field.