Irma Stevens

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EDUCATION

Ph.D. Mathematics Education, University of Georgia, 2019
Dissertation: Pre-Service Teachers' Construction of Formulas through Covariational Reasoning with Dynamic Objects
Committee Members: Kevin C. Moore, Chair; Leslie P. Steffe; Amy Ellis; Edward Azoff
Supported by Scholars of Excellence Award

M.A. Mathematics, University of Georgia, 2016
Thesis: Topological Data Analysis and the MAA National Study of College Calculus
Committee Members: Noah Giansiracusa, Chair; Jason Cantarella; Edward Azoff
Coursework included Numerical Analysis, Qualitative/Partial Differential Equations, Real/Complex Analysis, Geometry, Combinatorics, and Abstract Algebra.

B.S. Mathematics, University of North Carolina at Charlotte, 2013 (Summa Cum Laude)
Minor in Bioinformatics, Graduated from the University Honors Program

RELEVANT WORK EXPERIENCE

2022-present	Assistant Professor	University of Rhode Island, Kingston, RI
2019-2022	Postdoctoral Researcher	University of Michigan, Ann Arbor, MI
2013-2019	Graduate Assistant	University of Georgia, Athens, GA
2017-2019	High School Teacher	Westminster Christian Academy, Watkinsville, GA
2016-2017	Head Coach	Athens Area Girls Math Team, Athens, GA
2015	GED Mathematics Specialist Volunteer	Athens Technical College, Athens, GA
2014, 2017	Instructor of Record	University of Georgia, Athens, GA
2011-2013	Tutor Trainer/Tutor	University of North Carolina at Charlotte, Charlotte, NC

RESEARCH EXPERIENCE

Postdoctoral Researcher*, Managing Students' Contributions to Mathematical Work in Whole Class Discussions in High School: How Do Teachers Decide What to Do?*

[PI, Patricio Herbst]. 2017 James S. McDonnell Foundation Award, 2017-2022. (Fall 2019-Present)

- Co-design, conduct, and analyze online and in person two year-long research-based professional developments for 41 high school geometry and algebra teachers alongside high school teachers, graduate students, and professors involved in research on teacher decision making when having classroom discussions about task-based lessons
- Co-design, conduct, and analyze virtual focus groups with a national sample of 26 high school Algebra and Geometry teachers
- Lead sub-team involved in analyzing and selecting high school student work from task-based lessons on algebra and geometry topics
- Hire and mentor undergraduate students involved in various components of design, data organization, and analysis
- Present and publish important findings

Postdoctoral Researcher, ***GeT Support: An online professional learning community to support the geometry course for teachers***

[PI, Patricio Herbst]. ($1,843,909.00). National Science Foundation IUSE/Robert Noyce Scholarship Program Award 1725837, 2017-2022. (Fall 2019-Present)

- Assist in qualitative and quantitative analyses of data (e.g., assessments, instructional logs, interviews) from community of ~40 instructors and their students
- Recruit teachers to participate in clinical interviews
- Hire and mentor undergraduate students involved in various components of design, data organization, and analysis
- Moderate online synchronous seminars with GeT participants
- Present and publish important findings

Research Assistant, ***Advancing Secondary Mathematics Teachers' Quantitative Reasoning***

[PI, Kevin Moore]. ($741,491). National Science Foundation CAREER Award DRL-1350342, 2014-2020. (2014-Present)

- Conduct and analyze semi-structured clinical interviews and teaching experiments with 43 participants ranging from undergraduates to professors
- Develop case studies providing examples of students' reasoning that proved beneficial and detrimental as well as examples of students' reasoning evolving over time
- Create research-based curriculum for pre-service teachers that focuses on function, covariation, modeling, graphing and other major secondary mathematics concepts
- Collaborate with *Project Aspire* (NSF Award MSP-1050595) for assessment data
- Present and publish important findings

Research Assistant, ***Generalization Across Multiple Mathematical Areas***

[PI, Amy Ellis in collaboration with Elise Lockwood (co-principal investigator), Erik Tillema (co-principal investigator), and Kevin Moore (co-principal investigator)]. ($1,499,908). National Science Foundation Research on Education and Learning (REAL), 2014-2018. (2016-2018)

- Work with Kevin Moore to
    - Conduct and analyze semester-long teaching experiment involving three pre-service teachers in a mathematics education content course
    - Collect semester-long classroom data in a mathematics education content course

- Work with Amy Ellis to
    - Participate in Amy Ellis's research meetings to analyze teaching experiment data involving two middle school students to help develop a generalization framework
    - Observe week-long teaching experiment with middle school students

Research Assistant, Department of Mathematics and Science Education, University of Georgia, Dr. Kevin C. Moore (Advisor), Athens, GA (2013-2014)

- Collect teaching experiment data involving four pre-service teachers in a mathematics education content course
- Engage in clinical interviews examining 25 pre-service teachers' meanings for function, inverse function, graphs, and relationships
- Employ quantitative and covariational reasoning frameworks to analyze pre-service teachers' activities when problem solving
- Collaborate with fellow graduate students and a professor at the University of Georgia to present and publish important findings

Charlotte Research Scholar (Summer 2012)

- Project Title: "Statistical Modeling of Gene Duplication"
- Mentor: Dr. Jessica Schlueter, Bioinformatics
- Description: Compare pipelines used to determine probable gene duplication sites.

