DAVID I. MILLER

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SUMMARY

My research on broadening participation in science, technology, engineering, and mathematics (STEM) fields builds bridges across diverse perspectives—including education sciences, developmental psychology, quantitative methodology, social psychology, and sociology. My methodological focus on research synthesis drives me to think about the big picture needs of STEM education, ranging from early childhood to higher education and workforce development. These syntheses aim to inspire new lines of primary data collection, while also informing long-standing debates and advancing innovation in research synthesis methodology.

EDUCATION

2018 **Ph.D., Psychology**, Northwestern University
Dissertation committee: David Uttal, Alice Eagly, Larry Hedges

2010–2012 **Graduate Student, Science Education Research**, University of California – Berkeley
Research advisor: Marcia Linn (Technology-Enhanced Learning in Science Center)

2010 **B.S., Physics,** Harvey Mudd College
Graduated with High Distinction; Dean's List (2006–2010); Departmental Honors Physics

PROFESSIONAL EXPERIENCE

2021–Present **Senior Researcher**, American Institutes for Research (AIR)
STEM Education, Educators and Instructors

2018–2021 **Researcher,** American Institutes for Research (AIR)
STEM Education, Educators and Instructors

GRANTS AND EXTRAMURAL FELLOWSHIPS (TOTAL: $10,446,777)

2024–2027 **Co-PI, AIR Opportunity Fund,** $999,499
Quantitative Evidence Synthesis Training (QuEST), AIR, PI: Laura Michaelson [abstract]

2024–2026 **Co-PI, NSF Mid-Scale Research Infrastructure (MSRI) Incubator,** $499,928
Incubating the Use of Artificial Intelligence for Conducting High-Quality Research Syntheses, AIR, PI: Josh Polanin [abstract]

2022–2027 **PI, NSF EDU Core Research (ECR),** $4,999,995
ECR Hub: Advancing the Long-Term Potential of Fundamental Research, AIR [abstract]
Co-PIs: Danielle Ferguson (AIR), Larry Hedges (Northwestern University), Roni Ellington (Morgan State University)

2022–2025 **Project Director, Institute of Education Sciences (IES),** $896,931
Consequences of Selective Reporting Bias in Education Research, AIR, PI: Martyna Citkowicz [abstract]

2021–2025 **PI, NSF Improving Undergraduate STEM Education (IUSE),** $500,000
Improving Undergraduates' Motivation and Retention in STEM Through Classroom Interventions: A Meta-Analysis, AIR [abstract]

2021–2025 **PI, NSF EDU Core Research (ECR),** $1,167,066
Identifying and Reducing Gender Bias in STEM: Systematically Synthesizing the Experimental Evidence, AIR [abstract]

2019–2024 **PI, NSF EDU Core Research (ECR),** $499,831
The Development of Gender Stereotypes About STEM Abilities: A Meta-Analysis, AIR [abstract]

2018–2022 **Co-PI, NSF Discovery Research PreK-12 (DRK-12),** $739,452
Advancing Methods and Synthesizing Research in STEM Education, AIR, PI: Dean Gerdeman [abstract]

2011–2016 **PI/Fellow, NSF Graduate Research Fellowship Program (GRFP),** $120,000
STEM Education and Learning Research, awarded at University of California – Berkeley in 2011, transferred to Northwestern University in 2012 under cognitive psychology

2014 **Data Science Summer Fellow, University of Chicago,** $16,000
Eric & Wendy Schmidt Data Science for Social Good (DSSG) Summer Fellowship at the University of Chicago (while I was a graduate student at Northwestern University)

2013 **PI, American Psychological Association of Graduate Students (APAGS),** $1,000
Basic Psychological Science Research Grant, Northwestern University

2012 **PI, Society for the Psychological Study of Social Issues (SPSSI),** $1,500
Clara Mayo Grant and matching funds from Northwestern University

2009–2010 **PI, Shanahan Student-Directed Research Funds,** $5,575
Longitudinal Impacts of 3-D Spatial Training Among Gifted STEM Undergraduates, Harvey Mudd College (faculty advisor: Diane Halpern)

EMPLOYMENT IN PHYSICS (INFORMS MY STEM EDUCATION RESEARCH)

2007–2010 **Physics Tutor for STEM Undergraduates**, Harvey Mudd College
Subjects taught: Newtonian mechanics, quantum mechanics, special relativity

2009 **Summer Research Intern,** condensed matter physics, University of California – Irvine

2008 **Summer Research Intern,** high-energy nuclear physics, SUNY – Stony Brook

2007–2008 **Research Assistant**, high-energy particle physics, Harvey Mudd College

2007 **Summer Research Intern,** astrophysics, Lowell Observatory

OTHER LEADERSHIP ROLES (SELECTED)

2022–Present **Founding Director,** NSF EDU Core Research (ECR) Hub [website]
Leads this new five-year resource center that partners with NSF to foster community and knowledge exchanges among STEM education researchers funded by the EDU Core Research (ECR) program (an active portfolio of more than $400M in funded projects)

2023–Present **Task Lead for Review Protocol Development,** What Works Clearinghouse (WWC)
Develops the review protocol and literature search for the WWC's next practice guides on organizing and differentiating instruction in mathematics and science in grades K-8

2023–Present **Methods Advisor,** Meta-Analysis Working Group, What Works Clearinghouse (WWC)
Advises the WWC on changes to its meta-analytic procedures for practice guides as a formal appointed member of its Meta-Analysis Statistical, Technical, and Analysis Team (STAT) Working Group, representing AIR's active WWC contract on STEM education

2020–2023 **Co-founder/co-director,** Methods of Synthesis and Integration Center (MOSAIC) [website]
Co-launched and co-led this center to advance methods innovation in research synthesis, including building community among more than 40 active research synthesists at AIR

2021 **Working Group Lead,** Statistical Formulas, What Works Clearinghouse (WWC)
Led the technical working group on recommending changes to the WWC's effect size and standard error formulas for the Version 5.0 Handbook (other working group members were Ryan Williams, Larry Hedges, and Qi Zhang)

2020–2021 **Working Group Co-Lead,** Cluster Standards, What Works Clearinghouse (WWC)
Co-led the technical working group on recommending changes to the WWC's standards for cluster-level assignment studies for the Version 5.0 Handbook

2017–2018 **President,** Queer Pride Graduate Student Association (QPGSA), Northwestern University

HONORS AND AWARDS (SELECTED)

2024 **Editor's Choice, *Psychological Bulletin*, December 2024 issue**
Title: The development of children's gender stereotypes about STEM and verbal abilities: A preregistered meta-analytic review of 98 studies [PDF]

2018 **#1 Most Downloaded Article,** across all Society for Research in Child Development (SRCD) journals in 2018, including *Child Development* (where it was published)
Title: The development of children's gender-science stereotypes: A meta-analysis of five decades of U.S. Draw-A-Scientist studies [PDF]

STUDENT RESEARCH AWARDS (EXTRAMURAL ONLY)

2018 **Society for Personality and Social Psychology (SPSP),** Diversity Fund Graduate Travel Award ($500)

2013 **American Psychological Association (APA),** Student Travel Award ($300)

2013 **American Psychological Association (APA),** Anne Anastasi General Psychology Graduate Student Research Award, APA Division 1, Society of General Psychology ($300)

2011 **Association for Psychological Science (APS),** Student Research Award ($250)
[selected by a blind-review panel]

2010 **American Psychological Association (APA),** Anne Anastasi Student Poster Award, APA Division 1, Society of General Psychology ($100)

2010 **Western Psychological Association (WPA),** Robert L. Solso Research Award ($500)
[selected by a blind-review panel]

