

Patrick K. Kirkland

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EDUCATION

- 2022 **University of Notre Dame**, Notre Dame, IN
Ph.D., Psychology: Cognition, Brain, and Behavior Area
Advanced Quantitative Social Science Minor
- 2020 **University of Notre Dame**, Notre Dame, IN
Master of Arts, Psychology
- 2012 **University of Notre Dame**, Notre Dame, IN
Master of Education, Middle School Mathematics Certification
- 2010 **University of Notre Dame**, Notre Dame, IN
Bachelor of Business Administration, Finance and Political Science

PROFESSIONAL POSITIONS

- 2022– **Assistant Professor of the Practice**, Institute for Educational Initiatives, University of Notre Dame
- 2021 **Math Tutoring Instructional Coach**, TutorND, University of Notre Dame
- 2017–22 **Graduate Student Research Assistant**, Cognition, Learning, and Development Lab
- 2016–17 **Associate Director of Academics**, ACE Teaching Fellows, University of Notre Dame
- 2013–16 **Associate Program Director of Academics**, ACE Teaching Fellows, University of Notre Dame
- 2012–13 **Business Intelligence Analyst**, inVentiv Medical Management, Charlotte, NC
- 2010–12 **Middle School Mathematics Teacher** as a member of ACE Teaching Fellows, St. Frances Cabrini School, Savannah, GA

GRANTS, FELLOWSHIPS, AND AWARDS

- 2022– **Co-PI, National Science Foundation (NSF) Grant**: ECR DRL-2100214, “Characterizing and assessing number sense in third through eighth grade students.” (Co-led development of the project, writing the proposal, and implementing the project. PI: Nicole McNeil, Ph.D.; Co-PI: Ying Cheng, Ph.D.) [\$553,429]
- 2021 **Outstanding Graduate Student Teacher Award**, The Graduate School and ND Learning | Kaneb Center for Teaching Excellence, University of Notre Dame
- 2018–19 **Community-Engaged Research Grant**, Center for Social Concerns, University of Notre Dame. “Using Number Talks in Mathematics Classrooms to Improve Student Number Sense and Advance Restorative Justice in the SBCSC.” [\$5,667]

2017–22 **James A. Burns Fellowship**, Notre Dame Program for Interdisciplinary Education Research (ND PIER)

TEACHING AND SUPERVISION

- 2023 **Co-Instructor:** Topics in Educational Psychology (EDU 60410)
- 2023 **Instructor:** Methods in Educational Research (ESS 30600)
- 2023 **Instructor:** Capstone Seminar (EDU 65935)
- 2022–Present **Instructor:** Assessment in Elementary Education (EDU 60172)
- 2022–Present **Field Supervisor:** Supervised Teaching (EDU 65950)
- 2022–Present **Instructor:** Clinical Seminar (EDU 65930)
- 2021–Present **Instructor:** Mathematics in Elementary Education II (EDU 60112)
- 2020–Present **Instructor:** Mathematics in Elementary Education I (EDU 60132)
- 2020 **Field Supervisor:** Introduction to Teaching Practicum (EDU 65034)
- 2020 **Co-Instructor:** Quantitative Methods I (PSY 60100)
- 2019 – 2020 **Teaching Assistant:** Quantitative Methods I & II (PSY 60100 & 60101)
- 2019 – 2020 **Instructor:** Quantitative Methods I & II Lab (PSY 61100 & 61101)
- 2016 – 2019 **Clinical Faculty:** Mathematics Education I & II (EDU 60665, 60765)
- 2015 **Teaching Assistant:** Education, Schooling, and Society (ESS 33600)
- 2014 – 2015 **Instructor:** Introduction to Computers in Education (EDU 60040)

REFEREED JOURNAL ARTICLES

- Kirkland, P.K.**, Cheng, Y., & McNeil, N.M. (*accepted*). A Validity Argument for a Brief Assessment of Mature Number Sense. *Journal for Research in Mathematics Education*.
- Simsek, E., Xenidou-Dervou, I., Hunter, J., Dowens, M. G., Pang, J.S., Lee, Y., McNeil, N. M., **Kirkland, P. K.**, & Jones, I. (2022). Factors associated with children’s understanding of mathematical equivalence: An investigation across six countries. *Journal of Educational Psychology*.
- Kirkland, P.K.** & McNeil, N. M. (2021). Question design affects students' sense-making on mathematics word problems. *Cognitive Science*, 45, e12960.
- O’Rear, C. D., **Kirkland, P. K.**, & McNeil, N. M. (2020). Partial knowledge in the development of number word understanding. *Developmental Science*, 25(5), e12944.