PUBLICATIONS

Works in Progress

Moore, K. C., Liang, B., Stevens, I. E., Tasova, H. I., & Paoletti, T. (in press). Abstracted quantitative structures: A marriage of quantitative reasoning and concept construction (book chapter in *Quantitative Reasoning in Mathematics and Science Education* Springer monograph)

Moore, K. C., Stevens, I. E., Tasova, H. I., Liang, B. (accepted). Figurative and operative thought. (book chapter)

Herbst, Chazan, Brown, Stevens, & Boileau. (accepted). Serviceability, Normativity, and Responsiveness. ("Mathematics and Science Teacher Noticing: Conceptual Explorations and Empirical Connections" special issue in *School Science and Mathematics Journal*).

Moore, K. C., Stevens, I. E., Liang, B., Tasova, H. I., & Castillo-Garsow, C. (in preparation). When graphs contain everything: Two undergraduate students' graphing actions. (journal article)

Stevens, I. E. (in preparation). The role of a multiplicative objects in students' reasoning with formulas. (journal article)

Stevens, I. E. & Herbst. P. (in preparation). Relating mathematical meanings and teachers' obligations to curriculum. (journal article)

Peer-Reviewed Journals

Paoletti, T., Stevens, I. E., & Vishnubhotla, M. (2021). Comparative and restrictive inequalities. *The Journal of Mathematical Behavior*, 63, 14. https://doi-org.proxy.lib.umich.edu/10.1016/j.jmathb.2021.100895

Moore, K. C., Stevens, I. E., Paoletti, T., Hobson, N. L. F., & Liang, B. (2019). Pre-service teachers' figurative and operative graphing actions. *The Journal of Mathematical Behavior*, 56, 100692. https://doi.org/10.1016/j.jmathb.2019.01.008

Paoletti, T., Stevens, I. E., Hobson, N. L. F., Moore, K. C., & LaForest, K. R. (2017). Inverse function: Pre-service teachers' techniques and meanings. *Educational Studies in Mathematics, 97*, 93–109. doi:10.1007/s10649-017-9787-y

Paoletti, T., Stevens, I. E., & Moore, K. C. (2017). Tricks may inhibit students' reasoning. *Mathematics Teacher*. 110(6), 447–453.

Book Chapters

Brown, A., Stevens, I., Herbst, P., & Huhn, C. (2021). Confronting teachers with contingencies to support their learning about situation-specific pedagogical decisions in an online context. In K. F. Hollebrands & R. Anderson (Eds.), *Online Learning in Mathematics Education*. Springer: 291–316.

Milewski, A., Herbst, P, & Stevens, I. (2020). Managing to collaborate with secondary mathematics teachers at a distance: Using storyboards as a virtual place for practice and consideration of realistic classroom contingencies. *Teaching, Technology, and Teacher Education during the COVID-19 Pandemic: Stories from the Field*. R. E. Ferdig, E. Baumgartner, R. Hartshorne, R. Kaplan-Rakowski and C. Mouza, Association for the Advancement of Computing in Education (AACE): 623–630.

Refereed Proceedings

Schwarts, G., Stevens, I. E., Herbst, P., & Brown, A. (accepted). "It's a different mindset here": Facilitation challenges in a practice-based professional development. *Proceedings of the forty-fourth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education.* Nashville, TN.

Stevens, I. E. (in press). "$A=2\pi rh$ is the surface area for a cylinder": Figurative and operative thought with formulas. *Proceedings of the Twenty-Fourth Annual Conference on Research in Undergraduate Mathematics Education*. Boston, MA.

Stevens, I. E. & Herbst, P. (2021). "What got flipped?": Teacher's use of contrasting conceptions to support students' development of inverse functions. In Olanoff, D., Johnson, K., & Spitzer, S. M. (Eds.) *Proceedings of the forty-third annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education.* Philadelphia, PA. (pp. 1623–1624)

Stevens, I. E., & Boileau, N. (2021). Understanding student behaviour as evidence of student conceptions and instructional norms. In Olanoff, D., Johnson, K., & Spitzer, S. M. (Eds.) *Proceedings of the forty-third annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education.* Philadelphia, PA. (pp. 1899–1900)

Spiteri, A., Stevens, I. E., & Herbst, P. (2021). Supporting the construction of variables in an inverse function context through targeted questions. In Olanoff, D., Johnson, K., & Spitzer, S. M. (Eds.) *Proceedings of the forty-third annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education.* Philadelphia, PA. (pp. 1623–1624)

Stevens, I. E. (2020). "Solving versus Relating": Pre-service teachers' conflicting images of formulas and dynamic contexts. In A.I. Sacristán, J.C. Cortés-Zavala & P.M. Ruiz-Arias, (Eds.). *Mathematics Education Across Cultures: Proceedings of the 42nd Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Mexico* (pp. 1223–1227). Cinvestav /AMIUTEM / PME-NA. 10.51272/pmena.42.2020-192

Stevens, I. E., Ko, I., Paoletti, T., Boileau, N., & Herbst, P. (2020). Introducing inverse function to high school students: Relating convention and reasoning. In A.I. Sacristán, J.C. Cortés-Zavala & P.M. Ruiz-Arias, (Eds.). *Mathematics Education Across Cultures: Proceedings of the 42nd Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Mexico* (pp. 227–235). Cinvestav /AMIUTEM / PME-NA. 10.51272/pmena.42.2020-23

Stevens, I. E. (2020). Elementary school geometry to university level calculus: Building upon learning trajectories rooted in covariational reasoning with area contexts to support covariational reasoning related to implicit differentiation. *Proceedings of the Twenty-Third Annual Conference on Research in Undergraduate Mathematics Education* (p. 1287–1288). Boston, MA.

Moore, K. C., Liang, B., Stevens, I. E., Tasova, H., Paoletti, T., & Ying, Y. (2020). A quantitative reasoning framing of concept construction. *Proceedings of the Twenty-Third Annual Conference on Research in Undergraduate Mathematics Education* (pp. 752–761). Boston, MA.

