CSBBCS
SCSCCC
2011

University of Manitoba
Winnipeg • June 24, 25, 26

Message from the Organizers and Committee

Welcome to Winnipeg and the 26th Annual Meeting of the Canadian Society for Brain Behaviour and Cognitive Science! We are very excited to host you all here, and this promises to be a fantastic meeting. Conferences are a lot of work and planning so we are extremely grateful for all the time spent, decisions made, and support given by our local committee and others who have contributed to the success of this meeting.

2011 CONFERENCE CREDITS

BBCS Organizing Committee:

Conference Organizers:
Tammy Ivanco and Randy Jamieson

With the assistance of:
Mary Kuzmeniuk, Gloria Derksen, and Stephen Smith, and Jason Leboe-McGowan

Program Committee:
Murray Singer, Tammy Ivanco, and Randy Jamieson

Graduate Awards Committee:
Harinder Aujla, Glen Bodner, Hans Dringenberg, Melanie Glenwright, Tammy Ivanco, Jo-Anne Lefevre, Mike Masson, and John Vokey

Conference Volunteers:
Chrissy Chubala, Brian Hauri, Jackie Spear, Anjum Fazalludin, Steve Prime, Jane Lawrence, Ben Meek, Na Tian, Jolene Kinley, Jeff Doering, Ashley Pauls, Suzane Cadiz

Logo Design:
Matt Crump

Technical Contact:
Trudy Shore, MohSho Interactive Multimedia, webmaster@csbbcs.org

PKP Technical Contact:
Open Conference Systems
http://pkp.sfu.ca/ocs

This conference was sponsored by:

University of Manitoba (Department of Psychology, Faculty of Arts, and Faculty of Graduate Studies); University of Winnipeg; Pearson Canada; Stantive Technologies Group; Canadian Society for Brain, Behaviour, and Cognitive Science

UNIVERSITY OF MANITOBA

THE UNIVERSITY OF WINNIPEG

PEARSON

STANTIVE
Technologies Group

Powerful Thinking. Transformative Results.

Table of Contents

General Information

Paper Sessions

All talks (paper sessions, symposia, and the Hebb Talk) will be held in the **Engineering and Information Technology Complex (EITC)** rooms E2-320, E2-330, E2-350, and E3-270. Computers with PowerPoint installed will be available in each room. Please arrive at least 10 minutes prior to the start of your session to ensure your presentation will project properly.

Poster Sessions

Poster sessions will be held in the EITC Atrium. Boards will be numbered – pins will be provided. Please put your poster up BEFORE the 5 PM start time and LEAVE IT UP until noon of the following day. Poster sessions will include snacks and a cash bar.

Coffee

Coffee will be served in the EITC Atrium (see the program for times). Free with registration.

Lunches

Lunch will be served on Saturday and Sunday in the Manitoba Rooms. Free with registration.

Banquet

The banquet will be held on Saturday June 25 at 7:00 PM in Marshall McLuhan Hall – following the second poster session. You must have registered for the banquet to attend. It is NOT free with registration.

Internet Access

Registrants will receive a user ID and password to access University WiFi. To log on (a) connect to the wireless signal called "uofm", (b) open a browser, (c) enter the user ID and password you were given, and (d) click the "submit" button. (*http://umanitoba.ca/computing/ist/connect/wireless/uofm-guest.html*)

Parking

Parking on campus is free after 4:30 pm on weekdays and all day on weekends. If you want to park before 4:30 on Friday, the paid part of Lot T is $1/hour; the University Parkade is also available at $3 for the first hour and $2 every hour thereafter. Lot locations are on the campus map at the back of the program.

