# Melissa-Evelyn Libertus, PhD

Department of Psychology • Learning Research and Development Center University of Pittsburgh 607 LRDC • 3939 O'Hara Street, Pittsburgh, PA 15260 Telephone: (412) 624-7457 • E-Mail: <u>libertus@pitt.edu</u>



## Academic appointments

2018 – present: 2013 – 2018:	Associate professor, Dept. of Psychology, University of Pittsburgh, USA Assistant professor, Dept. of Psychology, University of Pittsburgh, USA
2013 – present:	Research scientist, Learning Research and Development Center
	University of Pittsburgh, USA
2010 – 2013:	Postdoctoral fellow, Dept. of Psychological and Brain Sciences
	Johns Hopkins University, USA
	Advisors: Lisa Feigenson & Justin Halberda

#### Education

2006 – 2010:	PhD in Psychology and Neuroscience, Duke University, USA
	Advisor: Elizabeth M. Brannon
2004 – 2006:	M.A. in Psychology and Neuroscience, Duke University, USA
	Advisor: Elizabeth M. Brannon
2001 – 2004:	B.Sc. in Cognitive Science (summa cum laude), University of Osnabrück,
	Germany

# **Scholarships and Awards**

2015:	Association for Psychological Science (APS) Rising Star Award
2015:	Sofja Kovalevskaja Award, Alexander-von-Humboldt-Foundation (declined)
2014:	International Mind Brain and Education Society (IMBES) Early Career Award
2011:	Developmental Science Early Career Research Prize
2011:	Building Bridges Travel Award, German Scholars Organization
2009 – 2010:	Katherine Goodman Stern Fellowship, Duke University
2009:	Frances Degen Horowitz Millennium Scholar, Society for Research in Child
	Development
2007 – 2009:	Three Conference Travel Grants, Duke University
2006 – 2007:	George H. Hitchings New Investigator Award in Health Research and Training,
	Triangle Community Foundation
2006 – 2009:	Four Summer Vertical Integration Scholarships, Duke University
2004 – 2005:	Fulbright Scholarship (declined)
2002 – 2006:	German National Merit Foundation Scholarship (Studienstiftung des Deutschen Volkes)

# GRANTS

## **External grants**

"Intrinsic and extrinsic influences on young children's mathematical abilities" James S. McDonnell Foundation PI: Melissa Libertus Funded period: 01/2019-12/2024 Total costs: \$600,000 "Collaborative Research: Math Cognition In Toddlers From Latino and White families: Contributions Of Home Experiences With Mothers and Fathers"

National Science Foundation (HRD 1760844) Pls: Catherine Tamis-LeMonda, Natasha Cabrera, Melissa Libertus Funded period: 08/2019-07/2021 Total costs: \$450,000 (University of Pittsburgh only)

"APA Summer Undergraduate Psychology Research Experience (SUPRE)" APA

PI: Jana Iverson; Co-PIs: Julie Fiez, Lauren Hallion, Tristen Inagaki, Melissa Libertus, Anna Marsland, Ed Orehek, Elizabeth Votruba-Drzal, Aidan Wright Funded period: 06/2018 – 07/2018 Total costs: \$21,869

"NCS-FO: Neurobehavioral Integration of Visual and Semantic Number Knowledge and its Role for Individual Variation in the Math Ability of Children and Adults"

National Science Foundation (DUE 1734735) Pls: Marc Coutanche, Julie Fiez, Melissa Libertus Funded period: 09/2017 – 08/2020 Total costs: \$966,253

"APA Summer Undergraduate Psychology Research Experience (SUPRE)"

APA

PI: Jana Iverson; Co-PIs: Julie Fiez, Melissa Libertus, Elizabeth Votruba-Drzal, Aidan Wright Funded period: 05/2017 – 07/2017 Total costs: \$21,874

"Tell me about math: A longitudinal training study on the effects of parent-child interactions and parental cognition on children's math abilities"

National Science Foundation (DUE 1534830) PI: Melissa Libertus, Co-PIs: Klaus Libertus, Aidan Wright Funded period: 09/2015 – 08/2019 Total costs: \$499,750

 "Revealing the importance of math-related parent-child interactions via EEG hyperscanning" National Science Foundation (Supplement to DUE 1534830)
 PI: Melissa Libertus, Co-PIs: Klaus Libertus, Aidan Wright Funded period: 09/2016 – 08/2019 Total costs: \$ 99,194

#### Internal grants

"Students in cognitive development learn to apply knowledge and communicate effectively through blog posts for parents"

Discipline-Based Science Education Research Center Pls: Emily Braham, Melissa Libertus Funded period: 09/2017 – 12/2017 Total costs: \$2,000

"How Low- and High-SES Parents Support Young Children's Mathematical Thinking" Learning Research and Development Center Internal Award PI: Melissa Libertus, Co-PIs: Heather Bachman, Elizabeth Votruba-Drzal Funded period: 07/2017 – 06/2019 Total costs: \$149,962 "The dangers of computation without quantitative meaning: Testing the case of symbolic estrangement"

Learning Research and Development Center Internal Award PI: Melissa Libertus, Co-PIs: Julie Fiez, Christian Schunn Funded period: 05/2014 – 06/2016 Total costs: \$87,955

"Tell me about math: A longitudinal training study on the effects of parent-child interactions and parental cognition on children's math abilities"

Learning Research and Development Center Internal Award PI: Melissa Libertus, Co-PI: Klaus Libertus Funded period: 05/2015 – 02/2016 Total costs: \$149,873

#### Pending grants

"How Parents Support Young Children's Mathematical Thinking Across SES" National Institutes of Health PI: Melissa Libertus, Co-Is: Heather Bachman, Elizabeth Votruba-Drzal

"REU SITE: Linking Mind, Brain, and Behavior: Psychology Research Intensive Mentored Experiences (PRIME)"

National Science Foundation

PI: Jana Iverson, Co-PI: Melissa Libertus

"Cognitive and Biological Mechanisms in Pediatric Voice Therapy"

National Institutes of Health

PI: Katherine Verdolini Abbott, Co-Is: Patrick Barth, Dimitar Deliyski, Joseph Dohar, Melissa Libertus, Rita Patel

## PUBLICATIONS

## Publications in peer-reviewed journals

\* denotes graduate student mentee; \*\* denotes undergraduate student mentee

- 1. \*Braham, E., \*Elliott, L., **Libertus, M.** (in press). Using Hierarchical Linear Models to Examine Approximate Number System Acuity: The Role of Task Parameters and Participant Characteristics. *Frontiers in Psychology.*
- 2. \*Navarro, M., \*Braham, E., **Libertus, M.** (2018). Intergenerational associations of the approximate number system in toddlers and their parents. *British Journal of Developmental Psychology*, *36*(4), 521-539.
- 3. \*Braham, E., **Libertus, M.**, McCrink, K. (2018). Increasing Children's Spontaneous Focus on Number through Guided Parent-Child Interactions in a Children's Museum. *Developmental Psychology*, *54*(8), 1492-1498.
- 4. \*Braham, E., **Libertus, M.** (2018). When Approximate Number Acuity Predicts Math Performance: The Moderating Role of Math Anxiety. *PLoS One, 13*(5), e0195696.
- 5. Kersey, A., \*Braham, E., Csumitta, K., **Libertus, M.**, Cantlon, J. (2018). No intrinsic gender differences in children's earliest numerical abilities. *npj Science of Learning, 3*(1), 12.

