



# BASICS

*Ptarmigan Inn – May 13-14, 2011*

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Banff Annual Seminar In  
Cognitive Science

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## Friday Apr 30

5:00 PM Welcome and opening remarks

Please register with Peter Dixon if you have not already done so (\$70 for faculty, \$25 for students and postdoctoral fellows).

5:15 PM **Pierre Jolicoeur** (Université de Montréal)

*Cognitive neuroscience of visual and auditory short-term memory: Evidence from human electrophysiology and magnetoencephalography*

I will review recent work based on recordings of the electroencephalogram and magnetoencephalogram that enable us to track the processing of visual and auditory stimuli through sensation, perception, memory, and action. I will draw on examples based on curve tracing, auditory short-term memory, visual short-term memory, tactile short-term memory, visual attention, and preparation for simple actions. These studies provide useful complementary information that help us to develop a more complete understanding of simple and complex cognitive functions as well as their implementation in the human brain.

6:45 PM Dinner break

8:30 Reception and poster session (Sponsored by the *Canadian Journal of Experimental Psychology*  
10:30 PM and the Canadian Psychological Association)

## Saturday May 1

8:30 AM Coffee, tea, juice, pastries

9:00 AM **Weimin Mou** (University of Alberta)

*Fixed Reference Directions Model of Spatial Memory and Navigation*

The early theories of spatial memory and navigation stipulated that animals, including humans, have an enduring cognitive map of objects in the environment and during locomotion update the representation of their location and orientation in the cognitive map (e.g., Gallistel, 1990; O'Keefe & Nadel, 1978; Tolman, 1948). However these theories have been challenged recently by the proposal that human spatial navigation primarily relies on egocentric representations that are dynamic updated during navigation. In this talk, I will discuss one allocentric model of spatial memory and navigation and how to use this model to revisit the evidences supporting the proposal of dynamic updating egocentric representations. I will also describe evidences that support the allocentric model but not the egocentric updating model.

10:30 AM Coffee, tea, juice

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11:00 AM **Bruce Milliken** (McMaster University)

*Episodic Binding in Performance Tasks: Contextual Control and Consequences for Awareness*

Kahneman, Treisman and Gibbs (1992) introduced the idea that onset of a visual event cues the retrieval of corresponding object representations in memory. In turn, performance tasks often capture the ease with which the features of a perceptual event are integrated with the contents of retrieved object representations, which we refer to here as episodic binding effects. This framework has had a notable impact across several attention and performance literatures. In this talk I highlight two properties of episodic binding effects that have received little attention in prior research. In particular, the expression of episodic binding effects in performance is under contextual control, and episodic binding processes can have profound consequences for awareness of contingencies between consecutive events.

12:30 PM Lunch break

2:00 PM **Randall K. Jamieson** (University of Manitoba)

*A Unified Account of Implicit and Explicit Learning*

People's behaviour is often more sophisticated than their explicit knowledge would seem to allow. A popular explanation for the discrepancy is that people's sophistication reflects the work of a specialized learning mechanism that unconsciously extracts and covertly deploys knowledge about structure in the environment (i.e., the theory of implicit learning). I present data from several implicit learning protocols: the artificial grammar task, the serial reaction time task, the speeded identification task, and the implicit associative learning task. I explain those data using a model of human memory designed to explain explicit learning: cued-recall, classification, recognition, and frequency judgement. After I demonstrate that a single model gives a coherent explanation of people's behaviour in both implicit and explicit learning tasks, I will articulate the theory's perspective on the nature of intelligence and draw out the implications of that theoretical perspective for the design of artificial cognition.