Moore, K. C., Liang, B., Tasova, H. I., & Stevens, I. E. (2019). Abstracted quantitative structures. *Proceedings of the 41st Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1879–1883). St. Louis, MO.

Stevens, I. E. (2019). The role of multiplicative objects in a formula. In A. Weinberg, D. Moore-Russo, H. Soto, & M. Wawro (Eds.), *Proceedings of the Twenty-Second Annual Conference on Research in Undergraduate Mathematics Education* (pp. 273–281). Oklahoma City, OK.

Stevens, I. E. (2019). Using a dynamic geometric context to support students' constructions of variables. In A. Weinberg, D. Moore-Russo, H. Soto, & M. Wawro (Eds.), Proceedings of the Twenty-Second Annual Conference on Research in Undergraduate Mathematics Education (pp. 576–585). Oklahoma City, OK.

Stevens, I. E. (2018). The parallelogram problem: Supporting covariational reasoning in the construction of formulas. In Hodges, T. E., Roy, G. J., & Tyminski, A. M. (Eds.), *Proceedings of the 40th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 624–627). Greenville, SC: University of South Carolina & Clemson University.

Liang, B., Stevens, I. E., Tasova, H. I., & Moore, K. C. (2018). Magnitude reasoning: A pre-calculus student's quantitative comparison between covarying magnitudes. In Hodges, T. E., Roy, G. J., & Tyminski, A. M. (Eds.), *Proceedings of the 40th annual meeting of the*

North American Chapter of the International Group for the Psychology of Mathematics Education (pp. 608–611). Greenville, SC.

Stevens, I. E. (2018). Insights into students' images of a geometric object and its formula from a covariational reasoning perspective. In Weinberg, A., Rasmussen, C., Rabin, J., Wawro, M., & Brown, S. (Eds.), *Proceedings of the Twenty-First Annual Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education (SIGMAA on RUME) Conference* (pp. 997–1005). San Diego, CA.

Tasova, H. I., Stevens, I. E., Moore, K. C. (2018). A framework for analyzing written curriculum from a shape-thinking and (co)variational reasoning perspective. In Weinberg, A., Rasmussen, C., Rabin, J., Wawro, M., & Brown, S. (Eds.), *Proceedings of the Twenty-First Annual Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education (SIGMAA on RUME) Conference* (pp. 1527–1533). San Diego, CA.

Hardison, H., Stevens, I. E., Lee, H. Y., & Moore, K. C. (2017). Lydia's circle concept: The intersection of figurative thought and covariational reasoning. In E. Galindo & J. Newton (Eds.), *Proceedings of the 39th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (p. 391). Indianapolis, IN: Hoosier Association of Mathematics Teacher Educators.

Stevens, I. E. & Moore, K. C. (2017). The intersection between quantification and an all-encompassing meaning for a graph. In E. Galindo & J. Newton (Eds.), *Proceedings of the 39th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 709–716). Indianapolis, IN: Hoosier Association of Mathematics Teacher Educators.

Stevens, I. E. (2017). A critical examination of the critiques of radical constructivism as an epistemology for education. In Kaur, B., Ho, W.K., Toh T.L., & Choy, B.H. (Eds.). *Proceedings of the 41st Conference of the International Group for the Psychology of Mathematics Education*, Vol 1, p. 270. Singapore: PME.

Stevens, I. E., Paoletti, T., Moore, K. C., Liang, B., & Hardison, H. (2017). Principles for designing tasks that promote covariational reasoning. *In A. Weinberg, C. Rasmussen, J. Rabin, M. Wawro & S. Brown (Eds.), Proceedings of the 20th Annual Conference on Research in Undergraduate Mathematics Education* (pp. 928–936). San Diego, CA.

Stevens, I. E., & Moore, K. C. (2016). The Ferris wheel and justifications of curvature. In M. B. Wood, E. E. Turner, M. Civil, & J. A. Eli (Eds.), *Proceedings of the 38th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 644–651). Tucson, AZ: The University of Arizona.

*Moore, K. C., Paoletti, T., Stevens, I. E., Hobson, N. L. F. (2016). Graphing habits: "I just don't like that". In T. Fukawa-Connelly, N. Infante, M. Wawro, & S. Brown (Eds.), *Proceedings of the Nineteenth Annual Conference on Research in Undergraduate Mathematics Education* (pp. 16–30). Pittsburgh, PA: West Virginia University.

* Received Honorable Mention for Best Paper Award

Paoletti, T., Mauldin, K. D., Moore, K. C., Stevens, I. E., Hobson, N. L. F., & LaForest, K. L. (2015). Changing cones: Students' images of a dynamic situation. In T. G. Bartell, K. N. Bieda, R. T. Putnam, K. Bradfield, & H. Dominguez (Eds.), *Proceedings of the 37th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (p. 427). East Lansing, MI: Michigan State University.

Stevens, I. E., Hobson, N. L. F., Moore, K. C., Paoletti, T., LaForest, K. L., & Mauldin, K. D. (2015). Changing cones: Themes in students' representations of a dynamic situation. In T. G. Bartell, K. N. Bieda, R. T. Putnam, K. Bradfield, & H. Dominguez (Eds.), *Proceedings of the 37th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 363–372). East Lansing, MI: Michigan State University.

Stevens, I. E., LaForest, K. L., & Hobson, N. L. F., Paoletti, T., & Moore, K. C. (2015). Undergraduate students' inverse strategies and meanings. In T. G. Bartell, K. N. Bieda, R. T. Putnam, K. Bradfield, & H. Dominguez (Eds.), *Proceedings of the 37th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (p. 262). East Lansing, MI: Michigan State University.

