

# Eric D. Wilkey, PhD

Postdoctoral Scholar  
Brain and Mind Institute  
Western University  
London, Ontario  
N6A 3K7  
Canada

**Email:** [ericwilkey@gmail.com](mailto:ericwilkey@gmail.com)

**Website:** [ericdwilkey.com](http://ericdwilkey.com)

## EDUCATION & PROFESSIONAL EXPERIENCE

- Postdoc**                      *2018 – present*  
Brain and Mind Institute  
Western University, London, ON, Canada  
Advisor: Dr. Daniel Ansari
- Ph.D.**                              *2013 – 2018*  
Neuroscience  
Vanderbilt University, Nashville TN  
Primary Advisor: Dr. Gavin R Price  
Thesis Committee: Dr. Laurie Cutting, Dr. Frank Tong, Dr. Blythe Corbett  
Dissertation: *Attention to Number: A neurocognitive foundation for mathematical competence*
- Research Analyst**        *2011 – 2013*  
Vanderbilt University, Peabody Research Institute
- Large-scale meta-analysis of predictors of school success
  - City-wide Kindergarten reading intervention assessment
- M. Ed.**                              *2010 – 2011*  
Mind, Brain and Education  
Harvard University, Cambridge, MA  
Advisor: Dr. Jenny Thomson
- B.A.**                                *2003 – 2007*  
Belmont University, Nashville, TN  
Philosophy, minors in Classical Greek and Studio Art  
Honors Scholar, Magna Cum Laude

## GRANTS, FELLOWSHIPS, & AWARDS

- 2019–2021 *Banting Postdoctoral Fellowship*, Awarded by The Natural Sciences and Engineering Research Council of Canada (NSERC) \$140,000 CAD (\$70K per year).
- 2019–2021 *BrainsCAN Tier I Postdoctoral Fellowship Award Top-Up*, University of Western Ontario, \$20,000 CAD (\$10K per year).
- 2018 Travel grant award by BrainsCAN to attend a workshop on Open Science at University College Cork, Ireland (October 2018)
- 2017–2018 *Hardy Culver Wilcoxon Award*, presented by the Peabody College Department of Psychology & Human Development (Vanderbilt University) to the graduate student with the most distinguished doctoral dissertation in any area of Psychological Inquiry.
- 2017 Competitive Research-Achievement Fellowship from Vanderbilt Department of Psychology and Human Development. Award provides stipend for one semester to pursue research aims that build on a previous first-author publication.
- 2016 Fellow at Kavli Summer Institute in Cognitive Neuroscience, UC Santa Barbara, 2016. Fellowship for tuition, room, and board.
- 2016 Stipend awarded from NIH to present at NIH and IES funded Math Cognition and Learning Conference special topic: The Role of Linguistic and Cultural Factors in Mathematical Cognitive Development, Ft. Worth, Texas.
- 2015–2018 Peabody Dean's Fellowship for PhD (Vanderbilt University).
- 2013–2018 Peabody Graduate Honors Scholarship (Vanderbilt University)
- 2014 IMBES outstanding poster award at International Mind, Brain and Education Society, Fort Worth, TX.

## PUBLICATIONS | [ORCiD](#) | [Google Scholar](#)

### **Peer-Reviewed Articles**

Conrad, B. N., **Wilkey, E. D.**, Yeo, D. J. & Price, G. R. (accepted). Network topology of symbolic and nonsymbolic number comparison. *Network Neuroscience*.

**Wilkey, E.D.**, Pollack, C., Price, G. R. (2020). Dyscalculia and typical math achievement are associated with individual differences in number specific executive function. *Child Development*, 91(2), 596-619. <https://doi.org/10.1111/cdev.13194>

**Wilkey, E. D.**, & Ansari, D. (2020). Challenging the neurobiological link between number sense and symbolic numerical abilities. *Annals of the New York Academy of Sciences*. <https://doi.org/10.1111/nyas.14225>

Yeo, D. J., **Wilkey, E.D.**, Price, G. R. (2019). Malleability of mapping between Arabic numerals and approximate quantities: Factors underlying individual differences and the relation to math. *Acta Psychologica*, 198, 102877. <https://doi.org/10.1016/j.actpsy.2019.102877>

