RAYCHEL BARKIN

University of Maryland, College Park
Human Development and Quantitative Methodology
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Education

2022	**PhD** in Human Development *(to be conferred May 2023)* University of Maryland, College Park *Specialization in Developmental Science* Advisor: Dr. Geetha Ramani
2021	**Graduate Certificate** in Measurement, Statistics, & Evaluation University of Maryland, College Park Advisor: Dr. Gregory Hancock
2016	**BA** in Psychology Boston University, College of Arts and Sciences *Minors in Linguistics and Deaf Studies*

Fellowships and Scholarships

2020 – 2025	Graduate Research Fellowship (Tuition and Stipend; $138,000) National Science Foundation - DGE 1840340
2022	College of Education Scholarship ($1,500) University of Maryland College of Education
2022	Charles H. Flatter Endowed Fellowship ($500) University of Maryland, Department of Human Development
2021 – 2022	Social Development and Learning Scholarship ($1,392) University of Maryland College of Education
2021 – 2022	Bruce W. Sorter Endowed Fellowship ($2,000) University of Maryland, Department of Human Development
2020 – 2021	Richard L. Matteson Endowed Scholarship ($1,000) University of Maryland College of Education
2019 – 2020	William C. & William J. Graham Endowed Scholarship ($1,000) University of Maryland College of Education
2018 – 2020	Dean's Fellowship ($10,000/per academic year) University of Maryland College of Education

2015 – 2016 Senior Thesis Scholarship Recipient (Cost of Research)
Museum of Science - Boston, Living Laboratory®

Grants and Awards

2022 Cosmos Scholars Dissertation Grant ($4,026)
The Cosmos Club Foundation

2021 Support for Advancing Research and Collaboration Dissertation Grant ($1,000)
University of Maryland, College Park - College of Education; SPARC

2020 Graduate Student Government Research Grant ($400)
University of Maryland, College Park

2019 Departmental Travel Award - University of Maryland ($400)
Human Development & Quantitative Methodology

2015 – 2016 Undergraduate Research Opportunities Program Grant ($2,500)
Boston University

Professional Appointments

2022 - present **Human Development Undergraduate Major Graduate Assistant** at *University of Maryland, College Park*

- Develop new and support current data initiatives (collection, cleaning, analyses, interpretation and writeup) for evaluation of the new undergraduate Human Development major within the School of Education
- Facilitate the creation of the Undergraduate Program Learning Outcomes Assessment Summary Report to communicate applied educational research findings to both internal and external stakeholders
- Communicate with faculty and community partners to establish new partnerships for undergraduate internships
- Prepare presentation materials to further disseminate enrollment and course success within the major

2018 - present **Graduate Research Scientist** at *University of Maryland, College Park*

- Design, pilot, and conduct end to end research (A/B & usability-like testing) both remote & in-person Collected data from 1000+ subjects via surveys, game- based methods, observation, and interviews
- Wrote and published multiple scientific manuscripts on children's multimodal communication and mathematical knowledge

- Communicated research findings during 10+ scientific conferences, invited talks, and workshops to academic and industry stakeholders
- Secured over $150k in funding by writing and editing numerous proposals for independent & collaborative research efforts

2021 **Course Creator and Instructor** at *Project RISE Summer Academy*

- Created all materials for and instructed undergraduate students through online intensive course "Introduction to Nonverbal Communication"
- Focused on increasing diversity in students who pursue graduate studies in a broad range of fields related to language and literacy

2016-2018 **Laboratory Manager** at *Boston College*

- Fostered research partnerships (schools & museums) and supervised undergraduate assistants (50+)
- Moderated recruitment and testing of subjects (ages infancy to adulthood) in psychology research projects

Scholarly Publications

Maiden Name: **Gordon**; **Mentored Student*

Gordon, R. & Ramani, G. B. (2021). Integrating embodied cognition and information processing: A combined model of the role of gesture in children's mathematical environments. *Frontiers in Psychology*, *12*, 999. https://doi.org/10.3389/fpsyg.2021.650286

Gordon, R., Scalise, N. R., & Ramani, G. B. (2021). Give yourself a hand: The role of gesture and working memory in preschoolers' numerical knowledge. *Journal of Experimental Child Psychology*, *208*, 105145. https://doi.org/10.1016/j.jecp.2021.105145

Hurst, M. A., Wong, A., **Gordon, R.**, *Alam, A., & Cordes, S. (2021). Children's gesture use provides insight into proportional reasoning strategies. *Journal of Experimental Child Psychology*, *214*, 105277. https://doi.org/10.1016/j.jecp.2021.105277

Chernyak, N., Turnbull V., **Gordon, R.**, Harris P., & Cordes, S. (2020). Counting promotes proportional moral evaluation in preschool-aged children. *Cognitive Development*, 56, 100969. https://doi.org/10.1016/j.cogdev.2020.100969

Gordon, R., Chernyak, N., & Cordes, S. (2019). Get to the point: Preschoolers' spontaneous gesture use during a cardinality task. *Cognitive Development*, 52, 100818. https://doi.org/10.1016/j.cogdev.2019.100818

Manuscripts Under Review and In Preparation

Barkin, R. & Ramani, G. B (Under Review). *The Relation Between Children's Working Memory and their Use of Gesture Strategies During Arithmetic Problem Solving*.

