

## Curriculum Vitae

Elizabeth M. Brannon, Ph.D.

### Contact information

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### Personal Data

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Date of Birth January, 16, 1971  
Place of Birth Ann Arbor, MI  
Citizenship USA

### Education

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Ph.D., Columbia University, Psychology, 2000  
Advisor, Dr. Herbert S. Terrace  
Thesis Title “Ordinal numerical representations in rhesus monkeys”  
Ph.D. awarded with distinction

M.A., Columbia University, Psychology, 1996  
Advisor, Dr. Herbert S. Terrace

M.A., Columbia University, Biological Anthropology, 1994  
Advisor, Dr. Marina Cords

B.A., University of Pennsylvania, Biological Anthropology, 1992  
Thesis advisor, Dr. Dorothy Cheney  
*summa cum laude* with distinction in the major

### Positions Held

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Full Professor, Center for Cognitive Neuroscience & Department of Psychology and Neuroscience,  
Duke University, 2012 (**Primary Appointment**)  
Associate Professor, Center for Cognitive Neuroscience & Department of Psychology and  
Neuroscience, Duke University, 2008-2011  
Associate Professor, Evolutionary Anthropology, Duke University, 2008-present (Secondary  
Appointment)  
Adjunct Assistant Professor, Department of Psychology, University of North Carolina, Chapel  
Hill. 2002-present (Secondary Appointment)  
Assistant Professor, Center for Cognitive Neuroscience & Department of Psychology and  
Neuroscience, Duke University, 2001-2008

Assistant Research Professor, Center for Cognitive Neuroscience & Department of Psychology:  
Experimental, Duke University, 2000-2001

### **Honors and Awards**

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Nominated for Psychonomic Society Governing Board, 2014  
James McDonnell Scholar Award, 2008-2014  
Early Investigator Award, Society for Experimental Psychology (SEP), 2008  
Thomas Langford Lectureship Award, Duke University, 2008  
NSF CAREER Award (2005-2010)  
John Merck Scholar (2003-2007)  
Ph.D. awarded with distinction, 2000  
Presidential Teaching Award, Columbia University, 1997  
*summa cum laude* with distinction in the major, 1992  
Phi Beta Kappa, elected 5/12/93  
University Scholar of the University of Pennsylvania, 1989-1992

### **Research Grants and Fellowships**

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#### *Pending funding*

2015-2018 NIH R21 MH107040-01  
Elizabeth M. Brannon & Michael L Platt (multi PI)  
“Effects of Learning and rTMS on the Neural Code for Number”  
The main goal of this research proposal is to explore the role of expertise on changing the neural code for number.

2014-2017 NIH U01-NS090516  
“Computing decisions with a brainet”  
Nicolelis (PI)  
The main goal of this research proposal is to implement multiple Brainet designs aimed at exploring how networks of primate brains can interact in order to reach decision in sensorimotor and cognitive tasks.

#### *Current funding*

2014-2019 RO1 HD079106-01  
“Improving Math Ability via Primitive Number Sense Training”  
Elizabeth M. Brannon (PI)  
The main goals of this research proposal are to explore the cognitive and neural relationship between approximate arithmetic and symbolic arithmetic in adults and children using training paradigms and fMRI.

2010-2015 National Science Foundation Research Grant, 0951690  
“*Relationship between early and later developing numerical abilities*”  
Elizabeth M. Brannon (PI). \$699,966

2008-2014 James S. McDonnell Foundation Scholar Award.  
Elizabeth M. Brannon (PI). \$600,000

2013-2014 BASS teaching team, Duke, Brannon and Hahn \$16,800  
Math before Symbols: Games to Increase School Readiness in Pre-Schoolers: This team will work with pre-school and early elementary school children to test the

effectiveness of an iPad-based game in readying children's math skills, and a subset of the team might aim to produce a pre-K children's book based on these insights about how children learn math before symbols.

2013-2014 Initiative on Education and Human Development, Duke, \$25,000

*Completed funding*

2010-2012 RO1 HD059108-06A2 (1 year RO1 renewal & no cost extension)

*“Representation of number in infancy”*

Elizabeth M. Brannon (PI). \$289,500

2008-2013 NICHD RO1HD057173-01

*“Functional and neuroimaging of the development of neural mechanisms for number processing”*

Kevin Pelphrey (PI), EMB (Co-PI)

2009-2013 NEI 1R01EY01

*“Contributions of Areas LIP and VIP to Numerical Behavior.”*

Michael L Platt (PI), EMB (Co-I)

2010-2011 NICHD RO1 HD-049912-05S1 (ARRA supplement)

*“Representation of number in primates”*

Elizabeth M. Brannon (PI). \$59,661

2005-2011 NICHD RO1HD049912-01A2

*“Representation of number in primates”*

Elizabeth M. Brannon (PI) \$969,871

2005-2011 NSF CAREER award

*“CAREER: Evolution and development of numeracy”*

Elizabeth M. Brannon (PI). \$400,000

2009-2011 NIH1RC1 MH088680-01

*“From Phenotype to Mechanism: Mapping the Pathways Underlying Risky Choice”*

Scott Huettel (PI), EMB (Co-I)

2010-2011 NSF workshop conference award

*“Space, Time and Number: The Cerebral Basis of Mathematical Intuitions”*

Elizabeth M. Brannon (PI). Direct \$32,717

2010-2011 NICHD R13 workshop conference award

*“Space, Time and Number: The Cerebral Basis of Mathematical Intuitions”*

Elizabeth M. Brannon (PI). Direct \$9,000

2003-2008 NIMH RO1MH066154-01

*“Representation of number in infancy”*

Elizabeth M. Brannon (PI). Direct \$600,000

2003-2007 John MERCK Scholars Fellowship,

*“The evolution and ontogeny of mathematical abilities human infants represent number.”*

Elizabeth M. Brannon (PI). Direct \$150,000

2002-2006 NSF ROLE and Developmental and Learning Sciences

*“The Representation of Number in Infancy”*

Elizabeth M. Brannon (PI).

