

SHIRLEY DUONG

Website and portfolio: s-duong.github.io

Emails: shirleyduong5@gmail.com, shd77@pitt.edu

Last updated: January 2023

EDUCATION

University of Pittsburgh

Expected 2023

Cognitive Psychology, Ph.D. (Advisor: Dr. Melissa Libertus)
Certificate, Center for the Neural Basis of Cognition

University of Pittsburgh

April 2021

Cognitive Psychology, M.S.

University of New Haven

May 2017

Psychology, B.A. (Honors Thesis Advisor: Dr. Patrick McGrady)
Mathematics Minor

RESEARCH INTERESTS

- Links between children's early math experiences in the home learning environment (HLE) and their emerging math skills
- Innovative methods (coding schemes and statistical modeling) for measuring the HLE

TECHNICAL SKILLS

- Languages: R, STATA, SQL, HTML, JavaScript, CSS, Python, MATLAB
- Statistical analysis: linear and logistic regression, multi-level modeling, cluster analysis, recurrence quantification analysis
- Data visualization: ggplot2, R Markdown, Google Looker Studio, Tableau, ArcGIS, Seaborn
- Assessment development and text coding: Qualtrics, Datavyu, Nvivo, PsychoPy

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HONORS & AWARDS

National Science Foundation Graduate Research Fellowship	2019-2022
University of Pittsburgh, Learning Research & Development Center, Graduate Student Award	2021
Society for Philosophy and Psychology Graduate Student Travel Award	2018
University of New Haven, College of Arts & Sciences Undergraduate Research Award	2017
University of New Haven, John D. Hatfield Scholar, Honors Program	2015-2017
University of New Haven, Career Development Center Leadership Award	2016-2017

PUBLICATIONS

*Indicates undergraduate student or post-bac mentee

- *Carver, C., **Duong, S.**, Bachman, H., Votruba-Drzal, E., & Libertus, M. E. (2022). Examining relations between parental feedback types and preschool-aged children's academic skills. *International Journal of Psychological Studies*, 14(4). <http://dx.doi.org/10.5539/ijps.v14n4p1>
- Elliott, L. E., Carvalho Pereira, J. M., Portia, M. L., Coulanges, L., Podvysotska, T., **Duong, S.**, Bachman, H. J., Votruba Drzal, E., & Libertus, M. (2022). Self-regulation in toddlers and the emergence of pre-academic disparities. *Infant Behavior and Development*, 69, 101779. <https://doi.org/10.1016/j.infbeh.2022.101779>
- Bachman, H. J., Votruba-Drzal, E., Miller, P. L., Elliott, L. E., **Duong, S.**, & Libertus, M. E. (2022). Associations among socioeconomic status and preschool-aged children's approximate number system acuity, number, and spatial skills: The role of executive function. *Journal of Experimental Psychology*, 221, 105453. <https://doi.org/10.1016/j.jecp.2022.105453>
- Duong, S.**, Bachman, H. J., Votruba-Drzal, E., & Libertus, M. (2021). What's in a question? Parents' question use in dyadic interactions and the relation to preschool-aged children's math abilities. *Journal of Experimental Child Psychology*, 211, 105213. <https://doi.org/10.1016/j.jecp.2021.105213>
- Libertus, M. E., **Duong, S.**, Fox, D., Elliott, L. E., McGregor, R., Ribner, A., & Silver, A. (2021) A rational explanation for links between the ANS and math. *Commentary to Clark, S., Beck J., (2021) The number sense represents (rational) numbers in Behavioral and Brain Sciences*, 1-57. <https://doi.org/10.1017/S0140525X21001011>
- Bachman, H. J., Elliott, L., **Duong, S.**, Betancur, L., Navarro, M. G., Votruba-Drzal, E., & Libertus, M. (2020). Triangulating multi-method assessments of parental support for early math skills. *Frontiers in Education: Educational Psychology*. <https://doi.org/10.3389/feduc.2020.589514>

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Kottegoda, Y., Mastropietro, A., **Duong, S.** (2019). Characteristics of modulo one sequences. *Elemente der Mathematik*, 74, 1-11.

Ramesh, S., **Duong, S.**, Dosani, F., & Dina, B. (2019). A note on Wronskians of real analytic functions. *Far East Journal of Mathematical Education*, 19(2), 113-117.

