

## ELENA MARIE SILLA (ABD)

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### EDUCATION

- Expected Summer 2026    **Ph.D. in Education (Learning Sciences)**  
University of Delaware  
Secondary Specialization: Mathematics Education  
Dissertation: *Examining the Relationship between Teaching Practices, Students' Mathematical Beliefs, and Procedural Flexibility in Mathematics*  
Committee: Dr. Christina Areizaga Barbieri (chair), Dr. Amanda Jansen, Dr. Teomara Rutherford, Dr. Jamaal Matthews
- May 2019    **M.Ed. in Elementary Education**  
University of Notre Dame  
*Elementary Teaching Certification in the State of Indiana (K-6)*
- May 2017    **B.A. in Psychology, magna cum laude**  
University of Notre Dame

### ADVANCED RESEARCH TRAINING

*Data Visualizations Using R*, Instructor: Dr. Kieran Healy  
*Writing Effective Grants*, Instructor: Dr. Valarie Earnshaw  
*IQA Observation Protocol Training*, Instructor: Dr. Melissa Boston  
*Belonging-Centered Instruction Observation Protocol Training*, Instructor: Dr. Jamaal Matthews

### FELLOWSHIPS, GRANTS, AWARDS, & HONORS

- May 2025    APA Division 15 Dissertation Research Grant [\$1,500]
- April 2025    AERA Division C Graduate Student Seminar Program [\$275]
- April 2023    First Place Graduate Paper Award, University of Delaware [\$600]
- April 2022    Graduate Student Travel Award, University of Delaware [\$1,500]
- Fall 2021    Unidel Distinguished Graduate Scholar Award, University of Delaware [\$170,000] (awarded through Spring 2026)
- Fall 2021    Fontana Family Graduate Tuition Scholarship, University of Delaware [\$33,000] (awarded through Spring 2025)

Spring 2019	CFPF Grant: <i>Improving Literacy and Social Skills through Drama-Based Education</i> , University of Notre Dame [\$700]
Spring 2018	CFPF Grant: <i>Incorporating Culturally Diverse Literature in the Classroom</i> , University of Notre Dame [\$1,200]
Fall 2017	UROP Grant: <i>How is Math Equivalence Taught in Classrooms?</i> , University of Notre Dame [\$230]
Spring 2015	President's Circle Summer Funding, University of Notre Dame [\$2,000]
Spring 2014	UROP Grant: <i>How does Approximate Number Training Work?</i> , University of Notre Dame [\$1,704]

## **PUBLICATIONS**

### **REFEREED JOURNAL ARTICLES**

- Silla, E. M.**, Barbieri, C. A., & Newton, K. J. (2024). Procedural flexibility on fraction arithmetic and word problems predicts middle-schoolers' differential algebra skills. *Journal of Educational Psychology*, 116(2), 195-211. DOI: [10.1037/edu0000822](https://doi.org/10.1037/edu0000822)
- Jansen, A., **Silla, E. M.**, & Collier, C. (2024). Salience and feasibility of enacting Rough Draft Math: Teachers' voices about productive and powerful variations in ambitious teaching. *Journal of Mathematics Teacher Education*. DOI: [10.1007/s10857-024-09650-6](https://doi.org/10.1007/s10857-024-09650-6)
- Jansen, A., Botello, M., & **Silla, E. M.** (2024). Rough draft math as an evolving practice: Incremental changes in mathematics teachers' thinking and instruction. *Education Sciences*, 14(11), 1266. DOI: [10.3390/educsci14111266](https://doi.org/10.3390/educsci14111266)
- Barbieri, C. A., & **Silla, E. M.** (2023). Evoking learning by examples through reducing misconceptions and highlighting procedures. *The Journal of Experimental Education*. DOI: [10.1080/00220973.2023.2227969](https://doi.org/10.1080/00220973.2023.2227969)

### **BOOK CHAPTERS**

- Rittle-Johnson, B., Msall, C., Li, S., Silla, E. M., Barbieri, C. A., & Star, J. R. (forthcoming). Promoting algebraic thinking. In C. Gilmore (Ed.), *Handbook of Mathematical Cognition*.

### **MANUSCRIPTS INVITED FOR REVISION AND UNDER REVIEW**

- Silla, E. M.**, Viegut, A. A., Redican, E., Barbieri, C. A., Resnick, I., Newcombe, N. S., & Jordan, N. C. (invited for revision after review). Profiles of fraction knowledge in first grade and their relation to cognitive and mathematical skills.