Paoletti, T., Stevens, I. E., Hobson, N. L. F., LaForest K., & Moore, K. (2015, February) Pre-service teachers' inverse function meanings. In T. Fukawa-Connolly, N. E. Infante, K. Keene, & M. Zandieh (Eds.), *Proceedings of the Eighteenth Annual Conference on Research in Undergraduate Mathematics Education* (pp. 853–867). Pittsburgh, PA: West Virginia University.

Published Abstracts

Herbst, P., Stevens, I. E., Milewski, A., Ion, M., & Ko, I. (2020). State of the undergraduate Geometry courses for secondary Teachers: Curriculum, Instructional Practices, and Student achievement. In *Abstracts of Papers Presented to the American Mathematical Society, 41(1),* 435.

Stevens, I. E. (2020). The role of multiplicative objects in a formula. In *Abstracts of Papers Presented to the American Mathematical Society, 41(1),* pp. 367-368.

Tasova, H. I., Liang, B., Stevens, I. E., & Moore, K. C. (2019). Undergraduate students' quantitative comparisons of covarying quantities' magnitudes. In C. D. Savage, G. Benkart, B. D. Boe, M. L. Lapidus, & S. H. Weintraub. *Abstracts of Papers Presented to the American Mathematical Society*, 40(1), 421.

Moore, K. C., Stevens, I. E., Liang, B., & Tasova, H. I. (2019). Concept construction and abstracted quantitative structures. In C. D. Savage, G. Benkart, B. D. Boe, M. L. Lapidus, & S. H. Weintraub. *Abstracts of Papers Presented to the American Mathematical Society*, 40(1), 421.

Stevens, I. E. (2018). How a pre-calculus student was able to reason about rates of change using magnitudes. In C. D. Savage, G. Benkart, B. D. Boe, M. L. Lapidus, & S. H. Weintraub. *Abstracts of Papers Presented to the American Mathematical Society*, *39*(1), pp. 466–467.

Stevens, I. E. & Moore, K. C. (2017). A case study: When graphs contain everything. In C. D. Savage, G. Benkart, B. D. Boe, M. L. Lapidus, & S. H. Weintraub. *Abstracts of Papers Presented to the American Mathematical Society*, *38*(1), pp. 461–462.

Stevens, I. E. (2017). Topological data analysis of students' responses to MAA surveys on college calculus. In C. D. Savage, G. Benkart, G., B. D. Boe, M. L. Lapidus, & S. H. Weintraub, *Abstracts of Papers Presented to the American Mathematical Society: 38*(187), p. 565.

INVITED ADDRESSES

(Bolded names indicate presenters)

Stevens, I. E. (2020, May). *Dissertation and beyond: A reflection on the end of graduate school.* Invited seminar leader for the Montclair University Department of Mathematics Dissertation Proposal Seminar.

Stevens, I. E. (2020, April). *Supporting students developing meanings for variable*. Invited seminar leader for the Montclair University Department of Mathematics Dissertation Proposal Seminar.

Stevens, I. E. (2020, February). *The role of multiplicative objects in a formula*. Invited presentation at the Joint National Meeting of the American Mathematical Society and the Mathematical Association of America. Denver, CO.

Stevens, I. E. (2018, April). *Exploring preservice teachers' imagery and construction of formulas*. Invited online presentation for the Clemson University Department of Teaching and Learning First Year Seminar. Clemson, SC.

Moore, K. C. & **Stevens, I. E.** (2016, October). *Broadening Students' Mathematical Experiences*. Invited presentation at the 57th Georgia Mathematics Conference. Eatonton, GA.

Moore, K. C., Paoletti, T., **Stevens, I. E.**, & **LaForest, K. R.** (2014, October). *Functions as relationships and quantitative reasoning.* Invited presentation at the 55th Georgia Mathematics Conference. Eatonton, GA.

CONFERENCE PRESENTATIONS

(Bolded names indicate presenters)

Herbst, P., Schwarts, G., Brown, A., Stevens, I., Chazan, D. (under review). Toward a method for analyzing multimodal online interaction among teachers. *AERA.*

Schwarts, G, Herbst, P., Stevens, I. E., & Brown, A. (under review). Beyond correctness: What do teachers notice about student work produced in problem-based lessons. *AERA.*

Schwarts, G., Stevens, I. E., Herbst, P., & Brown, A. (2022, November). *"It's a different mindset here": Facilitation challenges in a practice-based professional development*. **Paper** to be presented at the 2022 forty-fourth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Nashville, TN.

Stevens, I. E. (2022, September). *Using magnitude bars to support students' representations of dynamic objects*. Presentation at the 2022 National Council of Teachers of Mathematics (NCTM) Annual Meeting and Exposition. Los Angeles, CA.

Stevens, I. E. (2022, February). *"A=2πrh is the Surface Area for a Cylinder": Figurative and Operative Thought with a Formula Re-presenting Relationships in Dynamic Geometric Contexts*. **Paper** presented at the Twenty-Fourth Annual Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education (SIGMAA on RUME) Conference. Boston, MA.

Stevens, I. E., Boileau, N., Bridges, S., Brown, A., & Herbst, P. (roundtable). *Timing as a Complexity in* Teaching. **Paper** to be presented at the 2022 Annual Meeting for the American Educational Research Association (AERA). San Diego, CA.

Herbst, P., **Brown, A.**, **Stevens, I. E.** (roundtable). *The evolution of StoryCircles: An online professional learning approach to attend to practice in context*. **Paper** to be presented at the 2022 Annual Meeting for the American Educational Research Association. San Diego, CA.

Herbst, P., **Milewski, A.**, Stevens, I. E., **Huhn, C.**, Lorenz, R. & Strickland, S. (2022, February). *Supporting synchronous and asynchronous study of secondary mathematics lessons among colleagues: Designs, technologies, and facilitation*. **Paper** to be presented at the Twenty-Fifth Annual Conference of the Association of Mathematics Teacher Educators.

