

## Amy B. Ellis

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### FORMAL EDUCATION

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- May 2004      **Ph.D., Mathematics and Science Education**  
University of California, San Diego and San Diego State University  
Thesis:        *Relationships Between Generalizing and Justifying:  
Students' Reasoning with Linear Functions*
- Aug. 1998     **M.A., Mathematics, Emphasis in Mathematics Education**  
San José State University
- May 1993      **B.A., Mathematics, Minor in Japanese**  
Washington University in St. Louis

### POSITIONS HELD

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- 2019 – Present      **Professor**, University of Georgia  
Department of Mathematics and Science Education
- 2016 – 2019      **Associate Professor**, University of Georgia  
Department of Mathematics and Science Education
- 2012 – 2016      **Associate Professor**, University of Wisconsin-Madison,  
Dept. of Curriculum and Instruction
- 2004 – 2012      **Assistant Professor**, University of Wisconsin-Madison,  
Dept. of Curriculum and Instruction
- 2000 – 2004      **Research Assistant**  
San Diego State University, Department of Mathematics and Statistics  
University of California, San Diego, Department of Mathematics
- 2002              **Instructor**, Elementary Topics in Mathematics for Pre-Service Teachers  
San Diego State University, Department of Mathematics and Statistics
- 2000              **Instructor**, Mathematics for Pre-Service Elementary Teachers  
Antioch University in Seattle, Department of Mathematics
- 1998 – 2000      **Instructor**, Mathematics Courses  
North Seattle Community College, Department of Mathematics

- 1998 – 2000      **Instructor**, Mathematics Courses  
Bellevue Community College, Department of Mathematics
- 1994 – 1997      **Mathematics Teacher and Department Chair** (Chair from 1995 – 1997)  
Pinewood Junior High and High School, Los Altos, CA
- 1993 – 1994      **Mathematics Teacher**  
St. Paul High School, San Francisco, CA

#### RECENT HONORS AND AWARDS

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- 2020              *Mary Frances Early College of Education Russel H. Yeany Jr. Research Award*,  
University of Georgia
- 2013              *Best Paper Honorable Mention*. 16<sup>th</sup> Annual Conference for the SIGMAA on  
Research in Undergraduate Mathematics Education with E. Lockwood and E.  
Knuth
- 2010              *National Science Foundation CAREER Award* through Discovery Research K-12  
(DRK12)
- 2008              *Early Career Publication Award* of the Special Interest Group "Research in  
Mathematics Education" (SIG-RME) of the American Educational Research  
Association

#### RESEARCH AND PUBLICATIONS

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\*Peer reviewed

##### Books

1. \*Ellis, A.B., Bieda, K., Knuth, E. (2012). *Essential understandings project: Reasoning and Proving in High School Mathematics (Gr. 9 – 12)*. Reston, VA: National Council of the Teachers of Mathematics.
2. \*Lannin, J., Ellis, A.B., & Elliott, R. (2011). *Essential understandings project: Mathematical reasoning (Gr. K – 8)*. Reston, VA: National Council of the Teachers of Mathematics.
3. \*Lobato, J., & Ellis, A.B. (2010). *Essential understandings project: Ratios, proportions, and proportional reasoning (Gr. 6 – 8)*. Reston, VA: National Council of the Teachers of Mathematics.

##### Journal Articles

4. \*Ellis, A.B., Waswa, A., Tasova, H.I., Hamilton, M., Moore, K., & Çelik, A. (2024). Classroom supports for generalizing. *Journal for Research in Mathematics Education*, 55(1), 7 – 30.

5. \*Lynch, A., Lockwood, E., & Ellis, A.B. (2022). Comprehensive example generation: Mathematicians' uses of examples when developing conjectures. *Research in Mathematics Education*, 1 – 23. <https://doi.org/10.1080/14794802.2022.2156586>
6. \*Lockwood, E., & Ellis, A.B. (2022). Two students' mathematical thinking and activity across representational registers in a combinatorial setting. *ZDM – Mathematics Education*, (54)4, 829 – 845. <https://doi.org/10.1007/s11858-022-01352-8>
7. \*Ellis, A.B., Lockwood, E., & Çelik, A. (2022). Empirical re-conceptualization: From empirical generalizations to insight and understanding. *Journal of Mathematical Behavior*, 65. <https://doi.org/10.1016/j.jmathb.2021.100928>
8. \*Ellis, A.B., Lockwood, E., Tillema, E., & Moore, K. (2022). Generalization Across multiple mathematical areas: The relating-forming-extending Framework. *Cognition and Instruction*, 40(3), 351 – 384. <https://doi.org/10.1080/07370008.2021.2000989>
9. \*Singleton, B., & Ellis, A.B. (2020). Why multiply? Connecting area measurement to multiplicative reasoning. *Mathematics Teacher: Learning and Teaching PreK-12*, 113(10), e37 – e42.
10. \*Fonger, N., Ellis, A.B., & Dogan, M.F. (2020). A quadratic growth learning trajectory. *Journal of Mathematical Behavior*, 59, 1 – 22.
11. \*Ellis, A.B., Ely, R., Tasova, H., & Singleton, B. (2020). Scaling continuous variation: Supporting students' algebraic reasoning. *Educational Studies in Mathematics*, 104(1), 87 – 103.
12. \*Ellis, A.B., Ozgur, Z., & Reiten, L. (2019). Teacher Moves for Supporting Student Reasoning. *Mathematics Education Research Journal*, 31(2), 107 – 132.
13. \*Ellis, A.B., Ozgur, Z., Vinsonhaler, R., Dogan, M.F., Carolan, T., Lockwood, E., Lynch, A., Sabouri, P., Knuth, E., & Zaslavsky, O. (2019; published online 2017). Student thinking with examples: The CAPS Framework. *Journal of Mathematical Behavior*, 53, 263 – 283.
14. \*Ozgur, Z., Ellis, A.B., Vinsonhaler, R., Dogan, M.F., & Knuth, E. (2019; published online 2017). From examples to proof: Purposes, strategies, and affordances of example use. *Journal of Mathematical Behavior*, 53, 284 – 303.
15. \*Knuth, E., Zaslavsky, O., & Ellis, A.B. (2019; published online 2017). The role and use of examples in learning to prove. *Journal of Mathematical Behavior*, 53, 256 – 262.
16. \*Matthews, P.M., & Ellis, A.B. (2018). Natural alternatives to natural number: The case of ratio. *Journal of Numerical Cognition*, 4(1), 19 – 58.

17. \*Ellis, A.B., Ozgur, Z., Kulow, T., Dogan, M.F., & Amidon, J. (2016). An exponential growth learning trajectory: Students' emerging understanding of exponential growth through covariation. *Mathematical Thinking and Learning*, 18(3), 151 – 181.
18. \*Lockwood, E., Ellis, A.B., & Lynch, A.G. (2016). Mathematicians' example-related activity when exploring and proving conjectures. *International Journal of Research in Undergraduate Mathematics Education*, 1 – 32.
19. \*Reiten, L., Ozgur, Z., & Ellis, A.B. (2015). Students engaging in mathematical practices: As the gears turn. *Wisconsin Teacher of Mathematics*, 68(1), 7 – 11.
20. \*Ellis, A.B., Ozgur, Z., Kulow, T., Williams, C.C., & Amidon, J. (2015). Quantifying exponential growth: Three conceptual shifts in creating multiplicative rates of change. *The Journal of Mathematical Behavior*, 39, 135 – 155.
21. \*Weber, E., Ellis, A.B., Kulow, T., & Ozgur, Z. (2014). Six principles for quantitative reasoning and modeling. *Mathematics Teacher*, 108(1), 24.
22. Ellis, A.B. (2013). The proof is in the practice. *Virginia Mathematics Teacher*, 40(1), 24 – 28.
23. \*Thanheiser, E., Ellis, A.B., & Herbel-Eisenmann, B. (2012). From dissertation to publication in JRME. *Journal for Research in Mathematics Education*, 43(2), 144 – 158.
24. \*Ellis, A.B. (2011). Generalizing promoting actions: How classroom collaborations can support students' mathematical generalizations. *Journal for Research in Mathematics Education*, 42(4), 308 – 345.
25. \*Ellis, A.B. (2011). The proof is in the practice. *Mathematics Teaching in the Middle School*, 16(9), 522 – 527.
26. \*Ellis, A.B. & Ely, R. (2011). Different approaches to the mystery table. *Mathematics Teaching in the Middle School*, 16(8), 452 – 453.
27. \*Ellis, A.B. (2009). Patterns and quantities: Helping students learn about linear functions. *Mathematics Teaching in the Middle School*, 14(8), 482 – 491.
28. Knuth, E., & Ellis, A.B. (2009). Building a foundation for success in secondary school mathematics. *Principal's Research Review*, 4(2), 2-7.
29. \*Ellis, A.B., & Grinstead, P. (2008). Hidden lessons: How a focus on slope-like properties of quadratic functions encouraged unexpected generalizations. *Journal of Mathematical Behavior*, 27(4), 277-296.