Ahl, R.E., **Duong, S.**, & Dunham, Y. (2019). Children employ wealth cues when predicting others' sharing. *Developmental Psychology*, 55(2), 303-314.

BOOK CHAPTER

*Denotes joint authorship

Libertus, M. E., ***Duong, S.**, & *Silver, A. (2020). Mathematical cognition. In Benson, J. B. (Ed.), *Encyclopedia of infant and early childhood development*, 2nd edition vol. 2, (pp.311-318). Cambridge, MA: Academic Press. doi: 10.1016/B9780-12-809324-5.23573-6

MANUSCRIPTS UNDER REVIEW

Duong, S., Bachman, H. J., Votruba-Drzal, E., & Libertus, M. Exploring the role of “in the moment” and global factors in parents’ questioning during shared book reading.

Duong, S., Davis, T., Bachman, H., Votruba-Drzal, E., & Libertus, M. E. It takes two to tango: Exploring the dynamic structures of caregiver-child number talk using recurrence quantification.

Duong, S., Elliott, L. E., *Sodoti, O. C., Bachman, H., Libertus, M. E., & Votruba-Drzal, E. Money talks! The role of parents’ discussion of money for preschoolers’ math knowledge.

MANUSCRIPTS IN PREP

*Indicates undergraduate student or post-bac mentee

Chandler-Campbell, I., *Manley, C. E., **Duong, S.**, *Pickering, A., & Corriveau, K. H. Promoting learning agency outside of the classroom: Effects of autonomy-supportive language on child-engagement in informal STEM learning

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CONFERENCE PRESENTATIONS

*indicates undergraduate student mentee

Duong, S., Davis, T., Votruba-Drzal, E., Bachman, H. J., & Libertus, M. E. (2023, March). It takes two to tango: Dynamic and reciprocal caregiver-child conversations about numbers and math. In I. Chandler-Campbell & **S. Duong** (Chairs), *Tinkerer, Investigator, Learner, Scientist: Promoting children's active role in informal STEM conversations*. [Symposium]. Society for Research in Child Development Biennial Meeting, Salt Lake City, UT.

Chandler-Campbell, I., *Manley, C. E., **Duong, S.**, *Pickering, A., & Corriveau, K. (2023, March). Effect of autonomy-supportive language on child engagement in informal STEM learning. In I. Chandler-Campbell & **S. Duong** (Chairs), *Tinkerer, Investigator, Learner, Scientist: Promoting children's active role in informal STEM conversations*. [Symposium]. Society for Research in Child Development Biennial Meeting, Salt Lake City, UT.

Duong, S., Carvalho Pereira, J. M., *Lopiccolo, D., Votruba-Drzal, E., Bachman, H. J., & Libertus, M. E. (2023, March). "Beneath counts: Exploring the dynamics of caregiver-child conversations about numbers and math in semi-structured activities." [Poster] Society for Research in Child Development Biennial Meeting, Salt Lake City, UT.

Carvalho Pereira, J. M., Elliott, L., **Duong, S.**, Kothari, D., *Lopiccolo, D., Bachman, H. J., Votruba-Drzal, E., & Libertus, M. E. (2023, March). Are Some Math Talk Types More/Less Related to Concurrent Math Skills? Examining Preschoolers' Quantifier Talk. [Poster] Society for Research in Child Development, Salt Lake City, Utah.

Duong, S., Elliott, L. E., Bachman, H., Votruba-Drzal, E., & Libertus, M. (2022, June). "Variation in parents' number talk with their preschool-aged children: A cluster-analytic approach." [Poster] Mathematical Cognition and Learning Society Conference, Antwerp, Belgium.

*Hofman, S., **Duong, S.**, Bachman, H., Votruba-Drzal, E., & Libertus, M. (2022, June). "The Role of Gestural and Spatial Input in Children's Early Spatial Skills." [Poster] Mathematical Cognition and Learning Society Conference, Antwerp, Belgium.

Carvalho Pereira, J. M., **Duong, S.**, Elliott, L. E., Bachman, H., Votruba-Drzal, E., & Libertus, M. (2022, June). "Toddlers' math talk in response to parents' math-related prompts, but not statements, predicts early numeracy." [Poster] Mathematical Cognition and Learning Society Conference, Antwerp, Belgium.

