**PRIYA B. KALRA**

Postdoctoral Researcher

University of Western Ontario

Email: pkalra7@uwo.edu

Phone: 510.206.6955

**EDUCATION**

**2015 Ed. D. Human Development and Education**

Harvard Graduate School of Education Cambridge, MA

Dissertation: *Implicit learning: development, individual differences, and educational implications*

Committee: John D.E. Gabrieli,

Jon R. Star

Andrew D. Ho

Jennifer M. Thomson

**2013 Ed.M. Human Development and Psychology** *(in passing)*

Harvard Graduate School of Education Cambridge, MA

**2007 M.Sc. Functional Neuroimaging**

Brunel University London, United Kingdom

Thesis: *Different roles of left IFG sub-regions in reading: an ROI study*

Thesis supervisor: Taeko Wydell

**2004 B.A. Cognitive Science**

University of California, Berkeley Berkeley, CA

**ACADEMIC APPOINTMENTS**

**2021-2023 BrainsCAN Postdoctoral Fellow**

*The role of the medial temporal lobe in implicit learning*

University of Western Ontario

Advisors: J. Paul Minda, Laura Batterink, Marc Joanisse

**2017-2020 Research Associate**

University of Wisconsin, Madison

Department of Educational Psychology

PIs: Edward M. Hubbard/Percival G. Matthews

**2015-2016 Adjunct Instructor**

Psychology Departments

*U.C. Berkeley, U.C. Davis, Mills College, St. Mary’s College,*

*CSU East Bay*

**RESEARCH INTERESTS**

Individual and developmental differences in memory & learning, relational reasoning in K-12 academics, developmental cognitive neuroscience

Cognitive processes and representations in learning academic content

**PUBLICATIONS**

**PEER-REVIEWED PUBLICATIONS**

**Kalra, P.B. & Richland, L.R.** (2022) Relational reasoning: a foundation for higher cognition based on abstraction. *Mind, Brain, & Education* (online early view; issue number pending)

**Kalra, P.B.**, Matthews, P.G. & Hubbard, E.M. (2020) Taking the relational structure of fractions seriously: Relational reasoning predicts fraction knowledge in elementary school children. *Contemporary Educational Psychology* 62

**Kalra**, **P.B**., Binzak, J.V., Matthews, P.G. & Hubbard, E.M.(2020).Symbolic fractions elicit an analog magnitude representation in school-age children. *Journal of Experimental Child Psychology* 195

**Kalra, P.B**, Gabrieli, J.D.E., Finn, A.S. (2019) Evidence of stable individual differences in implicit learning. *Cognition* 190:199-211

Finn, A.S\*., **Kalra, P\*.**, (\*co-first authors) Goetz, C., Leonard, J.A., Sheridan, M.A., Gabrieli, J.D.E. (2016) Developmental dissociation between the maturation of procedural memory and declarative memory. *Journal of Experimental Child Psychology* 142:212-240

Blackburne, L.K., Eddy, M., **Kalra, P.,** Yee, D., Sinha, P., Gabrieli, JDE (2014) Neural correlates of letter reversal in children and adults *PLoS One* 9(5): e98386

**Kalra P.** and O’Keefe, J.K. (2011) Communication in mind, brain, and education: Making disciplinary differences explicit. *Mind, Brain and Education* 5(4): 163-171

**MANUSCRIPTS IN PREPARATION**

Park Y. **Kalra**, **P.B**., Binzak, J.V., Matthews, P.G. & Hubbard, E.M. (*submitted*). Developmental changes in nonsymbolic and symbolic fractions processing: a cross-sectional fmri study.

**Kalra, P.B.** *(in preparation*) IQ and working memory do not explain spontaneous explicit learning in an implicit learning task

Binzak, J.V., **Kalra**, **P.B**., Matthews, P.G. & Hubbard, E.M. (*in preparation*). Neural associations of magnitude processing with symbolic fractions and nonsymbolic ratios.