30. \*Hyde, J., Lindberg, S., Linn, M., **Ellis, A.B.**, & Williams, C. (2008). Gender similarities characterize math performance. *Science*, 321(5888), 494 – 495.
31. \***Ellis, A.B.** (2007). Connections between generalizing and justifying: Students' reasoning with linear relationships. *Journal for Research in Mathematics Education*, 38(3), 194 – 229.
32. \***Ellis, A.B.** (2007). A taxonomy for categorizing generalizations: Generalizing actions and reflection generalizations. *Journal of the Learning Sciences*, 16(2), 221 – 262.
33. \***Ellis, A.B.** (2007). The influence of reasoning with emergent quantities on students' generalizations. *Cognition and Instruction*, 25(4), 439 – 478.
34. \*Lobato, J., Clarke, D., & **Ellis, A.B.** (2005). Initiating and eliciting in teaching: A reformulation of telling. *Journal for Research in Mathematics Education*, 36(2), 101-136.
35. \*Lobato, J., **Ellis, A.B.**, & Muñoz, R. (2003). How "focusing phenomena" in the instructional environment afford students' generalizations. *Mathematical Thinking and Learning*, 5(3), 1-36.
36. \*Lobato, J., & **Ellis, A.B.** (2002). Focusing effects of technology: Implications for teacher education. *Journal of Technology and Teacher Education*, 10(2), 297 – 314.
37. \*Lobato, J., & **Ellis, A.B.** (2002). The teacher's role in supporting students' connections between realistic situations and conventional symbol systems. *Mathematics Education Research Journal*, 14(2), 99 - 120.

### Book and Handbook Chapters

φDenotes handbook chapter

38. \***Ellis, A.B.**, Paoletti, T., & Lockwood, E. (2024). Empirical and reflective abstraction. In P. Dawkins, A. Hackenberg, & A. Norton (Eds.), *Piaget's genetic epistemology in and for ongoing mathematics education research* (pp. 169 – 208). Springer.
39. \***Ellis, A.B.**, Özgür, Z., Doğan, M.F. (2023). A Conceptual Analysis of Early Function Through Quantitative Reasoning. In: Karagöz Akar, G., Zembat, İ.Ö., Arslan, S., Thompson, P.W. (eds), *Quantitative Reasoning in Mathematics and Science Education*. Mathematics Education in the Digital Era, vol 21 (pp. 169 – 197). Springer, Cham. [https://doi.org/10.1007/978-3-031-14553-7\\_7](https://doi.org/10.1007/978-3-031-14553-7_7).
40. \***Ellis, A.B.**, Staples, M., & Bieda, K. (2022). Justification across the grade bands. In K. Bieda, A. Conner, K. Kosko & M. Staples (Eds.), *Conceptions and Consequences of Mathematical Argumentation, Justification and Proof* (pp. 287 – 297). Springer.

41. φ\*Stephens, A., **Ellis, A.B.**, Blanton, M., & Brizuela, B. (2017). Algebraic thinking in the elementary and middle grades. In J. Cai (Ed.), *Compendium for Research in Mathematics Education* (pp. 386 – 420). Reston, VA: National Council of Teachers of Mathematics.
42. \***Ellis, A.B.** (2015). How generalizing can foster proving and vice versa: A case with linear functions. In P. Kenney & E. Silver (Eds.), *More Lessons Learned from Research, Volume 1. Useful and Useable Research Related to Core Mathematical Practices*. (pp. 81 – 92). Reston, VA: National Council of Teachers of Mathematics.
43. \*Knuth, E., Kalish, C., **Ellis, A.B.**, Williams, C., & Felton, M. (2012). Adolescent reasoning in mathematical and non-mathematical domains: Exploring the paradox. In V. Reyna, S. Chapman, M. Dougherty, & J. Confrey (Eds.), *The adolescent brain: Learning, reasoning, and decision making* (pp. 183 – 210). Washington, DC: American Psychological Association.
44. \***Ellis, A.B.** (2011). Algebra in the middle school: Developing functional relationships through quantitative reasoning. In J. Cai & E. Knuth (Eds.), *Early Algebraization: A Global Dialogue from Multiple Perspectives Advances in mathematics education* (pp. 215 – 235). New York: Springer.

Peer Reviewed Monographs, Conference Proceedings, and Policy Documents

45. \*National Assessment Governing Board. (2026). *Mathematics framework for the 2026 National Assessment of Educational Progress*. National Assessment Governing Board and U.S. Department of Education.
46. \***Ellis, A.B.**, Bloodworth, A., & Horne, D. (In press). Playful math, problem posing, and discovered complexity. To appear in Cook, S., Katz, B. & Moore-Russo D. (Eds.), *Proceedings of the 26th Annual Conference on Research in Undergraduate Mathematics Education*. University of Nebraska.
47. \*Horne, D., Bloodworth, A., & **Ellis, A.B.** (2023). Modeling mathematicians' playful engagement in task-based clinical interviews. In Cook, S., Katz, B. & Moore-Russo D. (Eds.), *Proceedings of the 25th Annual Conference on Research in Undergraduate Mathematics Education* (pp. 99-107). University of Nebraska.
48. \*Bloodworth, A., Horne, D., & **Ellis, A.B.** (2023). Students' and mathematicians' playful engagement. In Cook, S., Katz, B. & Moore-Russo D. (Eds.), *Proceedings of the 25th Annual Conference on Research in Undergraduate Mathematics Education* (pp. 108-117). Omaha, NE.
49. \***Ellis, A.B.** (2022). Decentering to build asset-based learning trajectories. In Lischka, A. E., Dyer, E. B., Jones, R. S., Lovett, J. N., Strayer, J., & Drown, S. (Eds.), *Proceedings of the Forty-Fourth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 15 – 29). Middle Tennessee State University.

50. \*Ellis, A.B., Horne, D., Bloodworth, A., Nielsen, A., & Ely, R. (2022). Playful math: Modeling students' engagement in play-based algebra activities. In Lischka, A. E., Dyer, E. B., Jones, R. S., Lovett, J. N., Strayer, J., & Drown, S. (Eds.), *Proceedings of the Forty-Fourth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 771 – 780). Middle Tennessee State University.
51. \*Ely, R., & Ellis, A.B. (2022). Playful mathematics and learning. In Lischka, A. E., Dyer, E. B., Jones, R. S., Lovett, J. N., Strayer, J., & Drown, S. (Eds.), *Proceedings of the Forty-Fourth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 2122 – 2124). Middle Tennessee State University.
52. \*Moore, K.C., Ellis, A.B., Waswa, A., Hamilton, M., Tasova, H., Çelik, A.O., & Wood, E. (2022). Using abstraction as a lens to analyze instructional materials. In Lischka, A. E., Dyer, E. B., Jones, R. S., Lovett, J. N., Strayer, J., & Drown, S. (Eds.), *Proceedings of the Forty-Fourth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 158 – 163). Middle Tennessee State University.
53. \*Plaxco, D., Reimer, P., Williams-Pierce, C., Ellis, A.B., Molitoris-Miller, S., Simpson, A., Zandieh, M., Mauntel, M., & Dogan, M.F. (2022). Mathematical play: Across ages, context, and content (follow-up report). In Lischka, A. E., Dyer, E. B., Jones, R. S., Lovett, J. N., Strayer, J., & Drown, S. (Eds.), *Proceedings of the Forty-Fourth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 2117 – 2121). Middle Tennessee State University.
54. \*Ellis, A.B. (2022). Generalizing beyond body-supported dimensions. In A. Simpson (chair), C. Williams-Pierce, E. Shokeen, N. Katirci, H. Soto, J. Baker, D. DeLiema, M. Kapur, A. Ellis, E. Lockwadoo, D. Plaxco, M. Alibali, & D. Ramirez, The Nature(s) of Embodied Mathematical Failure. In C. Chinn, E. Tan, C. Chain, & Y. Kali (Eds.), *16<sup>th</sup> International Conference of the Learning Sciences (ICLS) 2022, ICLS Proceedings*, pp. 1787 – 1793.
55. \*Ellis, A.B., Ying, Y., Wawsa, A., Moore, K., Hamilton, M., Tasova, H., & Çelik, A. (2021). Classroom supports for generalizing. In Olanoff, D., Johnson, K., & Spitzer, S. (Eds.), *Proceedings of the Forty-Third Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1420 – 1429), Philadelphia, PA.
56. \*Tasova, H., Ellis, A.B., Hamilton, M., Moore, K., Wawsa, A., Çelik, A., & Ying, Y. (2021). A serendipitous mistake: How one teacher's beliefs and knowledge mediated her in-the-moment instruction. In Olanoff, D., Johnson, K., & Spitzer, S. (Eds.), *Proceedings of the Forty-Third Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1574 – 1579), Philadelphia, PA.