**Wilkey, E. D.**, & Price, G. R. (2019). Attention to number: The convergence of numerical magnitude processing, attention, and mathematics in the inferior frontal gyrus. *Human Brain Mapping*, 1–16. <https://doi.org/10.1002/hbm.24422>

**Wilkey, E. D.**, Cutting, L. E., & Price, G. R. (2018). Neuroanatomical correlates of performance in a state-wide test of math achievement. *Developmental Science*, 21(2), e12545. <http://doi.org/10.1111/desc.12545>

Price, G. R., Yeo, D. J., **Wilkey, E. D.**, & Cutting, L. E. (2018). Prospective relations between resting-state connectivity of parietal subdivisions and arithmetic competence. *Developmental Cognitive Neuroscience*, 30, 280–290. <http://doi.org/10.1016/j.dcn.2017.02.006>

**Wilkey, E. D.**, Barone, J. C., Mazzocco, M. M. M., Vogel, S. E., & Price, G. R. (2017). The effect of visual parameters on neural activation during nonsymbolic number comparison and its relation to math competency. *NeuroImage*, 159 (August), 430–442. <http://doi.org/10.1016/j.neuroimage.2017.08.023>

Price, G. R. & **Wilkey, E. D.** (2017). Cognitive mechanisms underlying the relation between nonsymbolic and symbolic magnitude processing and their relation to math. *Cognitive Development*, 44(September), 139–149. <http://doi.org/10.1016/j.cogdev.2017.09.003>

Yeo, D. J., **Wilkey, E. D.**, & Price, G. R. (2017). The search for the number form area: A functional neuroimaging meta-analysis. *Neuroscience & Biobehavioral Reviews*, 78(April), 145–160. <http://doi.org/10.1016/j.neubiorev.2017.04.027>

Price, G. R., **Wilkey, E. D.**, & Yeo, D. J. (2017). Eye-movement patterns during nonsymbolic and symbolic numerical magnitude comparison and their relation to math calculation skills. *Acta Psychologica*, 176(March), 47–57. <http://doi.org/10.1016/j.actpsy.2017.03.012>

Price, G. R., **Wilkey, E. D.**, Yeo, D. J., & Cutting, L. E. (2016). The relation between 1st grade grey matter volume and 2nd grade math competence. *NeuroImage*, 124, 232–237. <https://doi.org/10.1016/j.neuroimage.2015.08.046>

Tripney, J., Hombrados, T. J., Newman, M., Hovish, K., Brown, C., Steinka-Fry, K., & **Wilkey, E. D.** (2013). Technical and Vocational Education and Training Training (TVET) Interventions to Improve the Employability and Employment of Young People in Low- and Middle Income Countries : Systematic Review. *Campbell Systematic Reviews*, 9. [doi:10.4073/csr.2013.9](https://doi.org/10.4073/csr.2013.9)

### **Book Chapters, Commentaries, and Encyclopedia Entries**

Price, G. R. & **Wilkey, E. D.** (2018). Developmental Dyscalculia. In The SAGE encyclopedia of intellectual and developmental disorders. E. B. Braaten (Ed.). (Vol. 1, pp 379-383). Thousand Oaks, CA. Sage. <http://dx.doi.org/10.4135/9781483392271.n125>

\*Merkley, R., **Wilkey, E. D.**, & Matejko, A. A. (2016). Exploring the Origins and Development of the Visual Number Form Area: A Functionally Specialized and Domain-Specific Region for the Processing of Number Symbols? *Journal of Neuroscience*. 36, 4659–4661. DOI: <http://dx.doi.org/10.1523/JNEUROSCI.0710-16.2016>

\* **co-first-author publication**

Cerruti, C., **Wilkey, E. D.**, (2011) Verbal overshadowing and verbal facilitation in creative cognition. In L. DellaPietra (Ed.), *Perspectives on Creativity Vol. 2*. (pp. 178-187). Cambridge, UK: Cambridge Scholars Press. [download](#).

## In Progress

Pollack, C., **Wilkey, E. D.**, Price, G. R. (revision under review) Predictors of middle school students' growth in symbolic number comparison performance.