Barkin, R. & Ramani, G. B (In Prep). *The Contribution of Inhibitory Control on Children's Gesture Use in an Early Mathematical Environment*.

Barkin, R., Grose, G., *Krishnasamy, N., Ramani, G. B (In Prep). *Families Count: Parent and Child Math Communication During Formal and Informal Mathematics Environments.*

Jaeggi, S.M., DePascale, M., Feng, Y., Lin, G., **Barkin, R.**, Tavassolie, N., Ghil, E., Gaye, F., Akhavein, K., Buschkuehl, M., & Ramani G.B. (In Prep; Manuscript draft complete). *Comparing Domain-specific, Domain-general, and Combined Intervention Approaches to Improve Children's Numerical Knowledge*.

Invited Academic Talks

Examining the Theoretical and Empirical Relations Between Gesture, Math, and Executive Function (2021, May). [Invited Talk] Virtual presentation for Susan Levine's C*ognitive Development Lab* at *the University of Chicago*, Chicago, IL.

So you want to run a Zoom study: Tips and tricks for online research with kids (2021, February)**.** [Workshop] *Developing and Implementing Online Studies with Children*, The Mathematical Cognition and Learning Society Virtual Conference.

Scholarly Presentations

Oral Presentations

Gordon, R. & Ramani, G. B. (July 2022). Math Adventures: Exploring the Relations Between Children's Working Memory, Age, and Gesture Use During Arithmetic Problem Solving. In E. Congdon (Chair), *Individual Differences and Children's Understanding of Gesture?* [Symposium] The 9th Conference of the International Society for Gesture Studies, Chicago, IL.

Gordon, R. & Ramani, G. B. (June 2022). Children's Executive Functions, Math Abilities, and their use of Gesture in Arithmetic Contexts. In B. Devlin (Chair), *Predicting Early Mathematics Difficulties* [Symposium]. Annual Meeting of the Mathematical Cognition and Learning Society 2022, Antwerp, Belgium.

Gordon, R. & Ramani, G. B. (May 2022). Exploring the Relations Between Children's Working Memory, Math Knowledge, and Gestures Use During Arithmetic. In **Gordon,**

R. (Chair), *The Dynamic Relations Between the Presentation of Math Problems, Individual Cognitive Factors, and Problem-Solving Strategies* [Symposium] The Mathematical Cognition and Learning Society 2021 Online Conference.

Gordon, R., Scalise, N. R., & Ramani, G. B. (April 2021). The Role of Gesture and Working Memory in Head Start Preschoolers' Numerical Knowledge. In M. Libertus (Chair), *How and Why are Socioeconomic Status and Young Children's Math Skills Linked?* [Symposium] Biennial meeting of the Society for Research in Child Development, Virtual.

Hurst, M., Wong, A., **Gordon, R.**, *Alam, A., & Cordes, S. (April 2021). Children's Gesture use Provides Insight into Proportional Reasoning Strategies. In J. Tian (Chair), *From Proportions to Symbolic Rational Numbers* [Symposium] Biennial meeting of the Society for Research in Child Development, Virtual.

Poster Presentations

*Krishnasamy, N., **Gordon, R.**, & Ramani, G.B. (November 2021) *Exploring the relations between children's cognitive abilities, age, and gender in relation to their use of gesture strategies during arithmetic problem solving.* The Annual Harvard Women in Psychology Trends in Psychology Summit (TiPS) Virtual Presentation due to Covid-19.

*Broder, E., *Oliveira, J., **Gordon, R.**, & Ramani, G.B. (April 2021) *"How did you get that answer?": Arithmetic Performance and Strategy Use in Boys and Girls.* University of Maryland Undergraduate Research Day, Virtual Presentation due to Covid-19.

*Krishnasamy, N., *Oliveira, J., **Gordon, R.**, & Ramani, G.B. (April 2021) *Families Count: Math Talk Between Parents and Children.* University of Maryland Undergraduate Research Day, Virtual Presentation due to Covid-19.

Gordon, R., Scalise, N. R., & Ramani, G. B. (2020) *Helping Hands: A Mathematical Gesture Intervention for Parent-Child Dyads*. The 3rd Annual Conference of the Mathematical Cognition and Learning Society (Canceled due to Covid-19).

Gordon, R., & Ramani, G. B. (2020) *First Hand Math: A Gesture-Based Early Mathematics Intervention for Low-Income Children*. The 3rd Annual Conference of the Mathematical Cognition and Learning Society (Canceled due to Covid-19).