2001-2003 RO3 MH64955-01

*“Electrophysiological correlates of numerical discrimination in human infants”*

2001-2002 Elizabeth M. Brannon (PI), G.R. Mangun (Co-PI)  
B/START MH63075-01 NIMH  
“Knowledge of numerical relationships in infants”  
Elizabeth M. Brannon (PI)  
2000 Arts and Science Research Council, Duke University  
1998-2000 National Research Service Award, NIMH  
1993-1996 National Science Foundation Graduate Fellowship  
1992 University Scholar Research Grant

### **External Service & Professional Experience**

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2011- Associate Editor, *Developmental Science*  
2010-2014 Regular Panel member NIH Cognition and Perception Study Section  
2010- Executive committee member for The International Society for the Study of  
Attention & Performance  
2010- Treasurer of The International Society for the Study of Attention & Performance  
2010- Associate Editor *Frontiers in Comparative Psychology*  
2010- Editorial Board *Frontiers in Developmental Psychology*  
2009-2012 Advisory board *Current Directions in Psychological Science*  
2009- Editorial Board *Journal of Experimental Psychology: Animal Behavior Processes*  
2004- Editorial Board *Cognition*  
2008-2010 Editorial Board *Infancy*  
2003-2010 Editorial Board *Psychological Science*

AdHoc reviews: *Animal Cognition, Animal Learning and Behavior, Behavior and Philosophy, Behavioral Processes, Cerebral Cortex, Cognitive Brain Research, Child Development, Cognitive Psychology, Current Biology, Developmental Neuropsychology, Developmental Psychology, Developmental Science, European Journal of Psychology of Education, Infancy, Journal of Cognitive Neuroscience, Journal of Comparative Psychology, Journal of Experimental Psychology; General, Journal of Experimental Child Psychology, Journal of Experimental Psychology; Animal Behavior Processes, Nature, Nature Neuroscience Reviews, Nature Reports, Neuron, Neuropsychologia, PLOS: Biology, , PLOS ONE, Proceedings of the National Academy of Sciences, Proceedings of the Royal Society: Biological Sciences, Psychonomic Bulletin and Review, Science, Trends in Cognitive Sciences, Trends in Neuroscience.*

#### AdHoc grant reviews:

*National Science Foundation Panel, Research on Learning and Education 2001*  
*National Science Foundation ad hoc reviewer 2001-2010*  
*National Institute for Health, ad hoc reviewer BBBP1 2002, 2003*  
*National Science Foundation Panel, Center for Science of Learning, 2003*  
*National Institute for Child Health and Development, special member, 2004*  
*National Institute for Child Health and Development, special member, 2005*  
*NIMH, Cognition and Perception Study Section, special member, February 2006*  
*National Institute for Child Health and Development, ad hoc reviewer, March 2006*  
*NIMH, Fellowship review panel, July 2006*  
*National Science Foundation Developmental and Learning Sciences panel, May 2007*  
*National Institute for Child Health and Development, Special Emphasis panel, April 2008*

### **Conferences and Symposia Organized**

- 2014 Beyond Academia: DIBS workshop, October, 30<sup>th</sup>, 2014
- 2010 International Attention and Performance meeting in Paris, France, on Space Time and Number: Co-organizer with Dr. Stanislas Dehaene
- 2007 National Science Foundation Workshop on Neuroscience and Mathematics  
Co-Chair with Dr. John Anderson
- 2009 Comparative Cognition Society Symposium in honor of Dr. Herb Terrace 2009

### **Invited Symposia talks and Colloquia**

#### **2015**

- 4th Latin American School for Education, Cognitive and Neural Sciences to be held March, 2015 in Chile
- Rutgers, New Brunswick, Festschrift for C.R. Gallistel & Rochel Gelman

#### **2014**

- Invited Speaker Emory University, workshop, March 2014
- Colloquium, University of Pennsylvania, May, 2014
- Origins of Intelligence workshop, Sapporo Japan, July 2014
- Special invited lecture Japanese Animal behavior meeting, Inuyama, Japan, July 2014
- Colloquium, Keio University, Tokyo, Japan, July 2014
- MIT invited colloquium, October, 2014, Department of Brain and Cognitive Sciences
- Rethinking the innateness hypothesis, Rutgers, October 2014
- Invited Speaker, Society for Language Development, Boston, November 2014

#### **2013**

- University Scholar Seminar, Duke, November 22<sup>nd</sup>
- Morris Symposium: Quantification and Number, Stony Brook September 2013
- Colloquium, INSERM, Paris June 2013
- Colloquium, Lisbon Champalimaud Neuroscience Programme, July 10th
- Cognitive Science Colloquium, University of Maryland, May 2<sup>nd</sup>
- NIH conference on Math Cognition Conference, May 20<sup>th</sup>-21<sup>st</sup>
- Keynote speaker for Femmes, Middle school girls science day, Durham NC

#### **2012**

- 2nd Latin American School for Education, Cognitive and Neural Sciences to be held during March 5-16, 2012 in Patagonia, Argentina
- Psychology colloquium, Washington University, March 26th
- Psychology colloquium, Princeton University, September 21<sup>st</sup>

**2011**

- Developmental Brownbag, UNC, Chapel Hill
- Workshop on Evolution of Human Cognition, Georgetown University
- Psychology Department Colloquium, Harvard University
- Ben Gurion University, Israel April 2011, declined
- National Institute for Child Development Math Consortium Meeting, May 16-17, 2011
- Second Annual Aspen Brain Forum titled, “Cognitive Neuroscience of Learning with Implications for Education,” New York Academy of Sciences and the Aspen Brain Forum Foundation, Aspen, Colorado September 22-24, 2011
- Cognitive Neuroscience Colloquium, University of Pennsylvania, November, 2011

**2010**

- Invited presidential colloquium, International Conference on Infant Studies (ICIS) March 2010
- Duke Institute for Brain Sciences, Workshop on Development, Spring 2010
- Conference on Space, Time, and Number, Paris, 2010
- American Scientist Pizza Lunch, September 21<sup>st</sup>, 2010
- Developmental BrownBag UNCG, Dec 3<sup>rd</sup> 2010

**2009**

- American Academy of Advancement of Science, Invited Symposium on *Comparative Cognition: The Science of Mental Evolution*
- Comparative Cognition Society, Organizer of symposium to honor H.S. Terrace
- Invited colloquia at University of British Columbia, interdisciplinary speaker series, Arts and Science, Neuroscience, & Med School

**2008**

- Society for Experimental Psychology: Young Investigator Award Speaker
- Invited symposium speaker, International Primatological Society, Edinburgh

**2007**

- Symposium on Brain Mechanisms of Sequential Behavior, Society for Neuroscience, The neural and behavioral underpinnings of numerical ordering San Diego CA, October 2007
- Cognitive Neuroscience Society symposium: Numerical Understanding in the Brain: Comparative, Developmental, and Neural Perspectives, New York May 2007
- National Science Foundation conference on Neuroscience and Learning, invited speaker, May 2007
- Invited Colloquium, Institute for Research in Cognitive Science, University of Pennsylvania, March 2007

**2006**

- National Institutes of Health Behavioral and Social Science Research Lecture Series, Nov 20, 2006
- American Psychological Association, invited symposium, August 10-13, 2006, in New Orleans

- Invited meeting Konrad Lorenz Institute for Evolution and Cognition Research (KLI), The New Cognitive Sciences, June 2006 Vienna; Organizers Lynn Nadel & Mary Peterson
- Invited colloquium, Department of Psychology, Stanford, April 2006
- Invited colloquium, Department of Psychology, Northwestern, March 2006
- Invited Developmental Brown Bag, Department of Psychology, University of Chicago, March 2006

#### **2005**

- Invited colloquium, Department of Psychology, Columbia, December 2005
- Invited Presidential Symposium Cognitive Development Society October 2005
- Invited symposia Yale conference on objects and infancy, May 2005
- Invited colloquium, Department of Psychology, Yale, March 2005
- Invited address, Southern Society for Philosophy and Psychology, March 2005

#### **2003-2004**

- Cognitive Neuroscience Summer Institute, Dartmouth NH June 2004
- Invited colloquium, Department of Psychology, Georgia State University, Fall 2003.
- Invited meeting Fyssen Foundation, “From monkey to human brain” Paris, France June 2003
- Presidential symposium Eastern Psychological Association, 2003, “Numerical thinking: A comparative study”
- Invited meeting, OECD. Brockton, MA. January 2003

#### **2001-2002**

- Invited Developmental Brown Bag, Department of Psychology, University of Virginia, November 2002.
- Invited Developmental Brown Bag, Social and Health Sciences Dept., Duke University, September, 2002.
- Invited Colloquium Max Planck, Leipzig, May 2002.
- Invited Colloquium Max Planck, Tuebingen, May 2002.
- Invited Colloquium, Center for Cognitive Science, Rutgers University, December 2001.
- Job talk, Department of Psychology, University of North Carolina, Chapel Hill April, 2001
- Invited BEAST, Department of Anthropology, Duke University, April 2001.