REFEREED PUBLICATIONS IN PROCEEDINGS

Kirkland, P.K., Guang, C., McNeil, N.M. (Accepted - 2023). Exploring the Association between Upper Elementary Students' Mature Number Sense and Grade-Level Mathematics Achievement. *Proceedings of the Forty-Fifth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Reno, NV

Kirkland, P.K., Guang, C., Cheng, Y., Trinter, C., Kumar, S., Nakfoor, S., Sullivan, T., McNeil, N.M. (2022). Middle School Students' Mature Number Sense is Uniquely Associated with Grade-Level Mathematics Achievement. *Proceedings of the Forty-Fourth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Nashville, TN

Cobb, W.; Guang, C.; **Kirkland, P.K.**; Bahadursingh, A.; Kumar, S.; Ona, C. S, O'Rear, C.D., McNeil, N.M., (2022). Race moderates the effect of tactility on children's learning from counting books. *Proceedings of the Annual Meeting of the Cognitive Science Society*, 44.

O'Rear, C.D., McNeil, N.M., & **Kirkland, P.** (2018) Evidence of Partial Number Knowledge on the Give-N Task. In C. Kalish, M. Rau, J. Zhu, & T.T. Rogers (Eds.), *Proceedings of the 40th Annual Conference of the Cognitive Science Society*. Madison, WI: Cognitive Science Society.

CONFERENCE PRESENTATIONS

Kirkland, P.K. (2023 – Accepted). *Ensuring Our Students Can Make Sense of Math: Using Rich Formative Assessment in K-8 Mathematics*. Presentation accepted to be given at the 2023 Indiana Non-Public Educators' Conference, Indianapolis, IN.

Kirkland, P.K., Guang, C., Cheng, Y., Trinter, C., & McNeil, N.M., (2022). *Does Students' Number Sense Predict Grade-Level Math Learning?* Poster accepted to be presented at the 2022 in-person annual National Council of Teachers of Mathematics (NCTM) Research Conference, Los Angeles, CA.

Kirkland, P.K., Guang, C., Campbell, N., Kumar, S., Mogan, A., McNeil, N.M. (2022). *Investigating Mature Number Sense: Middle School Students' Brief Assessment Scores Correlate with Their Use of Number Sense Strategies*. Poster presented at the Mathematical Cognition and Learning Society Conference (MCLS), Antwerp, Belgium.

Maron, M., Seip, I., Celeste, S., Azar, J., O'Rear, C. D., Gomez, J., Jarrell, E., **Kirkland, P.K.**, Cobb, W. T., & McNeil, N. M. (2022). *The effect of tactile versus non-tactile counting books on children's number talk during shared book reading*. Poster presented at the Biennial Meeting of the Cognitive Development Society (CDS), Madison, WI.

Kirkland, P.K. (2022) *Ensuring Our Students Can Make Sense of Math: Using Rich Formative Assessment in K-8 Mathematics*. Presentation given at the 2022 annual convention of the National Catholic Education Association (NCEA), New Orleans, LA.

Kirkland, P.K., Cheng, Y., Trinter, C., & McNeil, N.M. (2022) *Analyzing Student Use of Number Sense Strategies*. Paper presented virtually at the 2022 annual National Council of Teachers of Mathematics (NCTM) Research Conference.

Kirkland, P.K., Streeter, K., & McNeil, N.M. (2021) *Using Number Talks to Improve Student Number Sense and Advance Restorative Justice*. P. Kirkland (Presenter), Individual Session, research report presented virtually at the Twenty-Fifth Annual Conference of the Association of Mathematics Teacher Educators (AMTE).

Kirkland, P.K., Cheng, Y., Trinter, C., & McNeil, N.M. (2020) *Developing a Measure of Student Number Sense with Valid and Reliable Scores*. Poster was accepted to be presented at the 2020 annual National Council of Teachers of Mathematics (NCTM) Research Conference, Chicago, IL. (Conference canceled)

O'Rear, C.D., McNeil, N.M., **Kirkland, P.K.** (2019). *Partial Number Word Knowledge on the Give-N Task*. Paper presented at the 2019 annual conference of the Mathematical Cognition and Learning Society (MCLS), Ottawa, ON.