Clerjuste, S. N., **Silla, E. M.**, Chawla, K., & Barbieri, C. A. (invited for revision after review). Leveraging common mathematical errors to improve mathematical understanding of students with math difficulties.

**Silla, E. M.**, Guba, T. P., Rodrigues, A., Anisiobi, O. C., Scanniello, A., & Barbieri, C. A. (under review after invited revision). A systematic review of motivational and mathematical predictors of algebra.

**Silla, E. M.**, Newton, K. J., & Barbieri, C. A. (under review). Profiles of flexibility in fraction arithmetic and connection to algebra readiness.

Miller-Cotto, D., Guba, T. P., **Silla, E. M.**, Morra, G., & Barbieri, C. A. (under review). Do signaling cues and metacognitive prompts support fraction learning?

### **MANUSCRIPTS IN PREPARATION**

**Silla, E. M.**, Botello, M., Miller-Cotto, D., & Barbieri, C. A. (in preparation). From engagement to understanding: The role of motivation and beliefs in fraction learning [working title].

Rutherford, T., **Silla, E. M.**, & Lee, H. (in preparation). It matters how you ask: Cross-domain profiles of expectancies and values using standard versus comparison question type.

### **PEER-REVIEWED CONFERENCE PROCEEDINGS**

**Silla, E. M.**, Botello, M., Miller-Cotto, D., & Barbieri, C. A. (2025, October 26-29). From engagement to understanding: The role of motivation and beliefs in fraction learning. In X. Yao, A. McCloskey, R. M. Zbiek, & R. Martinez (Eds.), *Proceedings of the 47<sup>th</sup> Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. State College, PA: The Pennsylvania State University.

Smith, H., **Silla, E.**, Pacheco, P., McReynolds, A., Kohen, I., Berube, M., Morra, G., Barbieri, C. A., and Reimer, P. (2023). Advantages and implications of incorporating qualitative data in education research: Across contexts. In F. O'Donnell, M. O'Riordan, M. Lee, & S. Ferguson (Eds.), *Proceedings of the Northeast Education Research Association (NERA) Annual Conference*. Trumbull, CT: Northeast Education Research Association.

**Silla, E. M.** (2022). How do multi-digit multiplication problems promote procedural flexibility? An analysis of two fourth grade textbooks. In A. E. Lischka, E. B. Dyer, R. S. Jones, J. Lovett., J. Strayer, & S. Drown (Eds.), *Proceedings of the 44<sup>th</sup> Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Nashville, TN: Middle Tennessee State University.

Vest, N. A., **Silla, E. M.**, Bartel, A. N., Nagashima, T., Aleven, V., & Alibali, M. W. (2022). Self-explanation of worked examples integrated in an Intelligent