57. \*Hamilton, M., Moore, K., **Ellis, A.B.**, Ying, Y., Tasova, H.I., Çelik, A., & Wawsa, A. (2021). Supporting generalizing in the classroom: One teacher's beliefs and instructional practice. In Olanoff, D., Johnson, K., & Spitzer, S. (Eds.), *Proceedings of the Forty-Third Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1536 – 1541), Philadelphia, PA.
58. \*Plaxco, D., Reimer, P.N., Williams-Pierce, C., **Ellis, A.B.**, Molitoris-Miller, S., Simpson, A., Zandieh, M., Mauntel, M., & Dogan, M.F. (2021). Mathematical play: Across ages, context, and content. In Olanoff, D., Johnson, K., & Spitzer, S. (Eds.), *Proceedings of the Forty-Third Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1913 – 1915), Philadelphia, PA.
59. \*Williams-Pierce, C., Dogan, M.F., & **Ellis, A.B.** (2021). Multimodal generalizing in a mathematical videogame. In E. de Vries, E., Y. Hod, & J. Ahn (Eds.), *Proceedings of the 15th International Conference of the Learning Sciences* (pp. 641-644). Bochum, Germany: International Society of the Learning Sciences.
60. \***Ellis, A.B.**, & Lockwood, E. (2020). Beyond patterns: Making sense of pattern-based generalizations through empirical re-conceptualization. In Sacristán, A.I., Cortés-Zavala, J.C. & Ruiz-Arias, P.M. (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*. Cinvestav / AMIUTEM / PME-NA (pp. 981 – 985). Mazatlán, Mexico.
61. \*Fonger, N., & Ellis, A.B. (2020). Amidst multiple metaphors for learning trajectories research. In Sacristán, A.I., Cortés-Zavala, J.C. & Ruiz-Arias, P.M. (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*. Cinvestav / AMIUTEM / PME-NA (p. 2325 – 2329). Mazatlán, Mexico.
62. \*Plaxco, D., Reimer, P.N., Williams-Pierce, C., **Ellis, A.B.**, Molitoris-Miller, S., Simpson, A., Zandieh, M., Mauntel, M., & Dogan, M.F. (2020). Mathematical play: Across ages, context, and content. In Sacristán, A.I., Cortés-Zavala, J.C. & Ruiz-Arias, P.M. (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*. Cinvestav / AMIUTEM / PME-NA (pp. 178 – 180). Mazatlán, Mexico.
63. \***Ellis, A.B.**, Lockwood, E., & Lynch, A. (2020). Empirical Re-Conceptualization as a Bridge to Insight. In M. Gresalfi & I. Horn (Eds.), *The Interdisciplinarity of the Learning Sciences, 14<sup>th</sup> International Conference of the Learning Sciences (ICLS) 2020, Volume 3* (pp. 1593 – 1596). Nashville, TN: Vanderbilt University.
64. \***Ellis, A.B.**, Lockwood, E., & Lynch, A.G. (2020). Empirical Re-Conceptualization: Bridging from Empirical Patterns to Insight and Understanding. In S. Cook (Ed.), *Proceedings of the twenty-*



*third Annual Conference on Research in Undergraduate Mathematics Education*, (pp. 159 – 167). Boston, MA: Boston University.

65. \*Ellis, A.B., Fonger, N.F., & Dogan, M.F. (2019). Articulating links between student conceptions and instructional actions in learning trajectories research. In S. Otten, Z. de Araugo, A. Candela, C. Munter, & C. Haines (Eds.), *Proceedings of the 41<sup>st</sup> Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1803 – 1808). St. Louis, MO: University of Missouri.
66. \*Williams-Pierce, C., Plaxco, D., Reimer, P.N., Simpson, A., Orrill, C.H., Burke, J.P. Sinclair, N., Guyevskey, V., & Ellis, A.B. (2019). Mathematical play: Across ages, context, and content. In S. Otten, Z. de Araugo, A. Candela, C. Munter, & C. Haines (Eds.), *Proceedings of the 41<sup>st</sup> Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1979 – 1990). St. Louis, MO: University of Missouri.
67. \*Fonger, N.F., Ellis, A.B., & Dogan, M.F. (2019). Epistemological and methodological foundations of creating a learning trajectory of children's mathematics. In U.T. Jankvist, M. Van den Heuvel-Panhuizen, & M. Veldhuis (Eds.), *Proceedings of the Eleventh Congress of the European Society for Research in Mathematics Education (CERME11, February 6-10, 2019)*. Utrecht, Netherlands: Freudenthal Group & Freudenthal Institute, Utrecht University and ERME.
68. \*Ellis, A.B., Ely, R., Singleton, B., & Tasova, H. (2018). Scaling continuous covariation: Supporting middle school students' algebraic reasoning. In T. Hodges, G. Roy, & A. Tyminski (Eds.), *Proceedings of the 40<sup>th</sup> Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 147 – 154). Greenville, SC: University of South Carolina & Clemson University.
69. \*Ellis, A.B., Tasova, H., & Singleton, B. (2018). How quantitative reasoning can support graph understanding in algebra. In T. Hodges, G. Roy, & A. Tyminski (Eds.), *Proceedings of the 40<sup>th</sup> Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 195 – 198). Greenville, SC: University of South Carolina & Clemson University.
70. \*Williams-Pierce, C., Plaxco, D., Reimer, P., Ellis, A.B., & Dogan, M.F. (2018). Mathematical play: Across ages, context, and content. Hodges, T.E., Roy, G. J., & Tyminski, A. M. (Eds.). *Proceedings of the 40<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1507 – 1514). Greenville, SC: University of South Carolina & Clemson University.
71. \*Ely, R., & Ellis, A.B. (2018). Scaling-continuous variation: A productive foundation for calculus reasoning. In A. Weinberg, C. Rasmussen, J. Rabin, M. Wawro, & S. Brown (Eds.),

*Proceedings of the twenty-first Annual Conference on Research in Undergraduate Mathematics Education*, pp. 1180 - 1188. San Diego, CA: San Diego State University.

72. \*Ellis, A.B., Fonger, N., & Dogan, M.F. (2017). Developing function understanding through dependency relations of change. 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. 283 – 286). Indianapolis, IN: Hoosier Association of Mathematics Teacher Educators.
73. \*Fonger, N., Dogan, M.F., & Ellis, A.B. (2017). Students' clusters of concepts of functions. 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. 2, pp. 329-336. Singapore: PME.
74. \*Ellis, A.B., Tillema, E., Lockwood, E., & Moore, K. (2017). Generalization across domains: The relating-forming-extending framework. 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. 677 – 684). Indianapolis, IN: Hoosier Association of Mathematics Teacher Educators.
75. \*Fonger, N.L., Ellis, A.B., & Dogan, M.F. (2016). Students' conceptions supporting their symbolization and meaning of function rules. 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. 156 - 163). Tucson, AZ: The University of Arizona.
76. \*Singleton, B.K., & Ellis, A.B. (2016). Area units without borders: Alternatives to tiling for determining area change in dynamic figures. 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. 294-297). Tucson, AZ: The University of Arizona.
77. \*Ozgur, Z., Reiten, L., & Ellis, A.B. (2015). On framing teacher moves for supporting student reasoning. In T. Bartell & K. Bieda (Eds.), *Proceedings of the 37<sup>th</sup> annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1062 – 1069). East Lansing, MI: Michigan State University.
78. \*Lockwood, E., Lynch, A., Ellis, A.B., & Knuth, E. (2015). Exhaustive example generation: mathematicians' uses of examples when developing conjectures. In T. Fukawa-Connelly, N. Infante, K. Keene, and M. Zandieh (Eds.), *Proceedings of the eighteenth Annual Conference on Research in Undergraduate Mathematics Education*, pp. 216 - 230. Pittsburgh, PA: West Virginia University.