Stevens, I. E. & Herbst, P. (2021, October). *Supporting the construction of variables in an inverse function context through targeted questions*. **Poster** to be presented at the 43rd Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Philadelphia, PA.

Stevens, I. E., & Boileau, N. (2021, October). *Understanding student behaviour as evidence of student conceptions and instructional norms*. **Poster** to be presented at the 43rd Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Philadelphia, PA.

Spiteri, A., Stevens, I. E., & Herbst, P. (2021, October). *Supporting the construction of variables in an inverse function context through targeted questions*. **Poster** to be presented at the 43rd Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Philadelphia, PA.

Stevens, I. E. *"Solving versus relating": Pre-service teachers' conflicting images of formulas and dynamic contexts*. (2021, June). **Paper** presented at the 42nd annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Mazatlán, Sinaloa, Mexico.

Stevens, I. E., Ko, I., Paoletti, T., Boileau, N., & Herbst, P. (2021, June). *Introducing inverse function to high school students: Relating convention and reasoning*. **Paper** presented at the 42nd annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Mazatlán, Sinaloa, Mexico.

Stevens, I. E. (2021, February).*Multiple ways of understanding geometric formulas via covariational reasoning*. **Paper** presented at the Twenty-Fifth Annual Conference of the Association of Mathematics Teacher Educators.

Stevens, I. E., Herbst, P., Bardelli, E., & Milewski, A. (2020, March). *Supporting Discussions About Teachers' Practical Knowledge via StoryCircles.* Presentation at the 2020 Annual Michigan Association of Mathematics Teacher Educators Annual Conference: Conversations Among Colleagues. Ann Arbor, MI.

Stevens, I. E. (2020, February). *Elementary School Geometry to University Level Calculus: Building Upon Learning Trajectories Rooted in Covariational Reasoning with Area Contexts to Support Covariational Reasoning Related to Implicit Differentiation*. **Poster** presented at the Twenty-Third Annual Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education (SIGMAA on RUME) Conference. Boston, MA.

Moore, K. C., Liang, B., Stevens, I. E., Tasova, H., Paoletti, T., & Ying, Y**.** (2020, February). *A Quantitative Reasoning Framing of Concept Construction*. **Paper** presented at the Twenty-Third Annual Special Interest Group of the Mathematical Association of

America on Research in Undergraduate Mathematics Education (SIGMAA on RUME) Conference. Boston, MA.

Herbst, P., **Stevens, I. E.**, Milewski, A., Ion, M., & Ko, I. (2020, January). *State of the undergraduate Geometry courses for secondary Teachers: Curriculum, instructional practices, and student achievement*. **Abstract** presented at the Joint National Meeting of the American Mathematical Society and the Mathematical Association of America. Denver, CO.

Moore, K. C., Liang, B., Tasova, H. I., & Stevens, I. E. (2019, November). Abstracted quantitative structures. **Paper** presented at the 41st annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. St. Louis, MO.

Stevens, I. E. (2019, March). *The role of multiplicative objects in a formula*. **Paper** presented at the Twenty-Second Annual Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education (SIGMAA on RUME) Conference. Oklahoma City, OK.

Stevens, I. E. (2019, February). *Using a dynamic geometric context to support students' constructions of variables*. **Paper** presented at the Twenty-Second Annual Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education (SIGMAA on RUME) Conference. Oklahoma City, OK.

Moore, K., Stevens, I. E., Liang, B., & Tasova, H. (2019, January). *Concept construction and abstracted quantitative structure*. **Abstract** presented at the Joint National Meeting of the American Mathematical Society and the Mathematical Association of America. Baltimore, MD.

Tasova, H. I., Liang, B., Stevens, I. E., Moore, K. C. (2019, January). *Characterizing two undergraduate students' quantitative comparisons of covarying quantities' magnitudes*. **Abstract** presented at the Joint National Meeting of the American Mathematical Society and the Mathematical Association of America. Baltimore, MD.

Stevens, I. E. (2018, November). *The parallelogram problem: Supporting covariational reasoning in the construction of formulas*. **Paper** presented at the 40th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Greenville, SC.

Liang, B., Stevens, I. E., Tasova, H. I., & Moore, K. C. (2018, November). *Magnitude reasoning: A pre-calculus student's quantitative comparison between covarying magnitudes.* **Paper** to be presented at the 40th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Greenville, SC.

Tasova, H. & **Stevens, I.** (2018, October). *A specialized content knowledge task on functions and rate of change*. **Abstract** presented at the 59th annual Georgia Mathematics Conference. Eatonton, GA.

Liang, B., Stevens, I. E., & Tasova, H. I. (2018, March). *Documenting college students' meanings for partitioning activity.* **Poster** presented at the 2018 College of Education Research Conference at University of Georgia. Athens, GA.

Stevens, I. E. (2018, February). *Insights into students' images of a geometric object and its formula from a covariational reasoning perspective.* **Paper** presented at the Twenty-First

Annual Special Interest Group of the Mathematical Association of America Conference on Research in Undergraduate Mathematics Education. San Diego, CA.

Tasova, H. I. & Stevens, I. E., & Moore, K. C. (2018, February). *A framework for analyzing written curriculum from a shape-thinking and (co)variational reasoning perspective.* **Paper** presented at the Twenty-First Annual Special Interest Group of the Mathematical Association of America Conference on Research in Undergraduate Mathematics Education. San Diego, CA.

Stevens, I. E. (2018, January). *How a pre-calculus student was able to reason about rates of change using magnitudes.* **Abstract** presented at the Joint National Meeting of the American Mathematical Society and the Mathematical Association of America. San Diego, CA.