Duong, S., Elliott, L. E., Bachman, H., Votruba-Drzal, E., & Libertus, M. (2022, April). "Exploring clusters of parents engaging in number talk with their preschool-aged children and the relation to children's math skills." [Poster] Cognitive Development Society Conference, Madison, WI.

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Chandler-Campbell, I., *Manley, C. E., **Duong, S.**, *Pickering, A., & Corriveau, K. H. (April, 2022).

"Promoting learning agency outside of the classroom: Effects of autonomy-supportive language on child-engagement in informal STEM learning." [Poster] Cognitive Development Society Conference, Madison, WI.

Duong, S., Fox, D., Gordner, S., Bachman, H., Votruba-Drzal, E., & Libertus, M. (2021, September).

"Coding and analyzing the sequential nature of parent-child interactions during semi-structured play." [Poster] International Conference on Interactivity, Language, and Cognition: Integrating Quantitative and Qualitative Methods in the Cognitive and Language Sciences, online.

Duong, S., Bachman, H., Votruba-Drzal, E., & Libertus, M. (2021, March). Parents' sensitivity to child-

level factors and the relation to parental questioning during dyadic interactions. In **S. Duong** (Chair), *Novel perspectives on the role of adult questions for children's learning and cognition*. [Symposium]. Society for Research in Child Development Biennial Meeting, online.

Duong, S., Elliott, L., Bachman, H., Votruba-Drzal, E., & Libertus, M. (2021, March). "Minute-by-

minute variations in parental number talk and their implications for coding parent-child interactions." [Poster] Society for Research in Child Development Biennial Meeting, online.

*Kammerzell, J., **Duong, S.**, Heywood, N., Isaacson, M., Libertus, M., Votruba-Drzal, E., & Bachman, H.

(2021, March). "Exploring relations between parent and child factors and parental praise in preschool aged-children." [Poster] Society for Research in Child Development Biennial Meeting, online.

*Sidoti, O. C., **Duong, S.**, Bachman, H., Votruba-Drzal, E., & Libertus, M. (2021, March). "Variations in

parental talk about numbers and money during pretend play with 4-year-olds." [Poster] Society for Research in Child Development Biennial Meeting, online.

Duong, S., & Libertus, M. (2020, December). "Uncertainty resolution in numerosity comparison: the

moderating role of math ability." [Poster] Society for Judgement and Decision- Making Conference, online.

Duong, S., Bachman, H., Votruba-Drzal, E., & Libertus, M. (2020, September). "Qualitative differences

in parental questioning during dyadic interactions and the relation to 4-year-old children's math abilities." [Poster] Interacting Brains: Adult-Child Interactions From Multiple Perspectives Conference, online.

Duong, S., Bachman, H., Votruba-Drzal, E., & Libertus, M. (2020, June). "'What's after six?': Parental

math questions relate to 4-year-old children's math skills." [Poster] Mathematical Cognition and Learning Society Conference. Cancelled due to COVID-19.

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- Duong, S.,** *Pitulski, S., Bachman, H., Votruba-Drzal, E., & Libertus, M. (2019, October). "What's in a question? Parents' question use in dyadic interactions and the relation to 4-year-old children's math abilities." [Poster] Cognitive Development Society Conference, Louisville, KY.
- Duong, S.,** & Libertus, M. (2019, June). "Children's math abilities and the relation to risky decision making: a study proposal." [Poster] Mathematical Cognition and Learning Society Conference, Ottawa, CA.
- Duong, S.,** *Pitulski, S., Bachman, H., Votruba-Drzal, E., & Libertus, M. (2019, June). "Measuring the quality of parent child interactions and the relation to preschool-aged children's math skills." [Poster] Mathematical Cognition and Learning Society Conference, Ottawa, CA.
- Duong, S.,** Terrizzi, B.F., Butler, L.P., & Beier, J.S. (2019, March). "Children's prosocial facilitation of others' communicative goals." [Poster] Society for Research in Child Development, Baltimore, MD.
- Duong, S.,** Cherynak, N., & Beier, J. (2018, June). "Goals or equality: How young children choose between helping and fairness when distributing resources." [Poster] Society for Philosophy and Psychology Conference, Ann Arbor, MI.
- Terrizzi, B. F., Woodward, A. M., **Duong, S.,** Ventimiglia, J., & Beier, J. S. (2018, June). "Young children negatively evaluate people who do not help, even when helping is challenging." [Poster] International Congress of Infant Studies Conference, Philadelphia, PA.
- Kottegoda, Y., Mastropietro, A., & **Duong, S.** (2017, November). "Characteristics of modulo one sequences." [Talk] Mathematical Association of America Northeast Section Meeting, Fairfield, CT.
- Duong, S.,** McGrady, P. (2017, April). "The effects of school racial composition on racial bias in children." [Poster] Northeast Regional Honors Conference, Pittsburgh, PA.
- Ahl, R.E., **Duong, S.,** & Dunham, Y. (2017, January). "Young children use information about affluence to predict others' giving." [Poster] Society for Personality and Social Psychology Convention, San Antonio, TX.
- Ramesh, S., **Duong, S.,** Charania, F., Dina, B. (2016, November). "Some properties of the wronskian." [Talk] Mathematical Association of America Northeast Section Meeting, Hartford, CT.