CSBBCS Executive Members

Peter Dixon (President), University of Alberta, president@csbbcs.org
Colin MacLeod (Past President), University of Waterloo, pastpresident@csbbcs.org
Valerie Thompson (President-Elect), University of Saskatchewan, presidentelect@csbbcs.org
Peter Graf (Secretary/Treasurer), University of British Columbia, secretary@csbbcs.org
Steve Lupker (Member at Large 2010-2013), University of Western Ontario, executive2@csbbcs.org
Debbie Kelly (Member at Large 2009-2012), University of Manitoba, executive3@csbbcs.org

Future BBCS Conference Dates

BBCS 2012 will be hosted at Queen's University, in Kingston Ontario, June 7-9 2012
BBCS 2013 will be hosted at University of Calgary, in Calgary Alberta, June 7-9 2013

Society Awards (2011)

Donald O. Hebb Distinguished Contribution Award

Ellen Bialystok, Ph.D., FRSC

For making significant contributions to the study of brain, behaviour, and cognitive science

Dr. Bialystok's work in language learning, bilingualism, literacy, education and aging is recognized by a Killam Research Fellowship, her appointment as Distinguished Research Professor at York University, her election to Fellowship of the Royal Society of Canada, and a York University President's Research Award of Merit.

Dr. Bialystok is a true intellectual with broad interests and an ability to investigate large issues using tight experiments. She has written four books and she has edited three further volumes; of these, her single-authored books 'Language processing in bilingual children' (1991) and 'Bilingualism in development' (2001) have had a major influence in the fields of psycholinguistics and cognitive development. Her list of refereed journal articles is in excess of 100 and she has written 50 book chapters. Dr. Bialystok's recent work examining the consequences of bilingualism for other cognitive functions such as attentional control, executive functions and lexical access has been extremely well received and expands our understanding of cognition in general.

Dr. Bialystok's research on children led to the discovery of a processing advantage associated with bilingualism—bilingual children can more efficiently inhibit irrelevant stimuli and segregate competing streams of information—and she is now exploring whether this bilingual advantage extends into adulthood and old age, whether indeed it is a protective factor to counteract age-related cognitive decline. Articles reporting these results have appeared in *Psychology and Aging* (2004) and *Neuropsychologia* (2007). In addition, Dr. Bialystok is examining the neural correlates of this bilingual advantage; one study has been completed using MEG technology (*NeuroCase*, 2005) and others are now underway using fMRI and ERP. Thus her research work, while still mainly focusing on cognitive development, is increasingly concerned with cognitive processes, and with the underlying cognitive neuroscience.

Dr. Bialystok is a scientist of the highest order, a role model to her students and peers alike.

CSBBCS Early Career Award

Debbie Kelly, Ph.D.

The CSBBCS Early Career Award recognizes the exceptional quality and importance of the contributions of a new researcher (within 10 years of receiving his or her PhD) to knowledge in brain, behaviour, and cognitive science in Canada.

Dr. Kelly has established an internationally renowned and uniquely important program of research on basic and applied avian and human cognition.

There are many reasons for Dr. Kelly's success. Her research is clever, cutting edge, and technically sophisticated. She has advanced our understanding of important cognitive processes, most notably, the way in which geometry is used

for navigation. Her work is comparatively broad, including research on various species, and it is conceptually broad, with an integration of ideas and approaches from experimental psychology, biology and neuroscience.

Dr. Kelly has also had the vision to recognize and pursue important applications of avian cognition research, including the development of the first avian model for the investigation of cognitive aging and Alzheimer's disease. This research will be important for understanding and potentially treating problems associated with Canada's aging population. Dr. Kelly has established an impressive international network of collaborators to ensure the success of this exciting project. Her team has already developed an important computerized evaluation tool for investigating the degeneration of navigational abilities of both humans and non-humans.

Finally, Dr. Kelly is an inspirational role model for women in science, as evidenced by the National Science Foundation Women in Science fellowship that she received while at Nebraska University. In addition to providing an example of an exceptional scientist, she has also mentored and stimulated the careers of many female postdoctoral fellows, graduate students, undergraduate students and high school students. Dr. Kelly is a tribute to Canadian research and innovation.