**Wilkey, E. D.**, Conrad, B. N., & Price, G. R. (under review). Individual differences in format- and task-dependent coding of symbolic and nonsymbolic numerosity. Preregistration here: [https://osf.io/une49/?view\\_only=d01bc5d2fa364397874de586e8ed7581](https://osf.io/une49/?view_only=d01bc5d2fa364397874de586e8ed7581)

**Wilkey, E. D.**, Shanley, L., Sabb, F., Ansari, D., Clarke, B. (in prep). Congruency in nonsymbolic number comparison across first grade. Preregistration here: [https://osf.io/49bfp/?view\\_only=73c21ac7cd0d42d8b8be55786c54f7fe](https://osf.io/49bfp/?view_only=73c21ac7cd0d42d8b8be55786c54f7fe)

## PRESENTATIONS

### **International Conference Talks & Poster Presentations** (\*\* indicates conference talk)

**\*\*Wilkey, E. D.** (accepted). Attention to Number: The convergence of numerical magnitude processing, attention, and mathematics development. **Symposium talk to be presented at** the biennial conference of the International Mind, Brain, and Education Society, Montreal, Canada. June 2020.

**\*\*Wilkey, E. D.**, Conrad, B. N., Price, G. R. (accepted) Individual Differences in Shared Representation of Symbolic and Nonsymbolic Number at 7T fMRI. **Symposium talk to be presented at** the annual conference of the Organization of Human Brain Mapping, Montreal, Canada. June 2020.

**Wilkey, E. D.**, Conrad, B. N., Price, G. R. (accepted) Individual Differences in Shared Representation of Symbolic and Nonsymbolic Number at 7T fMRI. **Poster to be presented at** the annual conference of the Organization of Human Brain Mapping, Montreal, Canada. June 2020.

**Wilkey, E. D.**, Conrad, B. N., Price, G. R. (accepted) Individual Differences in Shared Representation of Symbolic and Nonsymbolic Number at 7T fMRI. **Poster to be presented at** the annual conference of the Association for Psychological Science, Chicago Illinois. May 2020.

**\*\*Wilkey, E. D.** & Price, G. R. (2019). Attention to Number: The convergence of numerical magnitude processing, attention, and mathematics. **Symposium talk presented at** the annual conference of the Mathematical Cognition and Learning Society, Ottawa, Ontario. June 2019.

Pollack, C., **Wilkey, E. D.**, Price, G. R. (2019) What predicts middle school students' growth in symbolic number comparison performance? **Poster presented at** the biennial conference of the Society for Research in Child Development, Baltimore, Maryland, USA. March 2019.

**Wilkey, E.D.** & Price, G. R. (2018). The influence of attentional modulation on numerical magnitude processing mechanisms and their relation to math achievement. **Poster presented at** the biennial conference of the International Mind, Brain, and Education Society, Los Angeles, USA. September 2018.

Conrad, B. N., **Wilkey, E. D.**, & Price, G. R. (2018). Frontoparietal reorganization during symbolic and nonsymbolic number processing. **Poster presented at** the annual conference of the Society for Neuroscience, San Diego. November 2018.

Yeo, D. J., **Wilkey, E.D.**, Price, G. R. (2018). Malleability of mapping between Arabic numerals and approximate quantities: Factors underlying individual differences and the relation to math. **Poster presented at** the Mathematics Education Center's 3<sup>rd</sup> annual symposium: The symbol grounding problem, Loughborough, UK. June 2018.

**Wilkey, E.D.**, Pollack, C., & Price, G.R. (2018). ANS acuity, mathematics achievement, and dyscalculia: Evidence for a domain-specific executive function relation. **Poster presented at** the Annual Meeting of the Cognitive Neuroscience Society, Boston, MA. March 2018.

**\*\*Conrad, B. N., Wilkey, E. D., & Price, G. R. (2018). Network Topology of Symbolic and Nonsymbolic Number Processing: A 7T fMRI Study. Data blitz talk presented at** the Annual Meeting of the Cognitive Neuroscience Society, Boston, MA. March 2018.

Conrad, B. N., **Wilkey, E. D.**, & Price, G. R. (2018). Network Topology of Symbolic and Nonsymbolic Number Processing: A 7T fMRI Study. **Poster presented at** the Annual Meeting of the Cognitive Neuroscience Society, Boston, MA. March 2018.

