



***36th Banff Annual Seminar In Cognitive Science***



## Friday May 5

5:00 pm Welcome and opening remarks

Please register with Peter Dixon if you have not already done so (\$85 for faculty, \$40 for students and postdoctoral fellows).

5:15 pm **Anthony Singhal** (University of Alberta), *Neural Bases of Attention in Action and Emotion*

Our attention systems critically mediate perception and action as we interact with our environment. Understanding the neural bases of attention has been a major theme in cognitive neuroscience, and it remains important to elucidate how various neural attention systems interact and shape our multisensory abilities. Recent work in my lab has investigated the nature of cross-modal attention during multitasking and workload, showing early links between attention and memory for spatial processing as well as controlled and automatic attentional influences on various types of action. We are also examining interactions between emotion circuits in the brain and those underlying attentional control to further understand maladaptive behavior in patients suffering from affective disorders. In this talk I will present a series of cognitive neuroscience studies that explore attention in the face of distraction, with healthy and clinical populations.

6:30 pm Dinner break

8:00 pm Poster session (with cash bar)

9:30 pm Reception (with cash bar)

## Saturday May 6

8:30 am Coffee, tea, juice, pastries

9:00 am **Craig Chapman** (University of Alberta), *The Deciding Hand: Understanding Attention and Cognition by Studying Reaching Movements*

Despite the fact that the brain is flooded with a river of information, we are only aware of a few tiny drops. In this talk, I will argue that these precious drops emerge from a complex competition for neural resources, with the winners being specifically channeled for their use in guiding efficient actions. To provide context, I will discuss broad theoretical frameworks which propose that actions provide a read out of selective attention processes mediated by topographic maps of behavioral relevance. I will then discuss specific examples from my own work where we combine motion-tracking, eye-tracking, electroencephalography and computational modelling, to reveal the precise way in which the structure of the environment, incoming sensory information, and internally generated choice biases affect the movement of the reaching hand in real time.

10:15 am Coffee, tea, juice

10:30 am **Alejandro Lleras** (University of Illinois at Urbana-Champaign), *Towards a Better Understanding of Early, Parallel Attentive Processing in Vision*

The goal of the vast majority of visual attention theories has been to understand how the capacity limitations of focused/spatial attention impact our interactions with the visual world. Our work is aimed at complementing these theories by providing a more precise understanding of how parallel, unlimited capacity attentive processing interact early on with the visual input to create the representations that will guide the behavior of focused attention (such as priority maps). Our theoretical work uses mathematical models to simulate various cognitive architectures and test those models using human behavioral data. In this talk, I will give some examples of our work where we have successfully used this approach to estimate behaviorally for the first time the extent of inter-item interactions (such as distractor-distractor suppression effects) and also to suggest that priority/salience maps can guide attention to likely target locations without explicitly representing salience (or target-distractor similarity).

11:45 pm Lunch break

1:15 pm Poster session

2:45 pm **Daniel Smilek** (University of Waterloo), *Attentional Disengagement in the Laboratory and in Everyday Life*

When individuals have to sustain their attention on a task for an extended period of time, they sometimes disengage from the task and shift their attention to task-unrelated internal thoughts (i.e., mind wandering) or to task-unrelated media (i.e., media multitasking). Over the past few years, we have been exploring these forms of attentional disengagement in both laboratory and everyday situations with an eye towards understanding to what extent individuals might be disengaging from primary tasks intentionally and strategically. With regard to mind wandering, our studies show that both in laboratory tasks and in real life situations (e.g., live undergraduate lectures), task-unrelated thoughts are often engaged intentionally. In some cases, the amount of intentional mind wandering is modulated based on task demands. Similarly, our studies of media multitasking suggest that media multitasking tendencies can reflect strategic choices about attentional deployment, that individuals are aware of the extent to which their media multitasking influences their performance, and that individuals actively modulate media distractions based on primary task demands.