#### **2000**

- Department of Neurobiology, Faculty guest speaker at weekend retreat, Duke University Medical Center, October 2000.
- Cortex Club, Department of Neurobiology, Duke University Medical Center, Fall 2000
- Commentator for Exploring the Mind Symposium, Duke University, February 2000.
- Invited colloquium, Nathan Kline Institute, NYC, February, 2000.

#### **1997-1999**

- Dissertation seminar, “Ordinal numerical abilities in rhesus monkeys,” Department of Psychology, Columbia University, 1999.

- St. Ann's High School, Brooklyn, NY, "Science and education," Fall 1999
- Lunch-box seminar (job talk); Department of Psychology, Duke University, January, 1999.
- Department of Psychology, Columbia University, "Chunking in humans and animals" 1998.
- Department of Psychology, University of Pennsylvania, "Ordinal numerical knowledge in rhesus monkeys," April, 1997.

## **Publications**

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### ***Books & Special issues***

- **Brannon, E.M.** (Ed.) 2010. Thought without language: A tribute to the contributions of H.S. Terrace. *Behavioral Processes*, 82(2), 137-138.
- Dehaene, S., & **Brannon, E.M.** (Ed.s) Space, Time, and Number in the Brain: searching for the foundations of mathematical thought. Elsevier, 2011.
- Dehaene, S., & **Brannon, E.M.** 2010. Space, time, and number: A Kantian research program. *Trends in Cognitive Sciences*, 14(12), 517-519.
- Purves, D., **Brannon, E.**, Cabeza, R., Huettel, S., LaBar, K., Platt, M., Woldorff, M. (2007). Principles of Cognitive Neuroscience. Sunderland, Massachusetts: Sinauer Associates.

### ***In preparation***

- Cordes, S., & **Brannon, E. M.** Infants see sets differently than adults: Average size computations at 7 months. In preparation
- DeWind, N.K., **Brannon, E. M.**, Platt, M.L. monkey physiology paper, In preparation
- DeWind, N.K., **Brannon, E. M.**, symbol feedback, In preparation
- Drucker, C., Monkeys attend to ratio of ratios
- Drucker, C. lemur serial reaction time
- Jones, S. **Brannon, E. M.**, multiplication
- Li, R., **Brannon, E. M.**, Huettel, S., Ambiguity aversion is absent in 8-year-old children
- Paulsen, D.J., Platt M.L., Huettel, S.A., & **Brannon, E.M.**, Feedback learning and risk, In preparation
- Park, J. Bermudez, V., **Brannon, E.M.**, preschool
- Park, J. Woldorff, M., **Brannon, E.M.**, Experience-Dependent Hemispheric Specialization of Letters and Numbers changes over development
- Pinhas, M. Paulsen, D. Woldorff, M., & **Brannon, E.M.**, In preparation
- Merritt, D.J., & **Brannon, E.M.**, Monkeys do not generalize a rule learned with discrete quantities to continuous quantities, In preparation
- Starr, A., & **Brannon, E. M.** contour length
- Starr, A., & **Brannon, E. M.** ratio infancy
- Starr, A., & **Brannon, E. M.** A role for visuospatial working memory in mediating the interaction between space and time
- Starr, A., & **Brannon, E. M.** Number and time are equally salient for 7-month-old infants

### ***Submitted or under revision***



- Cantlon, J., & **Brannon, E. M.** Subtraction in monkeys, under revision at *Psychological Science*
- DeWind, N.K., G.K. Adams, Platt, M.L. **Brannon, E. M.**, Modeling the approximate number system; Quantifying the contribution of visual stimulus features, Under revision *Cognition*
- Park J. Dewind, N., Woldorff, M., & **Brannon, E. M.**, Rapid and direct encoding of numerosity in the visual stream, Submitted to *Journal of Cognitive Neuroscience*
- Starr, A., & **Brannon, E. M.** Shared and separable representations of magnitude, Under revision for JECF

#### 2014 and in Press

- **Brannon, E.M.**, & Park, J. Navigator Chapter for: Phylogeny and Ontogeny of Mathematical and Numerical understanding, In Handbook on Mathematical Cognition, Ed.s R.Cohen-Kadosh
- Drucker, C., & **Brannon, E. M.** (2014). Rhesus monkeys (*Macaca mulatta*) map number onto space, *Cognition*, 132(1), 57-67. PMID: PMC4031030.
- Libertus, M., Starr, A., Williamson, T., & **Brannon, E.M.** (2014). Number trumps area for 7-month-old infants, *Developmental Psychology*, 50(1), 108-112. PMID: PMC3796133.
- Park, J., & **Brannon, E. M.** (2014). Improving arithmetic performance with number sense training: An investigation of underlying mechanism, *Cognition*, 133(1), 188-200. PMID: NIHMS614955.
- Park, J., Chiang, C., **Brannon, E.M.**, & Woldorff, M. (2014). Experience-Dependent Hemispheric Specialization of Letters and Numbers is Revealed in Early Visual Processing, *Journal of Cognitive Neuroscience*
- Pinhas, M., Woldorff, M., & **Brannon, E.M.** (2014). Electrophysiological evidence for the involvement of the approximate number system in preschoolers' processing of spoken number words, *Journal of Cognitive Neuroscience*, 26(9), 1891-1904. PMID: 221122.
- Starr, A., & **Brannon, E. M.** Evolutionary and Developmental Continuities in Numerical Cognition, In Ed.s Geary, D, Berch, D.