79. \*Ellis, A.B., Weber, E., & Lockwood, E. (2014). The case for learning trajectories research. In Oesterle, S., Liljedahl, P., Nicol, C., & Allan, D. (Eds.), *Proceedings of the Joint Meeting of PME 38 and PME-NA 36, Vol. 3*, pp. 1 – 8. Vancouver, Canada: PME.
80. \*Lockwood, E., Lynch, A.G., Ellis, A.B., & Knuth, E. (2014). Mathematicians' example-related activity in formulating conjectures. In Oesterle, S., Liljedahl, P., Nicol, C., & Allan, D. (Eds.), *Proceedings of the Joint Meeting of PME 38 and PME-NA 36, Vol. 4*, pp. 129 – 136. Vancouver, Canada: PME.
81. \*Ellis, A.B. (2014). What if we built learning trajectories for epistemic students? In L. Hatfield, K. Moore, & L. Steffe (Eds.), *Epistemic Algebraic Students: Emerging Models of Students' Algebraic Knowing*, WISDOM<sup>e</sup> Monographs (Vol. 4, pp. 199 – 207). Laramie, WY: University of Wyoming.
82. \*Ellis, A.B., Ozgur, Z., Kulow, T., Dogan, M.F., Williams, C., & Amidon, J. (2013). Correspondence and covariation: Quantities changing together. In M. Martinez & A. Superfine (Eds.), *Proceedings of the 34<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 119 – 126). Chicago, IL: University of Illinois at Chicago.
83. \*Ellis, A.B., Ozgur, Z., Kulow, T., Williams, C.C., & Amidon, J. (2013). An exponential growth learning trajectory. In Lindmeier, A. M. & Heinze, A. (Eds.). *Proceedings of the 37<sup>th</sup> Conference of the International Group for the Psychology of Mathematics Education*, Vol. 2, pp. 273-280. Kiel, Germany: PME.
84. \*Lockwood, E., Ellis, A.B., Knuth, E., Dogan, M.F., & Williams, C. (2013). Strategically chosen examples lead to proof insight: A case study of a mathematician's proving process. In M. Martinez & A. Superfine (Eds.), *Proceedings of the 34<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 245 – 252). Chicago, IL: University of Illinois at Chicago.
85. \*Ellis, A.B., Lockwood, E., Dogan, M.F., Williams, C.C., & Knuth, E. (2013). Choosing and using examples: How example activity can support proof insight. In Lindmeier, A. M. & Heinze, A. (Eds.). *Proceedings of the 37<sup>th</sup> Conference of the International Group for the Psychology of Mathematics Education*, Vol. 2, pp. 265-272. Kiel, Germany: PME.
86. \*Ellis, A.B. (2013). Teaching ratio and proportion in the middle grades. *Research Briefs and Clips*, National Council of the Teachers of Mathematics.
87. \*Lockwood, E., Ellis, A.B., & Knuth, E. (2013). Mathematicians' example-related activity when proving conjectures. In S. Brown, G. Karakok, K.H. Roh, and M. Oehrtman (Eds.) *Proceedings of the 16<sup>th</sup> Annual Conference on Research in Undergraduate Mathematics Education (Vol. 1)* (pp. 16 – 30). Denver, CO: Northern Colorado University.

88. \*Ellis, A.B., Lockwood, E., Williams, C., Dogan, M.F., & Knuth, E. (2012). Middle school students' example use in conjecture exploration and justification. In L.R. Van Zoest, J.J. Lo, & J.L. Kratky (Eds.), *Proceedings of the 34<sup>th</sup> Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 135 - 142). Kalamazoo, MI: Western Michigan University.
89. \*Lockwood, E., Ellis, A.B., Dogan, M.F., Williams, C., & Knuth, E. (2012). A framework for mathematicians' example-related activity when exploring and proving mathematical conjectures. In L.R. Van Zoest, J.J. Lo, & J.L. Kratky (Eds.), *Proceedings of the 34<sup>th</sup> Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 151 - 158). Kalamazoo, MI: Western Michigan University.
90. \*Ellis, A.B., Ozgur, Z., Kulow, T., Williams, C., & Amidon, J. (2012). Quantifying exponential growth: The case of the jactus. In R. Mayes & L. Hatfield (Eds.), *Quantitative Reasoning and Mathematical Modeling: A Driver for STEM Integrated Education and Teaching in Context*. (pp. 93 - 112). Laramie, WY: University of Wyoming.
91. \*Ellis, A.B. (2011). Middle school algebra from a functional perspective: A Conceptual analysis of quadratic functions. In L. Wiest & T. Lamberg (Eds.), *Proceedings of the 33<sup>rd</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 79 - 87). Reno, NV: University of Nevada, Reno.
92. \*Williams, C., Akinsiku, O., Walkington, C., Cooper, J.L., Ellis, A.B., Kalish, C., & Knuth, E. (2011). Understanding students' similarity and typicality judgments in and out of mathematics. In L. Wiest & T. Lamberg (Eds.), *Proceedings of the 33<sup>rd</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1180 - 1189). Reno, NV: University of Nevada, Reno.
93. Ellis, A.B. (2011). Invited commentary for Thompson's paper and presentation. In L. Hatfield & S. Chamberlin (Eds.), *New Perspectives and Directions for Collaborative Research in Mathematics Education: Papers from a Planning Conference for WISDOM<sup>e</sup>* (Vol. 1) (pp. 57 - 62). Laramie, WY: University of Wyoming.
94. \*Cooper, J., Walkington, C., Williams, C., Akinsiku, O., Kalish, C., Ellis, A.B., & Knuth, E. (2011). Adolescent reasoning in mathematics: Exploring middle school students' strategic approaches in empirical justifications. In L. Carlson, C. Holscher, & T. Shipley (Eds.), *Proceedings of the 33<sup>rd</sup> Annual Conference of the Cognitive Science Society* (pp. 2188 - 2193). Austin, TX: Cognitive Science Society.
95. \*Ellis, A.B. (2007). Unexpected connections across function families: Students' generalizations about quadratic data. In Lamberg, T., & Wiest, L.R. (Eds.), *Proceedings of the 29<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*.

96. \*Ellis, A.B. (2005). Justification as a support for generalizing: Students' reasoning with linear relationships. In G.M. Lloyd, M.R. Wilson, J.L.M. Wilkins, & S.L. Behm (Eds.), *Proceedings of the 27<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* [CD-ROM]. Eugene, OR: All Academic.
97. \*Ellis, A. B. (2001). An examination of the interaction patterns of a single-gender mathematics class. In R. Speiser, C. Maher, & C. Walter (Eds.), *Proceedings of the twenty-third annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (Vol. 2, pp. 609 - 616). Columbus, OH: ERIC Clearinghouse for Science, Mathematics, and Environmental Education, SE 065 164.
- Research and Publications in Progress
98. \*Ellis, A.B., & Ozgur, Z. (Accepted). Trends, insights, and developments in research on the teaching and learning of algebra. *ZDM – Mathematics Education*.
99. \*Kang, R., & Ellis, A.B. (Resubmitted after revise and resubmit decision). Developing middle and high school teachers' understandings of mathematical modeling through curricular and professional noticing. *Educational Studies in Mathematics*.
100. \*Kang, R., & Ellis, A.B. (Submitted). Preparing middle and high school teachers for teaching mathematical modeling: Curriculum vision and trust through curricular and professional noticing. *Journal of Mathematics Teacher Education*.
101. \*Moore, K.C., Wood, E., Welji, S., Hamilton, M., Waswa, A., & Ellis, A.B. (Submitted). Using abstraction to analyze curricular materials and their implementation. *Journal of Mathematical Behavior*.
102. \*Williams-Pierce, C., Simpson, A., Alibali, M., Soto, H., Baker, J., DeLiema, D., Ellis, A.B., Katirci, N., Shokeen, E., Gutiérrez, J., Brown, S., & Horne, D. (Submitted). The intersection of failure, embodied cognition, and mathematical activity: An integrated framework of learning. *Journal of the Learning Sciences*.
103. \*Ellis, A.B., Horne, D., Bloodworth, A., & Ely, R. (Submitted). From mathematical play to playful math. *Journal of Mathematical Behavior*.
104. \*Çelik, A., & Ellis, A.B. (In revision after revise and resubmit decision). Supporting a robust understanding of square root for middle school students. To be resubmitted to *Mathematics Education Research Journal*.

#### **RESEARCH SUPPORT (FUNDED)**

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1. Principal Investigator, Characterizing and Fostering Playful Mathematics in Grades 9 – 16. (\$15,000). University of Georgia Pushing the Grant Forward Award, 2023 – 2024.