Research

METRICS AND RESEARCH INTERESTS

Metrics: Total citations = 4,899; h-index = 16 (Google Scholar, as of January 2025)

Ongoing research interests in content-focused topics: Gender biases in higher education and beyond, gender stereotypes in early childhood, interventions to improve undergraduates' motivation in STEM, interventions to reduce disparities in research funding in higher education (new research interest based on work with the ECR Hub), intersectionality (race by gender), research syntheses on STEM student learning

Ongoing areas of developing new methods: Artificial intelligence tools to aid systematic reviews, power for moderator tests in meta-analyses with dependent effects and multiple moderators, selective reporting bias in meta-analyses with dependent effects, standard error formulas for covariate-adjusted mean differences

Methods used in published research: Mixed-effects meta-regression (*metafor* R package), multilevel modeling (*lme4* R package and *xtmixed* in Stata), multilevel multiple imputation (*jomo* R package), qualitative thematic analysis (NVivo), R-based systematic review tools (*litsearchr* and *revtools* R packages), random forests (*MetaForest* and *RandomForest* R packages), robust variance estimation (*clubSandwich* and *robumeta* R packages), topic modeling (*BERTopic* in Python, ongoing with ECR Hub work)

National datasets used in published research: High School Longitudinal Study of 2009 (HSLS:09), National Survey of College Graduates (NSCG), Survey of Doctorate Recipients (SDR), Trends in International Mathematics and Science Study (TIMSS), Programme for International Student Assessment (PISA)

Publications

PEER-REVIEWED ARTICLES [A][1]

A20 **Miller, D. I.,** Lauer, J. E., Tanenbaum, C., & Burr, L. (2024). The development of children's gender stereotypes about STEM and verbal abilities: A preregistered meta-analytic review of 98 studies. *Psychological Bulletin*, *150*(12), 1363–1396. **[Editor's Choice, December 2024 issue for *Psychological Bulletin*, which has impact factor = 17.3]** [PDF] [R code/data]

A19 Williams, R., Citkowicz, M., **Miller, D. I.,** Lindsay, J., & Walters, K. (2022). Heterogeneity in mathematics intervention effects: Evidence from a meta-analysis of 191 randomized experiments. *Journal of Research on Educational Effectiveness*, *15*(3), 584-634. [PDF] [R code/data]

A18 Eagly, A. H., Nater, C., **Miller, D. I.,** Kaufmann, M., & Sczesny, S. (2020). Gender stereotypes have changed: A cross-temporal meta-analysis of U.S. public opinion polls from 1946 to 2018. *American Psychologist*, *75*(3), 301–315. [PDF] [R code/data]

A17 **Miller, D. I.** (2019). When do growth mindset interventions work? *Trends in Cognitive Sciences*, *23*(11), 910-912. [PDF]

[1] Six peer-reviewed conference proceedings are grouped here, given that the peer-reviewed proceedings of high-profile conferences in computer science and learning sciences (e.g., CSCL, ICLS, SIGKDD) are selective, usually intended as full papers, and often exceed journal articles in scholarly impact in those fields. For instance, the Lakkaraju et al. (2015) paper in SIGKDD has been cited more than 200 times, per Google Scholar.

A16 **Miller, D. I.,** Nolla, K. M., Eagly, A. H., & Uttal, D. H. (2018). The development of children's gender-science stereotypes: A meta-analysis of five decades of U.S. Draw-A-Scientist studies. *Child Development*, *89*(6), 1943-1955. **[#1 Most Downloaded Article in 2018 from all SRCD journals]** [PDF] [R code/data]

A15 Atit, K., **Miller, D. I.,** Newcombe, N. S., & Uttal, D. H. (2018). Teachers' spatial skills across disciplines and education levels: Exploring nationally representative data. *Archives of Scientific Psychology*, *6*(1), 130-137. [PDF] [R code]

A14 Hsu, K. J., Rosenthal, A. M., **Miller, D. I.,** & Bailey, J. M. (2017). Sexual arousal patterns of autogynephilic male cross-dressers. *Archives of Sexual Behavior*, *46*, 247-253. [PDF]

A13 Eagly, A. H., & **Miller, D. I.** (2016). Scientific eminence: Where are the women? *Perspectives in Psychological Science*, *11*, 899-904. [PDF]

A12 Hsu, K. J., Rosenthal, A. M., **Miller, D. I.,** & Bailey, J. M. (2016). Who are gynandromorphophilic men? Characterizing men with sexual interest in transgender women. *Psychological Medicine*, *46*, 819–827. [PDF]

A11 **Miller, D. I.,** Eagly, A. H., & Linn, M. C. (2015). Women's representation in science predicts national gender-science stereotypes: Evidence from 66 nations. *Journal of Educational Psychology*, *107*, 631-644. [PDF] [R code/data]

A10 **Miller, D. I.,** & Wai, J. (2015). The bachelor's to Ph.D. STEM pipeline no longer leaks more women than men: A 30-year analysis. *Frontiers in Psychology*, *6*, 36. [PDF] [R code/data]

A9 Lakkaraju, H., Aguiar, E., Shan, C., **Miller, D. I.,** Bhanpuri, N., Ghani, R., & Addison, K. L. (2015). A machine learning framework to identify students at risk of adverse academic outcomes. In *Proceedings of the 21st Association for Computing Machinery (ACM) Special Interest Group on Knowledge Discovery and Data Mining (SIGKDD) Conference*. Sydney, Australia: Association for Computing Machinery. [PDF]

A8 Aguiar, E., Lakkaraju, H., Bhanpuri, N., **Miller, D. I.,** Yuhas, B., Addison, K., … , Ghani, R. (2015). Who, when, why: A machine learning approach to prioritizing students at risk of not graduating high school on time. In *Proceedings of the 5th International Conference on Learning Analytics and Knowledge (LAK)*. Poughkeepsie, NY: Society for Learning Analytics Research. [PDF]

A7 **Miller, D. I.,** & Halpern, D. F. (2014). The new science of cognitive sex differences. *Trends in Cognitive Sciences*, *18*, 37-45. [PDF]

A6 **Miller, D. I.**, & Halpern, D. F. (2013). Can spatial training improve long-term outcomes for gifted STEM undergraduates? *Learning and Individual Differences*, 26, 141-152. [PDF]

A5 Uttal, D. H., **Miller, D. I.**, & Newcombe, N. S. (2013). Exploring and enhancing spatial thinking: Links to STEM achievement? *Current Directions in Psychological Science*, *22*, 367-373. [PDF]

A4 Matuk, C. F., McElhaney, K. W., **Miller, D. I.,** Chen, J. K., Lim-Breitbart, J., Terashima, H., … , Linn, M. C. (2013). Reflectively prototyping a tool for exchanging ideas. In *Proceedings of the 10th International Conference on Computer Supported Collaborative Learning (CSCL)* (pp. 101-104). Madison, WI: International Society of the Learning Sciences. [PDF]

A3 McElhaney, K. W., Matuk, C. F., **Miller, D. I.**, & Linn, M. C. (2012). Using the Idea Manager to promote coherent understanding of inquiry investigations. In *Proceedings of the 11th International Conference of the Learning Sciences (ICLS)*. Sydney, Australia: International Society of the Learning Sciences. [PDF]

A2 Matuk, C. F., McElhaney, K. W., Chen, J. K., **Miller, D. I.**, Lim-Breitbart, J., & Linn, M. C. (2012). The Idea Manager: A tool to scaffold students in documenting, sorting, and distinguishing ideas during science inquiry. In *Proceedings of the 11th International Conference of the Learning Sciences (ICLS)*. Sydney, Australia: International Society of the Learning Sciences. [PDF] [Short paper]