**RESEARCH PRESENTATIONS** (selected)

**SYMPOSIA/TALKS**

**Kalra, P. B.** (2022, June). [Title TBA] as part of The role of relational reasoning in mathematical and spatial thinking: Implications for STEM education. (Jerome Prado, Chair). Accepted symposium to be conducted at International Mind, Brain, & Education meeting, Montreal, Quebec.

**Kalra, P.B.** (2022, April). A cognitive psychology perspective on example selection for stem concepts. Presentation at Center for Integrative Research on Cognition, Learning, and Education (CIRCLE) Conference. St. Louis, MO.

**Kalra, P.B**. (2019, March) Exploiting the structure of academic content to advance basic research. In Pollack, C.J. & Martin, R.E. (Chairs) *Applications of Cognitive Science Research: Contributions to Education across Levels of Analysis.* Symposium conducted at the meeting of the Society for Research in Child Development, Baltimore, MD.

Matthews, P.G., Binzak, J.V., **Kalra, P.B**., Park, Y., & Hubbard, E.M. (March, 2019). *Perceptual Routes to Rational Numbers*. Paper submitted as part of a symposium to 2019 Biennial Meeting on Society for Research in Child Development*,*Baltimore, MD.

Park, Y., Binzak, J.V., Toomarian, E.Y., **Kalra, P.,** Matthews, P.G., & Hubbard, E.M. (April, 2019). *Differences in processing symbolic vs. non-symbolic representations ratios: Behavioral and neural evidence*. Paper submitted as part of a symposium to American Education Research Association, Toronto, Canada.

**Kalra, P.B.,** Hubbard, E.M, & Matthews, P.G. (2019, March) Relational Reasoning Predicts Fraction Knowledge in Elementary School-Aged Children. In *Beyond Magnitude: Multiple Interpretations of Rational Numbers*. Tian, J. (Chair) & Siegler, R. (Discussant). Symposium conducted at the meeting of the Society for Research in Child Development, Baltimore, MD.

Hubbard, E.M., Binzak, J.V., Park, Y., **Kalra, P.B**., Toomarian, E.Y. (April, 2018). The ratio processing system underpins symbolic fraction understanding: Developmental neuroimaging investigations. *Paper submitted as part of a symposium to 1st Mathematical Cognition and Learning Society Conference.*

**Kalra, P.B.** (Chair) (2018, September). *Relational Reasoning in Mind, Brain, and Education*.Symposium conducted at meeting of International Mind, Brain, and Education Society. Speakers: Keith Holyoak, Silvia Bunge, Adam Green, Micah Goldwater

**POSTERS**

**Kalra, P.B.** (2022) Perceptual Similarity Affects Relational Judgements. *Accepted for* Cognitive Science Society Annual Meeting, Toronto, Ontario.

**Kalra, P.B**. (2021) Analyzing Interdisciplinary Collaboration with Bibliometric Data. U.W. Madison Data Science Hub—Data Science Research Bazaar: “Data Science for Social Good”

**Kalra, P.B**., Lazaroff, E., & Matthews, P.G. (2020) Variation in surface features improves recognition of common magnitude relations. Cognitive Science Society Annual Meeting (online)

**Kalra, P.B,** Hubbard, E.M., & Matthews, P.G**.** (2018)Relational Reasoning Predicts Fraction Knowledge. International Mind, Brain, and Education Society Meeting, Los Angeles

**Kalra, P.B.** & Hubbard (2018) Functional connectivity of IPS predicts distance effects in symbolic fraction magnitude comparison task. Flux Society Meeting, Berlin, Germany

**Kalra, P.B.** (2018)Predictors of spontaneous explicit learning in an implicit learning task. Cognitive Science Society Annual Meeting, Madison, WI

Binzak, J.V., Park, Y., Toomarian, E.Y., **Kalra, P**., Matthews, P.G., & Hubbard, E.M. (2017). Exploring the ratio processing system among primary school children: Behavioral and neural evidence. Poster presented at the*Cognitive Development Society,*Portland, OR

**Kalra, P**. Finn, A.S, & Gabrieli, JDE. (2014) Individual differences in implicit learning. Cognitive Neuroscience Society Annual Meeting, Boston, MA

**INVITED TALKS**

“Relational Complexity in Curricular Knowledge Components”

Analogy Minds Online Seminar Series, June 2020

“Is Implicit Learning Developmentally Invariant?”