2. Principal Investigator, *Playful Math: Playifying Classroom Mathematical Activity to Support Student Learning*. (\$21,735). University of Georgia Faculty Seed Grant in the Sciences Program, 2021 – 2022.
3. Principal Investigator, *Generalization Across Multiple Mathematical Areas: Classrooms and Teaching* [in collaboration with Elise Lockwood (co-principal investigator) Oregon State University, Erik Tillema (co-principal investigator), Indiana University, and Kevin Moore (co-principal investigator), University of Georgia]. (\$1,499,857). National Science Foundation EHR Core Research (ECR), 2019 – 2022.
4. Principal Investigator, *Generalization Across Multiple Mathematical Areas* [in collaboration with Elise Lockwood (co-principal investigator) Oregon State University, Erik Tillema (co-principal investigator), IUPUI, and Kevin Moore (co-principal investigator), University of Georgia]. (\$1,499,908). National Science Foundation Research on Education and Learning (REAL), 2014 – 2017.
5. Principal Investigator, *The Role and Use of Examples in Generalizing and Proving* [in collaboration with Eric Knuth and Steffan Lempp (co-principal investigators), U.W. Madison]. (\$35,751). Funded by the University of Wisconsin Graduate School Research Committee, 2013-2014.
6. Co-Principal Investigator, *Postdoctoral Training Program in Mathematical Thinking, Learning, and Instruction*, [in collaboration with Martha Alibali, Charles Kalish, Eric Knuth, Mitchell Nathan, and Peter Steiner, (co-principal investigators) and Anita Wager (principal investigator), U.W. Madison]. (\$686,999). U.S. Department of Education and the Institute of Educational Sciences (IES), 2014 – 2017.
7. Co-Principal Investigator, *The Role and Use of Examples in Learning to Prove* [in collaboration with Eric Knuth (principal investigator), U.W. Madison, and Orit Zaslavsky (co-principal investigator), NYU]. (\$995,957). National Science Foundation Discovery Research K-12 (DRK12), 2012 – 2017.
8. Principal Investigator, *Supporting Students' Proof Practices through Quantitative Reasoning in Algebra*. (\$730,417). National Science Foundation CAREER program through Discovery Research K-12 (DRK12), 2010 – 2015.
9. Co-Principal Investigator, *Postdoctoral Training Program in Mathematical Thinking, Learning, and Instruction* [in collaboration with Martha Alibali, Eric Knuth, Charles Kalish, David Kaplan (co-principal investigators), and Mitchell Nathan (principle investigator), U.W. Madison]. (\$484,095). Institute of Educational Sciences Postdoctoral Research Training Program in the Education Sciences, 2010 – 2013.
10. Co-Principal Investigator, *Mathematics Courses for Middle School Teachers: Examining the Influence on Teachers' Knowledge and Practice* [in collaboration with Eric Knuth (principal

investigator) and David Griffeath (co-principal investigator), U.W. Madison]. (\$26,244)  
Funded by the University of Wisconsin Graduate School Research Committee, 2011-2012.

11. Co-Principal Investigator, *Understanding and Cultivating the Connections Between Students' Natural Ways of Reasoning and Mathematical Ways of Reasoning* [in collaboration with Eric Knuth (principal investigator) and Charles Kalish (co-principal investigator), U.W. Madison]. (\$741,938). National Science Foundation Research and Evaluation on Education in Science and Engineering (REESE), 2008 – 2011.
12. Co-Principal Investigator, *New Trends in Gender and Mathematics Performance: Meta-Analytic Synthesis* [in collaboration with Janet Hyde (principal investigator), U.W. Madison, and Marcia Linn (co-principal investigator), U.W. Berkeley]. (\$199,838). National Science Foundation Synthesis Research Program, 2006 – 2009.
13. Co-Principal Investigator, *Coordinating Social and Individual Aspects of Generalizing Activity: A Multi-tiered "Focusing Phenomena" Study* [in collaboration with Joanne Lobato (principal investigator), San Diego State University]. (\$1,337,668). National Science Foundation Research on Learning and Education (RoLE), 2005 – 2008.
14. Co-Principal Investigator, *Understanding and Cultivating the Connections between Students' Non-Mathematical Ways of Reasoning and Mathematical Ways of Reasoning* [in collaboration with Eric Knuth (principal investigator) and Charles Kalish (co-principal investigator), U.W. Madison]. (\$13,618). U.W. Graduate School award, 2006 – 2007.
15. Principal Investigator, *Identifying Classroom Features Supporting Students' Mathematical Generalizations* (\$14,039). Funded by the University of Wisconsin Graduate School Research Committee, 2005 – 2006.
16. Co-Principal Investigator, *Mentoring Mathematics Teachers* [in collaboration with Eric Knuth (principal investigator), U.W. Madison] (\$8,940). Calculus Consortium for Higher Education award, December 2004.

## **RESEARCH SUPPORT (IN PROGRESS)**

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1. Principal Investigator, *Collaborative Research: Characterizing and Fostering Playful Mathematics in Grades 9 – 16* [in collaboration with Robert Ely, co-principal investigator, University of Idaho]. (\$1,496,015). National Science Foundation EHR Core Research (ECR), submitted October 2023.

## **LIST OF PRESENTATIONS**

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*Research Conference Presentations (Excluding Talks with Proceedings and Invited Talks)*

Ellis, A.B., Horne, D., & Bloodworth, A. (2024, April). Playful Math: Supporting Students' Reasoning and Engagement. Paper to be presented at the Annual Meeting of the American Educational Research Association, Philadelphia, PA.

Ellis, A.B., Horne, D., & Bloodworth, A. (2023, October). *The Influence of Playful Math on Students' Reasoning and Engagement*. Paper presented at the Annual Meeting of the National Council of Teachers of Mathematics Research Meeting, Washington, D.C.

Ellis, A.B., Bloodworth, A., & Horne, D. (2023, October). *Teaching with Playful Math: Exploring Opportunities and Challenges*. Paper presented at the Annual Meeting of the National Council of Teachers of Mathematics Research Meeting, Washington, D.C.

Welji, S., Wood, E., Hamilton, M., Ugiagbe, U., Waswa, A., Bozkus, F., Ellis, A., & Moore, K. (2023, October). *Abstraction in Practice: Understanding Differences in Instructional Materials and in Enacted Classroom Practice*. Paper presented at the Annual Meeting of the National Council of Teachers of Mathematics Research Meeting, Washington, D.C.

Knuth, E., Ellis, A.B., & Zaslavsky, O. (2016, July). *The Role of Examples in Proving Related Activities*. Paper presented at the 13<sup>th</sup> International Congress on Mathematical Education, Hamburg, Germany.

Ellis, A.B. (2016, April). Generalization Across Multiple Mathematical Areas. In A. Ellis (Chair), *Generalization Across Multiple Mathematical Areas*. Paper presented at the Annual Meeting of the National Council of Teachers of Mathematics Research Meeting, San Francisco, CA.

Reiten, L., Ozgur, Z., & Ellis, A.B. (2016, April). *Utility of the TMSSR Framework for Investigating Instructional Practices*. Paper presented at the Annual Meeting of the National Council of Teachers of Mathematics Research Meeting, San Francisco, CA.

Lynch, A.G., Sabouri, P., Vinsonhaler, R., & Ellis, A.B. (2015, January). *Undergraduates' Example-Related Activity in Proving Conjectures*. Paper presented at the Joint Mathematics Meetings, San Antonio, TX.

Ellis, A.B., & Ozgur, Z. (2014, April). Making sense of exponential growth with composite units. In D. Liss (Chair), *Elaborations on the Construction of Quantitative and Algebraic Reasoning*. Paper presented at the Annual Meeting of the National Council of Teachers of Mathematics Research Pre-session, New Orleans, LA.

Ellis, A.B. (2013, June). *What If We Built Learning Trajectories for Epistemic Students? An Elaboration on Hackenberg's Musings on Three Epistemic Algebraic Students*. Paper presented at the Epistemic



Algebraic Students Conference, Athens, GA.

Ellis, A.B., Ozgur, Z., Kulow, T., Dogan, M.F., & Williams, C.C. (2013, May). *Understanding Exponential Growth: Three Conceptual Shifts in Creating Multiplicative Rates of Change*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.

Ellis, A.B., Lockwood, E., Williams, C., Dogan, M.F., & Knuth, E. (2013, May). How students use examples when developing proofs. In E. Knuth (Chair), *Choosing and Using Examples: A Promising Road to Proof?* Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.

Lockwood, E., Ellis, A.B., Dogan, M.F., Williams, C.C., & Knuth, E. (2013, May).  
Mathematicians' example-related activity when exploring and proving mathematical conjectures. In E. Knuth (Chair), *Choosing and Using Examples: A Promising Road to Proof?* Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.

Ellis, A.B., Lockwood, E., Williams, C.C., Dogan, M., & Knuth, E. (2013, April). How example use can support students' proof insight. In A. Ellis (Chair), *How Example Use Influences Conjecturing and Proving*. Paper presented at the Annual Meeting of the National Council of Teachers of Mathematics Research Pre-session, Denver, CO.