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INVITED TALK

Duong, S. (2022, March). "Parent-child interactions, questions, and math (sort of)." Talk presented at the Social Learning Laboratory (PI: Kathleen Corriveau) at Boston University, online.

LOCAL PRESENTATIONS

Duong, S., & Libertus, M. (2022, November). "Quantifying dynamic structures in social interactions: Caregiver-child number talk as a case study." University of Pittsburgh Cognitive Psychology Talk Series, online.

Duong, S., & Libertus, M. (2021, November). "Profiles of parent interaction styles during math conversations with their children." University of Pittsburgh Cognitive Psychology Talk Series, online.

Duong, S., & Libertus, M. (2020, November/December). "Exploring relations between approximate number processing skills, eye movements, and math ability." Carnegie Mellon University, Center for the Neural Basis of Cognition Brain Bag Series and at the University of Pittsburgh Cognitive Psychology Talk Series, online.

Duong, S., & Libertus, M. (2020, November). "Exploring relations between approximate number system acuity, eye movements, and math ability." University of Pittsburgh Cognitive Psychology Talk Series, online.

Duong, S., Bachman, H., Votruba-Drzal, E., & Libertus, M. (2020, March). "What's in a question? Parents' question use in dyadic interactions and the relation to preschool-aged children's math abilities." [Poster] Graduate Student Exposition at the University of Pittsburgh. Cancelled due to COVID-19.

Duong, S., & Libertus, M. (2019, September). "Children's math abilities and the relation to risky decision making." University of Pittsburgh Cognitive Psychology Talk Series, Pittsburgh, PA.

Duong, S., & Libertus, M. (2019, April). "Exploring the complexity of parents' questioning in parent-child interactions and the relation to children's math skills." University of Pittsburgh Cognitive Psychology Talk Series, Pittsburgh, PA.

*Hofman, S., **Duong, S.**, Libertus, M. (2019, April). "Parental praise and its relation to children's math skills." [Poster] University of Pittsburgh Psychology Department Student Research Poster Session, Pittsburgh, PA.

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*Pitulski, S., **Duong, S.**, Libertus, M. (2019, April). "Question complexity in parent-child interactions and the relation to children's math abilities." [Poster] University of Pittsburgh Psychology Department Student Research Poster Session, Pittsburgh, PA.

Duong, S., & Libertus, M. (2019, March). "Exploring the complexity of parents' questioning in parent child interactions and the relation to children's math skills." University of Pittsburgh Council for Graduate Students in Education Conference, Pittsburgh, PA.

Kottegoda, Y., Mastropietro, A., & **Duong, S.** (2018, April). "Characteristics of modulo one sequences." [Poster] Southern Connecticut State University Spuyten Duyvil Undergraduate Mathematics Conference, New Haven, CT.