Richard Tees Distinguished Leadership Award

Julien Doyon, Ph.D.

For outstanding leadership to the BBCS community

Dr. Doyon has, for many years, worked relentlessly to advance scientific psychology in Canada and most particularly the field of neuroimaging. Julien was one of the original applicants for a CFI grant that enabled the purchase of an MRI scanner, along with other imaging technologies at Université de Montreal. Since, Julien has been a major force in creating and administering the imaging facility. Julien's work lead to the creation of the Unite de Neuroimagerie Fonctionelle (UNF) at Université de Montreal, a 3T Siemens scanner. Julien has continued to serve and lead the scientific community by acting as Scientific Director of this facility. He was also pivotal in the creation of the MEG laboratory at Université de Montreal. This facility is based on the first 275 channel whole-head magnetometer put in place in Canada and is still, to this day, the only operational MEG laboratory in Quebec. As Scientific Director of the UNF, Julien has also been a leader in the creation of an international laboratory for neuroimaging, in collaboration with colleagues in Paris. He has led the development of fMRI and other types of cerebral imaging through the organization of training workshops, scientific meetings, and the creation of scientific networks promoting scientific exchange and knowledge transfer. The most recent such network is the Quebec Bio-Imaging Network, funded by the Fonds de la Recherche en Sante du Quebec (FRSQ). This networking grant, under the direction of Julien, has provided funding for several neuroimaging pilot projects, specialized workshops, and training opportunities for students. Julien's leadership in these networking initiatives benefits all neuroimaging scientists in Quebec. Julien has recently been selected to be the local organizer of the annual meeting of the Organization for Human Brain Mapping (HBM), which will be held in Quebec City in 2011. It is clear that Julien's leadership has had, and continues to have, a major impact on the development of neuroimaging in Montreal, Quebec, and Canada.

Through his sustained work in the creation of neuroimaging infrastructure, student training, scientific output, and knowledge transfer, involvement in scientific societies such as BBCS, OHBM, and others, Julien has been the very embodiment of the leadership qualities exhibited by Richard Tees, who led by example in all spheres of our discipline.

The Donald O. Hebb Graduate Student Awards

The Donald O. Hebb Graduate Student Award is made to the individual who, in the opinion of the award committee, has presented the best paper or poster at the annual meeting. Last year's winners for best paper was Jonathan Fawcett from Dalhousie University (*Event-method directed forgetting: A new paradigm for understanding the intentional forgetting of events and actions*) with a honourable mention to Peter Jansen from McMaster University (*Chimaera Neural Networks for Self-Organizing Grammar Acquisition*). Last year's winner for best poster was Judy Ann Prasad from McGill University (*Selective lesions of the thalamic reuniens in rats increase impulsive responses in the 5-Choice Reaction Time Task*), with honourable mentions to both *Jeremy Hogeveen* from Wilfrid Laurier University (*Motor priming and the Chameleon effect: Evidence for a common mechanism*) and *Edward Wilson* from McGill University (*Neurovascular architecture following monocular deprivation in monkey primary visual cortex*).

The 2011 Award candidates for poster are...

*** (2) Dystrophin Localization in the Mouse Cerebellum: Implications for Duchenne Muscular Dystrophy; *Wanda M. Snow, Mark Fry, and Judy E. Anderson, University of Manitoba*

*** (4) Differences in the Relationship Between EEG Coherence and Working Memory Performance in Young Adults and High and Low Performing Older Adults; *Erin K. Johns, Stephannie Davies, and Natalie A. Phillips, Concordia University*

*** (13) Handwriting vs. Typing: The Influence of Learning Method on Visual Word Form Memory; *Tina Weston[1] and Randy L. Newman[2], [1]York University, [2]Acadia University*

*** (14) The more you know: Body-object interaction effects in semantic categorization tasks are modulated by task knowledge; *Cody Tousignant and Penny M. Pexman, University of Calgary*