- 6. Wang, J., **Libertus, M.**, Feigenson, L. (2018). Hysteresis-induced changes in preverbal infants' approximate number precision. *Cognitive Development, 47*, 107-116.
- \*\*Zheng, P, Libertus, M. (2018). The Role of Parental Education and Income on Parents' Academic Beliefs and the Provision of Home Learning Opportunities for 4-8-year old Children. Journal of Educational and Developmental Psychology, 8(1), 118-132.
- 8. \*Liu, R., Schunn, C., Fiez, J., **Libertus, M.** (2018). The integration between non-symbolic and symbolic numbers: Evidence from an EEG study. *Brain and Behavior, 8,* e00938.
- 9. Libertus, M., Feigenson, L., Halberda, J. (2018). Infants extract frequency distributions from variable approximate numerical information. *Infancy*, *23*(1), 29-44.
- Libertus, M., \*Liu, A., Pikul, O., Jacques, T., Cardoso-Leite, P., Halberda, J., Bavelier, D. (2017). The impact of action videogame training on mathematical abilities in adults. *AERA Open*, *3*(4), 1-13.
- 11. Möhring, W., \*Liu, R., **Libertus, M.** (2017). Infants' speed discrimination: Effects of different ratios and spatial orientations. *Infancy*, 22(6), 762-777.
- Libertus, K., Libertus, M., Einspieler, C., Marschik, P. (2017). "What" matters more than "Why" - Neonatal behaviors initiate social responses. *Behavioral and Brain Sciences, 40,* e394.
- 13. Libertus, M., \*Braham, E., \*Liu, R. (2017). Infants discriminate number: Evidence against the prerequisite of visual object individuation and the primacy of continuous magnitude. *Brain and Behavioral Sciences, 40,* e176.
- 14. \*Braham, E., Libertus, M. (2017). Intergenerational Associations in Numerical Approximation and Mathematical Abilities. *Developmental Science*, *20*(5), e12436.
- 15. Libertus, M., Forsman, L., Aden, U., Hellgren, K. (2017). Deficits in Approximate Number System Acuity and Mathematical Abilities in 6.5-year-old Children Born Extremely Preterm. *Frontiers in Psychology, 8,* 1175.
- \*Elliott, L., \*Braham, E., Libertus, M. (2017). Understanding Sources of Individual Variability in Parents' Number Talk with Young Children. *Journal of Experimental Child Psychology*, 159, 1-15.
- 17. Libertus, M., Odic, D., Feigenson, L., Halberda, J. (2016). The Precision of Mapping Between Number Words and the Approximate Number System Predicts Children's Formal Math Abilities. *Journal of Experimental Child Psychology*, *150*, 207-226.
- Pailian, H., Libertus, M., Feigenson, L., Halberda, J. (2016). Developmental Changes in Visual Short-Term Memory (VSTM) Capacity Between Ages 3 and 8 Years. *Attention, Perception, & Psychophysics, 78,* 1556-1573.
- 19. Einspieler, C., Bos, A., **Libertus, M.**, Marschik, P. (2016). The general movement assessment helps us to identify preterm infants at risk for cognitive dysfunction. *Frontiers in Psychology, 7*.
- 20. Libertus, M., Odic, D., Feigenson, L., Halberda, J. (2015). A Developmental Vocabulary Assessment for Parents (DVAP): Validating parental report of vocabulary size in 2-7-year-olds. *Journal of Cognition and Development, 16*(3), 442-454.
- 21. \*Keller, L. E., Libertus, M. (2015). Inhibitory control may not explain the link between approximation and math abilities in kindergarteners from middle class families. *Frontiers in Developmental Psychology, 6*, 685.

- 22. Libertus, M. (2015). The role of intuitive approximation skills for school math abilities. *Mind, Brain, and Education,* 9(2), 112-120.
- 23. Libertus, M., Feigenson, L., Halberda, J., Landau, B. (2014). Understanding the mapping between numerical approximation and number words: Evidence from Williams syndrome and typical development. *Developmental Science*, *17*(6), 905-919.
- 24. Libertus, M., Marschik, P. B., Einspieler, C. (2014). Number word use in toddlerhood predicts number recall performance at seven years of age. *PLoS ONE 9(6):* e98573. *doi:10.1371/journal.pone.0098573*
- 25. Libertus, M., Starr, A., Brannon, E. (2014). Number trumps area for 7-month-old infants. *Developmental Psychology*, *50*(1), 108-112.
- Starr, A., Libertus, M., Brannon, E. (2013). Number sense in infancy predicts mathematical abilities in childhood. *Proceedings of the National Academy of Sciences*, *110*(45), 18116-18120.

Article was featured in Science, Nature, one of top 100 stories in 2013 in Discover, National Geographic, Washington Post, and on NSF Science 360

- 27. Libertus, M., Feigenson, L., Halberda, J. (2013). Numerical approximation abilities correlate with and predict informal but not formal mathematics abilities. *Journal of Experimental Child Psychology*, *116*(4), 829-838.
- 28. Hellgren, K., Halberda, J., Forsman, L., Aden, U., **Libertus, M.** (2013). Compromised approximate number sense in extremely preterm school-aged children. *Developmental Medicine and Child Neurology*, *55*(12), 1109-1114.
- 29. Starr, A., Libertus, M., Brannon, E. (2013). Infants show ratio-dependent number discrimination regardless of set size. *Infancy*, *18*(6), 927-941.
- 30. Feigenson, L., **Libertus, M.**, Halberda, J. (2013). Links between the intuitive sense of number and formal mathematics ability. *Child Development Perspectives*, *7*(2), 74-79.
- 31. Odic, D., **Libertus, M.**, Feigenson, L., Halberda, J. (2013). Developmental change in the acuity of approximate number and area representations. *Developmental Psychology, 49*(6), 1103-1112.
- 32. Libertus, M., Feigenson, L., Halberda, J. (2013). Is Approximate Number Precision a Stable Predictor of Math Ability? *Learning and Individual Differences, 25,* 126-133.

One of the most highly cited papers in Learning and Individual Differences during 2014, 2015, and 2016

- 33. Libertus, M., Odic, D., Halberda, J. (2012). Intuitive sense of number correlates with math scores on college-entrance examination. *Acta Psychologica*, *141*(3), 373-379.
- 34. Möhring, W., **Libertus, M.**, Bertin, E. (2012). Speed discrimination in 6- and 10-month-old infants follows Weber's Law. *Journal of Experimental Child Psychology, 111,* 405-418.
- 35. Wu, C.-T., **Libertus**, **M.**, \*\*Meyerhoff, K., Woldorff, M. (2011). The temporal dynamics of object in visual cortex during the transition from distributed to focused spatial attention. *Journal of Cognitive Neuroscience*, *23*(12), 4094-4105.