**\*\*Wilkey, E.D.**, Barone, J. C., Mazzocco, M. M. M., Vogel, S. E., & Price, G. R. (2017). The Influence of Visual Cues on Nonsymbolic Number Comparison and Their Relation to Math Competency. **Nanosymposium talk presented at** the annual conference of the Society for Neuroscience, Washington, DC. November, 2017.

Yeo, D. J., **Wilkey, E. D.**, & Price, G. R. (2017). An ALE meta-analytical search for the putative number form area and its associated network. **Poster presented at** the annual conference of the Organization of Human Brain Mapping, Vancouver, Canada. June 2017.

**Wilkey, E. D.**, & Price, G. R. (2017). Symbolic and Nonsymbolic Magnitude Processing, the Neural Distance Effect, and Math Achievement. **Poster presented at** the annual conference of the Organization of Human Brain Mapping, Vancouver, Canada. June 2017.

**Wilkey, E.D.**, Barone, J. C., Mazzocco, M. M. M., Vogel, S. E., & Price, G. R. (2017). The Influence of Visual Cues on Nonsymbolic Number Comparison and Their Relation to Math Competency. **Poster presented at** the Annual Meeting of the Cognitive Neuroscience Society, San Francisco, CA March 2017.

Yeo, D. J., **Wilkey, E. D.**, & Price, G. R. (2017). The search for the putative number form area: A meta-analysis. **Poster presented at** the Annual Meeting of Cognitive Neuroscience Society, San Francisco, CA, March 2017.

**Wilkey, E.D.**, Barone, J. C., Mazzocco, M. M., Vogel, S. E., Price, G. R. (2016). The Influence of Non-Numeric Visual Parameters on Performance and Neural Activation Patterns During Nonsymbolic Number Comparison. **Poster presented at** the biannual conference of the International Mind, Brain, and Education Society, Toronto, Canada. September 2016.

Yeo, D. J., **Wilkey, E.D.**, Price, G. R. (2016). The relation between numerical estimation flexibility and mathematical competence. **Poster presented at** the biannual conference of the International Mind, Brain, and Education Society, Toronto, Canada. September 2016.

**Wilkey, E.D.**, Price, G. R. (2016). Eight-Year Growth in Math Skills and Its Relationship to Nonsymbolic and Symbolic Number Processing. **Poster presented at** the NIH and IES funded Math Cognition and Learning Conference special topic: The Role of Linguistic and Cultural Factors in Mathematical Cognitive Development, Ft. Worth , Texas. May 2016.

Yeo, D. J. , **Wilkey, E.D.**, Price, G. R. (2016). Eye movement patterns underlying symbolic and nonsymbolic numerical magnitude comparison. **Poster presented at** the NIH and IES funded Math Cognition and Learning Conference special topic: The Role of Linguistic and Cultural Factors in Mathematical Cognitive Development, Ft. Worth, Texas. May 2016.

**Wilkey, E.D.**, Price, G. R. (2016). Task-Specific Processing of Arabic Digits in the Left Angular Gyrus. **Poster presented at** the annual conference of Cognitive Neuroscience Society, New York City, NY. April 2016.

Price, G. R., **Wilkey, E.D.**, Yeo, D. J., Cutting, L. E. (2015). Resting-State Connectivity At 1st Grade Predicts Math Competence at 2nd Grade. **Poster presented at** the annual conference of the Society for Neuroscience, Chicago, IL. October 2015.

**Wilkey, E.D.**, Price, G. R., Cutting, L. E. (2015). Neuroanatomical Correlates of Performance in State-Wide Test of Math Achievement. **Poster presented at** the annual conference of the Cognitive Neuroscience Society, San Francisco, CA March 2015.

\* Price, G. R., **Wilkey, E.D.**, Cutting, L. E. (2014). Neuroanatomical predictors of 3<sup>rd</sup> Grade Math Competence. **Poster presented at** the biannual conference of the International Mind, Brain and Education Society, Fort Worth, TX. November 2014.