A1 **Miller, D. I.**, & Halpern, D. F. (2011). Spatial thinking in physics: Longitudinal impacts of 3-D spatial training. In L. Carlson, C. Hoelscher, & T. Shipley (Eds.), *Proceedings of the 33rd Annual Conference of the Cognitive Science Society* (pp. 3465-3470). Austin, TX: Cognitive Science Society. [PDF]

EDITED BOOK CHAPTERS [BC]

BC2 Hall, J. A., & **Miller, D. I.** (2024). Meta-analysis. In H. T. Reis, T. West, & C. M. Judd (Eds.), Handbook of Research Methods in Social and Personality Psychology (pp. 678-704). Cambridge University Press. [PDF]

BC1 **Miller, D. I.** (2016). Sex difference research and cognitive abilities. In N. A. Naples (Ed.), *The Wiley-Blackwell Encyclopedia of Gender and Sexuality Studies*. New York, NY: John Wiley & Sons, Ltd. [PDF]

PEER-REVIEWED SYNTHESES OF NSF-FUNDED RESEARCH [NSF][2]

NSF2 **Miller, D. I.,** Pinerua, I., Margolin, J., & Gerdeman, D. (2022). *Teachers' pedagogical content knowledge in mathematics and science: A cross-disciplinary synthesis of recent DRK-12 projects*. American Institutes for Research. **[Peer reviewers: Paola Sztajn, Stephen Uzzo]** [PDF]

NSF1 Witherspoon, E., **Miller, D. I.,** Pinerua, I., & Gerdeman, D. (2022). *Mathematical and scientific argumentation in PreK-12: A cross-disciplinary synthesis of recent DRK-12 projects*. American Institutes for Research. **[Peer reviewers: Jennifer Knudsen, Katherine McNeill]** [PDF]

PEER-REVIEWED PUBLICATIONS FOR THE WHAT WORKS CLEARNINGHOUSE [WWC][3]

WWC2 What Works Clearinghouse. (2022). What Works Clearinghouse procedures and standards handbook, version 5.0. U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance (NCEE). [PDF]

Lead writer for these sections (wrote first draft and revised):

- Assessing compositional change in cluster-level assignment studies (pp. 42-52)
- Assessing baseline equivalence in cluster-level assignment studies (pp. 59-63)
- Effect size and standard error formulas (Appendix E)

[2] Both NSF DRK-12 synthesis reports were peer-reviewed by external content experts, and key findings and recommended future research directions were presented to a group of about 20 NSF program officers.

[3] Both WWC publications were produced under a $21M federal contract awarded to AIR and were peer-reviewed by members of the WWC's Statistical, Technical, and Analysis Team (STAT, see list here), with several rounds of revision with contracting officers and leaders at the Institute of Education Sciences (IES). The Version 5.0 Handbook also went through a public comment period and revision cycle before Secretary Cardona approved it as an official publication of the U.S. Department of Education; hence, its peer-review process was more extensive than most academic journal articles.

WWC1 What Works Clearinghouse. (2020). Supplement to the What Works Clearinghouse procedures handbook, version 4.1. U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance (NCEE). [PDF]

Lead writer for this document, while closely collaborating with Ryan Williams and Larry Hedges.

FORMAL RECOMMENDATIONS TO THE INSTITUTE OF EDUCATION SCIENCES [IES][4]

IES6 **Miller, D. I.,** Williams, R., Polanin, J., Shimmel, L., Caverly, S., & Valentine, J. (2021, September 2). Effective sample size rules for cluster-level assignment studies. [8 pages]

IES5 **Miller, D. I.,** Williams, R., Hedges, L., Zhang, Q., Polanin, J., & Caverly, S. (2021, June 8). Proposed plan for improvements to version 5.0 effect size procedures. [21 pages]

IES4 Williams, R., **Miller, D. I.,** Polanin, J., Caverly, S., & Valentine, J. (2021, March 30). Feedback on proposal to remove the Benjamini-Hochberg procedure from domain-level characterizations. [5 pages]

IES3 Rickles, J., Sahni, S., **Miller, D. I.,** Zhang, Q., Williams, R., Caverly, S., & Polanin, J. (2021, March 10). Proposed handbook changes to the cluster design standards for version 5.0. [17 pages]

IES2 Williams, R., **Miller, D. I.,** Polanin, J., Caverly, S., & Valentine, J. (2020, August 31). Recommendations for additional guidance on rerandomization designs. [3 pages]

IES1 Williams, R., **Miller, D. I.,** Hedges, L., Taylor, J., Valentine, J., Caverly, S., & Polanin, J. (2020, April 20). Supplements to WWC Procedures Handbook, Version 4.1, standard error formulas. [12 pages, I wrote the technical appendix on the formula derivations using the delta method]

OTHER TECHNICAL REPORTS [TP]

TP4 Butler, J., Taylor, J., **Miller, D. I.,** & Belwalkar, B. (2023). *ECR Hub: Key insights from Year 1 bibliometric and natural language processing analyses*. Submitted to the National Science Foundation. [12 pages]

TP3 **Miller, D. I.,** Lauer, J. E., Williams, R. T., & Tanenbaum (2022). *The development of gender stereotypes about STEM and verbal abilities: A preregistered meta-analysis protocol.* Open Science Framework. [76 pages] [link]

TP2 **Miller, D. I.,** Witherspoon, E. B., & Margolin, J. (2021). *Education Innovation Research (EIR) evaluation design plan: New York Hall of Science, The Pack*. Submitted to the U.S. Department of Education's technical assistance partner for EIR grants. [40 pages]

TP1 Nolan, E., Xia, J., Mendoza, A., Curry, B., & **Miller, D. I.** (2020). *Chicago Public Schools Start on Success: Summative Evaluation Report*. American Institutes for Research. [66 pages]

MANUSCRIPTS UNDER REVIEW [UR]

UR3 **Miller, D. I.** (submitted). Power for moderator tests in modern meta-analyses: A simulation-based approach.

[4] These written recommendations to IES were often the result of many months or more than a year of facilitated conversations with leading statistical and methodological experts on the WWC's STAT (see member list here). The written recommendations often went through multiple rounds of revision with IES contracting officers and were the basis for making changes to public-facing WWC procedures and standards.

UR2 Taylor, J., **Miller, D. I.,** Michaelson, L., & Watson, K. (revise and resubmit). Mapping the pipeline of intervention evidence in education.

UR1 Nater, C., **Miller, D. I.,** Eagly, A. H., & Sczesny, S. (submitted). Gender stereotypes across nations reflect the social roles of women and men: Evidence from public opinion polls from 1995 and 2023.

SOFTWARE [S] (SELECTED)

S2 **Miller, D. I.,** Joshi, M., & Ebersole, C. R. (2024). Explore research on children's gender stereotypes about STEM and verbal abilities [R Shiny data tool application] [link]

S2 ECR Hub. (2022). NSF EDU Core Research (ECR) project search tool. [link]
Role: Directed the design and quality assurance testing of this interactive tool

S1 What Works Clearinghouse. (2021). Online study review guide (OSRG), version 4.1.
Role: Led the back-end software development for updating the WWC's OSRG with new version 4.1 statistical formulas, while conducting extensive testing to ensure accuracy

Presentations

INVITED PRESENTATIONS [IP]

IP15 **Miller, D. I.** (2023, October 31). The development of children's gender stereotypes about STEM abilities: A meta-analysis. Invited presentation at Allison Master's Identity & Academic Motivation Lab Meeting at the University of Houston.