- 36. Cantlon, J., Davis, S., **Libertus, M.**, \*\*Kahane, J., Brannon, E., Pelphrey, K. (2011). Intraparietal white matter development predicts numerical performance in young children. *Learning and Individual Differences*, *21*(6), 672-680.
- 37. Libertus, M., Feigenson, L., Halberda, J. (2011). Preschool acuity of the approximate number system correlates with school math ability. *Developmental Science*, *14*(6), 1292-1300.

One of top 5 downloads for 2013, 2014, 2015; article was featured in New York Times, Science Daily, and on MSNBC

- Libertus, M., Brannon, E., Woldorff, M. (2011). Parallels in stimulus-driven oscillatory brain responses to numerosity changes in adults and seven-month-old infants. *Developmental Neuropsychology*, 36(6), 651-667.
- 39. Libertus, M., Brannon, E. (2010). Stable individual differences in number discrimination in infancy. *Developmental Science*, *13*(6), 900-906.
- 40. Libertus, M., Brannon, E. (2009). Behavioral and neural basis of number sense in infancy. *Current Directions in Psychological Science, 18*(6), 346-351.
- 41. Libertus, M., \*\*Pruitt, L., Woldorff, M., Brannon, E. (2009). Induced alpha-band oscillations reflect ratio-dependent number discrimination in the infant brain. *Journal of Cognitive Neuroscience*, *21*(12), 2398-2406.
- 42. Cantlon, J., Libertus, M., Pinel, P., Dehaene, S., Brannon, E., Pelphrey, K. (2009). The Neural Development of an Abstract Concept of Number. *Journal of Cognitive Neuroscience, 21*(11), 2217-2229.
- 43. Cantlon, J., Cordes, S., **Libertus, M**., Brannon, E. (2009). Numerical Abstraction: It ain't broke. *Behavioral and Brain Sciences, 32*, 331-332.
- 44. **Libertus, M.**, Brannon, E., Pelphrey, K. (2009). Developmental changes in category-specific brain responses to numbers and letters in a working memory task. *Neuroimage, 44*(4), 1404-1414.
- Cantlon, J., Cordes, S., Libertus, M., Brannon, E. (2009). Comment on Log or Linear? Distinct Intuitions of the Number Scale in Western and Amazonian Indigene Cultures. *Science*, 323, 38b.
- Brannon, E., Libertus, M., Meck, W., Woldorff, M. (2008). Electrophysiological measures of time processing in infant and adult brains: Weber's law holds. *Journal of Cognitive Neuroscience*, 20(2), 193-203.
- 47. Libertus, M., Woldorff, M., Brannon, E. (2007). Electrophysiological evidence for notation independence in numerical processing. *Behavioral and Brain Functions, 3(1).*
- 48. Schwank, I., Armbrust, S., **Libertus, M.** (2003). Prädikative versus funktionale Denkvorgänge beim Konstruieren von Algorithmen [Predicative versus functional thinking processes while constructing algorithms]. *Zentralblatt für Didaktik der Mathematik* [ZDM The International Journal on Mathematics Education], *35* (*3*), pp.79-85.

#### Publications in preparation

\*Elliott, L., Feigenson, L., Halberda, J., **Libertus, M.** (under review). Bidirectional, longitudinal associations between math ability and approximate number system acuity in childhood.

- \*Liu, R., **Libertus, M.** (under review). Numerosity discrimination and its neural basis: a multivariate perceptual decision making view.
- \*Braham, E., **Libertus, M.** (in prep). Explaining Differences in Young Children's Exposure to Math Language: A Review of Parents' and Teachers' Math Talk with Preschoolers
- \*\*Hanner, E., \*Braham, E., \*Elliott, L., **Libertus, M.** (in prep). Increasing Math Talk in Adult-Child Interactions through Grocery Store Signs.
- Libertus, M., Odic, D., Feigenson, L., Halberda, J. (in prep). Visual training of approximate number sense improves auditory number sense and school math ability.
- \*Liu, A., Schunn, C., Fiez, J., **Libertus, M.** (in prep). Adjusting for adults' number estimation biases reveals symbolic integration of double-digit numbers.
- Odic, D., Libertus, M., \*\*Zhu, R., Feigenson, L., Halberda, J. (in prep). The development of verbal estimation is independent from the development of approximate number in five- to seven-year-old children.
- \*\*Thippana, J., \*Elliott, L., \*\*Gehman, S., **Libertus, M.** (in prep). Parents' Use of Number Talk during Play at Home: Exploring Variability across Activities and Families.

### PRESENTATIONS

#### Invited Talks and Colloquia

- 03/2018: Colloquium, University of Bologna, Italy
- 07/2017: Colloquium, KU Leuven, Belgium
- 12/2016: Colloquium, Bucknell University, USA
- 10/2016: Developmental Brownbag, Carnegie Mellon University, USA
- 04/2016: Neuroscience and Education lab, New York University, USA
- 09/2013: Developmental Brownbag, Carnegie Mellon University, USA
- 09/2013: Developmental Brownbag, University of Pittsburgh, USA
- 09/2013: Cognitive Brownbag, University of Pittsburgh, USA
- 03/2013: JRG-Auswahlsymposia, University of Tübingen, Germany.
- 03/2013: Workshop on Early Childhood Development, University of Zurich, Switzerland.
- 02/2012: Colloquium, Stanford University, USA.
- 02/2012: Developmental Brownbag, Stanford University, USA.
- 01/2012: Colloquium, Peabody College, Vanderbilt University, USA.
- 01/2012: Colloquium, Dept. of Psychology and Learning Research and Development Center, University of Pittsburgh, USA.
- 11/2011: Regional ERP/EEG Research Meeting, Baltimore, USA.
- 06/2011: Colloquium, University of Tübingen, Germany.
- 05/2011: Colloquium, University of Gießen, Germany.
- 05/2011: Colloquium, Karolinska Institute, Sweden.
- 07/2009: Laboratory for Child Development, Johns Hopkins University.
- 05/2009: Internal seminar, Institute of Cognitive Neuroscience, University College London, UK.
- 05/2009: Colloquium, Centre for Brain and Cognitive Development, Birkbeck College, University of London, UK.
- 05/2009: Colloquium, Institute for Empirical Research in Economics, University of Zurich, Switzerland.
- 05/2009: Colloquium, Institute of Cognitive Science, University of Osnabrück, Germany.
- 09/2007: NeuroMath Workshop, University of Osnabrück, Germany.
- 02/2007: Cognitive, Affective and Social Neuroscience Series, Duke University.
- 11/2006: Cognitive Neuroscience Presentation Seminar Series, Duke University.

10/2005: Cognitive Neuroscience Presentation Seminar Series, Duke University.

04/2005: Duke University Lunchbox Series.

