Priya B. Kalra
Curriculum Vitae
Postdoctoral Fellow | University of Western Ontario

ACADEMIC APPOINTMENTS

2021-present **BrainsCAN Postdoctoral Fellow**
The role of the medial temporal lobe in implicit learning
Western Institute for Neuroscience
University of Western Ontario
Advisors: J. Paul Minda, Laura Batterink, Marc Joanisse

2017-2020 **Postdoctoral Research Associate**
Perceptual and cognitive mechanisms of developing fractions knowledge
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

EDUCATION

2015 **Ed. D. Human Development and Education**
Harvard Graduate School of Education Cambridge, MA
Implicit learning: development, individual differences, and educational implications
Committee: John D.E. Gabrieli
Jon R. Star
Andrew D. Ho

2012 **Ed.M. Human Development and Psychology**
Harvard Graduate School of Education Cambridge, MA

2007 **M.Sc. Functional Neuroimaging**
Brunel University London, United Kingdom
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

RESEARCH INTERESTS

Memory, memory systems, relational reasoning, representational similarity analysis, multidimensional scaling, STEM teaching and learning, science of learning

PUBLICATIONS

Kalra, P.B., Batterink, L.J., & Minda, J.P. (2025) Procedural and declarative knowledge simultaneously contribute to category response selection. *Psychological Research* 89:146 https://doi.org/10.1007/s00426-025-02162-9

Park, J. **Kalra, P.B,** Chuang, Y., Binzak, J.V., Matthews, P. & Hubbard, E.M. (2025) Developmental changes in nonsymbolic and symbolic fractions processing: A cross-sectional fMRI study. *Developmental Science* 28(5) https://doi.org/10.1111/desc.70042

Kalra, P., Minda, J. P., Roark, C. L., & Cruz, A. (2025). Reply to 'Single and multiple systems in probabilistic categorization'. *Nature Reviews Psychology*, *4*(1), 65-65. https://doi.org/10.1038/s44159-024-00390-1

Roark, C. L., Minda, J. P., **Kalra, P.**, & Cruz, A. (2025). Reply to 'Structure-based dissociations provide agnostic evidence to the multiple-systems debate'. *Nature Reviews Psychology*, *4*(1), 67-67**.** https://doi.org/10.1038/s44159-024-00396-9

Kalra, P.B. (2025) Asking the right questions: interrogating the logic and assumptions of paradigms used to investigate interactions between procedural and declarative memory in category learning. In Berryhill, M.E. & Richmond, L.L. (Eds.) Synthesizing Memory: Integrating Across Fields and Levels of Scale [Special Issue]. *Frontiers in Human Neuroscience* (3) https://doi.org/10.3389/fcogn.2024.1505513

Kalra, P.B., Batterink, L.J., & Minda, J.P. (2024) Procedural and declarative category learning simultaneously contribute to downstream processes. *Proceedings of the Annual Meeting of the Cognitive Science Society* (45) https://escholarship.org/uc/item/8766k211

Minda, J.P, Roark, C.L., Cruz, A., & **Kalra, P.B.** (2024) Theories and systems of categorization and category learning. *Nature Reviews Psychology* https://doi.org/10.1038/s44159-024-00336-7

Kalra, P.B. & Richland, L.R. (2022) Relational reasoning: a foundation for higher cognition based on abstraction. *Mind, Brain, & Education* 16:75-78 https://doi.org/10.1111/mbe.12323

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 https://doi.org/10.1016/j.cedpsych.2020.101896

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 https://doi.org/10.1016/j.jecp.2020.104844

Kalra, P.B, Gabrieli, J.D.E., Finn, A.S. (2019) Evidence of stable individual differences in implicit learning. *Cognition* 190:199-211 https://doi.org/10.1016/j.cognition.2019.05.007

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 https://doi.org/10.1016/j.jecp.2015.09.027

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 https://doi.org/10.1371/journal.pone.0098386

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 https://doi.org/10.1111/j.1751-228X.2011.01124.x

MANUSCRIPTS SUBMITTED

Reyes, S.D., Van Hedger, S., **Kalra, P.B.,** & Batterink, L.J. (*submitted*) When Attention Matters: Domain-Specific Disruption of Explicit but Not Implicit Statistical Learning.