4:00 pm Coffee, tea, juice, cake

4:15 PM **Susanne Ferber** (University of Toronto), *Attention: Work(ing Memory) in Progress*

How do we keep track of oncoming traffic while checking our rear-view mirrors? Selecting and sustaining a percept after it has been removed from view involves attentional and visual working memory (VWM) processes that enable us to hold in our mind's eye the contents of our visual awareness and to decide which inputs will continue forward for further processing. VWM is a temporary storage system for visual input in which information is kept safe for a few seconds across eye movements and other intervening events. From crossing the street to calculating the tip at a restaurant, our success with countless basic and higher-order tasks depends on our ability to mentally represent external events, so they can be integrated with both the attentional system and long-term knowledge to determine our decisions and actions. The bandwidth of information available to

our senses is almost infinite, yet the bandwidth of information our brain is able to process in a meaningful way is severely limited. Indeed, most theories of VWM posit a capacity limit of less than four items. This is in stark contrast to our subjective experience of the present moment and our recollection of events from memory. Normally the VWM system works well, but it may be disrupted in healthy individuals when it is overloaded, may show different characteristics in populations with neural developmental disorders, and may fail altogether after brain damage. Despite our growing understanding of the neural and cognitive processing limitations of VWM, we know little about how VWM ultimately affects visually-guided behaviour. Indeed, the interactions between this memory system and other cognitive faculties remain relatively uncharted research territory. I will present evidence from behavioural, neuroimaging and neuropsychological studies to clarify the cognitive and neural mechanisms that govern the interactions of VWM with other cognitive faculties in the healthy, aging, or diseased brain.

5:30 pm Closing remarks

6:00 pm Adjourn



## Friday Posters

- 1 Tristan Eckersley, Rodney Schmaltz, Nicole Anderson (MacEwan University), *Exploring a haunted house: Fear, arousal, and the impact of infrasound*
- 2 Conley Kriegler, Marla Mickleborough (University of Saskatchewan), *To the left to the left: Analyzing pseudoneglect in headache populations*
- 3 Bob Uttl, Anne Tseu, Bethan McBreen (Mount Royal University), *Students rate professors teaching quantitative vs. non-quantitative courses lower on RateMyProfessor.com*
- 4 Anne Walley, Erica Loh, Melike Schalomon (MacEwan University), *The effects of LSD, mescaline and psilocin on social and anxiety-related behaviour in zebrafish*
- 5 Chelsea Ekstrand, Josh Neudorf, Ron Borowsky (University of Saskatchewan), *Relationships between behaviour and brain using fMRI and structural neuroimaging*
- 6 Angela M. Cullum, J. Cummine (University of Alberta), *Cerebellum activation during RAN tasks in adults with and without reading disorders*
- 7 Carly P. King, James C. Mills, Valerie A. Thompson (University of Saskatchewan), *Judgments of solvability in anagram problems*
- 8 Sally Vos, April McGrath (Mount Royal University), *Inducing dissonance through hypocrisy to motivate regular exercise*
- 9 Kelsey Friesen, Alison Heard, Penny M. Pexman (University of Calgary), *Children's comprehension of negation*
- 10 Ryan Williams, Jay Pratt, Susanne Ferber (University of Toronto), *The influence of precueing task-irrelevant locations on attentional capture*
- 11 Sayeed Devraj-Kizuk, Wesley Vuong, Clayton T. Dickson, Kyle E. Mathewson (University of Alberta), *Effect of hyperoxia on resting-state oscillatory states in humans*
- 12 Lauren D. Goegan, Lily Le, Lia M. Daniels (University of Alberta), *(Dis)connected by technology: How computer mediated communication impact perceptions of interactions*
- 13 Caitlin Furby (University of Lethbridge), *Topological entropy and artificial grammar learning*
- 14 Kendall Deleurme, Kellie Henricks, Alex Penney (MacEwan University), *How does it perform when controlling for the MCQ-30?*
- 15 Vera Lee, Scott Stone, Matthew S. Tata (University of Lethbridge), *What's in a cocktail party? Testing the mechanisms of auditory spatial resolution in multi-talker scenes.*
- 16 Yalin Chen, Jamie I.D. Campbell, Josh Neudorf, Janeen Loehr (University of Saskatchewan), *A behavioural and erp study of size congruency effect in adults' simple addition: No min counting*
- 17 Misha Kopciuk, Karen Atkinson-Leadbetter (Mount Royal University), *Effects of SSRIs on embryonic development in snails*
- 18 Bailey McCafferty, James Taylor (Mount Royal University), *Mindfulness meditation and false memory susceptibility*
- 19 Manmeet Mamik, William Branton, Eugene Asahchop, Brienne McKenzie, Christopher Power (University of Alberta), *Improved motor and memory performance with insulin treatment in models of HIV/AIDS neurodegeneration*
- 20 Lane Liddle, Cathy Agyemang, Peter Dixon (University of Alberta), *Impact of white noise on performance in the flanker task*