- Tutoring System enhances problem solving and efficiency in algebra. In J. Culbertson, A. Perfors, H. Rabagliati, & V. Ramenzoni (Eds.), *Proceedings of the 44<sup>th</sup> Annual Meeting of the Cognitive Science Society*. Toronto, Canada: Cognitive Science Society.
- Nagashima, T., Ling, E., Zheng, B., Bartel, A., **Silla, E. M.**, Vest, N., Anthony, L., Alibali, M. W., & Alevén, V. (2022). How does sustaining and interleaving visual scaffolding help learners? A classroom study with an Intelligent Tutoring System. In J. Culbertson, A. Perfors, H. Rabagliati, & V. Ramenzoni (Eds.), *Proceedings of the 44<sup>th</sup> Annual Meeting of the Cognitive Science Society*. Toronto, Canada: Cognitive Science Society.
- Bartel, A. N., **Silla, E. M.**, Vest, N. A., Nagashima, T., Alevén, V., & Alibali, M. W. (2021). Reasoning about equations with tape diagrams: Insights from students and math teachers. In E. de Vries, J. Ahn, & Y. Hod (Eds.), *15th International Conference of the Learning Sciences–ICLS 2021* (pp. 685-688). International Society of the Learning Sciences, 2021 [virtual due to COVID-19].
- Nagashima, T., Bartel, A. N., Yadav, G., Tseng, S., Vest, N. A., **Silla, E. M.**, Alibali, M. W., & Alevén, V. (2021). Using anticipatory diagrammatic self-explanation to support learning and performance in early algebra. In E. de Vries, J. Ahn, & Y. Hod (Eds.), *15th International Conference of the Learning Sciences–ICLS 2021* (pp. 474-481). International Society of the Learning Sciences, 2021 [virtual due to COVID-19].
- Nagashima, T., Bartel, A. N., Tseng, S., Vest, N. A., **Silla, E. M.**, Alibali, M. W., & Alevén, V. (2021) Scaffolded self-explanation with visual representations promotes efficient learning in early algebra. In T. Fitch, C. Lamm, H. Leder, & K. Teßmar-Raible (Eds.), *43rd Annual Meeting of the Cognitive Science Society* (pp. 1858-1864). Cognitive Science Society [virtual due to COVID-19].
- Silla, E. M.**, Hornburg, C. B., & McNeil, N. M. (2020). Research-based teaching practices for improving students' understanding of mathematical equivalence have not made it into elementary classrooms. In S. Denison, M. Mack, Y. Xu, & B. C. Armstrong (Eds.), *Proceedings of the 42nd Annual Conference of the Cognitive Science Society* (pp. 2937-2943). Austin, TX: Cognitive Science Society [virtual due to COVID-19].
- Nagashima, T., Bartel, A. N., **Silla, E. M.**, Vest, N. A., Alibali, M. W., & Alevén, V. A. (2020). Experimental survey for diagrammatic self-explanations. In M. Gresalfi & I. S. Horn (Eds.), *Proceedings of International Conference of the Learning Sciences, International Society of the Learning Sciences* (pp. 35-43). Nashville, TN: International Society of the Learning Sciences [virtual due to COVID 19].
- Nagashima, T., Yang, K., Bartel, A. N., **Silla, E. M.**, Vest, N., Alibali, M. W., & Alevén, V. (2020). Pedagogical affordance analysis: Leveraging teachers' pedagogical knowledge for eliciting pedagogical affordances and constraints of instructional tools. In M. Gresalfi & I. S. Horn (Eds.), *Proceedings of International Conference*

*of the Learning Sciences, International Society of the Learning Sciences* (pp. 1561-1564). Nashville, TN: International Society of the Learning Sciences.

## **CONFERENCE POSTERS AND PRESENTATIONS**

\* Denotes undergraduate mentee

### **SYMPOSIA ORGANIZED AT PEER-REVIEWED CONFERENCES**

**Silla, E. M.**, & Clerjuse, S. N. (2024, April). *The importance of mathematical competencies: When and for whom do they matter?* The American Educational Research Association (AERA) 2024 Annual Meeting, Philadelphia, PA.

### **PRESENTATIONS AT PEER-REVIEWED CONFERENCES**

**Silla, E. M.** (2025). Relating belonging-centered instruction to students' mathematical motivation and problem-solving [Poster]. Accepted for presentation at the Annual Meeting of the National Council for Teachers of Mathematics (NCTM) Research Conference, Atlanta, GA.

Jansen, A., Acharya, S., Blewitt, B., Botello, M., **Silla, E.**, Barbieri, C., McLean, L. (2025, October). *Investigating teachers' enactments and middle school experiences of rough draft math* [Poster]. Accepted for presentation at the Annual meeting of the International Group for the Psychology of Mathematics Education (PME-NA), State College, PA.

**Silla, E. M.** (2025, April). Examining the relationship between teaching practices, students' mathematical beliefs, and procedural flexibility in mathematics [Roundtable]. *The Motivation in Education SIG In-Progress Research Event* at the American Educational Research Association (AERA) 2025 Annual Meeting, Denver, CO.

Rutherford, T., **Silla, E. M.**, & Lee, H. R. (2025, April). *It matters how you ask: Cross-domain profiles of motivation using standard v. comparison question types* [Roundtable]. The American Educational Research Association (AERA) 2025 Annual Meeting, Denver, CO.

Guba, T. P., McKinney, G., Morra, G., **Silla, E. M.**, Miller-Cotto, D., & Barbieri, C. A. (2025, April). *Monitoring and calibration during fraction arithmetic: Effects of visual signaling cues and metacognitive prompts* [Paper Presentation]. The American Educational Research Association (AERA) 2025 Annual Meeting, Denver, CO.

**Silla, E.**, Viegut, A., Redican, E., Barbieri, C. A., Resnick, I., Newcombe, N., & Jordan, N. (2024, June). *Pathways to early success with fractions and their relation to cognitive and mathematical skills*. The Mathematical Cognition Learning Society (MCLS) Annual Conference, Washington, D.C..