IP14 **Miller, D. I.,** Witherspoon, E. B., Margolin, J., & Ferguson, D. (2022, August 17). DRK-12 research synthesis: Synthesizing insights from DRK-12 projects in key topic areas and developing future directions. Invited presentation at an NSF EDU program officer brown bag lunch series.

IP13 Nolan, E., **Miller, D. I.,** & Sorensen, N. (2020, May). Evaluation of Start on Success. Invited presentation to Chicago Public Schools.

IP12 **Miller, D. I.** (2020, March 19). Why do computing and engineering have particularly large gender gaps? Invited presentation for the National Academies of Sciences, Engineering, and Medicine (NASEM) symposium on "Promising Practices for Addressing the Underrepresentation of Women in Science, Engineering, and Medicine: Opening Doors."

IP11 **Miller, D. I.** (2016, January 28). How gender bias relates to career progression in STEM. Invited oral presentation at the Gender Preconference at the 2016 Society for Personality and Social Psychology Annual Convention, San Diego, CA.

IP10 **Miller, D. I.** (2015, December 13). Untapped talent: Can better testing and data accelerate creativity in learning and societies? Invited panel discussant for the "Innovations in North America / Europe" session at the Salzburg Global Seminar, Salzburg, Austria.

IP9 **Miller, D. I.** (2015, November 12). Increasing women's access to training in science and technology. Invited keynote address at the 2015 VHTO Higher Education Gender & STEM Conference, Amsterdam, The Netherlands.

IP8 **Miller, D. I.,** (2015, July 2). Using women's potential for science and technology careers. Invited oral presentation at the Public Policy Exchange forum on "Driving Forward Gender Equality in Europe: Combating Discrimination in the Workplace and Beyond." Brussels, Belgium.

IP7 **Miller, D. I.,** Wai, J., & Uttal, D. H. (2014, February). Replacing the leaky pipeline metaphor. Invited presentation at the Inter-Science of Learning Center Student and Post-Doc Conference, Pittsburgh, PA.

IP6 **Miller, D. I.** (2013, May 3). Gender-STEM stereotypes: From the sociocultural to cognitive. Invited presentation at Sian Beilock's Human Performance Laboratory at the University of Chicago.

IP5 **Miller, D. I.** (2013, April 9). Spatial thinking in STEM education: How do cognitive strategies and stereotypes interact? Invited presentation at Mike Stieff's Research Group at the University of Illinois at Chicago.

IP4 **Miller, D. I.**, Maloney, E., Beilock, S. L., & Uttal, D. H. (2013, February 22). How do gender stereotypes impact spatial thinking? Invited poster presentation at the 6th Inter-Science of Learning Center Student and Post-Doc Conference, Philadelphia, PA.

IP3 **Miller, D. I.** (2012, September 19). How does conceptual knowledge and psychosocial factors influence spatial thinking? Invited presentation at Susan Levine's Research Group Meeting at the University of Chicago.

IP2 **Miller, D. I.**, & Halpern, D. F. (2011, July 12). Longitudinal impacts of 3-D spatial training among gifted STEM undergraduates. Invited presentation at the Mary Hegarty's Spatial Thinking Laboratory meeting at University of California – Santa Barbara.

IP1 **Miller, D. I.**, & Halpern, D. F. (2011, May 31). Longitudinal impacts of 3-D spatial training among gifted STEM undergraduates. Invited presentation at Nora Newcombe's Research in Spatial Cognition (RISC) Laboratory meeting at Temple University.

CONFERENCE SYMPOSIA CHAIRED OR ORGANIZED [CS]

CS4 **Miller, D. I.** (2024, July 19). The impact of gender stereotypes on motivational STEM outcomes: New research directions and variation across development. Chair and lead organizer for symposium at the 7th Network Gender & STEM Conference 2024, Heidelberg, Germany. [Other presenters: Allison Master, Lian Bian, Christy Starr]

CS3 **Miller, D. I.** (2019, April 6). Access to accelerated mathematics course-taking in middle school and beyond. Lead organizer for symposium at the 2019 Annual Meeting of the American Educational Research Association (AERA), Toronto, Canada. [Other presenters: Kirk Walters (discussant), Nicholas Sorensen (chair), Pamela E. Davis-Kean, Thurston Domina]

CS2 **Miller, D. I.** (2013, May 26). New research directions on gender stereotypes in science, math, and engineering. Chair and lead organizer of symposium at the 35th Association for Psychological Science (APS) Annual Convention, Washington, DC. [Other presenters: Diane F. Halpern (discussant), Frederick L. Smyth, Greg M. Walton, Toni Schmader]

CS1 **Miller, D. I.** (2012, May 27). Spatial thinking and social psychology: How can they inform each other? Chair and lead organizer for symposium at the 34th Association for Psychology Science (APS) Annual Convention, Chicago, IL. [Other presenters: Elizabeth A. Gunderson, Keith B. Maddox, Stephanie A. Gagnon, Susan C. Levine (discussant)]

PRESENTATIONS TO THE WHAT WORKS CLEARINGHOUSE (WWC) (SELECTED) [PW]

PW3 **Miller, D. I.**, Sahni, S., Williams, R., & Booth, J. (2023, October 23). Defining tentative practice guide topics and inclusion criteria: Organizing and differentiating instruction in STEM in grades K–12 (WWC PESTO Task Order 3). Lead presenter and session facilitator for meeting with practice guide panel and Institute of Education Sciences (IES) program officers.

PW2 Rickles, R., **Miller, D. I.,** & Sahni, S. (2020, November 6). Updates from the WWC cluster design small working group. Oral presentation and discussion during the November 2020 meeting for the WWC's Statistical, Technical, and Analysis Team (STAT).

PW1 Williams, R., & **Miller, D. I.** (2020, May 29). Version 4.1 cluster standard error formula extensions. Oral presentation and discussion during the May 2020 meeting for the WWC's Statistical, Technical, and Analysis Team (STAT).

PEER-REVIEWED CONFERENCE PRESENTATIONS [C]

C32 **Miller, D. I.,** Tanenbaum, C., & Burr, L. (2024, July 19). Girls' STEM ability stereotypes predict motivational, but not performance, outcomes in STEM: A meta-analysis. Oral presentation at the 7th Network Gender & STEM Conference 2024, Heidelberg, Germany.

C31 **Miller, D. I.,** Tanenbaum, C., & Lauer, J. (2022, July 22). The development of children's gender stereotypes about STEM abilities: A meta-analysis. Oral presentation at the 6th Network Gender & STEM Conference 2022, Neubiberg, Germany

C30 Taylor, J., **Miller, D. I.,** Watson, K., & Michaelson, L. (2021, September 28). Mapping the pipeline of intervention evidence in education. Oral presentation at the Society for Research on Educational Effectiveness (SREE) 2021 Conference.

C29 Williams, R., Citkowicz, M., **Miller, D. I.,** & Lindsay, J. (2021, September 28). Exploring effect heterogeneity using meta-regression and machine learning: Using PreK-12 mathematics interventions as a case example. Oral presentation at the Society for Research on Educational Effectiveness (SREE) 2021 Conference.

C28 **Miller, D. I.,** Ferguson, D., & Margolin, J. (2021, June). Synthesizing insights from DRK-12 projects in key topic areas and developing future directions. Oral presentation at the 2021 NSF Discovery Research PreK-12 (DRK-12) Principal Investigators (PI) Meeting.

C27 Citkowicz, M., Lindsay, J., **Miller, D. I.,** & Williams, R. (2020, March 13). Heterogeneity in mathematics intervention effects: Evidence from a meta-analysis of 191 randomized experiments. Oral presentation at the Society for Research on Educational Effectiveness (SREE) 2020 Conference.