#### **Conference Presentations - Oral**

\* denotes graduate student mentee

- 1. **Libertus, M.**, \*Braham, E., \*Elliott, L., \*\*Hanner, E., Haslinger, A. (06/2018). *Understanding variability in parental math talk and its influences on young children's math skills.* 6th International Workshop on Advanced Learning Sciences, Pittsburgh, PA, USA.
- 2. \*Liu, R., \* Braham, E., **Libertus, M.** (11/2017). *Symbolic number comparison in 5- to 9-year-old children: Age-related changes in event-related potentials and their relation to formal math abilities.* Annual Meeting of the Society of Neuroscience, Washington, DC, USA.
- 3. \*Braham, E., **Libertus, M.**, McCrink, K. (10/2017). *Improving Young Children's Spontaneous Focus on Number Through Guided Parent-Child Interactions in a Children's Museum*. Biennial Meeting of the Cognitive Development Society, Portland, OR, USA.
- 4. Einspieler, C., Bos, F., **Libertus, M.**, Marschik, P. (10/2017). *The general movement assessment helps us identify preterm infants at risk for cognitive dysfunction*. XXXIII International Symposium of the Polish Neonatal Society, Cracow, Poland.
- 5. Libertus, M. (05/2017). Understanding the Link between the Approximate Number System and Math Abilities: Evidence from Training Studies and Observations of Intergenerational *Transmission*. Math Cognition Conference, Nashville, TN, USA.
- 6. Libertus, M., \*Elliott, L., \*Braham, E. (04/2017). *Parents' Own Number Sense and Math Abilities Explain Variability in Informal Math Talk with Their Children.* Biennial Meeting of the Society for Research in Child Development (SRCD), Austin, TX, USA.
- \*Elliott, L., Libertus, M. (04/2017). Inhibitory Control and the Approximate Number System: Significant but Separate Predictors of Early Math Abilities. Biennial Meeting of the Society for Research in Child Development (SRCD), Austin, TX, USA.
- 8. Shembel, A., Verdolini Abbott, K., Galera, R., **Libertus, M.** (06/2016). *Prospective Study of Voice Therapy in Children: Potential Cognitive Factors.* 45<sup>th</sup> Annual Symposium of The Voice Foundation, Philadelphia, PA, USA.
- 9. \*Liu, A., Schunn, C., Fiez, J., Libertus, M. (07/2015). *Symbolic Integration, Not Symbolic Estrangement, For Double-Digit Numbers.* 37th Annual Meeting of the Cognitive Science Society, Pasadena, CA, USA.
- 10. Libertus, M., Hellgren, K., Forsman, L., Aden, U. (03/2015). *Deficits in Mathematical Abilities and Approximate Number System Acuity in Children Born Extremely Preterm*. Biennial Meeting of the Society for Research in Child Development (SRCD), Philadelphia, USA.
- 11. Libertus, M., Odic, D., Feigenson, L., Halberda, J. (03/2015). *Verbal number estimation predicts math ability and mediates the relation between numerical approximation and math ability*. Biennial Meeting of the Society for Research in Child Development (SRCD), Philadelphia, USA.
- Pailian, H., Libertus, M., Feigenson, L., Halberda, J. (05/2014). On the dynamic nature of VWM: Separate limits for the storage and manipulation of information. Vision Sciences Society (VSS) 14<sup>th</sup> Annual Meeting, St. Pete Beach, USA.

- Halberda, J., Bavelier, D., Landau, B., Hellgren, K., Forsman, L., Jacques, T., Libertus, M. (05/2013). Training of Number Sense transfers broadly. Vision Sciences Society (VSS) 13<sup>th</sup> Annual Meeting, Naples, USA.
- 14. Libertus, M., Feigenson, L., Halberda, J. (04/2013). *The Relationship Between Informal and Formal School Math Ability and Children's Basic Numerical Approximation Skills*. Biennial Meeting of the Society for Research in Child Development (SRCD), Seattle, USA.
- Starr, A., Libertus, M., Brannon, E. (04/2013). Infants show ratio-dependent discrimination regardless of set size. Biennial Meeting of the Society for Research in Child Development (SRCD), Seattle, USA.
- 16. Halberda, J., **Libertus, M.,** Feigenson, L. (04/2013). *The Approximate Number System (ANS): What is it and how might it be affecting classroom performance.* Annual Meeting of The American Educational Research Association (AERA), San Francisco, USA.
- 17. Libertus, M., Halberda, J., Feigenson, L. (04/2011). *Approximate Number Discrimination Correlates With Math Abilities in Preschoolers.* Biennial Meeting of the Society for Research in Child Development (SRCD), Montreal, Canada.
- 18. Libertus, M., Wu, C., Harris, J., Woldorff, M. (11/2007). Attention can be shifted to a color pop-out prior to face-specific visual processing at that location. Annual Meeting of the Society for Neuroscience (SfN), San Diego, USA.
- Libertus, M. (03/2007). Neuronale Marker der Zahlenverarbeitung in Säuglingen und Kindern. [Neural markers of number processing in infants and children]. Gemeinsame Jahrestagung der Deutschen Mathematiker-Vereinigung und der Gesellschaft der Didaktik für Mathematik [Joint annual meeting of the German Association for Mathematicians and the Society for Mathematical Education], Berlin, Germany.
- Brannon, E., Cantlon, J., Cordes, S., Jordan, K., Libertus, M., MacLean, E., & Suanda, U. (11/2006). Comparative and developmental approach to studying nonverbal numerical cognition. Annual meeting of the Psychonomic Society, Houston, TX.
- 21. Libertus, M. (06/2006). *Electrophysiological correlates of symbolic vs non-symbolic number magnitude.* Numeracy and brain development (Numbra) Summer School, Finland.
- 22. **Libertus, M.**, Armbrust, S. (09/2002). *Prädikative versus funktionale Denkvorgänge beim Konstruieren von Algorithmen* [Predicative versus functional thinking processes while constructing algorithms]. Young Scientists Session, 43<sup>rd</sup> Conference of the German Psychological Society (DGPs), Berlin, Germany.
- Armbrust, S., Schwank, I., Libertus, M. (09/2002). Augenblickbewegungen beim Lösen von Matrizenaufgaben (QuaDiPF) [Eye-movements while solving matrices tasks (QuaDiPF)]. 43<sup>rd</sup> Conference of the German Psychological Society (DGPs), Berlin, Germany.

## **Conference Presentations - Posters**

\* denotes graduate student mentee; \*\* denotes undergraduate student mentee

1. \*Braham, E., McCrink, K., **Libertus, M.** (2018). Characteristics of Parents and their Children Explain Differences in Math Talk at a Children's Museum. 6<sup>th</sup> Biennial International Mind, Brain, and Education Society (IMBES) Conference, Los Angeles, CA, USA.