Barbieri, C. A., Miller-Cotto, D., Booth, J. L., Griffin, C., & **Silla, E.** (2024, June). The role of adolescents' sense of belonging to mathematics and math identity in geometry learning [Symposium]. In M. Botello & C. A. Barbieri (Chairs), *A Socio-*

*Cognitive Perspective to Mathematical Development Across the School Years: The Role of Learners' Motivations and Attitudes Towards Mathematics.* The Mathematical Cognition Learning Society (MCLS) Annual Conference, Washington, D.C..

**Silla, E. M.,** Newton, K. J., & Barbieri, C. A. (2024, April). Strategy variations and algebra readiness: Examining procedural flexibility using Latent Profile Analysis [Symposium Session]. In E. Silla & S. Clerjuste (Chairs), *The Importance of Mathematical Competencies: When and For Whom Do They Matter?* The American Educational Research Association (AERA) 2024 Annual Meeting, Philadelphia, PA.

**Silla, E. M.,** Morra, G., Newton, K. J., & Barbieri, C. A. (2024, April). *Solve in a new way: Examining students' spontaneous and potential procedural flexibility on arithmetic problems* [Paper Presentation]. The American Educational Research Association (AERA) 2024 Annual Meeting, Philadelphia, PA.

Clerjuste, S., **Silla, E.,** Chawla, K., & Barbieri, C. A. (2024, April). *Leveraging common mathematical errors to support understandings of equivalence and operations* [Poster]. The American Educational Research Association (AERA) 2024 Annual Meeting, Philadelphia, PA.

Jansen, A., & **Silla, E.** (2024, April). *Variations in enactments of ambitious mathematics instruction: The case of Rough Draft Math* [Paper Presentation]. The American Educational Research Association (AERA) 2024 Annual Meeting, Philadelphia, PA.

Jansen, A., & **Silla, E.** (2024, April). *Teachers' histories as learners and their enactments of Rough Draft Math* [Paper Presentation]. The American Educational Research Association (AERA) 2024 Annual Meeting, Philadelphia, PA.

Barbieri, C. A., Clerjuste, S. N., **Silla, E. M.,** & Chawla, K. (2024, April). *Leveraging common errors to support understandings of equivalence and operations* [Poster]. The Cognitive Development Society (CDS) Biennial Meeting, Pasadena, CA.

**Silla, E. M.,** Newton, K. J., & Barbieri, C. A. (2023, October). *Examining students' variability in procedural flexibility using latent profile analysis* [Research Report]. The Annual Meeting of the National Council for Teachers of Mathematics (NCTM) Research Conference, Washington, D.C.

**Silla, E. M.,** Morra, G., & Barbieri, C. A. (2023, October). Developing procedural flexibility through one-on-one training for students at risk for mathematics learning disabilities [Symposium Session]. In H. Smith (Chair), *Incorporating Qualitative Data in Education Research: Across Contexts.* The Northeastern Education Research Association Conference, Trumbull, CT.

**Silla, E. M.,** Barbieri, C. A., & Newton, K. (2023, April). *The relationship between procedural flexibility with fraction arithmetic and word problems and algebra*

*skills* [Round Table]. The American Educational Research Association (AERA) 2023 Annual Meeting, Chicago, IL.

Barbieri, C. A., & **Silla, E. M.** (2023, April). *Evoking learning by examples through reducing misconceptions and highlighting procedures* [Paper Presentation]. The American Educational Research Association (AERA) 2023 Annual Meeting, Chicago, IL.

**Silla, E. M.**, Barbieri, C. A., & Newton, K. (2022, June). *Arithmetic and word problem-based procedural flexibility measures as predictors of middle-schoolers' differential algebra skills* [Poster]. The 4<sup>th</sup> Annual Mathematics Cognition and Learning Society (MCLS) Conference, Antwerp, Belgium.

**Silla, E. M.**, Vest, N. A., Bartel, A. N., Nagashima, T., Aleven, M., & Alibali, M. W. (2022, June). *Middle-school students' preferences for visual features of tape diagrams and their relation to symbolizing equations* [Poster]. The 4<sup>th</sup> Annual Mathematics Cognition and Learning Society (MCLS) Conference, Antwerp, Belgium.

Bartel, A. N., **Silla, E. M.**, Vest, N. A., Nagashima, T., Aleven, V., & Alibali, M. W. (2022, June). *Do tape diagrams in explanations of worked examples foster conceptual understanding? Evidence from early algebra* [Poster]. The 4<sup>th</sup> Annual Mathematics Cognition and Learning Society (MCLS) Conference, Antwerp, Belgium.