Wong, A., Hurst, M., *Alam, A., **Gordon, R.**, & Cordes, S. (2020) *Examining the Effects of Different Types of Gestures on Children's Proportional Reasoning*. The 2020 Annual Conference of the Eastern Psychological Association (Canceled due to Covid-19).

Gordon, R., Scalise, N. R., & Ramani, G. B. (2019) *Give yourself a hand: Investigating low-income preschoolers' spontaneous gesture use in a numerical task*. The Cognitive Development Society Bi-ennial Conference, Louisville, KY.

Gordon, R., Rowe, M., & Ramani, G. B. (2019) *The relation between math-talk and math-gestures for parent-child dyads*. The 2nd Annual Conference of the Mathematical Cognition and Learning Society, Ottawa, Canada.

*Alam, A., Hurst, M., **Gordon, R.**, & Cordes, S. (2018) *Exploring the effects of gesture on children's proportional reasoning*. Boston College Psychology Undergraduate Research Conference, Chestnut Hill, MA.

Gordon, R., Chernyak, N., & Cordes, S. (2018). *Preschoolers' use of spontaneous gesture during a numerical task*. Accepted but not presented: 8th International Society for Gesture Studies International Conference, Cape Town, South Africa.

Chernyak, N., Turnbull, V., **Gordon, R.**, Harris, P., & Cordes, S. (2017). *Prompting children to count promotes proportional moral evaluations*. The Cognitive Development Society Conference, Portland, OR.

Gordon, R., Chernyak, N., & Cordes, S. (2017). *Children's spontaneous use of gesture in a numerical task*. Cognitive Development Society Conference, Portland, OR.

Hawthorne, K., Chernyak, N., **Gordon, R.**, & Cordes, S. (2017). *To compete or to collaborate: The effects of collaboration and competition on numerical estimation and executive functioning*. Boston College Psychology Undergraduate Research Conference, MA.

Gordon, R., & Kibbe M. (2016). *Young children's learning of gestural and verbal labels for novel objects: The role of meaningfulness*. 41st Annual Boston University Conference on Language Development, Boston, MA.

Teaching Experience

2022 **Invited Lecturer** for Adolescent Development course at University of Maryland, College Park. Lecture titled *Embodied Cognition.*

2021 **Invited Lecturer** for Children's Learning & Cognitive Development course at University of Southern California. Lecture titled *Teacher & Classroom Influences.*

2021 **Course Instructor** for *Introduction to Nonverbal Communication* at Project RISE Summer Academy, University of Maryland, College Park

- Developed syllabus and materials for week long online, synchronous course designed to prepare underrepresented undergraduates with training in education research in order to increase diversity in the pool of students who pursue doctoral studies in fields related to language and literacy.

Mentorship

2020 - Neela Vani Krishnasamy (University of Maryland)
2020 - 2021 Elyse Broder, Julia Oliveira (University of Maryland)
2018 - 2020 Randilu Amarasinghe (University of Maryland)
2017 - 2018 Aziza Alam (Boston College)

Service

2022 Recruitment Day Committee Member - Department of Human Development & Quantitative Methodology, University of Maryland

2021 - Communications Chair, Training Board of The Mathematical Cognition and Learning Society (*Elected for 2 Year Term*). Created MCLS Trainee website (mclstrainee.weebly.com), maintains main MCLS website (www.the-mcls.org), maintains various social & email accounts.

2020 - Researcher & Development Team Member for EF+Math Applied Research Track, "Developing a low-cost mobile App to reveal excellence in EFs and Math Learning"

Journal Review Experience

Ad-hoc Reviewer: *Developmental Science*, *Journal of Experimental Child Psychology* (JECP), *Translational Issues in Psychological Science* (TIPS)
Ad-hoc Co-Reviewer: *Early Childhood Research Quarterly* (ECRQ)

Professional Affiliations

American Psychological Association (APA), Cognitive Development Society (CDS), Society for Research in Child Development (SRCD), Mathematical Cognition and Learning Society (MCLS), Providing Opportunities for Women in Educational Research (POWER)

Skills and Programming

Data Cleaning & Analysis

- *R* for quantitative & qualitative data cleaning, analysis, and visualization (5 years)
    - *R markdown* for ease of analyses, documentation sharing, and communication during different stages of collaboration including manuscript preparation
- *SPSS* for secondary data cleaning, analysis, and visualization (7 years)

Data & Database Management

- *Excel/Google Sheets* (8 years)
- *Filemaker Pro* (2 years)
- *Open Science Framework* (osf.io/a8dpj)

Data Collection & Coding: (1-4 years)

- Video/Audio Recording, Transcription, and Coding: *CLAN/CHAT, Preflooker, Zoom*
- Survey: *Qualtrics, Survey Monkey*

- Eye tracking: *Tobii, Eyetribe*
- Bio-psychological: *BIOPAC*
- Experiment Programming: *Realbasic/XOJO*, *Gorilla Experiment Builder*