*** (15) Impaired visuomotor functioning in posterior cortical atrophy; *Benjamin P. Meek and Jonathan J. Marotta, University of Manitoba*

*** (20) Voluntary task switching and concurrent timing; *Charles Viau-Quesnel & Claudette Fortin, Université Laval*

*** (21) Context in Cognitive Control; *Alex William Gough, McMaster University*

*** (22) Goldilocks and the "3" Errors: Attention Lapses and Speed-Accuracy Conflict; *Paul Seli, James Allan Cheyne, and Daniel Smilek, University of Waterloo*

*** (24) Does covert attention alter perceived contrast? Evidence from gender perception; *Jason Rajsic and Daryl E. Wilson, Queen's University*

*** (37) Examining the impact of different types of working memory load in different numerical comparison tasks; *Nathaniel Barr[1], Erin A. Maloney[1], Evan F. Risko[2], and Jonathan Fugelsang[1], [1]University of Waterloo, [2]Arizona State University*

*** (43) Availability of constituents' conceptual representations during the processing of opaque and transparent compound words; *Kristan A. Marchak, Christina L. Gagné, and Thomas L. Spalding, University of Alberta*

*** (109) The effects of working memory on social attention; *Dana A. Hayward, Natasha Pestonji, and Jelena Ristic, McGill University*

*** (114) Encoding Structure in Holographic Reduced Representations; *Matthew A. Kelly[1], Dorothea Blostein[2], and D. J. K. Mewhort[2], [1]Carleton University, [2]Queen's University*

The 2011 Award candidates for best paper are…

*** (49) Broadening the focus of visual attention enhances mood; *Asma Hanif and Mark J. Fenske, University of Guelph*

*** (57) Waiting for 'The Go': Neural substrates of impulse control in the medial prefrontal cortex; *Scott J. Hayton, Eric C. Dumont, and Mary C. Olmstead, Queen's University*

*** (59) Reelin as a putative susceptibility factor for depression; *April L. Lussier[1], Raquel Romay-Tallón[2], Ekaterina Lebedeva[1], Hector J. Caruncho[2], and Lisa E. Kalynchuk[1], [1]University of Saskatchewan, [2]University of Santiago de Compostela*

*** (71) Release from retrieval-induced forgetting: The importance of the retrieval cues on the final test; *Tanya R. Jonker, Paul Seli, and Colin M. MacLeod, University of Waterloo*

*** (72) Is Free Recall Actually Better than Cued Recall? Cues Helps Generation but Impair Recognition; *Jason David Ozubko and Colin M. MacLeod, University of Waterloo*

*** (75) Action pre-empts identification in manually-assisted search; *Grayden J. F. Solman, James Allan Cheyne, and Daniel Smilek, University of Waterloo*

*** (78) Response inhibition decreases affective ratings and reduces the incentive to interact with motivationally-relevant stimuli; *Anne E. Ferrey[1,2], Alexandra Frischen[1], Amanda Campbell[1], Angele Larocque[1], and Mark J. Fenske[1], [1]University of Guelph, [2]York University*

*** (85) Sociality and cognition: fact or fiction? Insight from the cache protection behaviors of Clark's nutcrackers; *Dawson Clary and Debbie M. Kelly, University of Manitoba*

*** (86) Homeward bound: How desert ants integrate terrestrial and celestial information to successfully return to their nest after foraging; *Eric L. G. Legge[1], Antoine Wystrach[2,3], Marcia L. Spetch[1], and Ken Cheng[3], [1]University of Alberta, [2]L'université Paul Sabatier, [3]Macquarie University*

*** (87) Cerebral lateralization in a cichlid fish: A Study of Stimuli and Stress; *Michele K. Moscicki and Peter L. Hurd, University of Alberta*

*** (88) Anthropomorphism and the Domestic Dog; *Krista Macpherson and William A. Roberts, University of Western Ontario*