Lockwood, E., Ellis, A.B., Dogan, M., Williams, C.C., & Knuth, E. (2013, April). Mathematicians' Example Use. In A. Ellis (Chair), *How Example Use Influences Conjecturing and Proving*. Paper presented at the Annual Meeting of the National Council of Teachers of Mathematics Research Pre-session, Denver, CO.

Ellis, A.B. (2012, June). Developing and refining learning trajectories for functional relationships. In J. Barrett (Chair), *Using Learning Progressions in Research Settings*. Paper presented at the National Science Foundation DRK-12 Principal Investigator's Meeting, Washington, D.C.

Ellis, A.B., Ozgur, Z., Kulow, T., Williams, C., & Amidon, J. (2012, April). Proof in mathematics teaching: Quantitatively-based arguments. In M. Cirillo (Chair), *The Notion of Proof in Mathematics Teaching: Is it Changing?* Paper presented at the National Council of Teachers of Mathematics Research Pre-session, Philadelphia, PA.

Cooper, J.L., Walkington, C.A., Williams, C.C., Akinsiku, O.A., Kalish, C., Ellis, A.B., & Knuth, E. (2011, July). *Adolescent reasoning in mathematics: Exploring middle school students' strategic approaches in empirical justifications*. Paper presented at the 33<sup>rd</sup> Annual Meeting of the Cognitive Science Society, Boston, MA.

Ellis, A.B. (2011, April). Argumentation, justification, and proof in mathematics education. In N. Feinstein (Chair), *Balancing epistemology and empowerment: Discussion, argument, and*

*dialogue across the disciplines*. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.

Knuth, E., Ellis, A.B., & Williams, C. (2011, April). *The role of similarity and typicality in students' inferential reasoning*. Poster presented at the National Council of Teachers of Mathematics Research Pre-session, Indianapolis, IN.

Ellis, A.B. (2010, April). Classroom influences on students' generalizing: Categories and cycles of interaction. In T. Martin (Chair), *Let's Talk This Over: Discourse and Argumentation in Mathematics*. Paper presented at the annual meeting of the American Educational Research Association, Denver, CO.

Ellis, A.B. (2010, March). *Inductive and deductive reasoning: Finding a path from stop signs and fox heads to proof*. Paper presented at the National Science Foundation REESE (Research and Evaluation on Education in Science and Engineering) Principal Investigators' meeting, Washington, D.C.

Ellis, A.B. (2009, April). A quantitative understanding of quadratic growth: What is DiRoG and why does it matter? In E. Tillema (Chair), *Eighth Graders' Reasoning about Quadratic Functions*. Paper presented at the National Council of Teachers of Mathematics Research Pre-session, Washington, D.C.

Ellis, A.B., Hyde, J., Lindberg, S., Linn, M., & Williams, C. (2009, April). *Girls Perform Equally as Well as Boys on State Assessments*. Paper presented at the National Council of Teachers of Mathematics Research Pre-session, Washington, D.C.

Ellis, A.B., Kalish, C., Knuth, E., & Williams, C. (2009, April). Understanding the connections between students' ways of reasoning in and out of mathematics. In A. Ellis (Chair), *Students' Cognition in Mathematics*. Paper presented at the annual meeting of the American Educational Research Association, San Diego, CA.

Ellis, A.B. (2007, April). Attention focusing and student noticing: Implications for conception development. In A. Ellis (Chair), *Missing Links in the Implementation of Mathematics Education Reforms: "Attention Focusing" and "Noticing"*. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.

Ellis, A.B. (2007, February). The e-portfolio and student teacher learning in mathematics education. In K. Zeichner (Chair), *The E-Portfolio as a Tool for Student Teacher Learning and for Research about Student Teacher Learning*. Paper to be presented at the 59<sup>th</sup> Annual Meeting of the American Association of Colleges for Teacher Education, New York, NY.

Ellis, A.B. (2006, April). *Quantitative reasoning as a support for productive generalizing*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.

Knuth, E., Ellis, A.B., & Taylor, E. (2006, May). *Graduate study in mathematics education*.

Talk presented at the Wisconsin Mathematics Council Annual Meeting, Green Lake, WI.

Ellis, A. B., & Lobato, J. (2004, April). Using the construct of "focusing phenomena" to explore links between attentional processes and "transfer" in mathematics classrooms. In J. Lobato (Chair), *Attentional processes, salience, and "transfer" of learning: Perspectives from neuroscience, cognitive science, and mathematics education*. Paper presented at the annual meeting of the American Educational Research Association, San Diego, CA.

Lobato, J., & Ellis, A. B. (2002, April). *Paradox or possibility: The generalization of situated reasoning*. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.

Lobato, J., & Ellis, A. B. (2001, April). Generalizations about linear functions constructed by high school students studying a reform curriculum. In J. Lobato (Chair), *Cognitive and pedagogical issues in students' learning of linear functions*. Symposium conducted at the annual meeting of the American Educational Research Association, Seattle, WA.

### Invited Talks, Keynotes, and Plenary Addresses

May 2023 Third International Conference on Applications of Mathematics to Nonlinear Sciences, Pokhara, Nepal  
Presented a plenary address entitled, *Playful Math, Conjecturing, and Generalizing*

Nov. 2022 Forty-Fourth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Nashville, TN  
Presented a plenary address entitled, *Decentering to Build Asset-Based Learning Trajectories*

Oct. 2020 Proof Comprehension Research Group (PCRG) Webinars, Hosted by the Northeast chapter of the Special Interest Group for Research on Undergraduate Mathematics Education, Online  
Presented a talk entitled, *On Learning Trajectories*

Sept. 2019 4<sup>th</sup> International Symposium of Turkish Computer and Mathematics Education, Cesme, Turkey  
Presented a plenary address entitled, *Supporting Students' Engagement in Authentic Mathematical Activity: Designing Instruction for Conjecturing, Generalizing, and Proving*

March 2018 Texas State San Marcos Colloquium Series, San Marcos, Texas  
Presented a talk entitled, *Fostering Productive Generalizing and Proving in Algebra*

- April 2016 The 5<sup>th</sup> Oklahoma Conference on Research in Undergraduate Mathematics Education, Stillwater, Oklahoma  
Presented the plenary address entitled, *Generalization Across Multiple Mathematical Areas*
- April, 2016 Oklahoma State University Colloquium Series, Stillwater, Oklahoma  
Presented a talk entitled, *Developing Functional Relationships by Reasoning with Quantities*
- Feb., 2015 Conference for Mentoring and Partnerships for Women in RUME (MPWR), Pittsburgh, PA  
Presented a talk entitled, *Mentoring and Mentorship*
- June, 2013 University of Georgia, Department of Mathematics and Science Education  
Presented a talk entitled, *From Hypothetical to Actual: The Challenges of (Repeated) Retrospective Analysis in Building a Learning Trajectory*
- June, 2013 Epistemic Algebraic Students Conference, Athens, GA  
Presented a talk entitled, *What If We Built Learning Trajectories for Epistemic Subjects? An Elaboration on Hackenberg's Musings on Three Algebraic Epistemic Students*
- Feb., 2013 Michigan State University, Department of Teacher Education  
Presented a talked entitled, *Building Learning Trajectories from a Foundation of Quantitative Reasoning*
- Feb., 2013 Annual Meeting of the Teachers Development Group, Portland, Oregon  
Presented the plenary address entitled, *Promoting Student Engagement in Reasoning and Proving*
- Dec., 2012 National Council of Teachers of Mathematics and the California Mathematics Council, North Annual Meeting, Asilomar, CA  
Presented the keynote address entitled, *Laying a Foundation for Learning to Prove*
- Oct., 2012 Northern Illinois University, Department of Mathematics  
Presented a talk entitled, *A Learning Trajectory for Exponential Functions*
- Sept., 2012 Indiana University Bloomington, School of Education  
Presented a talk entitled, *Building Learning Trajectories from a Foundation of Quantitative Reasoning*
- April, 2011 Virginia Polytechnic Institute and State University (Virginia Tech), Department of Mathematics  
Presented a talk entitled, *Generalizing-Promoting Actions: Students' Generalizations about Quadratic Relationships and How Classroom Collaborations can Foster Them*

- April, 2011 University of Wisconsin Madison, Department of Mathematics Colloquium Series  
Presented a talk entitled, *Do Algebra Students Need a Reality Check? How Quantitative Reasoning Can Support Function Understanding*
- March, 2011 University of Wisconsin Madison, Friends of the Mind lecture series  
Presented a talk entitled, *From Cognitive to Sociocultural Accounts of Mathematical Learning: Coming to Value Feminist Models of Research*
- Sept., 2010 Wyoming Institute for the Study and Development of Mathematical Education, Invitational Planning Conference, Laramie, WY.  
Presented a talk entitled, *Quantification is a really big deal: Comments on quantitative reasoning and how it relates to mathematical modeling.*
- April, 2010 National Council of Teachers of Mathematics Research Pre-session, San Diego, CA, panel sponsored by the *Journal for Research in Mathematics Education*.  
Presented a talk entitled, *From Dissertation to JRME Publication.*
- March, 2010 National Science Foundation REESE Principal Investigator's Meeting, Washington, D.C.  
Presented a talk entitled, *Inductive and deductive reasoning: Finding a path from fox heads and stop signs to proof.*
- Nov., 2009 Regional Conference of the National Council of Teachers of Mathematics, Minneapolis, MN  
Presented a talk entitled, *Using quantities to help students understand linear and quadratic functions.*

### Discussant

- April, 2013 Served as a discussant for a symposium entitled, *Reasoning with Discrete and Continuous Images of Quantity: Emerging Research*, NCTM Annual Research Pre-Session, Denver, CO.
- April, 2006 Served as a discussant for a symposium entitled, *How Teachers and Students View Generality*, NCTM Annual Research Pre-Session, St. Louis, MO.