#### 2013

- Jones, S. M., Pearson, J., DeWind, N., Paulsen, D., Tenekedjieva, A., & **Brannon, E.M.** (2013). Lemurs and macaques show similar numerical sensitivity. *Animal Cognition*, 17(3), 503-15. PMID: PMC3966981.
- Merritt, D.J., & **Brannon, E.M.** (2013). Nothing to it: Precursors to a zero concept in preschool children. *Behavioural Processes*, 93, 91-97. PMID: PMC 3582820.
- Park, J., Li, R., & **Brannon, E.M.**, (2013). Neural connectivity patterns underlying symbolic number processing indicate mathematical achievement in children. *Developmental Science*, 17(2), 187-202. DOI: 10.1111/desc.12114.
- Park, J., & **Brannon, E.M.** (2013). Training the approximate number system improves math proficiency, *Psychological Science*, 24(10), 2013-1019. PMID: PMC3797151.
- Starr, A. Libertus, M.E., & **Brannon, E.M.** (2013). Number sense in infancy predicts mathematical abilities in childhood. *Proceedings of the National Academy of Sciences*, 110(45), 18116-18120. PMID: PMC3831472.

- Starr, A., Libertus, M.E., & **Brannon, E.M.** (2013). Infants show ratio dependent discrimination regardless of set size, *Infancy*, 18(6), 1-15. PMID: PMC3864890.

## 2012

- DeWind, N.K., & **Brannon, E.M.** (2012). Malleability of the approximate number system: effects of feedback and training. *Frontiers in Human Neuroscience*, 6(68). PMID: PMC3329901.
- Jones, S.M., & **Brannon, E.M.** (2012). Prosimian primates show ratio dependence in spontaneous quantity discriminations. *Frontiers in Comparative Psychology*, 3(550). PMID: PMC3572878.
- MacLean, E.L., Mandalaywala, T.M., & **Brannon, E.M.** (2012). Variance-sensitive choice in lemurs: constancy trumps quantity, *Animal Cognition*, 15(1), 15-25. PMID: PMC3645319.
- Merritt, D., DeWind, N., & **Brannon, E.M.** (2012). Comparative cognition of number representation, In Handbook of Comparative Cognition. Editors, T. Zentall and E. Wasserman. Oxford: Oxford University Press.
- Paulsen, D.J., Carter, R.M., Platt, M.L., Huettel, S.A., & **Brannon, E.M.** (2012). Neurocognitive development of risk aversion from early childhood to adulthood. *Frontiers in Human Neuroscience*, 5(178). PMID: PMC3250075.
- Roitman, J.D., **Brannon, E.M.**, & Platt, M.L. (2012). Representation of numerosity in posterior parietal cortex. *Frontiers in Integrative Neuroscience*, 6(25). PMID: PMC3364489.

## 2011

- MacLean, E.L., Matthews, L.J., Hare, B. Nunn, C.L., Anderson, R.C., Aureli, F. **Brannon, E.M.**, Call, J., Drea, C.M., Emery, N.J., Haun, D.B.M., Herrmann, E., Jacobs, L.F., Platt, M.L., Rosati, A.G., Sandel, A., Schroepfer, K.K., Seed, A.M., Tan, J., van Schaik, C.P., Wobber, V., (2011). How Does Cognition Evolve?: Phylogenetic Comparative Psychology, *Animal Cognition*, 15(2), 223-238. PMID: PMC3980718.
- **Brannon, E.M.**, & Merritt, D. (2011). Evolutionary foundations of the Approximate Number System. In Space, Time, and Number in the Brain: Searching for the Foundations of Mathematical Thought. Dehaene, S., & Brannon, E.M. (Eds.). New York, NY: Elsevier.
- Cantlon, J. F., & **Brannon, E. M.** (2011). Animal Arithmetic. Encyclopedia of Animal Behavior. Editors, Breed, M.D., & Moore, J. Oxford: Elsevier.
- Cantlon, J.F. Davis, S.W., Libertus, M.E. Kahane, J. **Brannon, E.M.** Pelphrey, K.A. (2011). Inter-Parietal White Matter Development Predicts Numerical Performance in Young Children, *Learning and Individual Differences*, 21(6), 672-680. PMID: PMC3240671.
- Cordes, S., & **Brannon, E.M.** (2011). Attending to one of many: When infants are surprisingly poor at discriminating an item's size, *Frontiers in Psychology*, 2(65). PMID: PMC3110486.
- Merritt, D. MacLean, E. Crawford, J.C. **Brannon, E. M.** (2011). Numerical rule-learning in ring-tailed Lemurs (*Lemur catta*). *Frontiers in Comparative Psychology*, 2(23), 1-9. PMID: PMC3113194.
- Libertus, M.E., **Brannon, E.M.**, Woldorff, M. (2011). Parallels in stimulus-

driven oscillatory brain responses to numerosity changes in 7-month-old infants and adults, *Developmental Neuropsychology*, 36(6), 651-667. PMID: PMC3638794.

- Paulsen, D.J., Platt M.L., Huettel, S.A., & **Brannon, E.M.**, (2011). Decision-making under risk in children, adolescents, and young adults. *Frontiers in Developmental Psychology*, 2(72). PMID: PMC3110498.

## 2010

- **Brannon, E.M.** (2010). Introduction to Thought without language: A tribute to the contributions of H.S. Terrace. *Behavioral Processes*, 82(2), 137-138.
- **Brannon, E.M.**, Jordan, K.E., & Jones, S. (2010). Behavioral Signatures of Numerical Discrimination. *Primate Neuroethology*. Platt, M.L., & Ghazanfar, A. (Eds.). Oxford: Oxford University Press.
- Cantlon, J. F., Safford, K.E., & **Brannon, E.M.** (2010). Spontaneous Analog Number Representations in 3-year-old Children. *Developmental Science*, 13(2), 289–297. PMID: PMC2819667.
- Dehaene, S., & **Brannon, E.M.** (2010). Space, Time, and Number: A Kantian Research Program. Special Issue on Space, Time, and Number, *Trends in Cognitive Sciences*, 14(12), 517-519. DOI: 10.1016/j.tics.2010.09.009.
- Jones, M.S., Merritt, D., Cantlon, J., & **Brannon, E.M.** (2010). Context affects the numerical semantic congruity effect in rhesus monkeys. *Behavioral Processes*, 83(2), 191-196. PMID: PMC3677752.
- Libertus, M., & **Brannon, E.** (2010). Stable individual differences in number discrimination in infancy. *Developmental Science*, 13(6), 900-906. PMID: PMC2966022.
- Merritt, D., Casasanto, D., **Brannon, E.M.** (2010). Do monkeys think in metaphors? Representations of space and time in monkeys and humans, *Cognition*, 117(2), 191-202. PMID: PMC2952654.
- Paulsen, D., Woldorff, M., & **Brannon, E.M.** (2010). Individual differences in nonverbal number discrimination correlate with event-related potentials and measures of probabilistic reasoning. *Neuropsychologia*, 48(13), 3687–3695. PMID: PMC2975800.
- Pearson, J., Roitman, J.D. **Brannon, E.M.** Platt, M.L., & Raghavachari, S. (2010). A physiologically-inspired model of numerical classification based on graded stimulus coding. *Frontiers in Behavioral Neuroscience*, 4(1). PMID: PMC2814553.