- \*Braham, E., \*\*Hanner, E., \*Elliott, L., Libertus, M. (2018). Supermarket Signs Promote Math Talk among Adults and Young Children. 6<sup>th</sup> Biennial International Mind, Brain, and Education Society (IMBES) Conference, Los Angeles, CA, USA.
- 3. \*Liu, R., \*Braham, E., **Libertus, M.** (2018). Symbolic and non-symbolic number comparisons in children rely on different brain regions: an event-related potentials (ERP) study. 6<sup>th</sup> Biennial International Mind, Brain, and Education Society (IMBES) Conference, Los Angeles, CA, USA.
- 4. \*Liu, R., \*Braham, E., **Libertus, M.** (2018). Symbolic and non-symbolic number comparison in children: an EEG study. *6th International Workshop on Advanced Learning Sciences, Pittsburgh, PA, USA*.
- 5. \*Braham, E., McCrink, K., **Libertus, M.** (2018). Creating Math-Related Parent-Child Interactions in a Children's Museum. *6th International Workshop on Advanced Learning Sciences, Pittsburgh, PA, USA*.
- 6. \*\*Thippana, J., \*Elliott, L., **Libertus, M.** (2017). What Influences Variability in Parents' Number Talk in the Lab and at Home? *Biennial Meeting of the Cognitive Development Society, Portland, OR, USA.*
- 7. \*Elliott, L., Feigenson, L., Halberda, J., **Libertus, M.** (2017). Bidirectional, Longitudinal Associations between Math Ability and Approximate Number System Acuity in Childhood. *Math Cognition Conference, Nashville, TN, USA.*
- 8. \*Braham, E., \*Liu, R., **Libertus, M.** (2017). Variability in Math Talk During Parent-Child Interactions: The Role of Parents' Math Ability and Approximate Number System Acuity. *Biennial Meeting of the Society for Research in Child Development (SRCD), Austin, TX, USA.*
- 9. \*Braham, E., **Libertus, M.** (2016). Math anxiety moderates the relation between approximate number acuity and math performance. *International Mind Brain and Education Society Conference, Toronto, Canada.*
- 10. \*Liu, R., \*Liu, A., Schunn, C., Fiez, J., **Libertus, M.** (2016). The integration between nonsymbolic and symbolic numbers and its relation to math ability. *International Mind Brain and Education Society Conference, Toronto, Canada.*
- 11. \*Braham, E., Libertus, M. (2016). Math talk variability in preschool classrooms: The role of teachers' abilities and beliefs. *International Mind Brain and Education Society Conference, Toronto, Canada.*
- 12. \*Liu, R., \*Liu, A., Schunn, C., Fiez, J., **Libertus, M.** (2016). Automatic integration between non-symbolic and symbolic numbers in adults. *Math Cognition Conference, Fort Worth, TX, USA.*
- 13. \*Liu, R., Schunn, C., Fiez, J., Libertus, M. (2016). Spontaneous integration between the representation of non-symbolic and symbolic numbers. *Annual Meeting of the Cognitive Neuroscience Society (CNS), New York, USA.*
- 14. \*Braham, E., \*Navarro, M., Libertus, M. (2015). Intergenerational Transmission of Numerical Ability: Evidence from Toddlerhood and Middle Childhood. *Biennial Meeting of the Cognitive Development Society, Columbus, USA.*
- 15. \*Liu, R., Möhring, W., **Libertus, M.** (2015). The ratio and orientation effect in infants' and adults' speed discrimination. *Biennial Meeting of the Cognitive Development Society, Columbus, USA.*

- 16. Wang, J., Libertus, M., Feigenson, L. (2015). Hysteresis-induced changes in infants' approximate number precision. *Biennial Meeting of the Cognitive Development Society, Columbus, USA.*
- 17. \*Braham, E., **Libertus, M.** (2015). Parental influences on children's numerical and mathematical abilities. *Annual Meeting of the Jean Piaget Society, Toronto, Canada.*
- 18. \*Keller, L., **Libertus, M.** (2015). Inhibitory control does not explain the link between approximation and math abilities in children. *Annual Meeting of the Jean Piaget Society, Toronto, Canada.*
- 19. \*Braham, E., Libertus, M. (2015). Intergenerational Associations in Approximate Number System Acuity and Mathematical Abilities. *Math Cognition Conference, St. Louis, MO, USA*.
- 20. \*Braham, E., **Libertus, M.** (2015). The Unique Contributions of Children's Numerical Approximation Skills for Various Math Abilities. *Biennial Meeting of the Society for Research in Child Development (SRCD), Philadelphia, USA.*
- 21. \*Braham, E., Libertus, K., **Libertus, M.** (2015). Information Processing Patterns During Approximate Number Comparisons in Preschoolers and Adults: An Eye-tracking Study. *Biennial Meeting of the Society for Research in Child Development (SRCD), Philadelphia, USA*.
- 22. \*Keller, L., **Libertus, M.** (2015). Examining the Importance of Child- and Parent-Level Cognitive Factors in Predicting Children's Early Math Abilities. *Biennial Meeting of the Society for Research in Child Development (SRCD), Philadelphia, USA.*
- 23. Libertus, M., Halberda, J., Feigenson, L. (2014). Six-month-old Infants can Track Frequency Distributions of Numerosities. 19<sup>th</sup> Biennial International Conference on Infant Studies (ICIS), Berlin, Germany.
- 24. Libertus, M., Feigenson, L., Halberda, J. (2013). On the Stability of Individual Differences in Children's Numerical Approximation Skills. *Biennial Meeting of the Society for Research in Child Development (SRCD), Seattle, USA.*
- 25. Odic, D., Libertus, M., Feigenson, L., Halberda, J. (2013). The quantity of quantity: are visual area and number represented by one system, or two? *Biennial Meeting of the Society for Research in Child Development (SRCD), Seattle, USA.*
- 26. Pailian, H., **Libertus, M.**, Feigenson, L., Halberda, J. (2013). Developmental Changes in Visual Short-Term Memory (VSTM) Capacity Between Ages 3 and 8 Years. *Biennial Meeting of the Society for Research in Child Development (SRCD), Seattle, USA.*
- 27. Pailian, H., **Libertus, M.**, Feigenson, L., Halberda, J. (2013). Measuring Individual Differences in Children's Visual Short-Term Memory Capacity using the Flicker Paradigm. *Biennial Meeting of the Society for Research in Child Development (SRCD), Seattle, USA.*
- 28. Libertus, M., Starr, A., Brannon, E. (2012). Infants' sensitivity to changes in number versus surface area. *18<sup>th</sup> Biennial International Conference on Infant Studies (ICIS), Minneapolis, USA.*
- 29. Odic, D., **Libertus, M.**, Feigenson, L., Halberda, J. (2012). The development of number and area acuity in young children. *18<sup>th</sup> Biennial International Conference on Infant Studies (ICIS), Minneapolis, USA.*