### Conference Chair / Organizer

- April, 2016 Chaired a symposium entitled *Generalization Across Multiple Mathematical Areas* at the annual meeting of the National Council of Teachers of Mathematics Research Conference, San Francisco, CA.
- April, 2009 Chaired a symposium entitled *Students' Cognition in Mathematics* at the annual meeting of the American Educational Research Association, Chicago, IL.

- April, 2007      Chaired a symposium entitled *Missing Links in the Implementation of Mathematics Education Reforms: "Attention Focusing" and "Noticing"* at the annual meeting of the American Educational Research Association, Chicago, IL.
- April, 2006      Chaired a symposium entitled *Mathematics Students' Representations and Strategies* at the annual meeting of the American Educational Research Association, San Francisco, CA.

## TEACHING

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### University of Georgia:

- MSED 8990      Doctoral Seminar in Mathematics Education (Spring '23)
- MSED 8030      Advanced Study of Mathematical Learning (Fall '18, Spring '22, Spring '24)
- MSED 6900      Using Research in Practice (Spring '18, Spring '20)
- MSED 6710      Research on the Teaching and Learning of Mathematics (Fall '21, Fall '23)
- MSED 4600/  
6600      Problem Solving (Spring '17, Spring '19)
- MSED 9640      Analysis and Critique of Research in Mathematics Education (Fall '17, Fall '20)

### University of Wisconsin:

- C&I 394      The Teaching of Secondary School Mathematics II  
(Fall '04, Spring '05, Fall '05, Fall '08, Fall '09, Fall '11)
- C&I 811      The Instruction of Mathematics  
(Spring '05, Spring '06, Spring '09, Fall '10, Spring '13, Fall '14)
- C&I 916 /  
EdPsych 711      Spencer Doctoral Research Program – Pro Seminar  
(Fall '06, Spring '07)
- C&I 942      Seminar on Research in Mathematics Education  
(Fall '07, Spring '09, Spring '12, Fall '15)
- C&I 975      Special Topics Seminar: Research Methods in Math and Science Education  
(Spring '11)

### Graduate and Post-Graduate Advising

#### **Doctoral Advisees (Degree Granted):**

- Rui Kang (2022)

- Kristen Roland (2020)
- Zekiye Ozgur (2017)
- Caroline Williams-Pierce (2016)
- Mathew Felton (2010)
- Rob Ely (2007)

**Doctoral Advisees (Current):**

- Dru Horne
- Sarah Park
- Claire Sarver
- Shaffiq Welji

**Master's Advisees (Degree Granted):**

- Bright Hough (2023)
- Russell Lawless (2022)
- Anna Bloodworth (2021)
- Tracy Carolan (2013)
- Emily Baguhn (2011)
- Torrey Kulow (2011)
- Zekiye Ozgur (2011)
- David Liss (2010)
- Caroline Williams (2010)
- Mathew Felton (2007)
- Jennifer Ruef (2005)

**Graduate Research Assistants:**

- Olubukola Akinsiku
- Joel Amidon
- Anna Bloodworth
- Tracy Carolan
- Muhammed F. Dogan
- Rob Ely
- Mathew Felton
- Paul Grinstead
- Mike Hamilton
- Dru Horne
- Winnio Ko
- Torrey Kulow
- Zekiye Ozgur
- Lindsay Reitan
- Brandon Singleton
- Halil Tasova
- Uyiosa Ugiagbe
- Rebecca Vinsonhaler

- Anne Waswa
- Shaffiq Welji
- Caroline Williams-Pierce
- Erin Wood
- Yufeng Ying

**Post-Doctoral Research Assistants:**

- Figen Bozkuş (2023 – 2024)
- Aytuğ Çelik (2019 – 2020)
- Nicole Fonger (2015 – 2017)
- José Francisco Gutiérrez (2015 – 2016)
- Elise Lockwood (2013 – 2015)
- Candace Walkington (2012 – 2014)
- Jennifer Cooper (2012 – 2014)

**Dissertation Committee Membership (Degree granted):**

- Sarah Lord (2023)
- Anne Waswa (2023)
- Nigar Altindis (2021)
- Biyao Liang (2021)
- Halil Tasova (2021)
- Yuling Zhuang (2020)
- Irma Stevens (2019)
- Muhammed F. Dogan (2016)
- Courtney Koestler (2010)
- Winnie Ko (2010)
- Anita Wager (2008)
- Kristen Bieda (2008)
- Dilar Oner (2006)
- Ana Stephens (2004)

**Dissertation Committee Membership (Current):**

- Lorraine Franco
- Erin Wood
- Rodney Stanley

**Master's Thesis Committee Membership (Degree granted):**

- Kathryn Mauldin (2019)
- Natalie Hobson (2017)
- Merve Nur Kursav (2017)
- Dan McGinn (2010)
- Mark Dziedzic (2009)
- Rebecca Galaski (2009)
- Dan Krill (2006)



- Thomas Loomis (2006)
- Tori Sampson (2005)
- Lawrence Isles (2004)

### Undergraduate Mentorship

Amanda Yang, through the Chancellor's Scholars Program, University of Wisconsin

Nathan Rivera, through the Undergraduate Research Scholars Program, University of Wisconsin

## PROFESSIONAL SERVICE

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### Service to the Field

- 2023 – Present    Advisory panel member, NSF-sponsored project, *Designing an Equitable Approach to Multiplicative Reasoning through Dynamic Measurement for Area* [Principal Investigator Nicole Panorkou, Montclair State University]
- 2022 – Present    Advisory panel member, NSF-sponsored project, *Comprehending Conditional Claims' Proofs Organically (C3PO)* [Principal Investigator Paul Dawkins, Texas State University San Marcos]
- 2022 – 2023        Advisory panel member, NSF-sponsored project, *Exploring K-2 Children Understandings of Visual Representations in Algebraic Reasoning* [Principal Investigator Barbara Brizuela, Tufts University]
- Jan. 2021          Panelist member, National Science Foundation Division on Research and Learning EHR-CORE review panel
- 2017 – Present    Member, Editorial Board, *Adiyaman University Journal of Education Sciences*
- 2017 – 2021        Advisory panel member, NSF-sponsored project, *CAREER: Developing Undergraduate Combinatorial Curriculum in Computational Settings* [Principal Investigator Elise Lockwood, Oregon State University]
- 2020 – 2022        Expert panel member, Horizon Research, external evaluation of *Building on MOSTs: Contributing to a Theory of Productive Use of Student Mathematical Thinking* [NSF, DRK-12].
- 2018 – 2020        Development panelist member, National Assessment of Educational Progress (NAEP) Framework Update Panel, WestEd and National Assessment Governing Board
- 2015 – 2018        Advisory panel member, NSF-sponsored project, *INFORMS-MKT* [Principal