- 21 Jessie Pepin, Stephanie Bell  
Cheryl Techentin (Mount Royal University), *Laterlaization of basic and social emotional facial expressions*
- 22 Jeffrey Krook, Erika Duperreault, Dustin Newton, Matthew Ross, Trevor J. Hamilton (MacEwan University ), *The effects of repeated ethanol dosing on zebrafish behaviour*
- 23 Pam Eberharter, K.-L. Turgeon, A. Altani, G. Georgiou (University of Alberta), *Eye movements in rapid automatized naming and text reading: What do they have in common?*
- 24 Devon Currie, T. D. Blanchette, S. T. Jalava, G. E. Bodner (University of Calgary), *Does a dysfluent font improve memory?*
- 25 Bradley Smith, John Vokey (University of Lethbridge), *What makes 0.05 significant? Studying subjective judgments of randomness*
- 26 Emiko Muraki, David M. Sidhu, Penny M. Pexman (University of Calgary), *Differences in motion: Verb type and concreteness effects in gesture*
- 27 Alexandra Lane, Paul D. Siakaluk, R. Luke Harris, Brian Duffels (University of Northern British Columbia), *A direct comparison of single-trial and blocked experimental designs using near infrared spectroscopy*
- 28 Taylor Pitman, Trevor Hamilton (MacEwan University ), *Gabazine modulates anxiety-like behaviour in zebrafish in a dose-dependent manner*
- 29 Lei Zhang, Weimin Mou (University of Alberta), *Late onset of visual landmarks increases variability of homing based on path integration*
- 30 Rachel Stark, Fangfang Li, Robbin Gibb (University of Lethbridge), *Development of ultrasonic vocalizations in rats: Evidence for replacement*
- 31 Jessica J. Joseph, Malinda Desjarlais (Mount Royal University ), *Facebook use and subjective well-being: The mediating roles of social comparison and social connectedness*
- 32 Kaitlin Tompkins, Paula Mantilla (Mount Royal University), *Assessment on driver's speed in playground zones*
- 33 Alesha Reed, J. Cummine, C. A. Boliek (University of Alberta), *The effects of transcranial direct current stimulation on intermuscular coherence during an overt reading task in skilled readers*
- 34 Eden Redman, Graeme Splinter, Jonathan W. P. Kuziek, Kyle E. Mathewson (University of Alberta), *No jittering with Latte Panda, comparing EEG data collection methods on the road to mobilization*
- 35 Tatiana Lund, Penny Pexman, Sophia Van Hees (University of Calgary ), *Examining effects of motor and emotion information in children's lexical processing*
- 36 Tyler Makepeace, Nicole Anderson (MacEwan University), *The psychophysics of boredom*
- 37 Anika Sehgal , Malinda Desjarlais (Mount Royal University ), *The Google effect: How the internet changes our perception of intelligence*
- 38 Tony Chaston, Josh Stewart, Jaro Malanowski (Mount Royal University), *Using virtual reality to lower student anxiety*
- 39 Lauren Vomberg, John Vokey (University of Lethbridge), *Music to my ears: Prosody and the indirect measurement of pitch resolution*
- 40 Brittany P. Marsh, Jennifer L. Briere (University of Saskatchewan), *The psychometric properties of retrieval-induced forgetting: Novel cue and recognition testing*
- 41 Xuehui Lei, Weimin Mou (University of Alberta), *Switching between global and local cognitive maps*

- 42 Sean Gaiesky, Stephen Carrell, Claudia L. R. Gonzalez (University of Lethbridge), *Motor lateralization and cognitive abilities*
- 43 Ian Newman, Simon Handley, Valerie Thompson (University of Saskatchewan), *Base-rate consideration: Visual attention, conflict detection, and strategy selection*
- 44 Nathan J. Wispinski, Jennifer K. Bertrand, Anthony Singhal, Craig S. Chapman (University of Alberta), *Decision making and movement: Evidence from the hand and the brain*
- 45 Layla Gould, Jon Farthing, Shannon Forrester, Justin Andrushko, Doug Renshaw, Michael Kelly (University of Saskatchewan), *Neurobiological and behavioural outcomes following cross-education for hemiparesis post-stroke*
- 46 Kris Cormier, Jarrod Blinch, Claudia L. R. Gonzalez (University of Lethbridge), *Pantomime vs. palpable: Applying Weber's law to haptically-guided action*
- 47 Ian Wellspring, Anthony Chaston (Mount Royal University), *Empathy and callous-unemotional traits: How they relate to reading emotional faces*
- 48 Melissa Lindberg, Maria Ramirez, Cheryl Techentin (Mount Royal University), *Gender differences in the lateralization of emotional facial expressions*