**Silla, E. M.**, & Barbieri, C. A. (2022, April). *Underlying mechanisms of benefits of varying worked example types on algebra learning* [Poster]. The 2022 Cognitive Development Society (CDS) Biennial Meeting, Madison, WI, USA.

**Silla, E. M.**, Vest, N. A., Nagashima, T., Bartel, A. N., Anthony, L. E., Aleven, V., & Alibali, M. W. (2022, February). *Efficacy of tape diagrams: Evidence from an Intelligent Tutoring System* [Paper Presentation]. The 3<sup>rd</sup> Annual Mathematics Cognition and Learning Society (MCLS) Conference [virtual due to COVID-19].

Vest, N. A., **Silla, E. M.**, Bartel, A. N., Nagashima, T., Aleven, V. A., & Alibali, M. W. (2021, April). *Evidence from worked examples: Conceptually rich explanations predict conceptual gains on posttest* [Poster]. The 2021 Virtual Biennial Meeting of the Society for Research in Child Development [virtual due to COVID-19].

Bartel, A. N., **Silla, E. M.**, Vest, N. A., Nagashima, T., Tang, Y. \*, Aleven, V. A., & Alibali, M. W. (2020, September). *Do tape diagrams promote a focus on conceptual principles? Evidence from equation solving with an Intelligent Tutoring System* [Paper Presentation]. The 2<sup>nd</sup> Annual Meeting of the Mathematical Cognition and Learning Society Conference [virtual due to COVID-19].

Bartel, A. N., **Silla, E. M.**, Vest, N. A., Nagashima, T., Vincent, V. A., & Alibali, M. W. (2020, August). *Reasoning about equations with tape diagrams: Do differing visual features matter?* [Poster]. The 42<sup>nd</sup> Annual Virtual Meeting of the Cognitive Science Society [virtual due to COVID-19].

- Palaguachi, C.\*, Bartel, A., **Silla, E.**, & Alibali, M. (2020, November). *Incorporating interventions in intelligent tutoring systems to enhance conceptual knowledge of mathematics* [Poster]. The Annual Biomedical Research Conference for Minority Students 2020 [virtual due to COVID-19].
- Silla, E.** (2019, March). *Helping students find their voices: The power of Socratic seminars* [Oral Presentation]. The Indiana Council for Teachers of English, Indianapolis, Indiana, United States.
- Ahl, R., **Silla, E.**, & Dunham, Y. (2015, October) *Givers and keepers: Children expect greater giving from resource-rich than resource-poor individuals* [Poster]. The Biennial Meeting of the Cognitive Development Society, Columbus, OH.
- O'Rear, C., McNeil, N.M., Fuhs, M., & **Silla, E.** (2015, October) *Approximate number system (ANS) acuity training in preschoolers from low-income homes* [Poster]. The Biennial Meeting of the Cognitive Development Society, Columbus, OH.

## **INVITED TALKS AND PRESENTATIONS**

### **EXTERNAL PRESENTATIONS**

- Silla, E. M.** (2023, November 29). Procedural flexibility in fraction arithmetic and algebra skills. Cognitive Neuroscience Brown Bag series, University of Alabama

### **DEPARTMENTAL AND INSTITUTIONAL PRESENTATIONS**

- Silla, E. M.**, Botello, M., Miller-Cotto, D., & Barbieri, C. A. (2025, April). *The role of mathematical beliefs and motivation in engagement and fraction learning* [Paper Presentation]. Steele Symposium, Newark, DE, USA.
- Rodrigues, A., **Silla, E.**, Guba, T-P., Anisiobi, O., & Scanniello, A. (2025, April). *A systematic review of mathematical and motivational relations with algebra performance* [Paper Presentation]. Steele Symposium, Newark, DE, USA.
- Silla, E. M.**, Newton, K. J., & Barbieri, C. A. (2024, March). *Examining variation in procedural flexibility using latent profile analysis* [Poster]. Delaware Day, Newark, DE, USA.
- Silla, E. M.**, Newton, K. J., & Barbieri, C. A. (2023, April). *Examining variation in procedural flexibility using latent profile analysis* [Paper Presentation]. Steele Symposium, Newark, DE, USA.
- Silla, E. M.**, Barbieri, C. A., & Newton, K. J. (2023, March). *Procedural flexibility on fraction computation problems predicts algebra readiness skills* [Poster]. Delaware Day, Newark, DE, USA.
- Silla, E. M.** (2022, December). How do multi-digit multiplication problems promote procedural flexibility? An analysis of two fourth grade textbooks. Colloquium Presentation for the School of Education, University of Delaware.
- Silla, E. M.** (2022, July). The relationship between procedural flexibility and algebra skills. SOURCE Presentation, University of Delaware.