- 30. Starr, A., **Libertus, M.**, Brannon, E. (2012). Small number discrimination in infancy: A case for approximate number representations. *18<sup>th</sup> Biennial International Conference on Infant Studies* (*ICIS*), *Minneapolis, USA*.
- 31. Libertus, M., Feigenson, L., Halberda, J. (2011). Approximate Number Discrimination Predicts Later Math Ability in Preschoolers. *Seventh Biennial Meeting of the Cognitive Development Society, Philadelphia, USA.*
- 32. Libertus, K., Libertus, M. (2011). Similarities And Differences In Approximate Numerical Comparisons Between Children and Adults As Revealed By Eye Gaze. Seventh Biennial Meeting of the Cognitive Development Society, Philadelphia, USA.
- 33. Libertus, M., Libertus, K. (2011). Differences in Strategies During Approximate Numerical Comparisons as Revealed by Eye-gaze Measures. *2011 Association for Psychological Science Annual Convention, Washington, DC, USA.*
- 34. Libertus, M., Stevenson, A., Odic, D., Feigenson, L., Halberda, J. (2011). The Developmental Vocabulary Assessment for Parents (DVAP): A Novel Tool to Measure Vocabulary Size in 3-to 5-year-old Children. *Biennial Meeting of the Society for Research in Child Development (SRCD), Montreal, Canada.*
- 35. Möhring, W., **Libertus, M.**, Bertin, E. (2011). Speed Discrimination in 6- and 10-month-old Infant is Ratio-Dependent. *Biennial Meeting of the Society for Research in Child Development* (SRCD), Montreal, Canada.
- 36. Libertus, M., Halberda, J., Feigenson, L. (2011). Approximate Number Discrimination Correlates With Math Abilities in Preschoolers. *Johns Hopkins 3<sup>rd</sup> Annual Postdoc Symposium, Baltimore, USA.*
- 37. **Libertus, M.**, Brannon, E. (2010). Behavioral Evidence for a Shared Mechanism of Number and Size Discrimination in Early but not Late Infancy. *1<sup>st</sup> Homewood Postdoctoral Poster Competition, Baltimore, USA.*
- 38. **Libertus, M.**, Brannon, E. (2010). Evidence for a shared system for number and area but not color discrimination in infancy. 24<sup>th</sup> Attention & Performance Meeting, Abbaye des Vaux de Cernay, France.
- 39. Möhring, W., Libertus, M., Bertin, E. (2010). Die Diskrimination von Geschwindigkeiten im Säuglingsalter. [Speed discrimination in infancy]. 8. LizentiandInnen- und DoktorandInnen-Kongress des Psychologischen Institutes der Universität Zürich (LiDoKo), Zürich, Schweiz. [8<sup>th</sup> Congress for Masters and PhD students at the Institute for Psychology of the University of Zurich, Switzerland].
- 40. Libertus, M., Brannon, E., Woldorff, M. (2010). Time course of stimulus-driven oscillatory synchronization and adaptation to numerical changes. *Annual Meeting of the Cognitive Neuroscience Society (CNS), Montreal, Canada.*
- 41. **Libertus, M.**, Brannon, E. (2010). Developmental trajectory of the relationship between numerical discrimination and other cognitive abilities in infancy. 17<sup>th</sup> *Biennial International Conference on Infant Studies (ICIS), Baltimore, USA.*
- 42. Libertus, M., Brannon, E. (2009). Evidence for Weber's Law in Infants' Numerical Discriminations From A New Change Detection Paradigm. *Biennial Meeting of the Society for Research in Child Development (SRCD), Denver, USA.*

- 43. Libertus, M., Brannon, E., Woldorff, M. (2009). Stimulus-driven oscillatory responses to numerical changes: a novel frequency-tagging EEG paradigm. *Annual Meeting of the Cognitive Neuroscience Society (CNS), San Francisco, USA.*
- 44. Libertus, M., Brannon, E., Pelphrey, K. (2008). Working memory for numbers, letters, and faces in 8-year-old children and adults. *Annual Meeting of the Cognitive Neuroscience Society* (*CNS*), San Francisco, USA.
- 45. Libertus, M., Pruitt, L., Woldorff, M., Brannon, E. (2007). Electrophysiological markers of number processing in 7-month-old infants. *Numeracy and Brain Development (Numbra) Summer School, Greece.*
- 46. Cantlon, J., Davis, S., **Libertus, M.**, Brannon, E., Pelphrey, K. (2007). The Integrity of White Matter Pathways and Numerical Cognition in Adults and Young Children. *Annual Meeting of the Organization of Human Brain Mapping, Chicago, USA.*
- 47. Cantlon, J., Libertus, M., Brannon, E., Pelphrey, K. (2007). The development of abstract numerical processing in parietal cortex. *Annual Meeting of the Vision Sciences Society, Sarasota, USA.*
- 48. Libertus, M., Pruitt, L., Woldorff, M., Brannon, E. (2007). Electrophysiological markers of number processing in 7-month-old infants. *Annual Meeting of the Cognitive Neuroscience Society (CNS), New York, USA.*
- 49. Cantlon, J., Libertus, M., Brannon, E., Pelphrey, K. (2007). Symbolic & Non-symbolic Number in the Developing Brain. *Annual Meeting of the Cognitive Neuroscience Society (CNS), New York, USA.*
- 50. Libertus, M., Libertus, K., Suanda, S., Woldorff, M., Meck, W., Brannon, E. (2007). Behavioral and Neurophysiological Correlates of Interval Timing in Human Infants Follow Weber's Law. *Biennial Meeting of the Society for Research in Child Development (SRCD), Boston, USA.*
- 51. **Libertus, M**., Woldorff, M., Brannon, E. (2006a). Electrophysiological Correlates of the Numerical Distance Effect. *5<sup>th</sup> Forum of European Neuroscience, Vienna, Austria.*
- 52. Libertus, M., Woldorff, M., Brannon, E. (2006b). Electrophysiological correlates of number comparisons. *Annual Meeting of the Cognitive Neuroscience Society, San Francisco, USA.*
- 53. Libertus, K., **Libertus, M.**, Woldorff, M., Meck, W., Brannon, E. (2005). Behavioral and neurophysiological correlates of time processing in human infants. *Annual Meeting of the Society for Neuroscience, Washington, D.C., USA.*
- 54. Brannon, E., **Libertus, M.**, Meck, W., Woldorff, M. (2005). Neurophysiological correlates of time processing are modulated by interval differences in human infants and adults. *Annual Meeting of the Cognitive Neuroscience Society, New York, USA.*
- 55. **Libertus, M.** (2004). Unterschiede in Eigenschaftspräferenzen bei prädikativem versus funktionalem Problemlösen. [Differences in preferences for object features in the context of predicative versus functional problem solving]. *44<sup>th</sup> Conference of the German Psychological Society, Göttingen, Germany.*

# **TEACHING & MENTORING**

# Teaching

# University of Pittsburgh

Fall 2018:	Cognitive Development (PSY 2330, graduate level)
Fall 2017:	Cognitive Development (PSY 1330, advanced undergraduate level, overall
	teaching effectiveness: 4.59 out of 5)
Spring 2017:	Cognitive Development (PSY 1330, advanced undergraduate level, overall
	teaching effectiveness: 4.36 out of 5)
Fall 2016:	Cognitive Development (PSY 2330, graduate level, overall teaching
	effectiveness: 3.78 out of 5)
Spring 2016:	Cognitive Development (PSY 1330, advanced undergraduate level, overall
	teaching effectiveness: 4.73 out of 5)
Fall 2015:	Mind, Brain & Education (PSY 1054, advanced undergraduate level, overall
	teaching effectiveness: 4.86 out of 5)
	Human Developmental Neuroscience (PSY 2376, graduate level, overall
	teaching effectiveness: 4.7 out of 5)
Spring 2015:	Cognitive Development (PSY 1330, advanced undergraduate level, overall
	teaching effectiveness: 4.47 out of 5)
Fall 2014:	Cognitive Development (PSY 2330, graduate level, overall teaching
	effectiveness: 4.85 out of 5)
Fall 2013:	Cognitive Development (PSY 1330, advanced undergraduate level, overall
	teaching effectiveness: 4.63 out of 5)