## 2009

- **Brannon, E.M.**, & Cantlon, J. F. (2009). A comparative perspective on the origin of numerical thinking. In *Cognitive Biology: Evolutionary and Developmental Perspectives on Mind, Brain, and Behavior*. Luca Tomasi, Mary A. Peterson, and Lynn Nadel (Eds.). Cambridge: MIT Press.
- Cantlon, J. F., Cordes, S., Libertus, M. E., & **Brannon, E. M.** (2009). Numerical abstraction: It ain't broke. (commentary). *Behavioral and Brain Sciences*, 32(3-4), 331-332.
- Cantlon, J.F., Cordes, S., Libertus, M.E., **Brannon, E.M.** (2009) Comment on “Log or Linear? Distinct Intuitions of the Number Scale in Western and Amazonian Indigene Cultures, *Science*, 323(5910), 38. PMID: PMC3393850.

- Cantlon, J. F., Libertus, M.E., Pinel, P., Dehaene, S., **Brannon, E.M.**, & Pelphrey, K.A. (2009). The neural development of an abstract concept of number. *Journal of Cognitive Neuroscience*, 21(11), 2217-2229. PMID: PMC2745480.
- Cantlon, J.F., Platt, M.L., & **Brannon, E.M.** (2009). Beyond the number domain. Invited review. *Trends in Cognitive Sciences*, 13(2), 83-91. PMID: PMC2709421.
- Cordes, S., & **Brannon, E.M.** (2009). Crossing the divide: Infants discriminate small from large numerosities. *Developmental Psychology*, 45(6), 1583-1594. PMID: PMC2906140.
- Cordes, S., & **Brannon, E.M.** (2009). The relative salience of discrete and continuous quantity in young infants. *Developmental Science*, 12(3), 453-463. PMID: PMC2949063.
- Jordan, K.E., & **Brannon, E.M.** (2009). A comparative approach to understanding human numerical cognition. *The Origins of Object Knowledge*. Hood, B., & Santos, L. (Eds.). Oxford: Oxford University Press.
- Libertus, M.E., & **Brannon, E.M.** (2009) Behavioral and neural basis of number sense in infancy, *Current Directions in Psychological Science*, 18(6), 346-351. PMID: PMC2857350.
- Libertus, M., **Brannon, E.M.**, Pelphrey, K. (2009). Developmental changes in category-specific brain responses to numbers and letters in a working memory task. *NeuroImage*, 44(4), 1404-1414. PMID: PMC2659412.
- Libertus, M., Pruitt, L., Woldorff, M., & **Brannon, E.M.** (2009). Induced alpha-band oscillations reflect ratio-dependent number discrimination in the infant brain. *Journal of Cognitive Neuroscience*, 21(12), 2398-2406. DOI: 10.1162/jocn.2008.21162.
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- **Brannon, E.M.**, Libertus, M. Meck, W.H., & 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. PMID: PMC3607948.
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- **Brannon E.M.**, Suanda, U., Libertus, K. (2007). Temporal discrimination increases in precision over development and parallels the development of numerosity discrimination, *Developmental Science*, 10(6), 770-777. PMID: PMC2918408.
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- Cantlon, J. F; **Brannon, E. M.** (2007). How Much Does Number Matter to a Monkey (*Macaca mulatta*)?, *Journal of Experimental Psychology: Animal Behavior Processes*. 33(1), 32-41.
- Cantlon, J., Fink, R., & **Brannon, E.M.** (2007). Heterogeneity impairs numerical matching but not numerical ordering in preschool children. *Developmental Science*, 10(4), 431-440.
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- Merritt, D., MacLean, E., Jaffe, S., & **Brannon, E.M.** (2007). A comparative analysis of serial ordering in ring-tailed lemurs (*Lemur catta*). *Journal of Comparative Psychology*, 121(4), 363-371. PMID: PMC2953466.
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## 2006

- **Brannon, E.M.**, Lutz, D., and Cordes, S. (2006). The development of area discrimination and its implications for number representation in infancy. *Developmental Science*, 9(6), F59-F64. PMID: PMC1661837.
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- **Brannon, E.M.**, Cantlon, J., & Terrace, H.S., (2006). The role of reference points in ordinal numerical comparisons by rhesus macaques (*Macaca mulatta*). *Journal of Experimental Psychology: Animal Behavior Processes*, 32(2), 120-134.
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- **Brannon, E.M.** (2006). The representation of numerical magnitude. Invited review for *Current Opinion in Neurobiology*, 16(2), 222-229. PMID: PMC1626588.
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- Roitman, J., **Brannon, E.M.**, Andrews, J.R., & Platt, M.L. (2006). Nonverbal representation of time and number in adults. *Acta Psychologica*, 124(3), 296-318.

## 2005

- **Brannon, E.M.** (2005). The independence of language and mathematical reasoning. *Proceedings of the National Academy of Sciences*, 109(9), 3177-3178. PMID: PMC552939.
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- **Brannon, E.M.** (2005). Quantitative thinking: From monkey to human and human infant to adult. In S. Dehaene, J. Duhamel, Hauser, M.D., Rizzolatti, G. (Eds.), *From Monkey Brain to Human Brain* (pp.97-116). Cambridge, MA: MIT Press.
- Cantlon, J., & **Brannon, E.M.** (2005). Semantic congruity facilitates number judgments in monkeys and humans. *Proceedings of the National Academy of Sciences*, 102(45), 16507–16511. PMID: PMC1283437.
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- Jordan, K.E., **Brannon, E.M.**, Logothetis, N.K., Ghazanfar, A.A. (2005). Monkeys match the number of voices they hear to the number of faces they see. *Current Biology* 15(11), 1034-1038.

## 2004

- **Brannon, E.M.**, Wolfe, L., Meck, W.H., Woldorff, M. (2004). Timing in the baby brain. *Cognitive Brain Research*, 21(2), 227-233.
- **Brannon, E.M.**, Abbott, S., & Lutz, D. (2004). Number bias for the discrimination of large visual sets in infancy, *Cognition*, 93(2), B59-B68.
- **Brannon, E.M.**, Andrews, M., & Rosenblum, L. (2004). Effectiveness of video of conspecifics as a reward for socially housed bonnet macaques (*Macaca radiata*). *Perceptual and Motor Skills*, 98(3 Pt. 1), 849-858.

## 2003

- **Brannon, E.M.** (2003). Number knows no bounds. Invited commentary in *Trends in Cognitive Sciences*, 7(7) 279-281.
- **Brannon, E.M.**, & Roitman, J. (2003). Nonverbal representations of time and number in non-human animals and human infants. In *Functional and Neural Mechanisms of Interval Timing* Ed., Warren Meck. New York, NY: CRC Press. Pp. 143-182.
- Terrace, H.S., Son, L., & **Brannon, E.M.** (2003). Serial expertise of rhesus macaques. *Psychological Science*, 14(1) 66-73.