C26 **Miller, D. I.,** Wai, J., & Uttal, D. H. (2019, April 6). Mathematics course-taking pathways for joining STEM in college. Oral presentation at the 2019 Annual Meeting of the American Educational Research Association (AERA), Toronto, Canada.

C25 **Miller, D. I.,** Cade, W., Eisner, R., Rickles, J., Walters, K., & Sorensen, N. (2019, March 9). Does readiness for eighth-grade algebra matter? Replicating analyses at a third site in southeast Michigan. Oral presentation at the Society for Research on Educational Effectiveness (SREE) 2019 Conference.

C24 **Miller, D. I.,** & Eagly, A. H. (2018, October 5). How communal goals relate to sex segregation in computing and engineering. Oral presentation for the Society for Experimental Social Psychology (SESP) 2018 Conference, Seattle, WA.

C23 **Miller, D. I.,** Nolla, K., Eagly, A. H., & Uttal, D. H. (2018, June 2). The development of children's gender-science stereotypes: A meta-analysis of five decades of U. S. Draw-A-Scientist studies. Oral presentation at the 48th Annual Meeting of the Jean Piaget Society, Amsterdam, The Netherlands.

C22 **Miller, D. I.,** Wai, J., & Uttal, D. H. (2018, April). Gender differences in joining STEM during college. Oral presentation for the Committee on Scholars and Advocates for Gender Equity in Education at the 2018 Annual Meeting for the American Educational Research Association (AERA), New York City, NY.

C21 **Miller, D. I.**, Nolla, K. M., Eagly, A. H., & Uttal, D. H. (2018, March 2). The development of children's gender-science stereotypes: A meta-analysis of five decades of U.S. Draw-A-Scientist studies. Poster presentation at 2018 Society for Personality and Social Psychology (SPSP) Annual Convention.

C20 **Miller, D. I.**, Nolla, K. M., Eagly, A. H., & Uttal, D. H. (2016, February 14). How have U.S. children's stereotypes about scientists changed over time? Oral presentation at the 2016 American Association for the Advancement of Science (AAAS) Annual Meeting, Washington, DC.

C19 Aguiar, E., Lakkaraju, H., Bhanpuri, N., **Miller, D. I.,** Yuhas, B., Addison, K., … , Ghani, R. (2015, March 18). Who, when, why: A machine learning approach to prioritizing students at risk of not graduating high school on time. Oral presentation at the 5th International Learning Analytics & Knowledge (LAK) Conference, Poughkeepsie, NY.

C18 **Miller, D. I.**, Uttal, D. H., & Eagly, A. H. (2015, February 26). How communal goals contribute to STEM employment. Poster presentation at the 16th Society of the Personality and Social Psychology (SPSP) Annual Meeting, Long Beach, CA.

C17 **Miller, D. I.**, Wai, J., & Uttal, D. H. (2014, September 18). How spatial skills relate to movement into and out of STEM. Poster presentation at the 2014 Spatial Cognition conference, Bremen, Germany.

C16 Aguiar, E., Lakkaraju, H., Bhanpuri, N., **Miller, D. I.,** & Yuhas, B. (2014, August 26). Identifying students at risk accurately and early. Oral and poster presentation at the 20th Association for Computing Machinery (ACM) Special Interest Group on Knowledge Discovery and Data Mining (SIGKDD) Conference, New York City, NY.

C15 **Miller, D. I.**, Nolla, K., Eagly, A. H., & Uttal, D. H. (2014, February 14). How have children's gender-science stereotypes changed over time? A meta-analysis. Poster presentation at the 15th Society of the Personality and Social Psychology (SPSP) Annual Meeting, Austin, TX.

C14 **Miller, D. I.**, Eagly, A. H., & Linn, M. C. (2013, August 3). Women's representation in science predicts national gender-science stereotypes. Poster presentation at the 121st American Psychological Association (APA) Annual Convention, Honolulu, HI.

C13 Matuk, C. F., McElhaney, K. W., **Miller, D. I.,** Chen, J. K., Lim-Breitbart, J., Terashima, H., … , Linn, M. C. (2013, June 18). Reflectively prototyping a tool for exchanging ideas. Oral presentation at the 10th International Conference on Computer Supported Collaborative Learning (CSCL), Madison, WI.

C12 **Miller, D. I.**, Maloney, E., Beilock, S. L., & Uttal, D. H. (2013, May 26). Comparing gender stereotypes across cognitive intelligences: Spatial stereotypes matter. Oral presentation at the 35th Association for Psychological Science (APS) Annual Convention, Washington, DC.

C11 **Miller, D. I.**, & Linn, M. C. (2013, May 1). How does traditional science education assess visual and spatial thinking? Oral symposium presentation at the 2013 Meeting of the American Educational Research Association (AERA), San Francisco, CA.

C10 **Miller, D. I.** (2012, September 2). Broadening spatial thinking by investigating its role in scientific practices. Oral presentation at the 2012 Spatial Cognition conference, Bavaria, Germany.

C9 McElhaney, K. W., Matuk, C. F., **Miller, D. I.**, & Linn, M. C. (2012, July 5). Using the Idea Manager to promote coherent understanding of inquiry investigations. Oral presentation at the 2012 International Conference of the Learning Science (ICLS).

C8 Matuk, C. F., McElhaney, K. W., Chen, J. K., **Miller, D. I.**, Lim-Breitbart, J., & Linn, M. C. (2012, July 4). The Idea Manager: A tool to scaffold students documenting, sorting, and distinguishing ideas in science inquiry. Poster presentation at the 2012 International Conference of the Learning Science (ICLS), Sydney, Australia.

C7 **Miller, D. I.** (2012, May 27). Removing stereotype threat substantially boosts women's spatial performance: A meta-analysis. Oral symposium presentation at the 34th Association for Psychological Science (APS) Annual Convention, Chicago, IL.

C6 **Miller, D. I.**, McElhaney, K. W., & Linn, M. C. (2012, April 14). Can a bridging visualization help chemistry students integrate observable and molecular views? Poster presentation at the 2012 Meeting of the American Educational Research Association (AERA), Vancouver, Canada.

C5 **Miller, D. I.**, & Halpern, D. F. (2011, July 23). Spatial thinking in physics: Longitudinal impacts of 3-D spatial training. Poster presentation at the 33rd Cognitive Science Society Annual Conference, Boston, MA.

C4 **Miller, D. I.**, & Halpern, D. F. (2011, May 28). Longitudinal impacts of 3-D spatial training among gifted STEM undergraduates. Oral award address and poster presentation at the 23rd Association for Psychological Science (APS) Annual Convention, Washington, DC.

C3 **Miller, D. I.**, & Halpern, D. F. (2010, August 13). Spatial training improves mathematical physics problem-solving. Poster presentation at the 118th American Psychological Association (APA) Annual Convention, San Diego, CA.

C2 **Miller, D. I.**, Halpern, D. F., & Saeta, P. N. (2010, July 21). Can spatial skills training improve students' understanding of introductory physics? Oral presentation at the Summer Meeting of the American Association of Physics Teachers (AAPT), Portland, OR.

C1 **Miller, D. I.**, & Halpern, D. F. (2010, April 23). Spatial training narrows gender differences in spatial skills. Poster presentation at the 90th Western Psychological Association (WPA) Annual Meeting, Cancun, Mexico.

PHYSICS PRESENTATIONS [PP]

PP4 Huisman, F.M., Van Cleve, E., **Miller, D. I.**, & Taborek, P. (2010, March 19). Low temperature pressure gauge based on a quartz tuning fork. Oral presentation at the 2010 American Physical Society Annual Meeting, Portland, OR.