Stevens, I. E. & Liang, B. (2017, October). *Exploring linear relationships using various coordinate systems.* **Abstract** presented at the 58th Georgia Mathematics Conference. Eatonton, GA.

Stevens, I. E. & Moore, K. C. (2017, October). *The role of quantification and operative thought in a students' all-encompassing meaning for a graph*. **Abstract** presented at the 11th Annual Georgia Association of Mathematics Teacher Educators. Eatonton, GA.

Stevens, I. E. & Moore, K. C. (2017, October). *The intersection between quantification and an all-encompassing meaning for a graph*. **Paper** presented at the 39th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Indianapolis, IN.

Hardison, H., Stevens, I. E., Lee, H. Y., & Moore, K. C. (2017, October). *Lydia's circle concept: The intersection of figurative thought and covariational reasoning*. **Poster** presented at the 39th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Indianapolis, IN.

Stevens, I. E. (2017, July). *A critical examination of the critiques of radical constructivism as an epistemology for education*. **Paper** to be presented at the 41st annual meeting of the International Group for the Psychology of Mathematics Education. Singapore, Singapore: PME.

Tasova, H. I. & **Stevens, I. E.** (2017, April). *An analysis of U.S. and Turkish textbooks through a shape thinking perspective: Linear functions*. **Poster** presentation at the University of Georgia's College of Education Graduate Student and Faculty Research Conference. Athens, GA.

Stevens, I. E., Paoletti, T., Moore, K. C., Liang, B., & Hardison, H. (2017, February). *Principles for designing tasks that promote covariational reasoning*. **Paper** presented at the Twentieth Annual Conference on Research in Undergraduate Mathematics Education. San Diego, CA.

Stevens, I. E. & Moore, K. C. (2017, January). *A case study: When graphs contain everything.* **Abstract** presented at the Joint National Meeting of the American Mathematical Society and the Mathematical Association of America. Atlanta, GA.

Stevens, I. E. (2017, January). *Topological data analysis of students' responses to MAA surveys on college calculus*. **Abstract** presented at the Joint National Meeting of the American Mathematical Society and the Mathematical Association of America. Atlanta, GA.

Stevens, I. E. & Moore, K. C. (2016, November). *The Ferris wheel and justifications of curvature*. **Paper** presented at the 38th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Tucson, AZ.

Stevens, I. E. & **Liang, B.** (2016, October). *Exploring the mathematics of Ferris wheels*. **Abstract** presented at the 57th Georgia Mathematics Conference. Eagleton, GA.

Stevens, I. E., & **Liang, B.** (2016, October). *Exploring mathematical relationships of an amusement park ride*. **Abstract** presented at the 10th Annual Georgia Association of Mathematics Teacher Educators. Eatonton, GA.

Paoletti, T., Moore, K. C., & Stevens, I. E. (2016, July). *Task-design principles for covariational reasoning*. **Paper** presented at the Thirteenth International Congress on Mathematical Education (ICME). Hamburg, Germany.

Stevens, I. E., & Moore, K. C. (2016, July). *Undergraduate students' graphing habits*. **Poster** presented at the Thirteenth International Congress on Mathematical Education (ICME). Hamburg, Germany.

Stevens, I. E., & Moore, K. C. (2016, April). *"I think I'm missing something": How habits of graphing can impact students' representations*. **Poster** presented at the University of Georgia's College of Education Graduate Student and Faculty Research Conference. Athens, GA.

Hobson, N. L. F., Moore, K. C., Stevens, I. E., Liang, B., & Mauldin, K. D. (2016, March). *Providing students experiences to model novel situations.* **Abstract** presented at the American Mathematics Society Spring Southeastern Sectional Meeting at the University of Georgia. Athens, GA.

Moore, K. C., Paoletti, T., Stevens, I. E., & Hobson, N. L. F. (2016, February) *Graphing habits: "I just don't like that."* **Paper** presented at the Nineteenth Annual Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education (SIGMAA on RUME) Conference. Pittsburgh, PA.

Stevens, I. E., Hobson, N. L. F., Moore, K. C., Paoletti, T., LaForest, K. R., & Mauldin, K. D. (2015, November) *Changing cones: Themes in students' representations of a dynamic situation*. **Paper** presented at the Thirty-Seventh Meeting of the North American Chapter of the International Group for the Psychology of Mathematics (PME-NA). East Lansing, MI. Nov. 5-8, 2015.

Stevens, I. E., LaForest, K. R., Hobson, N. L. F., Paoletti, T., & Moore, K. (2015, November). *Undergraduate students' inverse strategies and meanings.* **Poster** presented at the Thirty-Seventh Meeting of the North American Chapter of the International Group for the Psychology of Mathematics (PME-NA). East Lansing, MI. Nov. 5-8, 2015.

Paoletti, T., Mauldin, K. D., Moore, K. C., Stevens, I. E., Hobson, N. L. F., & LaForest, K. R. (2015, November) *Changing cones: Students' images of a dynamic situation*. **Poster** presented at the Thirty-Seventh Meeting of the North American Chapter of the International Group for the Psychology of Mathematics (PME-NA). East Lansing, MI.

Stevens, I. E. (2015 October) *Changing cones and covariational reasoning*. **Abstract** presented at the 56th Georgia Mathematics Conference. Eatonton, GA.

Paoletti, T., **Stevens, I. E.**, **Hobson, N.**, **LaForest K.**, Moore, K. C. (2015, February) *Pre-service teachers' inverse function meanings*. **Paper** presented at the Eighteenth Annual Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education (SIGMAA on RUME) Conference. Pittsburgh, PA.