# **Duke University**

Summer 2007:	Developmental Psychology (PSY 97, undergraduate level)
Spring 2007:	Teaching and Research Ethics (graduate student seminar)

# Graduate student mentoring

# **Primary advisor**

Shirley Duong	Cognitive Psychology	2018 - present
Alex Silver	Cognitive Psychology	2018 - present
Ruizhe Liu	Cognitive Psychology	2014 - present
Emily Braham	Cognitive Psychology	2013 - present

#### **Milestone committee member**

Kevin Soo	Cognitive Psychology, Dissertation	2018 - present
Allison Liu	Cognitive Psychology, Dissertation	2017 - 2018
Kathryn Hauschild	Developmental Psychology, Dissertation	2017 - 2018
Dana Rosen	Clinical-Developmental Psychology, Masters & Specialty exam, Dissertation	2015 - present
Bart Larsen	Cognitive Psychology, Specialty exam	2016
Leanne Elliott	Developmental Psychology, Specialty exam, Dissertation	2016 - present

# Mentoring committee member

Ciara Willett	Cognitive Psychology	2017
---------------	----------------------	------

Nabila Jamal Orozco Kevin Soo Regina Calloway Laura Betancur Joshua Tremel Brendan Barstow Xiaoping Fang	<ul> <li>Cognitive and Developmental Psychology</li> <li>Cognitive Psychology</li> <li>Cognitive Psychology</li> <li>Developmental Psychology</li> <li>Cognitive Psychology</li> <li>Cognitive Psychology</li> <li>Cognitive Psychology</li> <li>Cognitive Psychology</li> </ul>	2016 - present 2014 - present 2014 - present 2014 - present 2014 - 2016 2014 - 2105 2013 - present
	Post-baccalaureate student mentoring	
Monica Navarro	Hot Metal Bridge Program (now PhD student at the University of Pittsburgh)	2014 – 2015
	Undergraduate student mentoring	
Bachelor of Philos	sophy students – University of Pittsburgh	
Abigail Dillaha	Neuroscience & Psychology major Chancellor's Undergraduate Research Fellowship, Fall 2017 Brackenridge Research Fellowship, Spring 2016	2018
Peter Zheng	Business, Economics, Political Science & Psychology major Brackenridge Research Fellowship, Fall 2017 PsychDRIVE Undergraduate Research Fellowship, Summer 20 Chancellor's Undergraduate Research Fellowship, Spring 2017 Chancellor's Undergraduate Teaching Fellowship, Spring 2017	
Erinn Hanner	Humanities, Arts, and Social Sciences Research Fellowship, Fa Psychology & Studio Arts major Chancellor's Undergraduate Research Fellowship, Fall 2017	2016 2017
Bachelor of Philos	sophy committee member – University of Pittsburgh	
Sarah Lazarro	Neuroscience & Psychology major	2018
Honors thesis stu	dents – University of Pittsburgh	
Wyatt Macejka	Psychology Chancellor's Undergraduate Research Fellowship, Fall 2017 Brackenridge Research Fellowship, Summer 2017	2018
Jamie Patronick	PsychDRIVE Undergraduate Research Fellowship, Summer 20 Psychology	17 2018
Onnaleah Trentini	Neuroscience	2018
Ashley Whited	Neuroscience	2018
Joy Cui	Neuroscience	2017

JUY CUI	neuroscience	2017
	Chancellor's Undergraduate Research Fellowhip, Spring 2017	
	Brackenridge Research Fellowship, Summer 2016	
Sierra Struble	Neuroscience	2017
Jyothirmayi Thippana	Neuroscience	2017
Melanie Matyi	Neuroscience	2016
·	Chancellor's Undergraduate Research Fellowship, Fall 2016	
	Brackenridge Research Fellowship, Summer 2016	

# Directed Research in Psychology or Neuroscience – University of Pittsburgh

1. Morgan Lemmon

<ol> <li>Jocelyn Hughes</li> <li>Aeliya Ahmed</li> <li>Sarah Pitulski</li> <li>Dara Czernikowski</li> <li>Michaela Barley</li> <li>Shannon O'Leary</li> <li>Caitlin Convery</li> <li>Christine Shine</li> <li>Thomas Marlin</li> <li>Kian Tabatabai</li> <li>Chelsea Wyche</li> <li>Georgia Williams</li> <li>Eliza Luxbacher</li> <li>Mia Nall</li> <li>Brianna Stein</li> <li>Delaney Regan</li> </ol>	2018 - present 2018 - present 2018 2018 - present 2018 2018 - present 2018 - present 2018 - present 2018 - present 2018 - present
18. Erica Schweitzer	2018 - present
19. Donald Deep	2018 - present
20. Sarah Gehman	2017 - present
Brackenridge Research Fellowship, Summer 2018	
21. Anisha Venkatesh	2017 - present
22. Miriam Bols	2017 - present
23. Taylor Williams	2017 - present
24. Azeen Athar	2017
25. Daniel Crawford Brackenridge Research Fellowship, Fall 2017	2017
26. Stephanie Quinones	2017 - 2018
Chancellor's Undergraduate Research Fellowship, Spring 2018	
27. Aditi Sharma	2017 - 2018
28. Adwoa Imbeah	2017 - present
Summer Undergraduate Research Award, Summer 2018	
29. Simran Gill	2017
30. Elias Rappaport	2017
31. Kelly Staples	2017 2016 present
32. Michelle Gamburg Brackenridge Research Fellowship, Spring 2018	2016 - present
33. Sonya Naik	2016 - 2017
34. Emily Pullman	2016 - 2017
35. Mahima Rajan	2016 - 2018
36. Xiaoyun Xu	2016 - 2017
37. Kayla Banner	2015 - 2016
38. Dana Cohen	2015
39. Lydia Grubic	2015 - 2016
40. Sejla Jukic	2015 - 2017
PsychDRIVE Undergraduate Research Fellowship, Summer 20 41. Shreya Kolar	2015 - 2018
42. Carolyn Kotkiewicz	2015 - 2010
43. Alexandra Lawall	2015 - 2016
44. Sarah Lazarro	2015 - 2016
45. Jenny Ly	2015 - 2016
46. Paige McLaughlin	2015 - 2017
47. Gabrielle Simon	2015 - 2016
48. Dominic Violi	2015 - 2016