PP3 **Miller, D. I.**, & Hemmick, T. K. (2008, August 8). Electron counting algorithm for Hadron Blind Detector: Hub and spoke. Oral presentation at the 2008 Physics/Astronomy Research Experience for Undergraduates (REU) Student Symposium, Stony Brook, NY.

PP2 **Miller, D. I.**, & Hemmick, T. K. (2008, August 5). Hub and spoke counting algorithm: Simulation results and future directions. Invited oral presentation at the Brookhaven National Laboratory's Hadron Blind Detector (HBD) group meeting, Stony Brook, NY.

PP1 **Miller, D. I.**, & Mandushev, G. (2007, August 8). The open cluster Berkeley 70 and its association with Cepheid variable Auriga 45. Oral presentation at the 2007 Astronomy Research Experience for Undergraduates (REU) Student Symposium, Flagstaff, AZ.

Teaching and Mentoring

Teaching

LEADERSHIP IN DOCTORAL TRAINING

2024–Now **Co-instructor and co-PI,** Quantitative Evidence Synthesis Training (QuEST), AIR [link]
Targets doctoral students in social and behavioral science programs at three universities: Georgia State University, Howard University, and the University of Texas at San Antonio

2023–2024 **Co-author,** introductory book chapter on meta-analysis methods [PDF]
Co-wrote book chapter for the *Handbook of Research Methods in Social and Personality Psychology*, with a target audience of doctoral students in social and personality psychology

WHAT WORKS CLEARNINGHOUSE (WWC) WEBINARS

Each webinar had between 100 to 200 attendees (mostly Ph.D.-level researchers with WWC certifications):

2021 **Updates to the version 4.1 Online Study Review Guide** (co-taught with Josh Polanin) [link]

2020 **Version 4.1 effect size and standard error formulas** (co-taught with Ryan Williams) [link]

2019 **Missing data in group design studies, version 4.0** (co-taught with Jessaca Spybrook) [link]

UNDERGRADUATE COURSES TAUGHT

Graduate teaching assistant at Northwestern University:

2018 **Learning, representation, and reasoning**, Cog Sci 111 (instructor: Dedre Gentner)

2017 **Developmental psychology,** Psych 218 (instructor: Onnie Rogers)

2016 **Developmental psychology,** Psych 218 (instructor: Susan Hespos)

2015 **Senior honors seminar,** Psych 398 (instructor: David Uttal)

2014 **Social psychology,** Psych 204 (instructor: Galen Bodenhausen)

2013 **Psychology of gender,** Psych 339 (instructor: Alice Eagly)

2013 **Research methods,** Psych 205 (instructor: Ben Gorvine)

PAID TUTORING TO UNDERGRADUATES

2007– 2010 **Physics Tutor,** Academic Excellence Center, Harvey Mudd College
Assisted ~15–20 undergraduates per session in completing homework assignments
Subjects: Newtonian mechanics, quantum mechanics, special relativity

2005– 2006 **Mathematics Tutor,** Math and Science Tutoring Center, South Seattle Community College
Tutored community college students in both group and individual settings
Subjects: Beginning algebra to multivariable calculus

TEACHING TO THE PUBLIC [P]

Shows capacity and accomplishments for relating educational and psychological research to societal issues and other scholarly fields, while fostering curiosity among a broad audience (reached over 350,000 readers):

P12 **Miller, D. I.** (2024, December 20). Why six-year-olds think computing and engineering are 'for boys'. *Scientific American*. [link]

P11 **Miller, D. I.** (2018, March 20). Kids draw female scientists more often than they did decades ago. *Scientific American*. [link]

P10 **Miller, D. I.** (2017, February 1). Stereotypes can hold boys back in school, too. *The Conversation*. Republished by *SF Gate*. [link]

P9 **Miller, D. I.** (2016, June 15). LGBT equality doesn't exist – but here's how to fight for it. *The Conversation*. Republished by *Associated Press*, *Raw Story*, and *SF Gate*. [link]

P8 **Miller, D. I.** (2016, February 4). Intersectionality: how gender interacts with other social identities to shape bias. *The Conversation*. [link]

P7 Wai, J., & **Miller, D. I.** (2015, December 1). Here's why academics should write for the public. *The Conversation*. Republished by *Huffington Post* and *Quartz*. [link]

P6 **Miller, D. I.** (2015, October 13). Men and women biased about studies of STEM gender bias – in opposite directions. *The Conversation*. Republished by *IFL Science*. [link]

P5 **Miller, D. I.** (2015, July 10). Tech companies spend big money on bias training—but it hasn't improved diversity numbers. *The Conversation*. Republished by *Business Insider* and *U.S. News*. [link]

P4 **Miller, D. I.** (2015, June 9). Beliefs about innate talent may dissuade students from STEM. *The Conversation*. Republished by *IFL Science*, *U.S. News*, and World Economic Forum. [link]

P3 **Miller, D. I.** (2015, May 28). Most people think 'man' when they think 'scientist' – how can we kill the stereotype? *The Conversation*. Republished by *Christian Science Monitor*, *Quartz*, *Raw Story*, *The New Zealand Herald*, and World Economic Forum. [link]

P2 **Miller, D. I.** (2015, April 16). Some good news about hiring women in STEM doesn't erase sex bias issue. *The Conversation*. Republished by *Quartz* and World Economic Forum. [link]

P1 **Miller, D. I.** (2015, March 3). A metaphor to retire. *Inside Higher Ed*. [link]

Mentoring

POSTDOCTORAL-LEVEL MENTORING

Formal supervisory role as NSF PI to these researchers and senior researchers who have Ph.D.'s, while mentoring them in regular meetings about taking on concrete project leadership roles such as project director, task lead, budget manager, trainer of junior staff, and so on:

2023–Now **Bharati Belwalkar,** researcher, AIR [promoted to senior researcher in 2024]

2023–Now **CJ Harmon,** researcher, AIR

2022–Now **Emma Cohen,** researcher, AIR [promoted to senior researcher in 2023]

2021–Now **Charlie Ebersole,** researcher, AIR

2021–Now **Rebecca Steingut,** researcher, AIR

2022–2023 **Sarah Peko-Spicer,** researcher, AIR [promoted to senior researcher in 2024]

2021–2022 **Laura Michaelson,** senior researcher, AIR

2020–2022 **Eben Witherspoon,** researcher, AIR [promoted to senior researcher in 2024]

DISSERATION COMMITTEES

2018–2019 **Eben Witherspoon,** Ph.D., Learning Sciences and Policy, University of Pittsburgh
My role: External dissertation committee member (chair: Chris Schunn)
Title: Localizing and understanding mechanisms of gender differences within pathways towards and away from science degrees

DOCTORAL-LEVEL MENTORING

Formal supervisory role as PI, co-PI, task lead, or projector director to these research assistants and associates who have bachelor's degrees, while mentoring them in taking on tasks with increasing levels of responsibility:

2022–Now **Jack Butler,** data scientist assistant, AIR [promoted to data science associate in 2023]

2022–2024 **Jasmine Howard,** research associate, AIR

2021–2024 **Crystal Aguilera,** research assistant, AIR [promoted to research associate in 2024]

2020–2023 **Lauren Burr,** research associate, AIR

2021– 2021 **Alberto Guzman-Alvarez,** summer intern, AIR [hired as research data scientist in 2023]

2019– 2021 **Isabella Pinerua,** research assistant, AIR [promoted to research associate in 2022]

2019– 2020 **Abigail Jefferys,** research assistant, AIR [promoted to research associate in 2022]

2019– 2020 **Robert Schwarzhaupt,** research associate, AIR [promoted to researcher in 2021]

UNDERGRADUATE MENTORING

Formal supervisory role as a doctoral student, working with these undergraduates on research projects that I led or mentoring them in their crafting their own research ideas:

2013–2014 **Silva Tang,** undergraduate research assistant), Northwestern University

2013 **Calvin Dorsey,** undergraduate research assistant, Northwestern University

2013 **Kyle Nolla,** undergraduate summer intern, Northwestern University

2012– 2013 **Stuart Babcock,** undergraduate research assistant, Northwestern University

2011 **Jessica Kwa,** CalTeach intern, University of California – Berkeley

Service

National Service Related to Research Funding

CONFERENCES OR EVENTS ORGANIZED

2023–2024 **Intellectual lead and conference organizing oversight,** 2024 EDU Core Research (ECR) Principal Investigators (PI) Meeting for NSF, May 28–30, 2024 [event website]
Co-chairs: Beth Tipton (Northwestern University), Laura Shankland (AIR)

By the numbers: Two-day convening with over 400 attendees, including more than 30 NSF officials. 80% of anonymous survey respondents rated the sessions as above average or far above average compared to a typical conference session (32% rated as "far above average").