Mauldin, K. D., Paoletti, T., Moore, K. C., LaForest, K. R., Stevens, I. E., Hobson, N. L. F. (2015, February). *Changing cones: Students' images of a dynamic situation.* **Poster**

presentation at the University of Georgia's College of Education Graduate Student and Faculty Research Conference. Athens, GA.

Stevens, I. E., LaForest, K. R., **Mauldin, K. D.**, Hobson, N. L. F., **Paoletti, T.**, Moore, K. C. (2015, February). *Making sense of inverses: Preservice teachers' inverse meanings.* **Poster** presentated at the University of Georgia's College of Education Graduate Student and Faculty Research Conference. Athens, GA.

CAMPUS TALKS

(* indicates invited address)

*__Stevens, I. E.__ (2019, December). *What Happens When Students Get the "Right" Answer but Don't Think They Do? An Exploration of Students' Conflicting Images and Their Relation to Covariational Reasoning and Formulas*. Presented at the EMST Rackham Interdisciplinary Workshop. Ann Arbor, MI.

*__Stevens, I. E.__ (2019, March). *What research has taught us about undergraduate calculus students*. Presented at the University of Georgia Street Mathematics and Related Topics (*SMARTS*) Seminar. Athens, GA.

*__Stevens, I. E.__ (2018, January). *Exploring preservice teachers' imagery and construction of formulas*. Presentation at the University of Georgia Department of Mathematics and Science Education Graduate Student Presentations and Faculty Panel. Athens, GA.

Stevens, I. E., & **Liang, B.** (2016, October). *Exploring mathematical relationships of an amusement park ride*. Presentation at the University of Georgia Mathematics Education Graduate Student Seminar. Athens, GA.

Stevens, I. E. (2016, April). *A proposed study into preservice teachers' meanings for symbolic representations*. Poster presented at the University of Georgia's First Annual EMAT 9640 and ESCI 9630 Presentations. Athens, GA.

*__Paoletti, T.__, __Stevens, I. E.__, __Hobson, N. L. F.__, __LaForest, K. R.__, & Moore, K. C. (2015, January). *Undergraduate students' inverse strategies and meanings.* Presentation at the University of Georgia Mathematics Teaching Seminar. Athens, GA.

Stevens, I. E. (2012, July). *Statistical modeling of gene duplication*. **Poster** presented at the First Annual Charlotte Research Scholars Symposium. Charlotte, NC.

TEACHING EXPERIENCE

Instructor of Record, University of Rhode Island, Kingston, RI (2022)

- Pre-Calculus (*MTH 111*) (Fall 2022)
- Applied Pre-Calculus (*MTH 108*) (Fall 2022)

Instructor of Record, University of Georgia, Athens, GA (2014, 2017, 2018)

- Graduate Seminar: Epistemological Influencers of Radical Constructivism (*EMAT 8990*) (Co-Instructor, Kevin Moore) (Spring 2018)
- Connections in Secondary Mathematics I (*EMAT 4810/6810*) (Spring 2017)
- Pre-Calculus (*MATH 1113*) (Fall 2014)

Teaching Assistant, University of Georgia, Athens, GA (2013-2019)

- Teaching Secondary School Mathematics III/Field Experience in Secondary School Mathematics III (*EMAT 4900*)
    - 1 section, Teaching Assistant for Kelly Edenfield (Fall 2018)
    - Description: Third of three pair of courses for pre-service secondary mathematics undergraduates focused on pedagogical ideas with accompanying field experiences.
    - Role: I organized and graded assignments for the students' field experiences, which included field observations. I also attended each of the classes, meeting with the instructor beforehand to plan activities and choose readings. I also led class occasionally.
- Connections in Secondary Mathematics I (*EMAT 4810/6810*)
    - 8 sections, Teaching Assistant for Kevin Moore (2013-present).
    - Description: Mathematics content course using a research-based curriculum designed for mathematics (secondary education) undergraduate/graduate students.
    - Role: I attended every class and orchestrated small group discussions. I helped re-design one of the units with another TA (Fall 2013), proposed homework questions, and graded assignments. I also led class occasionally.

Guest Speaker, Montclair State University, Montclair, NJ (Spring 2020)

- Dissertation Proposal Seminar (*MATH 830*)
    - 1 section, Speaker for Teo Paoletti (Spring 2020)
    - Description: This course is designed for mathematics education doctoral students who are preparing their prospectus or beginning to write their dissertation.
    - Role: Invited by faculty in the department of Mathematical Sciences to present dissertation research. I partook in two face-to-face synchronous online meetings. I spoke with mathematics education doctoral students about the process of writing a prospectus and dissertation, writing for conferences and publications, and insights into productive writing and research techniques.

Internship, University of Georgia, Athens, GA (2016-2018) & University of Michigan, Ann Arbor, MI (2019)

- The Study of Mathematical Thinking and Learning (EDUC 782, UM)
    - 1 section, Intern for Patricio Herbst (Fall 2019)
    - Description: Core content course for doctoral students that provides a comprehensive overview on how researchers in mathematics education have framed and studied questions of individual thinking, learning, and knowing in mathematics.
    - Role: I substituted for instructor of the course and attended/participated in classroom discussions for classes that revolved around qualitative research methods.
- Connections in Secondary Mathematics II (*EMAT 4860*, UGA)
    - 1 section, Intern for Andrew Izsák (Fall 2017)
    - Description: Mathematics content course on proportional reasoning using a research-based curriculum for secondary mathematics education undergraduate students.