RESEARCH EXPERIENCE

Trying Together

Data Analyst

Pittsburgh, PA

Sept. 2022-Present

University of Pittsburgh, Kids' Thinking Lab

Graduate Student Researcher

Pittsburgh, PA

Jul. 2018-Present

Project: Parents Promoting Early Learning

(PIs: Drs. Melissa Libertus, Heather Bachman, and Elizabeth Votruba-Drzal)

University of Maryland, Lab for Early Social Cognition

Lab Manager

College Park, MD

Jun. 2017-Jun. 2018

Projects:

- Equality or Goals, led by Drs. Jonathan Beier and Nadia Chernyak
- Children's Evaluations of Unhelpful People, led by Dr. Jonathan Beier, Dr. Brandon Terrizzi, Amanda M. Woodward
- Social Helping, led by Drs. Jonathan Beier, Lucas Butler, Brandon Terrizzi

Yale University, Social Cognitive Development Lab

Research Assistant

New Haven, CT

Sept. 2015-May 2017

Project: Children Use Wealth Cues to Evaluate Others, led by Richard Ahl and Dr. Yarrow Dunham

UNH Dept. of Mathematics

Research Assistant

West Haven, CT

Feb. 2016-May 2017

Projects:

- Constructing Modulo One Sequences of n Length, led by Dr. Yasanthi Kottegoda
- Exploring and Proving Properties of the Wronskian, led by Dr. Ramesh Sharma

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UNH Dept. of Psychology

Research Assistant

Project: Workplace Romance, led by Dr. Amy Baker

West Haven, CT
May 2015-Nov. 2015

CONSULTING EXPERIENCE

Programming consultant

May 2022-Present

- Modify, test, and debug code (Python, Javascript) of a cognitive assessment battery (PsychoPy, Pavlovica)

Statistics consultant

Dec. 2021-Apr. 2022

- Conduct descriptive and inferential statistical analyses (R) related to email campaigns for a marketing and consulting firm
- Consultant on data analysis methods (e.g., regression analysis, reliability statistics, etc.) for graduate students at various universities

Qualitative research consultant

Dec. 2021-Feb. 2022

- Develop a coding scheme (Nvivo) to capture themes in qualitative interviews

MENTORING

University of Pittsburgh, Bachelor of Philosophy Thesis or Psychology Honors Thesis Students

- Chelsea Carver (Summer 2020 – Present)
- Sasha Hofman (Fall 2019 – Present)

University of Pittsburgh, Directed Research Students

- Heather Booth (Fall 2021 – Present)
- Kelsey Phillips (Fall 2021 – Present)
- Andrew Mills (Fall 2019 – Fall 2021)
- Sierra Armstrong (Fall 2018 – Present)
- Sarah Pitulski (Fall 2018 – Spring 2021)

Boston University

- Claire Manley (Spring 2021 – Present)
- Alexis Pickering (Spring 2021 – Present)

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TEACHING

Research Methods Lab Instructor, University of Pittsburgh
Cognitive Psychology Lab Instructor, University of Pittsburgh

Fall 2021
Spring 2022

SERVICE

Quant Family Collective Peer Mentor Program
University of Pittsburgh

Sept. 2022-Present

Psychology Department Committee on Equity, Inclusion, and Community
University of Pittsburgh

Sept. 2018-Present

- Co-leader (2020-2022): Managed subcommittee efforts, hosted meetings, and tracked budgets.
- Undergraduate Subcommittee: Plan and execute events aimed to promote undergraduate involvement in research.
- Outreach Subcommittee: Organize talks and panel discussions with speakers from the university and local community who work with underrepresented groups. Edit and distribute committee newsletter, with information about diversity initiatives and resources.

Cognitive Program Talk Series, Student Organizer
University of Pittsburgh

Jan. 2020-Mar. 2020

Graduate Peer Mentor Program
University of Pittsburgh

Aug. 2019-Aug. 2020

Hot Metal Bridge (HMB) Peer Mentor Program
University of Pittsburgh

Aug. 2019-Aug. 2021

Cognitive Program Communication Committee
University of Pittsburgh

Jul. 2019-Jul. 2020

Compile and disseminate resources for students in the program, including information about course requirements, fellowships and scholarships, service opportunities, and funding.

Learning Research and Development Center Social Committee
University of Pittsburgh

Jun. 2019-Present

Plan and organize center-wide events, including welcome receptions, fundraisers, and the annual holiday party.

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AFFILIATIONS & MEMBERSHIPS

Mathematical Cognition and Learning Society
Society for Research in Child Development
Cognitive Development Society
Society for Judgment and Decision Making
Psi Chi, International Honor Society in Psychology