- Silla, E. M.,** Collier, Z., & Barbieri, C. A. (2022, April). *The relationship between peer relations, math identity, and math achievement in elementary-aged students* [Poster]. Steele Research Symposium at the University of Delaware, Newark, DE, USA.
- Silla, E. M. &** Barbieri, C. A. (2022, March). Underlying mechanisms of benefits of varying worked example types on algebra learning. Delaware Day, University of Delaware.
- Silla, E. M.,** Tommasi, T.\*, Vest, N. A., Bartel, A. N, Buehler, Z., Manhart, H., Petersdorff, M.\*, Nagashima, T., Aleven, V., & Alibali, M. W. (2021, April). *Fostering conceptual understanding of equation solving via an intelligent tutoring system* [Poster]. The Wisconsin Center for Education Research Poster Fair [virtual due to COVID-19]
- Silla, E.,** Bova, M., Martin, J., & Welsh, M. [co-authors] (2018, July). *Hands-on learning: Giving ELLs the tools for success* [Oral presentation]. The ACE Teaching Fellows Conference, Notre Dame, Indiana, United States.
- Silla, E. M.,** O'Rear, C., McNeil, N.M., & Fuhs, M. (2015, May). *Unraveling the relationship between the approximate number system and math achievement* [Poster]. The University of Notre Dame Undergraduate Scholars Conference, Notre Dame, IN.

## **RESEARCH EXPERIENCE**

**Graduate Research Assistant**, University of Delaware Fall 2021-present  
M<sup>3</sup> (Math Methods and Motivation) Lab, Dr. Christina Areizaga Barbieri

- Current projects include exploring the relationship between students' sense of belonging to mathematics and their math understanding (dissertation research) and examining the benefits of metacognitive and visual scaffolds on student learning (manuscript in preparation)
- Developed data management protocol for collecting, entering, coding, and analyzing quantitative and qualitative data
- Mentor undergraduate researchers in reading scholarly articles, managing and entering data, and working with participants
- Regularly engage with practitioner community in Delaware through conducting professional development sessions and workshops
- Led materials design, measures development, protocol design, and data management for between-subjects classroom study to investigate benefits of visual, metacognitive, and motivational prompts and scaffolds; conducted quantitative analyses of data (manuscript in progress)
- Led materials design, measures development, protocol design, data collection, and data management for within-subjects classroom study to investigate benefits of learning from errors in the context of worked examples; conducted quantitative and qualitative analyses of data (manuscript under review)

**Graduate Research Assistant**, University of Delaware Fall 2024-present  
Motivating Mathematics in the Middle Grades: Rough Draft Math, Dr. Amanda Jansen

- Lead graduate research assistant on designing surveys and measures to assess students' motivation in mathematics in classrooms
- Lead graduate research assistant in designing and implementing student focus group and group interviews to assess students' experiences with Rough Draft Math
- Contributed to development and validation of new observation protocol to observe instances of rough draft math during instruction
- Developed data management protocol for collecting, entering, coding, and analyzing quantitative and qualitative data

**Summer Research Assistant**, University of Delaware  
Summer 2023

Paving the Way for Fractions: Exploring Foundational Concepts in First Grade, Dr. Nancy Jordan

- Lead author and analyst on project using mixture modeling to examine variability in students' informal early fraction knowledge and how this knowledge relates to cognitive and spatial skills (manuscript under review)

**Graduate Research Assistant**, University of Delaware Summer 2022-2023  
Rough Draft Math Project, Dr. Amanda Jansen

- Analyzed coding data for emergent profiles to describe teachers' enactments of and motivations for using rough draft math in their classrooms
- Applied inductive coding scheme to 32 transcripts to detect patterns in teachers' enactments of and motivations for rough draft math (manuscripts published)

**Project Manager**, University of Wisconsin, Madison Summer 2019-2021  
Cognitive Development & Communication Lab, Dr. Martha Alibali

- Managed an NSF-funded project that investigated whether activating conceptual knowledge via an Intelligent Tutoring System improves algebra performance
- Coordinated collaboration across universities, wrote IRB protocol, designed stimuli and materials, mentored and trained undergraduates, recruited and worked with participants, and assisted with writing and data analysis