### 1996-2002

- **Brannon, E.M.**, (2002). The development of ordinal numerical knowledge in infancy. *Cognition*, 83(3), 223-240.
- **Brannon, E.M.**, & Van de Walle, G. (2001). The development of ordinal numerical competence in young children. *Cognitive Psychology*, 43(1), 53-81.
- **Brannon, E.M.**, Wusthoff, C.J., Gallistel, C.R., & Gibbon, J. (2001). Numerical subtraction in the pigeon: evidence for a linear subjective number scale. *Psychological Science*, 12(3), 238-243.
- **Brannon, E.M.**, & Terrace, H.S. (2002). The Evolution and Ontogeny of Ordinal Numerical Ability. In Bekoff, M., Allen, C., and Burghardt, G.M. *The Cognitive Animal*. Cambridge, MA: The MIT Press. Pp. 197-204.
- Gallistel, C.R., **Brannon, E.M.**, Gibbon, J., & Wusthoff, C.J. (2001). Response to Dehaene. *Psychological Science*, 12(3), 247.
- **Brannon, E.M.**, & Terrace, H.S. (2000). Representation of the numerosities 1-9 by Rhesus Monkeys (*Macaca mulatta*). *Journal of Experimental Psychology: Animal Behavior Processes*, 26(1), 31-49.
- **Brannon, E.M.**, & Terrace, H.S. (1999). Letter to the editor. *Science*, 283, 1852.
- **Brannon, E.M.**, & Terrace, H.S. (1998). Ordering of the numerosities 1-9 by monkeys. *Science*, 282(5389), 746-749.
- Platt, M.L., **Brannon, E.M.**, Briese, T.L. & French, J.A. (1996). Differences in feeding ecology predict differences in performance between golden lion tamarins (*Leontopithecus rosalia*) and Wied's marmosets (*Callithrix kuhli*) on spatial and visual memory tasks. *Animal Learning and Behavior*, 24(4), 384-393.

### Selected scientific Commentaries on Brannon Publications

Selected press coverage can be viewed at [www.brannonlab.org](http://www.brannonlab.org)

- Carey, S. (1998) Knowledge of number: it's evolution and ontology, *Science*, 282, 641-2.
- Azar, B. (2000) Monkeying around with number, *APA Monitor* (31)1.
- Dehaene, S. (2001). Subtracting pigeons: Logarithmic or linear? *Psychological Science*. Vol 12(3), 244-246.
- Bower, B. (2002). Numbers in Mind, *Science News* 161, 392-393.
- Bower, B. (2005). Math Minus Grammar, *Science News* 167, 117-118.
- Santos, L R. (2005). Primate Cognition: Putting Two and Two Together, *Current Biology*, 15 (1), R545-R547
- Gross, L. (2006). A Neural Seat for Math? *PLOS, Biology*, 4(5)e149
- Miller, J. (2006) Babies show budding number ability, *Science News*, 169.
- Feigenson, L. (2007) *Trends in Cognitive Science*.

- Dingfelder, S.F. (2007) Monkey Math, *APA monitor* (38) 3.
- Gross, L. (2007). Neurons for numerosity: As quantities increase, so does the neural response. *PLOS, Biology*, 5(8)e226.
- Van Opstal, F. (2007). Labeled-line coding and summation coding of numerosities in prefrontal and parietal cortex. *J. of Neuroscience*. 27(36)9535-9536.
- Beran MJ., (2008) The Evolutionary and Developmental Foundations of Mathematics. *PLoS Biol* 6(2): e19 [doi:10.1371/journal.pbio.0060019](https://doi.org/10.1371/journal.pbio.0060019)
- Top 100 scientific findings Discover Magazine 2013

### **Scientific Society Memberships**

American Psychological Association, American Psychological Society, Comparative Cognition Society, Cognitive Development Society, Cognitive Neuroscience Society, Eastern Psychological Association, International Society for Infant Studies, Psychonomics Society, Society for Research in Child Development, Society for Neuroscience, Vision Science Society

### **Department and University Service**

- Leaky Foundation DIBS Presentation 9/26/2014
- Chair of developmental faculty search Spring 2015
- CCN retreat committee 2014
- Faculty co-chair for DIBS Career path workshop, Fall, 2014
- Presenter for DIBS outreach event, Dallas, Texas, January 2014
- Presenter for Duke Parents, March 2014
- Chair of tenure committee, Dr. Michael Tomasello
- Academic Programs Committee (Provost advisory committee) 2013-2016
- Presenter for Duke Forward event, Washington DC, 2013
- Executive committee for Initiative on Human Education and Development, 2013
- Developmental Area head, 2011-
- Chair of search committee for developmental psychology, 2011-2013
- Director of Graduate Studies, Cognitive Neuroscience Admitting Program, 2008-2009, 2010-2016
- Tenure review committee for Dr. Stephen Mitroff, 2011
- Review committee for Dean of Engineering School, 2011-2012
- Tenure review committee for Brian Hare, Evolutionary Anthropology, 2011
- Third year review committee for Makeba Wilbourn, 2010-2011
- Third year review committee for Amy Joh, 2010-2011
- Member of P&N chair advisory committee 2008-2009, 2010-2012
- Tenure review committee for Dr. Elizabeth Marsh, 2011
- Director of Graduate Studies, P&N, 2008-2009
- Third year review committee for Stephen Mitroff, 2008-2009
- Member of search committee for chair of Evolutionary Anthropology 2008-2009
- Member of steering committee for Primate Genomics Initiative 2008-2010
- Member of Director's Board Duke Lemur Center, 2006-2009
- Faculty organizer of Developmental Brown Bag 2007-2009
- Faculty organizer of Cognitive Development Brown Bag 2006-2007



- Research board for the Duke Primate Center (protocol review) 2004-2010
- Member of search committee for cognitive development area, 2007-2008
- Member of Bylaws committee for P&N Spring 2007-2008
- Organizer for Topics in Cognitive Neuroscience Talk Series Spring 2007
- Faculty Advisor for Student magazine “The Duke Mind,” 2007-2008
- Member of search committee for cognitive primatology position, 2005-2006
- Associate Director of Graduate Studies 2002-2005
- Department ethics representative 2001-2005, 2007-2009, 2011-2013
- Member of search committee for behavioral genetics position, 2004-2005
- Internal Advisory Board for the Duke Primate Center 2002-2005
- Member of search committee for Director of Center for Cognitive Neuroscience 2002

## **Teaching**

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### ***Courses taught:***

Educational Neuroscience Seminar Spring 2014

Bass seminar 2013-2014

Professional Development Course for graduate students (2010-2014)

Thought without Language seminar (Spring 2001, 2002, 2003, 2004, 2005)

Developmental Psychology lecture course (Fall 2002, 2004, 2006, 2007, 2012)

Graduate seminar Nonverbal Cognition (Spring 2004)

Graduate seminar in Cognitive Neuroscience (Spring 2008)

Graduate seminar in Advanced Topics in Cognitive Development (Spring 2011, Fall 2012, Fall, 2014)

### ***Team Teaching and Guest Lectures:***

Evolution and Development Proseminar 2001-2006

Graduate course on Cognitive Neuroscience 2000-2013 (1-2 lectures each semester)

Undergraduate course on Cognitive Neuroscience

Guest lecture in Introduction to Visual Culture by Kristine Stiles, 2008 & 2011

Guest Lecture in Graduate Cognitive Development, UNC, Chapel Hill Spring 2009, 2012, 2014