3:30 PM Coffee, tea, juice, cake

4:00 PM **Michael Dougherty** (University of Maryland)

*Robust Prediction in a Monotonic World*

While data analytic tools have clearly inspired theoretical innovation within psychology, the reverse has rarely occurred: there are few instances of psychological theory inspiring novel analysis tools. In this talk, I introduce a computational framework that serves the dual purpose of both describing human judgment and decision-making and modeling statistical relationships. Instead of developing the computational framework from the perspective of existing analytic or statistical tools, our framework was inspired by theoretical advances in understanding human judgment and decision-making. The algorithm, dubbed the General Monotone Model (GeMM) blends ideas from the areas of cognitive science, knowledge discovery and data mining, and statistics. Using both simulated and real data, I illustrate GeMM's ability to effectively recover latent data structures and predict new observations while exhibiting extraordinary robustness to non-linearity.

5:30 PM Closing remarks

6:00- Reception and poster session

8:00 PM

## Posters Friday 8:00-11:00

1. Alexander Taikh, Glen E. Bodner (University of Calgary), *Reading words aloud makes them more... or less memorable*
2. Catherine I. Phillips, Christopher R. Sears, Penny M. Pexman (University of Calgary), *The body-object interaction effect in a sentence reading task*
3. Gemma Leonard, Ian Hargreaves, Penny Pexman (University of Calgary), *The neural consequences of embodied semantic processing*
4. Brea Chouinard, Jacqueline Cummine, Esther Kim, Crystal Zhou, Stan Hrybouski (University of Alberta), *A neuroanatomical investigation of irlen's using a reading task*
5. Juanita Whalen, Penny Pexman, Gemma Leonard (University of Calgary), *It pays to have a sibling: Speaker-target relationship as a cue to ironic intent*
6. Michelle Chan, Nikki V. Lubemsky, Anthony Singhal (University of Alberta), *The role of emotional distractions on simulated driving performance*
7. Tom Carter, Rodney M. Schmaltz (Grant MacEwan University), *The effect of perceived group size on identification and affiliation within musical subcultures*
8. Jonathan Wilbiks, Ben Dyson (Ryerson University), *When selective attention fails: The costs and benefits of audio-visual integration as a function of musical expertise*
9. Amber McCloskey, Nicole D. Anderson (Grant MacEwan University), *Visual crowding in older and younger observers*
10. Nadia Dow, Peter Dixon (University of Alberta ), *Effect of practice on failure to engage in task switching*
11. Dallas Desrosiers, Michael Woloszyn (Thompson Rivers University), *Evidence against a mirror neuron explanation of false memory for actions*
12. Miranda Lucas, Rodney Schmaltz (Grant MacEwan University), *Music as a sexually selected trait: A pilot study*
13. Kyle Plotsky, Scott Allen (University of Lethbridge), *Unconscious control of accuracy: A study of a target's affective effects*
14. Samantha Lowden, Suzanne Hala, Lee-Ann McKay (University of Calgary), *The effects of elaboration on external source monitoring in 4-year-olds*
15. Wenjun Dai, Jacqueline Cummine (University of Alberta), *Investigating reading processes using tractography and region of interest analysis*
16. Crystal Zhou, Brea Chouinard, Stan Hrybouski, Alexandra Mateu-Martin, Jacqueline Cummine (University of Alberta), *Varying word types in a reading task varies fMRI bold activation in the ventral and dorsal reading processing streams*
17. Alan K. S. Nielsen, D. Rendall (University of Lethbridge), *Sound symbolism and the bouba-kiki effect: Implications for language learning and the symbol grounding problem*
18. Irene Liu, Giuseppe Iaria, Richard M. Levy, Jason J.S. Barton (University of Calgary), *When do we get lost? Examining the effects of aging on a variety of topographical orientation strategies*
19. Faria Sana, Joseph A. Kim (McMaster University), *The effect of surface- and structure-driven learning on performance and confidence of far-transfer problem-recognition tasks among statistics novices*
20. Nicole Burnett, A. N. Burnett, G. Bodner (University of Calgary), *Generating better readers without generating*
21. Melissa C. Reimchen, John R. Vokey, John E. Granzow (University of Lethbridge), *On the dissociation between pitch production and pitch judgement: The role of musical expertise*