\* outstanding poster award; only one award for research posters at conference

### **Regional Conferences & Poster Presentations**

**Wilkey, E.D.**, Barone, J. C., Mazzocco, M. M., Vogel, S. E., Price, G. R. (2016). The Influence of Non-Numeric Visual Parameters on Performance and Neural Activation Patterns During Nonsymbolic Number Comparison. **Poster presented at** the Vanderbilt Brain Institute, Neuroscience Graduate Program Retreat, Nashville, TN. September 2016.

**Wilkey, E.D.,** Price, G. R. (2016). Eight-Year Growth in Math Skills and Its Relationship to Nonsymbolic and Symbolic Number Processing. **Poster presented at** the 9<sup>th</sup> Annual Vanderbilt Kennedy Center Science Day, Nashville, TN. September 2016.

Yeo, D. J., **Wilkey, E.D.,** Price, G. R. (2016). The relation between numerical estimation flexibility and mathematical competence. **Poster presented at** the 9<sup>th</sup> Annual Vanderbilt Kennedy Center Science Day, Nashville, TN. September 2016.

**Wilkey, E.D.,** Price, G. R., Cutting, L. E. (2015). Neuroanatomical Correlates of Performance in State-Wide Test of Math Achievement. **Poster presented at** the Vanderbilt Brain Institute, Neuroscience Graduate Program Retreat, Nashville, TN. September 2015.

**Wilkey, E.D.,** Price, G. R. (2014). Musical Training & Mathematical Competence: *Behavioral Relationships and Neurocognitive Foundations*. **Poster presented at** Music & the Mind in Music City event, Nashville, TN, June 2014.

### **Invited Talks**

**Title:** Going for the Big Prize  
**Date:** February 26<sup>th</sup>, 2020  
**Event:** Scholars to Leaders Speaker Series  
**Location:** Western University; London, Ontario; Canada

**Title:** Open Science in Numerical Cognition (workshop)  
**Date:** June 16<sup>th</sup>, 2019  
**Event:** Workshop, Mathematical Cognition and Learning Society Annual Conference  
**Location:** Carleton University; Ottawa, Ontario; Canada

**Title:** Attention to Number, Neurocognitive Foundations of Mathematical Competence  
**Date:** May 31<sup>st</sup>, 2019  
**Event:** Visiting Scholar, Research Group Talk  
**Location:** University of Oregon; Eugene, Oregon

**Title:** Panel Discussion on Securing a Postdoctoral Fellowship  
**Date:** May 2<sup>nd</sup>, 2019  
**Event:** Postdoctoral Research Forum  
**Location:** Western University; London, Ontario; Canada

**Title:** Open Science  
**Date:** November 13<sup>th</sup>, 2018  
**Event:** Knowledge dissemination; sponsored workshop  
**Location:** Western University, London, ON

**Title:** *Learning and the Brain: Where are we now (keynote address)*  
**Date:** July 20, 2016  
**Conference:** Making Math Matter: Integrating Math Skills in Grades PK – 8; Teacher Training  
**Location:** Memphis, TN

**Title:** *The Mathematical Brain*  
**Date:** July 19, 2016  
**Conference:** Making Math Matter: Integrating Math Skills in Grades PK – 8; Teacher Training  
**Location:** Memphis, TN

**Title:** *The Mathematical Brain*  
**Date:** March 1, 2016  
**Event:** Brain Awareness Month; talk open to the general public  
**Location:** Nashville, TN

**Title:** *Neuroanatomical Correlates of Math Competence*  
**Date:** February 18<sup>th</sup>, 2016  
**Event:** Cross-Departmental talk for Vanderbilt Cognition & Cognitive Neuroscience  
**Location:** Nashville, TN

**Title:** *Neuroanatomical Correlates of Math Competence*  
**Date:** January 15<sup>th</sup>, 2016  
**Event:** Cross-Departmental talk for Vanderbilt Psychology & Human Development Department  
**Location:** Nashville, TN

## TEACHING

### Vanderbilt University

**Guest Lecturer** (2 Classes): Spring 2018  
 Undergraduate seminar: Educational Neuroscience

- Neuroanatomy
- Neuropharmacology and “Smart Drugs”

**Guest Lecturer** (4 Classes): Fall 2017  
 Master’s and undergraduate seminar: Educational Neuroscience

- Neuropharmacology and “Smart Drugs”
- Behavioral Testing for Educational Neuroscience