## Saturday Posters

- 49 Rozee S. Pereverseff, Jalava, S. T., Blanchette, T. D., Bodner, G. E. (University of Calgary), *Memory states for trivia*
- 50 Selina Wang, Valerie A. Thompson (University of Saskatchewan), *Investigating predictors of the Feeling of Rightness accompanying intuitive answers*
- 51 Cassidy Fleming, Teresa Paslawski, Carol A. Boliek (University of Alberta), Marc Joanisse (University of Western Ontario), Jacqueline Cummine (University of Alberta), *The effects of transcranial direct current stimulation over the angular gyrus on overt reading of words of varying imageability in healthy adults*
- 52 Scott Stone, Claudia L. R. Gonzalez, Matthew S. Tata (University of Lethbridge), *Hearing what you see: A novel visual-to-auditory augmented reality system*
- 53 Jason Flindall, Claudia Gonzalez (University of Lethbridge), *Wait wait, don't tell me: Inconsistent, irregular, and improbable responses from the Edinburgh-Waterloo handedness questionnaire*
- 54 Bailey Fraser, Brian Duffels, Paul D. Siakaluk (University of Northern British Columbia), *Processing of highly valenced words in visual word recognition*
- 55 Amanda Sinclair, Jordin Tilbury, Steven L. Prime (University of Saskatchewan), *Audiovisual attentional blink and spatial congruency*
- 56 Mariel Rodriguez-Bellizia, Loues Natasha, Flindall Jason, Gonzalez Claudia (University of Lethbridge), *Detectable delectables: CFS reveals unconscious bias toward edible objects*
- 57 Clarissa Beke, Clarissa Beke, Nicole van Rootselaar, Claudia L. R. Gonzalez, (University of Lethbridge), *Stories, songs, and small structures: Do different auditory stimuli affect your motor plans?*

- 58 Adam Morrill (MacEwan University), Stephen Pierzchajlo (University of Western Ontario), Brittany Angus-Cook, Christopher Striemer (MacEwan University), *The effects of bilateral posterior parietal tDCS on prism adaptation and attention.*
- 59 Tia McLean, Joanna Scanlon, Anthony Singhal, Kyle Mathewson (University of Alberta), *Cognition in real-world contexts: The P2 in visually complex environments*
- 60 Nicole van Rootselaar, Marisa Lelekach, Fangfang Li, Claudia Gonzalez (University of Lethbridge), *Significant semantics: Interaction of meaningful speech and grasping*
- 61 David M. Sidhu, Penny M. Pexman (University of Calgary), *Lonely and sensational icons: effects of semantic neighbourhoods and sensory experience on iconicity*
- 62 Matt Josdal, Lachlan A. McWilliams, Steven L. Prime (University of Saskatchewan), *Adult attachment, personality, and inhibition of return*
- 63 Jamie D. Schnell, Scott Allen (University of Lethbridge), *Examining placebo and nocebo effects using a memory task*
- 64 Nicole K. Bolt, Janeen D. Loehr (University of Saskatchewan), *Joint action outcomes influence the sense of joint agency*
- 65 Joanna E. M. Scanlon, Kimberly A. Townsend, Danielle L. Cormier, Jonathan W. P. Kuziek, Kyle E. Mathewson (University of Alberta), *The ecological cocktail party: Measuring brain activity while filtering out background noise*
- 66 Jennifer K. Bertrand, Nathan J. Wispinski, Kyle E. Mathewson, Craig S. Chapman (University of Alberta), *Are neural oscillations responsible for the misperception of flicker brightness?*
- 67 Alicia Orr, Jamie Campbell, Yalin Chen (University of Saskatchewan), *What is learned in procedural learning? The case of alphabet arithmetic*
- 68 Prachi, Steven L. Prime (University of Saskatchewan), *Influence of auditory pitch on visual motion perception*
- 69 Ewen Lavoie, A. M. Valevicius, Q. A. Boser, M. J. Luu, T. R. Dawson, O. Kovic, P. M. Pilarski, A. H. Vette, J. S. Hebert, C. S. Chapman (University of Alberta), *Exploring normative and upper-limb prosthetic user eye movement patterns during functional object movement tasks*
- 70 Alain Morin, Famira Racy, Christina Duhnych, James Patton (Mount Royal University), *Inner speech frequency, content, and functions in university students*
- 71 Kevin McKillop, John R. Vokey (University of Lethbridge), *You push my buttons: User interfaces and shadows*
- 72 Ashtin Halmrast, Javid Sadr (University of Lethbridge), *When 0.5 > 1.0: The effect of limited information on facial attractiveness*
- 73 Jeff Sawalha, N. J. Wispinski, S. Ho, A. Singhal, C. S. Chapman (University of Alberta), *Economic decision making with rapid reaching: Two-fold reward system*
- 74 Shae T. Jalava, G. E. Bodner (University of Calgary), *Recognition memory accuracy across study-test cycles*
- 75 Gillian Russell, Robert Williams, James Sanders (University of Lethbridge), *Investigating the role of memory associations in excessive and problem gambling using a Canadian national panel*
- 76 Josh Neudorf, Chelsea Ekstrand, Ron Borowsky (University of Saskatchewan), *Semantic priming of reading by visual processing stream*