### ***Current graduate students:***

Nick Dewind, anticipated graduation December 2014

Ariel Starr (NSF), anticipated graduation May 2015

Carline Drucker (NSF) 2011-

Rosa Li (NSF) 2011-

Emily Szkudlarek 2014-

### ***Past graduate students***

Kerry Jordan, PhD, May 2007; associate professor Utah State University 2007-

Jessica Cantlon, PhD October 2007; assistant professor University of Rochester 2009-

Melissa Libertus, PhD, May 2010; assistant professor University of Pittsburg 2013-

David Paulsen, May 2012, Data Scientist

Sarah Jones, May 2012, currently visiting assistant Professor at St. Norbert College

### ***Current postdoctoral students:***

*Stephanie Bugden 2015-*

***Past Postdoctoral Students:***

Kerrie Lewis 2002-2004; Associate Professor Texas State University 2006-  
Donna Lutz 2003-2005; nonacademic job  
Dustin Merritt 2006-2011; nonacademic job  
Joonkoo Park 2011-2014, Assistant professor University of Massachusetts, Amherst  
Michal Pinhas 2011-2013, Assistant professor, Ariel University  
Jamie Roitman 2002-2006; Assistant Professor University of Illinois, Chicago  
Sara Cordes 2005-2009; Assistant Professor, Boston College

***Competitive Funding awarded to my students***

NSF Graduate Fellowship, Kerry Jordan 2004-2007  
APA American Psychological Association Dissertation award, Kerry Jordan 2006-2007  
NSF Graduate Fellowship, Jessica Cantlon 2004-2007  
NRSA Graduate Fellowship, David Paulsen 2010-2012  
APA Elizabeth Koppitz Fellowship, Jessica Cantlon 2007-2008  
NRSA Postdoctoral Fellowship, Sara Cordes 2006-2009  
NRSA Postdoctoral Fellowship, Dustin Merritt 2009-2011  
NRSA Predoctoral Fellowship, David Paulsen 2010-2013  
Hitchings New Investigator Award, Melissa Libertus, 2006  
STERN dissertation award, Melissa Libertus, 2009-2010  
Broad Graduate Fellowship, Nick DeWind, 2011-2012  
NSF Graduate Fellowship, Ariel Starr, 2012-2015  
DIBS postdoctoral fellowship, Joonkoo Park 2012-2013  
NSF Graduate Fellowship, Caroline Drucker, 2013-2016  
NSF Graduate Fellowship, Rosa Li, 2013-2016

***Graduate student dissertation committees (not including my own students):***

Susan Ormsbee, PBS, defended PhD Spring 2003  
Tracy Barrett, PBS, defended PhD April 2004  
Michelle Merrill, Biological Anthropology, defended PhD April 2004  
Aaron Sandler, Neurobiology Department, defended PhD 2006  
Jose Larrauri, Psychology and Neuroscience, defended PhD, July 2008  
Jen Gibbons, Psychology and Neuroscience, MAP committee 2009  
Evan MacLean, Evolutionary Anthropology defended PhD 2012  
Amrita Nair, Neurobiology defended 2013  
Kait Clark, Psychology and Neuroscience, defended PhD, 2014  
Amy Winecoff, Psychology and Neuroscience  
Courtnea Rainey, Psychology and Neuroscience  
Daniel Pages, Psychology and Neuroscience  
Emma Wu Dowd, Psychology and Neuroscience  
Christopher Krupenye, Evolutionary Anthropology  
Kristin Johnson, Psychology and Neuroscience  
Kelsey Lucca, Psychology and Neuroscience

***Undergraduate independent studies and practicums:***

**Evolutionary Anthropology** (3) (Talia Baghdoyan with distinction in the major, 2014)

**Biology** (3)

**Psychology** (over 40 students since 2000, many with distinction in the major)

(Rachel Roberts, with distinction in the major 2014; Cayley Larimer, 2015)

**Neuroscience** (Crystal Chiang, Anchal Sabharwal, Marley Rossa with distinction in the major 2014; Sonia Godbole, Pawan Mathew, Erica Ortiz 2015)

*Undergraduate students who coauthored publications as a result of independent study or work-study collaborations Sara Abbott, Whitney Tompson, Laura Pruitt, Lauren Wolfe, Rebecca Fink, Kelley E. Safford, Tara Mandalwaya, Jeremy Crawford, Priya Patel, Crystal Chiang, Rachel Roberts, Vanessa Bermudez, Talia Baghdoyan*

Mentor for Mechanisms of Behavior NSF summer students (2000-2010)

Mentor for Howard Hughes Summer Undergraduate Students (2000-2004, 2006)

Mentor for Howard Hughes High School interns (3 students 2003-2004, 2006, 2007)

Mentor for Vertical Integration Program (2 students, 2006; 4 students, 2007; 1 student, 2008)

Mentor for high school students from North Carolina School of Science and Math 2008-2009, 2013-2014, 2014-2015

**Conference Talks and Posters**

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**2014**

- Park J, DeWind N, Woldorff MG, **Brannon E.M.** Abstraction of number concepts from visual percepts in the human brain. Mathematical Cognition Conference. 2014. Arlington, VA.
- Park J, DeWind N, Woldorff MG, **Brannon E.M.** Abstraction of number concepts from visual percepts in the human brain. Cognitive Neuroscience Society. 2014. Boston, MA.
- Starr, A., DeWind, N.K., & **Brannon, E.M.** (2014, September). The role of non-numerical stimulus features in the development of the number sense. Poster to be presented at the annual meeting of Flux, The International Congress for Integrative Developmental Cognitive Neuroscience. Los Angeles, CA.
- Starr, A. & **Brannon, E.M.** (2014, July). Infants simultaneously encode numerical and temporal information. Poster presented at the biennial meeting of the International Conference for Infant Studies. Berlin, Germany.

**2013**

- Drucker, C.B., **Brannon, E.M.**, & Platt, M. L. Transcranial magnetic stimulation of macaque intraparietal sulcus impairs numerical processing. Society for Neuroscience Annual Meeting, San Diego.
- Starr, A., & **Brannon E.M.** (2013, October). Shared and separable representations of magnitude in 4-year-old children. Poster presented at the biennial meeting of the Cognitive Development Society. Memphis, TN.
- Starr, A., Libertus, M.E., & **Brannon, E.M.** (2013, May). ANS acuity in infancy predicts ANS acuity in early childhood. Poster presented at the Math Cognition Conference. Bethesda, MD.
- Starr, A., Libertus, M.E., & **Brannon, E.M.** (2013, April). Infants show ratio-dependent

discrimination regardless of set size. Paper presented at the biennial meeting of the Society for Research in Child Development. Seattle, WA.

- Starr, A., Libertus, M.E., & **Brannon, E.M.** (2013, April). ANS acuity in infancy predicts ANS acuity in early childhood. Poster presented at the biennial meeting of the Society for Research in Child Development. Seattle, WA.