Kirkland, P.K. (2019). *Helping Students Make Sense of Math: Lessons from Cognitive Science*. Presentation given at the 2019 annual convention of the National Catholic Education Association (NCEA), Chicago, IL.

Kirkland, P.K. (2019). "A Simple Yes or No?": *How Word Problem Design Affects Student Sense-Making*. Poster presented at the 2019 annual meeting of the American Educational Research Association (AERA), Toronto, ON.

Kirkland, P.K. (2019). "A Simple Yes or No?": *How Word Problem Design Affects Student Sense-Making*. Poster presented at the 2019 annual National Council of Teachers of Mathematics (NCTM) Research Conference, San Diego, CA.

Kirkland, P.K. and Trinter, C. (2019). "Using an Online Environment to Coach Teachers in their Development of Core Instructional Practices." Presentation given at the Twenty-Third Annual Conference of the Association of Mathematics Teacher Educators (AMTE), Orlando, FL.

Svarovsky, G.N. and **Kirkland, P.** (2018). *Designing and Implementing Teacher Professional Development that Connects Social Justice and STEM Integration*. Paper presented at the annual conference of the Collaborative Network for Engineering and Computing Diversity Conference. Crystal City, VA.

MANUSCRIPTS UNDER REVIEW OR IN PREPARATION

O'Rear, C.D., **Kirkland, P.K.**, Purpura, D., (*revise & resubmit*). The How Many and Give-N Tasks: Conceptually Distinct Measures of the Cardinality Principle.

PREPARED RESOURCES FOR EDUCATORS

Pattison, S., **Kirkland, P.**, & Svarovsky, G. (2020). Storybook STEM resource spreadsheet. TERC. <https://www.terc.edu/storybookstem/>

Pattison, S., Svarovsky, G., Ramos-Montañez, S., & **Kirkland, P.** (2020). Storybook STEM: Children's literature as a tool for supporting informal STEM learning. TERC. www.terc.edu/storybookstem/

PROFESSIONAL EXPERIENCE – MEMBERSHIPS

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| 2016 – Present | National Council of Teachers of Mathematics (NCTM) |
| 2017 - Present | Society for Research on Educational Effectiveness (SREE)
American Educational Research Association (AERA)
Association for Education Finance and Policy (AEFP) |
| 2018 - Present | Association for Mathematics Teacher Educators (AMTE) |
| 2021 – Present | Cognitive Science Society (CSS) |

SERVICE

Manuscript Reviewer (*ad hoc*)

- Mathematics Teacher: Learning and Teaching PreK-12 (NCTM)
- Cognitive Development
- Cognitive Science
- Mathematical Thinking and Learning

Conference Submission Reviewer

- PME-NA 2023 Annual Meeting
- SREE 2022 Annual Meeting: Teachers and Leaders Section
- PME-NA 2022 Annual Meeting
- NCTM 2021 Research Conference
- MCLS 2021 Annual Meeting
- AERA 2020 Annual Meeting: Catholic Education SIG, Division C – Section 1c Mathematics, and Division D – Section 1 – Educational Measurement, Psychometrics, and Assessment
- NCTM 2019 Research Conference

University and Department Service

- ACE Executive Committee Member (2022-2023)

- Co-Chair, Graduate Student Professional Development, Department of Psychology (2021-22)
- Graduate Student Representative for the CBB Area, Department of Psychology Faculty Meetings (2020-21)
- Guest Lecture, Developmental Psychology (Fall 2020)
- Math Tutor Training, PATH Companions (Fall 2020, Spring 2021)

Community Service

- Panelist, United Way Youth Success Committee, Grant Review (Spring 2019)

Undergraduate Research Advising

- Senior Thesis Co-Advisor: Nicole Campbell, *Investigating the specific nature of the relationship between cognitive reflection and mature number sense in middle school students*. 2023
- Senior Thesis Co-Advisor: Chloe Spang, *An Analysis of Word Problems in Reform-Based and Traditional 7th-Grade Math Textbooks*. 2021