Language and Cognitive Neuroscience Lab, UW-Madison, November 2018

“A Novel Method for Studying Relational Reasoning with Similarity Structures”

Human, Animal, and Machine Learning: Experiment and Theory (HAMLET) group at UW-Madison, December, 2018

**AWARDS AND FELLOWSHIPS**

**2021** BrainsCAN Postdoctoral Fellowship (highly competitive)

**2020** *The Data Incubator* Fellowship

**2012** Summer Institute in Cognitive Neuroscience Fellowship

**2010, 2012** Harvard Mind, Brain, & Behavior Graduate Student Award

**2010, 2012** Harvard GSE Student Travel Awards

**2008-2012** Larsen Family Fellowship

**TEACHING EXPERIENCE**

**AS INSTRUCTOR OF RECORD**

**2019-present** University of Wisconsin-Madison

Ed Psych 301 How People Learn

**2016** University of California, Berkeley

Cog Sci 1 Intro to Cognitive Science

STAT P. Preparatory Statistics (Summer Bridge Program)

California State University, East Bay

PSY 2020 Research Methods in Psychology

PSY 4220 Cognitive Processes

PSY 4320 Physiological Psychology

**2015** University of California, Davis

PSC 132 Language and Cognition

PSC 130 Human Learning & Memory

St. Mary’s College of California, Moraga CAs

PSY 126 Sensation & Perception

Mills College, Oakland CA

PSY 146 Statistics for Behavioral Sciences

**AS TEACHING ASSISTANT**

**2013** S-052 Applied Data Analysis; *Harvard GSE*

**2012** STAT 101 Intro to Quant. Methods for Psych; *Harvard Statistics*

PSY 1900 Intro to Stat. for Behavioral Sciences; *Harvard Psych*

**2011** S-040 Intro to Applied Data Analysis; *Harvard GSE*

[S-030 Applied Regression & Data Analysis](http://my.gse.harvard.edu/course/gse-s030/2011/spring); *Harvard GSE*

**2010** S-005 Intro to Educational Research; *Harvard GSE*

HT-100 Cognitive Development, Brain, & Education; *Harvard GSE*

SLS 20 Psychological Science; *Harvard Psych*

**2011-2014** STAT P. Preparatory Statistics (Summer Bridge Program) *U.C. Berkeley*

**UNDERGRADUATE RESEARCH MENTEES (2017-2020)**

Michael Scheibengraber

Sarah Skinner (co-mentor with Yunji Park)

Halle Tyczowski

Abigail Laumer

Naman Patel

Jamila Ougayour

Maya Peterson

Heather Moutvic

Karley Adams

Evan Decker

David Che

**PROFESSIONAL DEVELOPMENT IN TEACHING**

* Engaging Students in the Teaching of Statistics (*CIRTL*)
* Evidence-Based Undergraduate STEM Teaching (*CIRTL*)
* Break the Bias Habit Workshop (*William T.L. Cox~U.W-Madison*)
* Preparing to Teach Online (*U.W.-Madison*)

**SERVICE ACTIVITIES**

**EXTRAMURAL**

Guest Editor *Mind, Brain, & Education* (Special Issue on Relational Reasoning)

Ad-Hoc Reviewer

*Cognition*

*Child Development*

*Developmental Science*

*Journal of Educational Psychology*

*Developmental Psychology*

*Journal of Cognition & Development*

*Frontiers in Psychology*

**INTRAMURAL**

**2021** Western University 2021 Brainhack

Planning Committee Member

**2018** UW-Madison Postdoc Handbook Committee

Contributor, Campus Resources section

**2017** UW-Madison Postdoctoral Research Symposium

Planning Committee Member

**2017** UW-Madison Graduate Women in Science (GWIS)

Proposal Reviewer for GWIS Ruth Dickie Scholarship

**2008-10** HGSE Student Research Conference

‘09-10 Program Committee Chair

‘08-09 Proposal Review Committee Member

**2002** University of California LGBTQIA Conference

Program Committee Chair