Example PI respondent quote: "This is one of the best PI meetings I've attended – and I've attended both ECR and DRK12 meetings for the last 6 years."

2023 **Intellectual lead and event organizing oversight,** public launch of the ECR Hub at the 2023 Annual Meeting for the American Educational Research Association (AERA) [PDF]
By the numbers: The launch event reached maximum capacity with more 80 attendees, while the booklet for ECR-funded research at AERA reached over 1,000 page views.

SESSION ROLES FOR THE 2024 ECR PI MEETING (SELECTED) [program PDF]

Organizer & welcoming remarks **Keynote session:** How ECR-funded scholars fit into NSF's broader funding priorities [Speakers: James Moore (NSF); Roni Ellington (Morgan State University)]

Keynote session: Will AI expand opportunity and equity in STEM education? [Speakers: Sepehr Vakil (Northwestern University); Yolanda Rankin (Emory University)]

Roundtable discussion: Managing grants at emerging research institutions and non-university organizations

Organizer **Roundtable discussion**: Roundtable lunch meetings with program officers

Networking session: Small-group networking sessions with a program officer's portfolio

Organizer & panelist **Panel discussion:** Disseminating findings from ECR projects: When, why, and how

Cofacilitator **Discussion session:** Engaging in dialogue with BCSER institute leads and BCSER program officers

FACILITATED DISCUSSIONS WITH PROGRAM OFFICERS (SELECTED)

Each of these 1-hour meetings engaged 5 to 20 NSF program officers with short presentations and facilitated discussion (in addition to meetings every 2 weeks with our ECR Hub cognizant program officer since 2022):

2024 **Co-presenter and co-facilitator** (with Joni Wackwitz), Advancing dissemination of ECR findings: Gathering program officer input on Year 3 ECR Hub plans for a dissemination community of a current ECR:Core and ECR:BCSER grantees (December 5, 2024).

2024 **Co-presenter and co-facilitator** (with Danielle Ferguson and Terri Pigott), Planning prospective grantee outreach for the ECR Building Capacity in STEM Education Research (ECR:BCSER) competition (October 17, 2024).

2024 **Co-presenter and co-facilitator** (with Emily Kern and Laura Shankland), Reflections on the 2024 ECR PI Meeting (July 8 and 11, 2024).

2024 **Co-presenter and co-facilitator** (with Danielle Ferguson and Laura Shankland), Facilitating program officer-principal investigator (PO-PI) interactions at the 2024 ECR PI meeting (March 28, 2024).

2024 **Co-presenter and co-facilitator** (with Beth Tipton and Laura Shankland), Defining concrete opportunities for NSF program officer collaboration for the 2024 ECR PI Meeting (February 15, 2024).

2023 **Grantee lead for ECR Hub reverse site visit** (with ECR Hub task leads), Assessing ECR Hub progress to date and developing Year 2 plans (November 9, 2023). [Day-long in-person meeting with NSF ECR program officers in Arlington, VA]

2023 **Co-facilitator** (presenters: Montrischa Williams and Beth Tipton), Plans for the public launch of the ECR Hub at AERA 2023 (March 16, 2023).

2022 **Brownbag lead presenter** (with Eben Witherspoon, Jonathan Margolin, and Danielle Ferguson), DRK-12 research synthesis: Synthesizing insights from DRK-12 projects in key topic areas and developing future directions (August 17, 2022).

OTHER COMMUNITY ENGAGEMENT WITH NSF GRANTEES (SELECTED)

2024 **Interviewee,** Demystifying how to participate in NSF funding: Lessons learned from NSF-funded resource centers [video] [PDF]

2024 **Workshop co-facilitator** (with Joni Wackwitz), Lightning roundtables at the ECR PI Meeting: Crafting your one-page infographic (April 17, 2024)

2024 **Lead author,** Create an infographic about your ECR project using PowerPoint [link]

2023 **Co-lead and co-facilitator** (with CJ Harmon and Laura Shankland), Community listening sessions for the 2024 ECR PI Meeting [summary] [our response]
Goal: Aimed to center the needs and inclusion of diverse NSF grantees

GRANT REVIEWING EXPERIENCE

2023 **Review panelist,** NSF Discovery Research PreK-12 (DRK-12)

2021 **Ad-hoc reviewer,** NSF CAREER proposals submitted to Advancing Informal STEM Learning (AISL) and EDU Core Research (ECR:Core)

2021 **Ad-hoc reviewer,** NSF Advancing Informal STEM Learning (AISL)

2020 **Ad-hoc reviewer,** NSF Advancing Informal STEM Learning (AISL)

2019 **Review panelist,** NSF Advancing Informal STEM Learning (AISL)

University and Organization Service

PROPOSAL DEVELOPMENT (AT AIR)

2023 **Presenter,** NSF 101 orientation for the AIR-wide interest group for quantitative research on postsecondary education (December 18, 2023)

2023 **Virtual workshop co-developer and co-presenter** (with Danielle Ferguson), NSF 101 learning series, AIR

- Overview and example AIR-NSF projects (March 9, 2023)
- Developing your AIR-NSF proposal idea (July 17, 2023)

REVIEWER OF GRANT PROPOSALS (AT AIR)

Note: All grant proposals at AIR undergo formal, internal peer review before submission to federal agencies. I served as an assigned reviewer for AIR proposals submitted to the following funding programs:

2024 **Internal proposal reviewer,** NSF Discovery Research PreK-12 (DRK-12) (x2)

2024 **Internal proposal reviewer,** NSF EDU Core Research (ECR) (x2)

2024 **Internal proposal reviewer,** NSF Innovative Technology Experiences for Students and Teachers (ITEST)

2023 **Internal proposal reviewer,** NSF EDU Core Research (ECR) (x2)

2022 **Internal proposal reviewer,** NSF EDU Core Research (ECR)

2021 **Internal proposal reviewer,** NSF EDU Racial Equity

2021 **Internal proposal reviewer,** NSF Discovery Research PreK-12 (DRK-12)

2020 **Internal proposal reviewer,** National Institute of Justice (NIJ)

REVIEWER OF FUNDED PROJECTS (AT AIR)

Note: Publications and products from all funded projects at AIR undergo formal, internal peer review.