*** (89) Information-seeking strategies by orangutans; *Heidi L. Marsh and Suzanne E. MacDonald, York University*

*** (90) Acoustic features in black-capped chickadee song contain dominance and geographic information; *Allison H. Hahn[1], Marisa Hoeschele[1], Lauren M. Guillette[1], Daniel Mennill[2], Ken Otter[3], Thibault Grava[3], and Christopher B. Sturdy[1], [1]University of Alberta, [2]University of Windsor, [3] University of Northern British Columbia*

*** (170) An investigation of the effect of phonological similarity and word length on RAN performance; *Kendall Kolne and Elisabet Service, McMaster University*

*** (172) Aging-Related Differences in Memorability Judgments of Emotional Scenes; *Jennifer C. Tomaszczyk and Myra A. Fernandes, University of Waterloo*

*** (173) Weapon Presence Impairs Real Eyewitness Testimony; *Jonathan M Fawcett[1], Emily J Russell[2], Kristine A Peace[3], and John Christie[1], [1]Dalhousie University, [2]Lakehead University, [3]Grant MacEwan University*

Program-at-a-glance

Friday, June 24

10:00 – 4:30	**Festschrift for Doug Mewhort**		EITC E3-270
4:00 – 7:00	**Conference Registration**		EITC Atrium
5:00 – 7:00	**Poster Session 1**	(Abstracts 1 – 48, 180)	EITC Atrium

Saturday, June 25

8:00 – 8:30	**Coffee**		EITC Atrium
8:30 – 10:00	**Paper Session 1**		
I.	Attention	(Abstracts 49 – 54)	EITC E2-320
II.	Animal Behaviour and Neuroscience	(Abstracts 55 – 59)	EITC E2-330
III.	Hormonal Regulation and Food Motivation [*Symposium*]	(Abstracts 61 – 63)	EITC E2-350
IV.	Language Comprehension: Representation & Processes [*Symposium*]	(Abstracts 64 – 67)	EITC E3-270
10:00 – 10:30	**Coffee**		EITC Atrium
10:30 – 12:00	**Paper Session 2**		
V.	Recognition and Recall	(Abstracts 68 – 72, 84)	EITC E2-320
VI.	Cognition	(Abstracts 73 – 78)	EITC E2-330
VII.	Categorization and Learning	(Abstracts 79 – 83)	EITC E2-350
VIII.	Comparative Cognition: The Next Generation [*Symposium*]	(Abstracts 85 – 90)	EITC E3-270
12:00 - 1:30	**Lunch**		Manitoba Rooms
1:30 – 3:00	**D. O. Hebb Lecture**		EITC E3-270
3:00 – 3:30	**Coffee**		EITC Atrium
3:30 – 5:00	**NSERC Session**		EITC E3-270
5:00 – 7:00	**Poster Session 2**	(Abstracts 91 – 149)	EITC Atrium
7:00 – 9:00	**Banquet**		Marshall McLuhan Hall

Sunday, June 26

8:00 – 8:30	**Coffee**		EITC Atrium
8:30 – 10:15	**Paper Session 3**		
IX.	Representations in numerical Cognition [*Symposium*]	(Abstracts 150 – 155)	EITC E2-320
X.	Perception and Cognition	(Abstracts 156 – 162)	EITC E2-330
XI.	Recent Advances in Synaptic Plasticity [*Symposium*]	(Abstracts 164 – 167)	EITC E2-350
XII.	Language, Reading, and Memory	(Abstracts 168 – 174)	EITC E3-270
10:15 – 10:45	**Coffee**		EITC Atrium
10:45 – 12:00	**Business Meeting**		EITC E3-270
12:00 - 1:30	**Lunch and Awards**		Manitoba Rooms
1:30 – 3:00	**President's Symposium**	(Abstracts 175 – 179)	EITC E3-270