    - Role: I worked with small groups of students during class, proposed homework/class tasks, and substituted for the instructor.
- Teaching Secondary School Mathematics I (*EMAT 4800*, UGA)
    - 1 section, Intern for Jonathan Foster (Fall 2017)
    - Description: First of three paired courses for undergraduate secondary mathematics education students focusing on mathematics standards and policy documents, learning theories, and teaching strategies.
    - Role: I worked with small groups and gave feedback for instructor when grading classroom presentations.
- Arithmetic for Middle School Teachers (*MATH 5020*, UGA)
    - 1 section, Intern for Sybilla Beckmann (Fall 2016)
    - Description: Content course for undergraduate pre-service middle grades teachers focused on arithmetic operations, number systems, and set theory.
    - Role: I worked with students in small groups during class.
- Geometry for Elementary School Teachers (*MATH 2001*, UGA)
    - 1 section, Intern for Sybilla Beckman (Fall 2016)
    - Description: Content course for undergraduate pre-service elementary teachers focused on visualization, measurement, and transformation of geometric objects.
    - Role: I worked with students in small groups during class.

High School Teacher (Part-Time), Westminster Christian Academy, Watkinsville, GA (Spring 2017-2019)

- Geometry: 9th grade (Spring 2017).
- Statistics: 12th grade (Spring 2017-2019)
- SAT Mathematics Preparation Course (Summer 2018)
- Mathematics Curriculum Committee Member (Spring 2017)
- Substitute Teacher: Algebra II, Pre-Calculus, AP Calculus

Mathematics Specialist Volunteer, Athens Technical College, Adult Education GED Program (2015)

- Taught lessons on Cartesian coordinate systems, perimeter and surface area, percent, exponents, simple interest, and arithmetic of integers, fractions, and decimals.
- Worked individually with students in the classroom to provide support as needed.

PROFESSIONAL SERVICE

Grant Co-Author, NSF, EHR Core Research, *Learning to prove by engaging in mathematical argument with virtual others* [PI: Patricio Herbst, Amanda Brown] (2021)

Associate Editor, *The Mathematics Educator* (2016-2018); 4 issues

- Corresponded with authors of accepted articles to go through the final rounds of revisions before publishing.
- Support authors in 2-3 rounds of revisions that ranged from clarifying main ideas, to obtaining publishing permission for images, to final grammatical edits in accordance with APA standards.

Mathematics Education Student Association (UGA); NCTM-affiliated graduate student run nonprofit organization dedicated to providing colloquiums, *The Mathematics Educator* Journal, a library, a book drive, and social events to its members.

- President (2015-16)
    - Oversee and lead organization events.
    - Obtain funding for the organization from the College of Education at UGA.
    - Form committees and appoint committee chairs as needed.
    - Preside over monthly meetings and assist other committee members as needed.
- Co-Colloquium Chair (2017-18)
    - Invite and organize colloquium visits for professors across the nation to talk on a variety of topics in mathematics education.
    - Organize a principals' colloquium of local high school principals to speak with undergraduate/graduate students in the mathematics education department
    - Create videos to make the colloquium talks publicly available online.
- Secretary (2014-15)
    - Facilitate membership drive.
    - Organize social events to bring together undergraduate/graduate students and professors.

Journal/Conference Proposal Reviewer

- Journal for Research in Mathematics Education (2019-present)
- Journal of Mathematical Behavior (2019-present)
- Educational Studies in Mathematics (2021-present)
- Annual Conference on RUME (2016-present)
- North American Chapter of the International Group for the Psychology of Mathematics Education (2016, 2020-2021) (Session Facilitator-2021)

MENTORSHIP

Undergraduate Research Opportunity Program (UROP) Co-Mentor

- Andrew Spiteri (2020-2021)
- Rashmi Nair (2021)

COMMUNITY INVOLVEMENT/OUTREACH

Michigan Math Circle, Ann Arbor, Michigan (2020)

- Featured activity leader for virtual mathematics circle for middle and high schoolers

Athens Area Girls Math Team, Athens, Georgia (2016-2017)

- Head coach of nonprofit organization to support girls in grades 1-6 working through Singapore Math curriculum.
- Proctor local mathematics contests for middle school girls.

Math Fest Curriculum Leader, NCTM Student Affiliate Grant #s1.sa.17.01 ($1857.00) (2017)

- Undergraduate mentor for local Mathematics festival for surrounding middle schools.

- Supported two undergraduates in choosing, designing, and implementing tasks on linear rates of change and probability.

Julia Robinson Mathematics Festival Volunteer, University of North Carolina at Charlotte (2012-2013)

- Activity leader for mathematics festival for middle school girls in the southeast.

HONORS AND AWARDS

University of Georgia Scholar of Excellence, 2013-2017
Received Honorable Mention for Best Paper Award in *Proceedings of the Nineteenth Annual Conference on Research in Undergraduate Mathematics Education*
Nominated for Graduate Education Advancement Board Fellowship (GEAB), 2019
UGA Graduate Student Travel Award, 2017 ($450.00)
UGA College of Education Graduate Student Travel Fund, 2015 ($100.00), 2017 ($108.00)
Spangler's Professorship Endowment, 2017 ($1200.00), 2018 ($1211.40)
Cooney Travel Award, 2017 ($250.00), 2018 ($100.00), 2019 ($140.00)
RUME with a View Conference Travel Fund, 2016 ($282.08)
Charlotte Research Scholar, 2012 ($4000.00)

MEMBERSHIPS

National Council of Teachers of Mathematics (NCTM), 2013-present
American Mathematical Society (AMS), 2015, 2018
Mathematical Association of America (MAA) 2017-present
Association for Women in Mathematics (AWM), 2015-present

OTHER SKILLS

Master Certified Tutor, Level 3 CRLA (College Reading and Learning Association)
Programming/Computing Skills: Mathematica, SAS, SPSS, R, C++, GSP, Geogebra, Texas Instruments graphing calculator, StudioCode, MaxQDA
Language Skills: Advanced Dutch comprehension, French Reading Knowledge