**Undergraduate Research Assistant**, University of Notre Dame Spring 2014-2017  
Cognition, Learning, and Development Lab, Dr. Nicole McNeil

- Conducted a senior thesis to investigate the presence of research-based practices in the classroom during arithmetic instruction
- Designed a study, recruited schools, collected observational data, analyzed data, and disseminated results to participating schools

**Undergraduate Summer Research Assistant**, Yale University Summer 2014  
Social Cognitive Development Lab, Dr. Yarrow Dunham

- Investigated how children perceived wealth and resource distribution in other children
- Developed stimuli, collected and analyzed data from over 300 children and adults, designed a comprehensive coding system, and presented results at a lab meeting

## **UNIVERSITY-LEVEL TEACHING EXPERIENCE**

### ***Instructor of Record, Human Development***

Fall 2024

University of Delaware, EDUC 205 (Undergraduate-Level Course)

- Designed syllabus, planned lessons, designed materials and assessments, and led instruction and discussion facilitation for 35 undergraduate preservice teachers
- Facilitated connection between preservice teachers' field experiences and content learned in class through reflections and through mentorship activities

### ***Instructor of Record, Developmental and Moral Education in Childhood and Adolescence***

Summer 2023

University of Notre Dame, EDU 60455 (Masters-Level Course)

- Led a seminar-style class for 25 in-service teachers to develop their understanding of developmental and moral psychology and their importance with regards to classroom practices
- As a summative assessment, had teachers conduct research on a developmental psychology topic of their choice and create a 20 minute presentation geared towards practitioners as well as write an APA-style research paper on their topic
- Developed syllabus, instructional activities, and rubrics for the class

### ***Graduate Teaching Apprentice, Human Development: K-12***

Spring 2023

University of Delaware, EDUC 205 (Undergraduate-Level Course)

- Assisted with lesson and materials development, grading, instruction, and facilitating discussion with 30 undergraduate preservice teachers (Instructor of Record: Dr. Christina Areizaga Barbieri)
- Led instruction on lessons related to Language Development and Motivation in Education

### ***Guest Lecture, Educational Psychology***

Spring 2025

University of Wisconsin, Eau Claire, PSYC 260 (Undergraduate-Level Course)

- Lecture focused on Situated Expectancy-Value Theory and connecting theory to in-school learning

### ***Guest Lecture, Human Development***

Spring 2025

University of Wisconsin, Eau Claire, PSYC 230 (Undergraduate-Level Course)

- Lecture focused on motivational theories and their application in schooling

### ***Course Co-Designer, Introduction to Statistical Inferences***

Spring 2022

University of Delaware, EDUC 856 (Doctoral-Level Course)

- Assisted with development of supplemental materials for class activities (R scripts, instructional PowerPoints) of a doctoral level statistics course (Instructor of Record Dr. Christina Areizaga Barbieri)

## **K-12 TEACHING EXPERIENCE**

### ***Lead Teacher, Fourth Grade***

Fall 2017-Spring 2019

St. Cornelius Catholic School

- Implemented classroom activities and interventions based on cognitive science research to instruct fourth graders in multiple subject areas
- Designed curricular materials in line with Common Core State Standards

## **PRACTITIONER-FOCUSED PROFESSIONAL LEARNING**

Barbieri, C. A., **Silla, E. M.**, Botello, M., & Clerjuste, S. N. (2025, June). Working with worked examples in enVision mathematics curriculum [Interactive Session]. Presented through the Delaware School Success Center, Newark, DE.

Barbieri, C. A., & **Silla, E. M.** (2025, May). Mathematical mistakes as supportive tools for learning and motivation [Interactive Session]. Presented at the Leadership Coaching Lab through the Delaware Math Coalition, Smyrna, DE.

**Silla, E. M.** (2024, November). Promoting students' sense of belonging in the mathematics classroom [Presentation]. Presented at the Delaware Math Equity Annual Conference.

**Silla, E. M.** (2024, March). Teaching mathematics by treating learning as a process of drafting and revising [Interactive Session]. Presented at the Texas SEED Equity Meeting, virtual.

**Silla, E. M.**, Barbieri, C. A., & Miller-Cotto, D. (2023, October). *Understanding and addressing differences in adolescents' sense of belonging to mathematics: Discussion* [Round Table]. Presented at the Delaware Math Equity Annual Conference, virtual.