- Investigator Michael Oehrtman, Oklahoma State University]
- Oct. 2017 Panelist chair, National Science Foundation Directorate for Education and Human Resources (EHR) CAREER review panel
- 2013 – 2016 Co-Chair, Topic Study Group on the Teaching and Learning of Algebra, *International Congress on Mathematics Education (ICME)*
- Dec. 2014 Panelist member, National Science Foundation Division on Research and Learning Discovery Research K-12 (DRK12) review panel
- 2012 – 2014 Editor, Informing Practice department, *Mathematics Teaching in the Middle School*
- 2011 – 2014 Strand Leader, Early Algebra, Algebra, and Number Concepts Strand, *Psychology of Mathematics Education Association, North American Chapter*
- Feb. 2014 Advisory panel member, NSF-sponsored project, *Delta2* [Principal Investigator Alan Maloney, North Carolina State University]
- March, 2011 Panelist member, National Science Foundation Division on Research and Learning Research and Evaluation on Education in Science and Engineering (REESE) review panel
- 2010 – 2011 Co-Chair, Division C (Learning and Instruction) Section 3 (Mathematics) for the *American Educational Research Association*
- 2010 – 2013 Secretary, Steering Committee for the *Psychology of Mathematics Education Association, North American Chapter*
- 2011 – 2014 Advisory panel member, NSF-sponsored project, *Making Mathematical Reasoning Explicit* [Principal Investigators Libby Knott, Washington State University, Jennifer Johnson-Leung, University of Idaho, Jim Kowalkowski, Davenport WA District Superintendent, Jo Olson, Washington State University, Robert Ely, University of Idaho, & Anne Adams, University of Idaho]
- Nov. 2010 Panelist member, National Science Foundation Division on Research and Learning CAREER review panel
- Sept. 2010 Working group member, *Invitational Planning Conference for Project WISDOM<sup>e</sup>* (Wyoming Institute for the Study and Development of Mathematical Education).
- 2009 – 2013 Advisory panel member, NSF-sponsored project, *Developing Algebra-Ready Students for Middle School: Exploring the Impact of Early Algebra* [Principal Investigators Maria Blanton, University of Massachusetts Dartmouth, and Eric

Knuth, University of Wisconsin-Madison]

- 2008 – 2010 Editorial Board Member, Division C (Learning and Instruction) Section 3 (Mathematics) for the American Educational Research Association
- February 2010 Panelist member, National Science Foundation Division on Research and Learning REESE (Research and Evaluation on Education in Science and Engineering) review panel
- October 2008 Panelist member, National Science Foundation Division on Research and Learning CAREER review panel
- October 2007 Working group member, *Research Paradigms on the Teaching and Learning of Proof*. Working conference funded by the National Science Foundation
- 2006 - 2007 *Essential Understandings* editorial panel member, National Council of the Teachers of Mathematics
- 2006 - 2007 Research panel / advisory board member for the Harcourt Achieve mathematics professional development program for middle school mathematics teachers
- June 2005 Working group member, content analysis coding for the Council of Chief State School Officers (CCSSO)
- January 2005 Working group member, *An International Working Conference: Addressing the Transfer Dilemma*, sponsored by the National Science Foundation.

University and Department Service:

- 2022 – Present Mentoring Committee for Emily Adah Miller, University of Georgia
- 2021 – Present University Tenure and Promotion Committee, University of Georgia
- 2019 – Present Mentoring Committee for Cameron Byerly, University of Georgia
- 2021 – 2023 Research, Innovation, and Entrepreneurship (RIE) Advisory Committee, Mary Francis Early College of Education, University of Georgia
- 2021 – 2022 Awards Committee, Department of Mathematics, Science, and Social Studies Education, University of Georgia
- 2020 – 2021 Mentoring Committee for Jim Garrett, University of Georgia
- 2019 – 2022 Mathematics Education Program Coordinator, Department of Mathematics

and Science Education, University of Georgia

- 2019 – 2021 Mentoring Committee for Megan Wongkamalasai, University of Georgia
- 2019 – 2020 Graduate School Review Board and Graduate School Dean / Associate Provost Search Committee, University of Georgia
- 2016 – 2020 Chair, Mentoring Committee for Jaime Diamond, University of Georgia
- 2016 – 2020 Mathematics Curriculum Team, University of Georgia
- 2018 – 2019 Mentoring Committee for Anna Conner, University of Georgia
- 2018 – 2019 Mentoring Committee for Kevin Moore, University of Georgia
- 2017 – 2019 College of Education Awards Committee, University of Georgia
- Spring 2017 College of Education Early Career Faculty Grant Committee, University of Georgia
- Fall 2017 Post-Tenure Review Committee, University of Georgia, Department of Mathematics and Science Education
- Fall 2017 Search Committee, University of Georgia, Department of Mathematics and Science Education
- Fall 2016 Post-Tenure Review Committee, University of Georgia, Department of Mathematics and Science Education
- Fall 2016 Search Committee, University of Georgia, Department of Mathematics and Science Education
- 2016 – Present Secondary Education Committee, University of Georgia, Department of Mathematics and Science Education
- 2016 – 2017 Graduate Program Committee, University of Georgia, Department of Mathematics and Science Education
- 2014 – 2016 Student Awards Committee, University of Wisconsin, Department of Curriculum & Instruction
- 2014 – 2016 School of Education Programs Committee, University of Wisconsin
- 2012 – 2013 Tenure Guidelines Committee, University of Wisconsin, Department of Curriculum and Instruction

- 2011 – 2013 School of Education and Social and Behavioral Sciences Institutional Review Board, University of Wisconsin
- 2009 – 2013 University of Wisconsin-Madison Chancellor’s Scholarship Program.
- 2004 - 2012 Mathematics and Mathematics Education Liaison Committee, University of Wisconsin Department of Mathematics, Department of Curriculum & Instruction, and Madison Metropolitan School District.
- 2010 – 2012 Graduate Programs Committee, University of Wisconsin, Department of Curriculum & Instruction.
- 2010 – 2011 Search Committee for the Faculty Associate for the Mathematics Specialist Program, University of Wisconsin
- 2008 – 2010 Student Awards Committee, University of Wisconsin Department of Curriculum & Instruction.
- 2008 – 2009 Search Committee for Mathematics Education, University of Wisconsin Department of Curriculum & Instruction
- 2007 – 2008 Research Mentor, Undergraduate Research Scholars Program, University of Wisconsin
- 2007 – 2008 Search Committee for Mathematics Education, University of Wisconsin Department of Curriculum & Instruction
- 2006 – 2007 Merit Review Committee, University of Wisconsin Department of Curriculum & Instruction
- 2004 – 2007 Graduate Programs Committee, University of Wisconsin Department of Curriculum & Instruction.
- 2005 – 2006 Substitute Faculty Representative, Faculty Senate

*Service to the Public:*

- 2017 Exponential Functions Learning Progressions Advisory Panel Member, Educational Testing Service
- 2009 – 2016 Leader, Course Development Group, Mathematics Specialist Program for the Madison Metropolitan School District
- 2009 – 2016 Member, Mathematics Specialist Program Development Committee, University of Wisconsin Department of Mathematics, Department of Curriculum & Instruction, and Madison Metropolitan School District
- 2013 Member, Wisconsin State Superintendent’s Mathematics Content Guidelines

Workgroup

- 2008 – 2010 Consultant for Teachscape to assist with the development and implementation of algebra II online lessons for high-school teachers in the state of Arkansas
- 2005 – 2008 Madison Metropolitan School District, professional development on middle school and high school algebra instruction
- 2005 – 2006 Workshop Co-Leader [with Eric Knuth], *Mentoring Mathematics Teachers*. Professional development workshop series for student and cooperating teachers
- June 2003 Workshop Assistant, Patrick Callahan Workshop Leader, Arcata, CA  
Mathematical *Preparing Mathematicians to Educate Teachers* (Sponsored by the  
Association of America)

Manuscript Reviewer:

- 2005 – Present *Journal for Research in Mathematics Education*
- 2005 – Present *Mathematics Teaching in the Middle School*
- 2007 – Present *Journal of the Learning Sciences*
- 2008 – Present *Cognition and Instruction*
- 2008 – Present *Learning and Instruction*
- 2009 – Present *Journal of Mathematics Teacher Education*
- 2009 – Present *Journal of Mathematical Behavior*
- 2013 – Present *Mathematical Thinking and Learning*
- 2014 – Present *ZDM*
- 2016 – Present *Journal of Numerical Cognition*
- 2016 – Present *Educational Studies in Mathematics*
- 2017 – Present *Mathematics Education Research Journal*

Proposal Reviewer for Professional Conferences:

- 2019 – Present Special Interest Group of the Mathematical Association of America Research

on Undergraduate Mathematics Education

- 2004 – Present Psychology of Mathematics Education, North American Chapter
- 2004 – Present American Educational Research Association, Division C (Learning & Instruction), Section 3 (Mathematics), and SIG-RME (Special Interest Group, Research on Mathematics Education)
- 2007 – Present National Council of the Teachers of Mathematics Research Pre-session

*Professional Affiliations:*

- 2004 – Present American Educational Research Association, Division C Learning and Instruction
- 2004 – Present American Educational Research Association, Research in Mathematics Education Special Interest Group
- 2001 – Present Psychology of Mathematics Education, North American Chapter
- 2004 – Present National Council of the Teachers of Mathematics