2024–Now **Internal peer reviewer,** Institute of Education Sciences (IES) project
Title: Examining heterogeneity in nudging intervention effects on postsecondary student outcomes (PI: Elisabeth Davis) [abstract]

2021–2025 **Internal peer reviewer,** NSF Discovery Research PreK-12 (DRK-12) project
Title: Evidence quality and reach hub for the DRK-12 community (PI: Danielle Ferguson) [abstract]

ORGANIZATION-WIDE LEADERSHIP

2020–2023 **Co-founder/co-director,** Methods of Synthesis and Integration Center (MOSAIC) [website]
Co-launched and co-led this AIR center for methods innovation in research synthesis, including building community among more than 40 active research synthesists at AIR

2017–2018 **President,** Queer Pride Graduate Student Association, Northwestern University
Led and managed the eight-member executive board to support and build community among LGBTQ graduate students at Northwestern University

2016–2017 **Advocacy chair,** Queer Pride Graduate Student Association, Northwestern University
Advocated for LGBTQ student needs to Northwestern's Graduate Leadership Advocacy Council; formed coalition with LGBTQ undergraduate and professional student groups [link]

JOB SEARCH COMMITTEES

2024 **Researcher,** Science or Computer Science Education, AIR

2022 **Researcher,** Science Education, AIR

2021 **Quantitative Researcher Intern,** Workforce Development, AIR

2021 **Quantitative Researcher,** Workforce Development, AIR

2020 **Quantitative Researcher,** Pre-Kindergarten to Postsecondary Educational Systems, AIR

2019 **Quantitative Researcher,** Pre-Kindergarten to Postsecondary Educational Systems, AIR

Other Reviewing Service

AD-HOC REVIEWER FOR JOURNALS

American Educational Research Journal
Campbell Systematic Reviews
Cognitive Processing
Developmental Psychology
Frontiers in Psychology
IEEE Transactions on Learning Technologies
Journal of Applied Research in Memory and Cognition
Journal of Educational Psychology
Learning and Individual Differences
Nature Communications
Nature Human Behavior
Perspectives on Psychological Science
Psychological Science
Psychology of Women Quarterly
Proceedings of the National Academies of Sciences
Science
Sex Roles
Sociology of Education
Spatial Cognition

REVIEWER FOR CONFERENCES AND STUDENT AWARDS

Association for Psychological Science (APS) Student Council, Student Research Award Competition
Association for Psychological Science (APS) Student Council, RISE Award Competition
Society for Research on Educational Effectiveness (SREE)

Other Service to the Public

NATIONAL EQUITY INITIATIVES

2024-Now **Data accountability liaison,** STEMM Opportunity Alliance (SOA), Pillar 1 on student engagement in out-of-school-time and classroom environments, AIR [link]
Role: Uses data to define and measure progress towards national STEMM equity goals for 2050

MEDIA COVERAGE OF PEER-REVIEWED RESEARCH (SELECTED)

2024 **Education Week:** The STEM Stereotypes That Hold Students Back Aren't What You Think [link]

Forbes: Kids As Young As Six Think Girls Are Worse Than Boys At Computer Science [link]

Mashable: STEM, gender, and the stereotypes that hold girls back [link]

National Science Foundation: At what age do children begin identifying with STEM? The answer is younger than we thought [link]

National Public Radio (NPR): 60-second spot [link]

Nature Careers Podcast: Why female students at an inner London school are seeing scientists in a different light [link]

Scientific American: Why Six-Year-Olds Think Computing and Engineering Are 'for Boys' [link]

The 74: Girls Face Stereotypes about STEM Abilities as Early as 6, Study Finds [link]

2023 **Medium:** I asked an A.I. "what does a scientist look like?" [link]

2021 **New York Times:** Imperfect Girls Make Perfect Role Models [link]

The Conversation: None of the 2021 science Nobel laureates are women – here's why men still dominate STEM award winning [link]

2020 **The Hechinger Report:** Why it's time to diversify and modernize science teaching [link]

2019 **Business Insider:** Women are now seen as just as competent as men, but less ambitious — and it's a good and bad thing [link]

Los Angeles Times: It's official: Majority of Americans think women are just as competent as men, if not more so [link]

New York Times: Americans Finally Consider Women as Competent as Men [link]

Newsweek: Women Are Finally Considered to Be As Competent As Men—But They're Still Thought of As More Emotional and Sensitive [link]

Pacific Standard: Americans Now Believe Women Are as Competent as Men—but Not as Ambitious [link]

Psychology Today: Have Gender Stereotypes Changed Since the Mid-20th Century? [link]

USA Today: Women are now seen as equally intelligent as men, study finds [link]

2018 **ABC News:** Children more likely than before to draw scientists as women, study shows [link]

BBC News: Children drawing more women in science [link]

CNET: Female scientists making headway in kids' imaginations [link]

CNN: Kids 50 years ago almost never drew scientists as women. Now they do almost a third of the time [link]

Education Week: Scientists Look Like What? [link]

Fortune: Kids Are Now More Likely to Imagine Women as Scientists Than They Were 50 Years Ago [link]

Mashable: Kids are drawing more female scientists than ever before [link]

Nature: US kids' doodles of scientists reveal changing gender stereotypes [link]

NBC News: Girl power: Kids' drawings show changing perceptions of who can be a scientist [link]

New York Times: Who can be a scientist? [link]

Newsweek: Kids Draw Women Scientists More Than Ever, but Stereotypes Still Catch up With Them in Grade School [link]

Science: What does a scientist look like? Children are drawing women more than ever before [link]

Science News: Kids are starting to picture scientists as women [link]

Smithsonian Magazine: Kids Are Drawing Women Scientists More Often Than They Did Decades Ago [link]

TIME: Researchers Asked Kids to 'Draw a Scientist.' Here's What They Came Up With [link]

The Atlantic: What We Learn From 50 Years of Kids Drawing Scientists [link]

Washington Post: Only 3 in 10 children asked to draw a scientist drew a woman. But that's more than ever. [link]

World Economic Forum: Kids aren't biased at age 6. And then this happens [link]

2015 **APA Monitor:** Science still seen as a male profession [link]

Ars Technica: Bias against women in science persists, even in egalitarian societies [link]

Nature: US women progress to PhD at same rate as men [link]

Pacific Standard: When It Comes to Female Scientists, Seeing Is Believing [link]

Quartz: In 2015, most people still think "man" when they think "scientist" [link]

Science: Science still seen as male profession, according to international study of gender bias [link]

The Guardian: Don't be fooled by the closing gender gap in science PhDs [link]

U.S. News: Report: No 'Leaky Pipeline' for Women in STEM [link]

U.S. News: STEM Gender Stereotypes Common Across the World [link]

World Economic Forum: How can we tackle gender stereotypes in science? [link]

Yahoo News: Tim Hunt's Boys' Club: Women Still Face Challenges in Science [link]

2013 **Quartz:** Standardized tests discriminate against the next Einsteins and Teslas [link]

2011 **Association for Psychological Science (APS) Observer:** Longitudinal Impacts of 3-D Spatial Training Among Gifted STEM Undergraduates [link]

Psychology Today: Is Spatial Intelligence Essential for Innovation and Can We Increase It Through Training? [link]

Other Methodological Training

CERTIFICATIONS IN STUDY APPRAISALS

These certifications required passing 4-hour, multiple-choice tests on methods standards for causal evidence:

2023 **Version 5.0 Certified Reviewer,** What Works Clearinghouse (WWC), Group Design Standards

2020 **Version 4.1 Certified Reviewer,** What Works Clearinghouse (WWC), Group Design Standards

2018 **Version 4.0 Certified Reviewer,** What Works Clearinghouse (WWC), Group Design Standards

WORKSHOPS WITH A COMPETITIVE APPLICATION PROCESS

2018 **Attendee, Meta-Analysis Training Institute,** Institute of Education Sciences (IES)

2015 **Attendee, Causal Analysis Using International Data,** American Educational Research Association (AERA) Institute on Statistical Analysis for Education Policy