## 2012

- Pinhas, M., Paulsen, D. J., & **Brannon, E. M.** (October, 2012). Individual differences in preschoolers' numerical acuity modulate event-related potential ratio effects. Paper presented at the 42nd annual meeting of the Society for Neuroscience, New Orleans, USA.
- Pinhas, M., Donohue, S. H., Woldorff, M. G., & **Brannon, E. M.** (April, 2012) Electrophysiological recordings of brain activity in preschoolers reveals the conceptual processing of spoken number words. Poster presented at the 19th annual meeting of the Cognitive Neuroscience Society, Chicago, USA.
- Starr, A., Libertus, M.E., & **Brannon, E.M.** (2012, June). Small number discrimination in infancy: a case for approximate number representations. Poster presented at the biennial meeting of the International Society for Infant Studies. Minneapolis, MN.
- Starr, A., & **Brannon, E.M.** (2012, June). Sound-shape congruency in preverbal infants. Poster presented at the biennial meeting of the International Society for Infant Studies. Minneapolis, MN.

## 2011

- **Brannon, E. M.**, Pinhas, M., Starr, A., & Libertus, M. (October, 2011). Relationship between early and later developing numerical abilities. Annual principal investigators meeting of the Research and Evaluation on Education in Science and Engineering (REESE) program, National Science Foundation, Washington, USA
- Jones, S., & **Brannon, E.M.** Conference on Comparative Cognition
- Cordes, S., & **Brannon, E.M.** 8-Month Olds Know Words Refer to Number: Verbal Labels Enhance Large Number Discrimination in Preverbal Infants, SRCD, Montreal
- Paulsen, D.J., Carter, M., Platt, M.L., Huettel, S.A., & **Brannon, E.M.** Risky Decision Making and Development: Behavioral Trajectories and Neural Recruitment From Early Childhood to Adulthood, SRCD, Montreal
- Paulsen, D.J., Carter, M., Platt, M.L., Huettel, S.A., & **Brannon, E.M.** Risky Decision Making and Development: Behavioral Trajectories and Neural Recruitment From Early Childhood to Adulthood, Cognitive Neuroscience Society

## 2010

- Libertus, M., **Brannon, E.M.**, & 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.
- Libertus, M., & **Brannon, E.M.** (2010). Developmental trajectory of the relationship between numerical discrimination and other cognitive abilities in infancy. 17th Biennial International Conference on Infant Studies (ICIS), Baltimore.
- Paulsen, D., Carter, M., Huettel, S., Platt, M., & **Brannon, E.** (2010). Risky decision making in young children activates prefrontal and posterior parietal regions, Cognitive Neuroscience Society, Montreal, QB
- Paulsen, D., Carter, M., Huettel, S., Platt, M., **Brannon, E.** (2010). Risky decision making

and development: neural recruitment from childhood to adulthood, Society for Neuroeconomics, Evanston, IL.

- Paulsen, D., Carter, M., Platt, M., Huettel, S., **Brannon, E.** (2010). Risky decision making and development: neural recruitment from childhood to adulthood. Society for Neuroscience, San Diego, CA.

## 2009

- Cantlon, J. F., & **Brannon, E. M.** (2009). The evolution of numerical cognition: Evidence from non- human primates. AAAS Annual Meeting, Chicago, IL.
- Cordes, S., Platt, M., & **Brannon, E. M.** (2009). Hot handed kids and gambling adults: Strategy reversal in risky decision making from childhood to adulthood. Society for Research in Child Development, Denver, Co.
- DeWind N.D., **Brannon E.M.**, & Platt M.L. (2009). November. Neural encoding of numerosity in the ventral intraparietal area in numerically naïve rhesus monkeys. Society for Neuroscience, Chicago, IL.
- Jones, S. M., Cantlon, J. F., & **Brannon, E. M.** (2009). Numerical sensitivity of lemurs. International Conference on Comparative Cognition, Melbourne, FL.
- Libertus, M., & **Brannon, E. M.** (2009). Evidence for Weber's Law in infants' numerical discriminations from a new change detection paradigm. Society for Research in Child Development, Denver, CO.
- Libertus, M., **Brannon, E. M.**, & Woldorff, M. (2009). Stimulus-driven oscillatory responses to numerical changes: a novel frequency-tagging EEG paradigm. Cognitive Neuroscience Society, San Francisco, CA.
- Merritt, D. J., Casasanto, D., & **Brannon, E. M.** (2009). Do monkeys use space to think about time? Society for Research in Child Development, Denver, CO.
- Merritt, D. J., Casasanto, D., & **Brannon, E. M.** (2009). The effects of space on time judgments in rhesus monkeys and humans. Comparative Cognition, Melbourne, FL.
- Paulsen, D., Carter, M., Huettel, S., Platt, M., & **Brannon, E. M.** (2009). Heterogeneity in risky decision making in 6- to 7-year-old children. Society for Research in Child Development, Denver, CO.
- Paulsen, D., Carter, M., Huettel, S., Platt, M., **Brannon, E.** (2009). Neurometrics of risky decision making in 6- to -7-year-old children, Society for Neuroeconomics, Evanston, IL.

## 2008

- Cantlon, J. F., & **Brannon, E. M.** (2008). Basic math in monkeys. Society for Neuroscience, Washington, D.C.
- Cantlon, J. F., **Brannon, E. M.**, & Pelphrey, K. A. (2008). Cortical organization of visual categories in preschool (2008). Cortical organization of visual categories in preschool children. Concepts, Objects, and Actions Meeting, Rovereto, Italy.
- Cordes, S., Suanda, S., & **Brannon, E. M.** (2008). Developmental limitations on numerical ordinal abilities. International Conference on Infant Studies, Vancouver, BC.
- Libertus, M., **Brannon, E. M.**, & Pelphrey, K. (2008). Working memory for numbers, letters, and faces in 8-year-old children and adults. Cognitive Neuroscience Society, San Francisco, CA.
- Paulsen, D., Huettel, S., Platt, M., & **Brannon, E. M.** (2008). Heterogeneity in risky decision

making in 6- to 7-year-old children. Society for Neuroeconomics, Park City, UT.

- Paulsen, D., Woldorff, M., & **Brannon, E. M.** (2008). Event-related potential signatures of detecting numerical difference. Society for Neuroscience, Washington, D.C.

## 2007

- MacLean, E. L., Merritt, D. J., & Brannon, E. M. (2007). Transitive inference in two species of prosimian primates [Abstract]. *American Journal of Primatology*, 69(S1), 102.
- Merritt, D. J., MacLean, E. L., & Brannon, E. M. (2007). Serial order processing in ring-tailed lemurs (*Lemur catta*) [Abstract]. *American Journal of Primatology*, 69(S1), 101.
- Cantlon, J.F., Libertus, M.E., **Brannon, E.M.**, & Pelphrey, K.A. Symbolic & Non-symbolic Number in the Developing Brain. Cognitive Neuroscience Society, New York, May 2007.
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- Jordan, K., & **Brannon, E.M.** Developmental changes in numerical matching performance across stimulus format and modality. Society for Research in Child Development, Boston, March 2007.
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