**Guest Lecturer** (4 Classes): Spring 2017  
 Master’s and undergraduate seminars: Educational Neuroscience

- Introduction to numerical cognition and neuroimaging
- Behavioral Testing for Educational Neuroscience

**Guest Lecturer** (2 classes): Fall 2016  
 Undergraduate seminar: Educational Neuroscience

- Neuropharmacology and “Smart Drugs”
- Behavioral Testing for Educational Neuroscience

**Guest Lecturer** (3 classes): Fall 2015  
 Undergraduate seminar: Numerical Cognition

- Lectures on Intro to neuroimaging & numerical cognition and guided paper discussions.



**Teaching assistant:** Spring 2015

Undergraduate course: Introduction to Neuroscience

- TA evaluations available upon request

**Teaching assistant:** Fall 2014

Undergraduate course: Introduction to Statistical Analysis

- Independently taught 2 sections of 20 students one day a week; lecture and statistics lab
- TA evaluations available upon request

## **MENTORING**

### **Western University**

Ashini Peiris (2019 - current), honors undergraduate in Neuroscience

- co-advisor for USRI award (undergraduate summer research internship)

Ira Gupta (2019 - current), honors undergraduate in Neuroscience

- co-advisor for USRI award (undergraduate summer research internship)

### **Vanderbilt University**

Gabrielle Freitag (2015-2018), honors undergraduate in Psychology

Current position: enrolled in PhD Program at Florida International University

Ellen Andrews (2015-2017), honors undergraduate in Neuroscience

Current position: research assistant at Emory

Mary Liz Kim (2014-2017), honors undergraduate in Neuroscience

Current position: enrolled in U Southern California Medical School

Jordan Barone (2014-2016), honors undergraduate in Neuroscience

Current position: enrolled in Md/PhD at U Chicago

## **SERVICE**

### ***Journal Article Reviews:***

Attention, Perception, & Psychophysics

Child Development

Cognition

Cognitive Science

Communications Biology

Developmental Psychology

eLife

Human Brain Mapping

Journal of Cognitive Neuroscience  
Journal of Experimental Child Psychology  
Neuroimage  
Neuroimage-Clinical

#### ***Grant Review Committees:***

2020 National Science Foundation, panel member  
2019 National Science Foundation (*ad hoc reviewer*)  
2019 Postdoctoral Fellowship Reviewer, University of Western Ontario

#### ***Conference Committees:***

2018 International Mind, Brain, and Education Conference Poster Committee (Co-Chair)

#### ***Thesis Committees:***

2018 Undergraduate Honors Thesis Committee; Olivia Lasala, Vanderbilt University  
2018 Undergraduate Honors Thesis Committee; Jack Lyden, Vanderbilt University  
2017 Undergraduate Honors Thesis Committee; Rachel Telles, Vanderbilt University

#### ***Academic Committees:***

2016 Neuroscience Student Organization- elected to Curriculum Committee, Vanderbilt University  
2015 Neuroscience Student Organization- elected to Curriculum Committee, Vanderbilt University

#### ***University Event Organizing:***

2020 *Lab Fair Event Organizer*: see below  
2019 *Lab Fair Event Organizer*: Proposed and help organize inaugural Lab Fair event for undergraduates interested in research to connect with research labs at the Brain and Mind Institute

### **ADVANCED COURSES ATTENDED**

2018	Open Science Workshop	Cork, Ireland
2017	Connectivity Course: Structural and Functional	Boston, USA
2016	Summer Institute in Cognitive Neuroscience	UC Santa Barbara, USA
2015	Freesurfer Training Course	Boston, USA

### **SOFTWARE AND CODING SKILLS**

- Proficient at handling large-scale datasets, complex analyses, and creating graphical displays in: **R, MATLAB, SPSS, jamovi, Python, STATA, JASP** (in order of competency).
- Proficient at neuroimaging analysis in: **Brainvoyager (Neuro-elf, batch processing, Python scripting), Freesurfer, MATLAB, and SPM.**
- Coding skills in: **Python, BASH, and C++, Markdown, R Markdown, Git**
- Database creation and management using REDCAP & Filemaker.