Short Program

Friday, June 24

Festschrift for Doug Mewhort (10:00 – 4:30) EITC E3-270

9:30 – 10:00	Coffee
10:00 – 10:30	Introduction
10:30 – 11:00	Bill Hockley
11:00 – 11:30	Jamie Campbell
11:30 – 12:00	Michael Jones
12:00 – 1:30	Lunch
1:30 – 2:00	Ken McRae
2:00 – 2:30	Gordon Logan
2:30 – 3:00	Rick Gurnsey
3:00 – 3:30	Coffee Break
3:30 – 4:00	Randy Jamieson
4:00 – 4:30	Andrew Heathcote

Poster Session 1 (5:00 – 7:00) EITC Atrium

(1) Dopamine D2 antagonist effects on motivation and timing
Choon Hooi Toh and Douglas A. Williams, University of Winnipeg

(2) Dystrophin Localization in the Mouse Cerebellum: Implications for Duchenne Muscular Dystrophy
Wanda M. Snow, Mark Fry, and Judy E. Anderson, University of Manitoba

(3) Inner speech implication in self-reflection: A fMRI meta-analysis
Alain Morin and Breanne Hamper, Mount Royal University

(4) Differences in the Relationship Between EEG Coherence and Working Memory Performance in Young Adults and High and Low Performing Older Adults
Erin K. Johns, Stephannie Davies, and Natalie A. Phillips, Concordia University

(5) Behavioural Distinction of Strategic Control and Spatial Realignment During a Viewing Window Task
Jane M. Lawrence and Jonathan J. Marotta, University of Manitoba

(6) Posterior Cortical Atrophy: The role of Simultanagnosia in deficits of Face Perception
Keri Locheed and Jonathan J. Marotta, University of Manitoba

(8) Early Motor Behaviour in the VPA Rat Model of Autism
Ashley Pauls, Na Tian, and Tammy Leanne Ivanco, University of Manitoba

(9) Winning while losing? Misremembering losses as wins in multiline slot machine games.
Candice Jensen, Mike J. Dixon, Kevin A. Harrigan, Michelle Jarick, Brian Cullen, and Jonathan A. Fugelsang, University of Waterloo

(10) Role of the frontal lobes in processing narrative structure
Richard Bruce Bolster, Elyse J. M. Joubert, Ashley E. Langford, and Stephen D. Smith, University of Winnipeg

(11) Chromaticity's Role in Natural Scene Recognition
Bruno Richard, Eliza Rainville, and Aaron Johnson, Concordia University

(12) Use of geometric properties for orientation: Object arrays and extended surfaces
Weimin Mou, Jean-François Nankoo, Justin W. Witzke, and Marcia L. Spetch, University of Alberta

(13) Handwriting vs. Typing: The Influence of Learning Method on Visual Word Form Memory
Tina Weston[1] and Randy L. Newman[2], [1]York University, [2]Acadia University

(14) The more you know: Body-object interaction effects in semantic categorization tasks are modulated by task knowledge
Cody Tousignant and Penny M. Pexman, University of Calgary

(15) Impaired Visuomotor Functioning in Posterior Cortical Atrophy
Benjamin P. Meek and Jonathan J. Marotta, University of Manitoba

(16) An approach to understanding embodied cognition
Heath Matheson and Nicole White, Dalhousie University

(17) Inhibition of Return: Attentional and Motor Conflict Contributions
Yena Bi, Jason Rajsic, and Daryl E. Wilson, Queen's University

(18) Conjunction search onset following single-feature preview: Equating visual transients
Wafa Saoud, Elizabeth S. Olds, and Timothy J. Graham, Wilfrid Laurier University

(19) An evaluation of LCD monitors for presenting precisely-timed brief displays
Hayley E. P. Lagroix, Matthew R. Yanko, and Thomas M. Spalek, Simon Fraser University

(20) Voluntary task switching and concurrent timing
Charles Viau-Quesnel and Claudette Fortin, Université Laval

(21) Context in Cognitive Control
Alex William Gough, McMaster University

(22) Goldilocks and the "3" Errors: Attention Lapses and Speed-Accuracy Conflict
Paul Seli, James Allan Cheyne, and Daniel Smilek, University of Waterloo