## Posters Saturday 6:00-8:00

22. Brandon Yardy, Fangfang Li (University of Lethbridge), *Gender identification based on 's' and 'sh' sounds in English and Mandarin*
23. Avery Popien, Mitchell LaPointe, John R. Vokey (University of Lethbridge), *Attentional bias toward food in disordered eaters: Is this a phobia?*
24. Lauren D. Goegan, Charmaine Thomas, Jody Arndt, Christopher R. Sears (University of Calgary), *Attentional biases associated with post-traumatic stress disorder: An eye-tracking study*
25. Michael Friesen, Aimee Skye (Grant MacEwan University), *Changing one's mind: A woman's prerogative or a bias in everyone?*
26. Kristine A. Peace, Victoria E. S. Richards, Kimberly A. Masliuk (Grant MacEwan University), *Do motivations for malingering matter? Symptoms of malingered PTSD as a function of motivation and trauma type*
27. Aiden Arnold, Ford Burles, Jason J.S. Barton, Giuseppe Iaria (University of Calgary), *Developmental topographical disorientation: A newly discovered cognitive disorder*
28. Mark J. Huff, Glen E. Bodner (University of Calgary), *Comparing item-specific and relational generation tasks in the DRM paradigm*
29. Tanya Hutchinson, Cody Tousignant, Glen E. Bodner (University of Calgary), *Context effects on recollection and familiarity ratings*
30. Lisa Pascal, Suzanne Hala, Lee-Ann McKay (University of Calgary), *Source monitoring for two and three sources: Does the generation effect help 4-year-olds?*
31. Christopher Madan, Anthony Singhal (University of Alberta), *Automatic motor processing enhances memory, while intentional does not*
32. Hugh Curtis, Ecaterina Ciugureanu, Paul Siakaluk, William Owen (University of Northern British Columbia), *Is embodied information accessible in an insult explanation task?*
33. Donald Atkin, Anthony Singhal, Peter Dixon (University of Alberta), *Right hand versus left hand, who wins? An ERP study of decision-making during a pointing task*
34. Renata Ruch, Shannon M. Digweed (Grant MacEwan University), *Acoustic cues to individual identity in domestic cattle (*bos taurus*)*
35. Sara Shepherd, Nicole D. Anderson (Grant MacEwan University), *Effects of pooling on global form perception*
36. Cody Tousignant, Penny Pexman (University of Calgary), *The more you know: Body-object interaction effects in semantic categorization tasks are modulated by task knowledge*
37. Cyrus Shaoul, Georgie Columbus, Harald Baayen, Chris Westbury (University of Alberta), *Eye-movements while reading a broad sampling of 3-grams*
38. Stephen Bennett, Nicole Burnett, Paul Siakaluk (University of Northern British Columbia), Penny Pexman (University of Calgary), *The effects of imageability and body-object interaction on multisyllabic words*
39. Teana Imbeau, Shannon M. Digweed (Grant MacEwan University), *Who's your neighbour? Individual identity in territorial 'rattle' calls of North American red squirrels (*tamiasciurus hudsonicus*)*
40. Kristin Rostad, Penny Pexman (University of Calgary), *"I want to, but I don't want to...": The understanding of conflicting desires in early childhood*
41. Jody Arndt, K. Newman, C. Sears (University of Calgary), *A time course analysis of attention to emotional images in dysphoric individuals*
42. Yvonne Wong, Anthony Singhal, Connie Varnhagen (University of Alberta), *Neural correlates of language processing strategies in children: An fMRI study*
43. Michelle White, Penny Pexman, Ian Hargreaves (University of Calgary), *Effects of context on semantic richness*
44. Manuel Ebert, Sebastian Fleck, Caspar Goetze, Kai Kaspar, Johannes Keyser, Sabine König, Carina D Krause, Robert Muil, Saskia K. Nagel, Frank Schumann, Peter König (University of Osnabrück), *FeelSpace: A holistic study of sensorimotor contingencies*

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