49. Charles Yang 50. Laxmikausthubha Yaratha	2015 - 2017 2015 - 2016
51. Trevor Zwaan	2015 - 2016
DeVito-Lipner Family Student Fund, Spring 2016	
52. Eva Dice	2014 - 2015
DeVito-Lipner Family Student Fund, Spring 2015	
53. Amanda Hopcroft	2014
54. Rebecca Laher	2014 - 2015
55. Permveer Longia	2014 - 2015
56. Eliana Munro	2014 - 2015
DeVito-Lipner Family Student Fund, Spring 2015	
Spring Undergraduate Research Award, Spring 2015	
57. Megan Raymond	2014
58. Deborah Scialabba	2014
59. Leah Siegel	2014
60. Amy Veasey	2014 - 2016
61. Serena Virgi	2014 - 2015

## Research advisor – Johns Hopkins University

2010 – 2013: Internship advisor at Johns Hopkins University (Rebecca Zhu, Cambria Litsey, Samantha Tuepker, Michelle Pargament, Geena Frumkin, Matthew Pulaski, Stephanie Caronna, Misti Jeffers, Brent Rappaport, Ruxue Shao, Lina Montoya, Karen Ho, Sean Ostro, Selin Zeytinoglu)

### Research advisor – Duke University

2009:	Frances Degen Horowitz Millennium Scholars mentor, Society for Research in Child Development
2008 – 2009:	Independent study mentor at Duke University (Melissa Mang, Priya Patel)
2006 – 2010:	Honors theses advisor at Duke University (Diana Hancock, Priya Patel, Tina Liang, Laura Pruitt)
2006 – 2008:	Vertical Integration Program mentor at Duke University (Priya Patel, Melissa Mang, Stacey Blase, Lauren Marx, Laura Pruitt)
2005:	NSF Mechanisms of Behavior Program mentor at Duke University (Anna Nehring)

#### SERVICE

# Ad hoc journal reviewing

Acta Psychologica	Developmental Psychobiology
Behavioral and Brain Sciences	Developmental Science
Biological Psychology	Early Childhood Research Quarterly
Brain and Cognition	Educational Psychology
British Journal of Developmental Psychology	European Journal of Neuroscience
Cerebral Cortex	European Journal of Psychology of Education
Child Development	Experimental Brain Research
Cognition	Frontiers in Developmental Psychology
Cognitive Neuropsychology	Human Brain Mapping
Current Biology	International Journal of Psychophysiology
Developmental Cognitive Neuroscience	Journal of Behavioral Decision Making

- Journal of Cognition and Development Journal of Cognitive Neuroscience Journal of Cognitive Psychology Journal of Experimental Child Psychology Journal of Experimental Psychology: General Journal of Experimental Psychology: Human Perception and Performance Journal of Experimental Psychology: Learning, Memory & Cognition Journal of Numerical Cognition Journal of Pediatric Neurology Learning and Individual Differences Memory & Cognition NeuroImage Neuroscience Letters
- Perception Philosophical Transactions B PLoS One Prospects (UNESCO's quarterly review of comparative education) Psychological Research Psychological Science Psychonomic Bulletin & Review, Psychophysiology Quarterly Journal of Experimental Psychology Research in Developmental Disabilities Scientific Reports Zeitschrift für Psychologie (Journal of Psychology)

#### **Grant reviewing**

Deutsche Forschungsgemeinschaft (DFG), Germany Institut D'Etudes Avancees de Paris (Paris Institute for Advanced Study), France Israel Science Foundation (ISF), Israel National Science Foundation: College of Reviewers, USA Nuffield Foundation, United Kingdom Research Foundation Flanders (FWO), Belgium Swiss National Science Foundation, Switzerland

#### **Conference reviewing**

- 2018: Biennial Meeting of the Society for Research in Child Development
- 2017: Cognitive Development Society meeting
- 2016: 38<sup>th</sup> Annual Meeting of the Cognitive Science Society
- 2015: 20<sup>th</sup> Biennial International Conference on Infant Studies
- 2015: 37<sup>th</sup> Annual Meeting of the Cognitive Science Society
- 2011: 22<sup>nd</sup> Biennial Meeting of the International Society for the Study of Behavioural Development

## **Professional Memberships**

Cognitive Development Society (CDS), Cognitive Neuroscience Society (CNS), International Mind Brain & Education Society (IMBES), International Society on Infant Studies (ICIS), Society for Research in Child Development (SRCD)

#### **Departmental and University Service**

2018 – present:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019:
 2018 – 2019 – 2019:
 2018 – 2019 – 2019 – 2019:
 2018 – 2019 –

2018:	6 <sup>th</sup> International Workshop on Advanced Learning Sciences, Steering committee, Learning Research and Development Center, University of Pittsburgh
2016 – present:	Faculty Grants Committee, Dietrich School of Arts and Sciences, University of Pittsburgh
2016 – present:	Co-chair, Communications Committee, Learning Research and Development Center, University of Pittsburgh
2016 – 2017: 2014 & 2015:	Faculty organizer, Cognitive Brownbag Seminar, University of Pittsburgh Faculty search committee, Learning Research and Development Center, University of Pittsburgh
2014 – 2015: 2013:	Colloquium committee, Dept. of Psychology, University of Pittsburgh Faculty search committee, Dept. of Psychology, University of Pittsburgh
2007 – 2010:	Co-organizer Developmental Brownbag Series Department of Psychology and Neuroscience, Duke University
2005 – 2007:	International House Orientation Peer for international graduate students

# **OTHER INFORMATION**

# Collaborators

2010 – present: 2016 – present: 2013 – present: 2013 – present: 2013 – present: 2016 – present: 2009 – present: 2016 – present: 2012 – present: 2013 – present: 2010 – present: 2010 – present: 2017 – present: 2016 – present: 2016 – present: 2016 – present: 2017 – present: 2010 – present: 2017 – present: 2013 – present: 2013 – present:	Ulrika Aden Heather Bachman Daphne Bavelier Mariagrazia Benassi Roberto Bolzani Natasha Cabrera Jessica Cantlon Marc Coutanche Christa Einspieler Julie Fiez Lea Forsman Kerstin Hellgren Fransiskus Ivan Peter Marschik Koleen McCrink Wenke Möhring Darko Odic Lauren Resnick Bert Reynvoet Delphine Sasanguie Christian Schunn Catherine Tamis-LeMonda Katherine Verdolini Abbott	Karolinska Institute, Sweden University of Pittsburgh, USA University of Geneva, Switzerland University of Bologna, Italy University of Bologna, Italy University of Bologna, Italy University of Maryland, College Park, USA University of Rochester, USA University of Pittsburgh, USA Medical University of Graz, Austria University of Pittsburgh, USA Karolinska Institute, Sweden Karolinska Institute, Sweden Surya University, Indonesia Medical University of Graz, Austria Barnard College, Columbia University, USA University of Fribourg, Switzerland University of British Columbia, Canada University of Pittsburgh, USA KU Leuven, Belgium KU Leuven, Belgium University of Pittsburgh, USA New York University, USA University of Delaware, USA
2016 – present:	Catherine Tamis-LeMonda	New York University, USA
2013 – present: 2016 – present:	Elizabeth Votruba-Drzal	University of Delaware, USA University of Pittsburgh, USA
2015 – present:	Aidan Wright	University of Pittsburgh, USA