Kalra, P.B, Petcovic, H.L., **&** Minda, J.P. Similarity ratings reveal expert-novice differences in knowledge organization. *Cognitive Science Proceedings* paper submission. Preprint available: https://osf.io/preprints/psyarxiv/fc3da_v1

MANUSCRIPTS IN PROGRESS

Kalra, P.B. Types of knowledge and instructional choices: The importance of procedural memory for learning concepts. Target journal: *Journal of Applied Research in Memory & Cognition* Preprint available: https://osf.io/preprints/psyarxiv/ezu73_v1

Kalra, P.B., Batterink, L.J., Minda, J.P, & Joanisse, M.F. (complete draft) Procedural and declarative category knowledge are integrated by a semantic control network: an fMRI-RSA study. Target journal: *Cerebral Cortex*

RESEARCH PRESENTATIONS (selected)

INVITED TALKS

"Quantitative approaches to mapping schemas in instructional domains"
Centre for Brain and Mind, Western University, March 2025

"Implications of Vector-Space Models of Relational Concepts"
Analogical Minds Online Seminar Series, January 2023

"Relational Complexity in Curricular Knowledge Components"
Analogical Minds Online Seminar Series, June 2020

"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

"Is Implicit Learning Developmentally Invariant?"
Language and Cognitive Neuroscience Lab, UW-Madison, November 2018

SYMPOSIA/CONFERENCE TALKS

Kalra, P.B., Batterink, L.J., Minda, J.P, & Joanisse, M.F. Interactions between category learning mechanisms. (2024, May) Implicit Learning Seminar, Marseille, France.

Kalra, P. B. & Minda, J.P. (2023, November). Individual differences in interaction between memory systems. Psychonomic Society Annual Meeting, San Francisco CA.

Kalra, P. B. & Minda, J.P. (2022, November). Implicitly learned information affects explicitly learned category judgements. Psychonomic Society Annual Meeting, Boston MA.

Kalra, P. B. (2022, June). Semantic spaces, relational reasoning, and fractions. In Prado, J. (Chair) *The role of relational reasoning in mathematical and spatial thinking: Implications for STEM education.* Symposium 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.

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.

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., Batterink, L.J., Minda, J.P., & Joanisse, M.F. (2025) Representations formed by procedural and declarative category learning are supported by overlapping sets of cortical areas**.** Poster at Cognitive Neuroscience Science Society Annual Meeting, Boston, MA

McTurk, M.*, **Kalra, P.B.,** Minda, J.P. (2025) Using COVIS to investigate interactions between memory systems. Poster at Cognitive Neuroscience Science Society Annual Meeting, Boston, MA (*research supervisee)

Kalra, P.B., Minda J.P, Batterink, L. & Joanisse, M. (2023) Investigating representations formed by implicit and explicit learning. Poster at Cognitive Neuroscience Science Society Annual Meeting, San Francisco, CA

Kalra, P.B. (2022) Perceptual Similarity Affects Relational Judgements. Flash talk presented at Cognitive Science Society Annual Meeting, Toronto, Ontario, Canada

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

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

TEACHING EXPERIENCE

AS INSTRUCTOR OF RECORD

2019-2021 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 CA
- PSY 126 Sensation & Perception

Mills College, Oakland CA
- PSY 146 Statistics for Behavioral Sciences

AS TEACHING ASSISTANT

Harvard Graduate School of Education

2013
- S-052 Applied Data Analysis

2011
- S-040 Intro to Applied Data Analysis
- S-030 Applied Regression & Data Analysis

2010
- S-005 Intro to Educational Research
- HT-100 Cognitive Development, Brain, & Education