Barbieri, C. A., **Silla, E. M.**, & Miller-Cotto, D. (2023, October). *Understanding and addressing differences in adolescents' sense of belonging to mathematics* [Presentation]. Presented at the Delaware Math Equity Annual Conference, virtual.

**Silla, E. M.**, Clerjuste, S. N., & Barbieri, C. A. (2023, June). *Cognitive science principles to support the teaching and learning of mathematics* [Poster]. Presented at the Policy and Practice Institute 2023 Annual Meeting, Dover, DE.

**Silla, E. M.** (2019). One step at a time: A traditional school's journey into personalized learning [Whitepaper].

## **MENTORSHIP EXPERIENCES**

### *Mentor to Undergraduate Research Assistants*

Fall 2019-present

- Mentored or co-mentored undergraduate research assistants in the Math Methods & Motivation Lab (2021-present) and the Cognitive Development & Communication Lab (2019-2021)
  - Research assistants in the **Math Methods and Motivation Lab**: Fernando Duran, Kimberly Steinberg, Georgia McKinney, Gabriella Morra
  - Research assistants in the **Cognitive Development & Communications Lab**: Tyler Tommasi, Tom Tang, Zach Buehler, Michaela Petersdorff, Holden Manhart
- Supported students' knowledge of statistical software, data analysis, interpretation, writing, presentation, and professional development

### *SOURCE Mentor*

Summer 2022, 2023, 2025

- Mentored undergraduate students in the SOURCE (Summer Opportunities for Undergraduate Research and Creative Endeavors) program on their independent study projects through supporting their knowledge of statistical software (R), data analysis, interpretation, writing, presentation, and professional development
  - Summer 2025: **Primary Mentor** for Summer Nguyen
  - Summer 2023: **Co-Mentor** for Khawn Phang
  - Summer 2022: **Primary Mentor** for Elise Lanterman

### *Support for Graduate School, Job Applications, and Study Abroad*

- 2025: Wrote recommendations for two UD students applying to study abroad programs; provided recommendation letter content to PI for multiple lab Ras applying to graduate programs
- 2023-2024: Provided advice, editing, and other support to mentee applying to graduate school (Ph.D. in Clinical Psychology)

## **SERVICE TO THE FIELD / PROFESSION**

### *Motivation in Education SIG Graduate Student Council*

September 2025 - present

- Served as a host of weekly writing groups and member of the planning committee for the Motivation in Education Research in Progress Session at AERA 2026

### *Motivation in Education SIG "Motivation Monday" Panelist*

January 2025

- Served as a panelist to discuss "Publishing Pipeline: Writing Process, Navigating Journals, Feedback, and Reviewers"

### *NIER Steering Committee, Gooru*

September 2023

### *Ad Hoc Reviewer for Peer-Reviewed Journals*

- Journal of Numerical Cognition

*Ad Hoc Reviewer for Conference Submissions*

- Psychology for Mathematics Education – North America
- Mathematical Cognition and Learning Society
- American Education Research Association – Division C; Motivation SIG
- International Society of the Learning Sciences

**UNIVERSITY SERVICE**

*Learning Sciences Liaison, Delaware Day (Ph.D. Recruitment)* March 2022-2024

*Education Graduate Association, University of Delaware*

- President and Communications Co-Chair Year 2023 Calendar
- Secretary and Communications Committee Year 2022 Calendar

*Learning Sciences Brown Bag Coordination Committee* 2023 - 2024

*Panelist, “Building Your Toolbox for Teaching in Graduate School”* October 2023

College of Education and Human Development, University of Delaware

**PROFESSIONAL DEVELOPMENT AND TRAINING**

***AERA Division C Mentoring Program***

April 2025

- Received professional development related to developing an independent research program and academic job market preparation

***NUMBERS Conference***, Kent State University

May 2022

- NSF-funded conference for selected mentors and mentees studying mathematical learning
- Two days of professional development and collaboration with other researchers studying mathematics cognition and learning

**STATISTICS AND RESEARCH SOFTWARE**

R and R Studio; Mplus; Dedoose; FileMaker; Temi; Qualtrics; Sibme; Google Suite; Microsoft Suite; Sibme; Covidence

**PROFESSIONAL AFFILIATIONS**

American Educational Research Association – Division C  
    *SIG Memberships:* Learning Sciences, Motivation in Education  
American Psychological Association – Division 7 & 15  
Cognitive Development Society  
Mathematical Cognition and Learning Society  
Psychology of Mathematics Education – North America  
National Council for Teachers of Mathematics