- 77 Dustin Newton, Trevor J. Hamilton (MacEwan University), *Anxiety-like behaviour in zebrafish is altered by manipulating freshwater carbon dioxide*
- 78 Carrie A. Leonard, Robert J. Williams (University of Lethbridge), *Erroneous perceptions of randomness predict paranormal beliefs*
- 79 Alison Heard, Christopher R. Madan, Penny M. Pexman (University of Calgary), *What drives motor effects in lexical-semantic processing?*
- 80 Liangzi Shi, Norman R. Brown (University of Alberta), *Why do we remember and why do we forget*
- 81 Geoff Hollis, Chris Westbury (University of Alberta), *Improving the quality of semantic norms through best/worst scaling*
- 82 Nicole Lantz, Angela Cullum, Jacqueline Cummine (University of Alberta), *The effects of stimulant medication on cortical thickness and reading scores in children with ADHD*
- 83 Sol Sun, Martin Koo, Maimuna Gias, Susanne Ferber (University of Toronto), *Incidental encoding manipulations induce trade-offs between the accessibility and quality of visual long-term memories*
- 84 Anthony Schoen, John R. Vokey (University of Lethbridge), *The DRM effect and 2AFC responding*
- 85 Jonathan Wilbiks (Mount Allison University), Benjamin Dyson (University of Sussex), *The contributions of perceptual factors and training on variation in audio-visual integration capacity*
- 86 Jennifer L. Briere, Tammy A. Marche, Carl L. von Baeyer (University of Saskatchewan), *Does memory bias for painful experiences influence children's pain coping ability?*
- 87 Famira Racy (Adler University & Mount Royal University), Alain Morin, Christina Duhnynch, James Patton (Mount Royal University), *Correlations between self-related constructs*
- 88 Jonathan Kuziek, Kyle E. Mathewson (University of Alberta), *Identifying cognitive differences following exposure to nature or urban scenes*
- 89 Chantel Ritter, Tara Vongpaisal (MacEwan University), *Multimodal and spectral degradation effects on speech and emotion recognition in adults*
- 90 Ana Sharma, Peter Dixon (University of Alberta), *Mind wandering and memory for temporal order in narratives*
- 91 Jinous Mirzaagha, John R. Vokey (University of Lethbridge), *Repetition blindness: Context effects on the RSVP of letters in words*
- 92 Lara Coelho, Jason Schacher, Claudia L. R. Gonzalez (University of Lethbridge), *The missing mitt: Underestimation of hand perception in elite baseball players*
- 93 Raphaëlle Robidoux, Éva Nadon, Alexandre Lafrenière, Olivier Girard-Joyal (University of Ottawa), *The new ethics of psychology: A summary of social changes in a modern world and their ethical implications*
- 94 Brandon Craig, Christopher Striemer (University of Alberta), Britt Anderson, James Danckert (University of Waterloo), *Cerebellar lesions slow the onset of inhibition of return (IOR): Preliminary findings*
- 95 Aishah Abdul Rahman, Danielle Pertschy, Luciano Hood, Valerie Carson, Sandra A. Wiebe (University of Alberta), *The association between physical activity, sedentary time, and response inhibition in early childhood.*
- 96 Kristen Deschamps, David M. Sidhu, Penny M. Pexman, Josh Bourdage (University of Calgary), *Extraverted Erica and agreeable Anne: The sound symbolism of first names*



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## Acknowledgment

The organizers gratefully acknowledge the support of the Departments of Psychology at the University of Alberta, the University of British Columbia, the University of Calgary, the University of Lethbridge, MacEwan University, the University of Manitoba, Mount Royal University, the University of Northern British Columbia, the University of Saskatchewan, and the University of Victoria, as well as the Canadian Society for Brain, Behaviour, and Cognitive Science.

## Notes