Harvard Psychology Department

2012
- PSY 1900 Intro to Statistics for Behavioral Sciences

2010
- SLS 20 Psychological Science

2012 Harvard Statistics Department
- STAT 101 Intro to Quantitative Methods for Psychology

U.C. Berkeley Summer Bridge Program

2011-2014
- STAT P. Preparatory Statistics

Teaching evaluations: https://pbkalra.github.io/Student_Evaluations_Kalra.pdf

UNDERGRADUATE RESEARCH MENTEES

2022-2025 Western University

Urooj Anees | Honors Thesis *Individual Differences in Categorization*
https://ir.lib.uwo.ca/usri/usri2022/ReOS/313/

Mitchell McTurk | Independent Study *COVIS & Memory System Interactions*
Maggie Chekan | Independent Study *Delayed Feedback & Memory Interactions*
Sierra Fredricks | Independent Study *Dual-task Interference in Memory*

2017-2020 U.W. Madison Bio 152 Independent Research Project

Karley Adams, David Chen, Evan Decker, Abigail Laumer, Heather Moutvic. Naman Patel, Maya Peterson, Jamila Ougayour, Michael Scheibengraber, Sarah Skinner, Halle Tyczowski.

PROFESSIONAL DEVELOPMENT IN TEACHING

2021 Engaging Students in the Teaching of Statistics (*CIRTL*)
2020 Preparing to Teach Online (*U.W.-Madison*)
2019 Evidence-Based Undergraduate STEM Teaching (*CIRTL*)
2019 Break the Bias Habit Workshop (*William T.L. Cox-U.W-Madison*)

AWARDS AND FELLOWSHIPS

2021	BrainsCAN Postdoctoral Fellowship (highly competitive)
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

KNOWLEDGE TRANSLATION & MOBILIZATION ACTIVITIES

TRAINING

2023	Certificate in Specialist Knowledge Translation Training (Child. Hospital, Toronto)
2023	*Fast Track Impact* series of workshops (Dr. Mark Reed)
2024	*Meaningful Public Engagement with Science* workshop (Dr. Paula Croxson)

ORGANIZING

2022-2025 Western University Centre for the Science of Learning

- Organized series of talks for teachers on the science of reading
- Organized meetings between Western faculty and local school board admins
- Contributed to grant writing and strategic planning

WRITING

2022	Q&A with Priya Kalra: Peering inside the Brain https://brainscan.uwo.ca/news/2022/qa_with_priya_kalra.html
2014	Getting Past Dyslexia Myths: How Neuroscience Has Helped https://www.huffpost.com/entry/using-neuroscience-to-bre_b_6390814
2012	Cognitive Neuroscience: Connecting Neuroimaging and Neural Nets https://sitn.hms.harvard.edu/flash/2012/cognitive-neuroscience/

SERVICE ACTIVITIES

EXTRAMURAL

Guest Editor	*Mind, Brain, & Education* (Special Issue on Relational Reasoning)
Ad-Hoc Reviewer	*Cognition*, *Child Development*, *Developmental Psychology*, *Developmental Science*, *European Journal of Neuroscience*, *Journal of Educational Psychology*, *Journal of Cognition & Development, Frontiers in Psychology*

INTRAMURAL

Program Co-ordinator	2022-2025 Western Center for the Science of Learning
Postdoc rep.	2022-2024 Western Institute for Neuroscience – Research Advisory Committee
Planning Committee	2021 Western University Brainhack
Contributor	2018 UW-Madison Postdoc Handbook, Campus Resources section
Planning Committee	2017 UW-Madison Postdoctoral Research Symposium
Proposal Reviewer	2017 UW-Madison Graduate Women in Science Ruth Dickie Scholarship
Program Chair	2010 HGSE Student Research Conference
Proposal Reviewer	2009 HGSE Student Research Conference
Program Chair	2002 University of California LGBTQIA Conference