(23) Prior Experience and the Implementation of Cognitive Control
Ellen K. MacLellan, Bruce Milliken, and David I. Shore, McMaster University

(24) Does covert attention alter perceived contrast? Evidence from gender perception
Jason Rajsic and Daryl E. Wilson, Queen's University

(25) Measuring Inner Speech: Are Existing Self-Reports Reliable and Valid?
Bob Uttl, Alain Morin, and Breanne Hamper, Mount Royal University

(26) Testosterone and Emotion Recognition in Men: Individual Differences and Diurnal Fluctuations
Layla A. Gould and Laurie Sykes Tottenham, University of Regina

(27) The Effects of Oral Contraceptives on Emotion Processing
Jessica Yelland and Laurie Sykes Tottenham, University of Regina

(28) Individual Differences in the Allocation of Attention to Emotional Images: An Eye Tracking Study
Kristin R. Newman, Jody E. Arndt, Jennifer D. Ference, Charmaine L. Thomas, and Christopher R. Sears, University of Calgary

(29) It's not all phonological: Visual discrimination and visual attention predict growth in children's rapid automatized naming
Cassia Luther Ruban and Richard S. Kruk, University of Manitoba

(30) Negative, But Not Erotic, Images Lead to Over-Estimations of Exposure Duration
Michelle L. Crease, Michelle. S. J. Di Nella, and Stephen D. Smith, University oOf Winnipeg

(31) The Production Effect in Memory: The Aging of Recollection
Olivia Ying-Hsin Lin and Colin MacLeod, University of Waterloo

(32) A reversed production effect in reality monitoring
Jacqueline A. Spear and Randall K. Jamieson, University of Manitoba

(33) Contextual Control in the Diversion Paradigm of Directed Forgetting
Melena Vinski and Molly Pottruff, McMaster University

(34) Item-Method Directed Forgetting is Effortful and Impoverishes Memory for Abstract Images
Jonathan M. Fawcett, Michael A. Lawrence, and Tracy L. Taylor, Dalhousie University

(35) The Role of Visual Working Memory in Visual Enumeration
Biljana Stevanovski, University of New Brunswick

(36) Where do we look when reaching and grasping objects in memory-delay task?
Steven L. Prime and Jonathan J. Marotta, University of Manitoba

(37) Examining the impact of different types of working memory load in different numerical comparison tasks
Nathaniel Barr[1], Erin A. Maloney[1], Evan F. Risko[2], and Jonathan Fugelsang[1], [1]University of Waterloo, [2]Arizona State University

(38) Fixation Patterns in Single-Digit Multiplication
Evan T. Curtis and Jo-Anne LeFevre, Carleton University

(39) Attributional Retraining: A Cognitive Treatment to Assist Failure Prone Individuals in Achievement Settings
Jeremy M. Hamm, Raymond P. Perry, Tara L. Stewart, Kate M. A. Dubberley, and Gregory D. Boese, University of Manitoba

(40) On The Dual Basis Of Mirror Effects: Recognition of Normal versus Obscured Faces
John R. Vokey[1] and William E. Hockley[2], [1]University of Lethbridge, [2]Wilfrid Laurier University

(41) Cross-cultural differences in arithmetic concepts
Katherine M. Robinson, University of Regina

(42) The Effects of Imageability and BOI on Multisyllabic Words
Stephen D. R. Bennett[1], A. Nicole Burnett[2], Paul D. Siakaluk[1], and Penny M. Pexman[2], [1]University of Northern British Columbia, [2]University of Calgary

(43) Availability of constituents' conceptual representations during the processing of opaque and transparent compound words
Kristan A. Marchak, Christina L. Gagné, and Thomas L. Spalding, University of Alberta

(44) Infants detect dependency relationships in the absence of an explicit inflectional marker
Melanie Soderstrom and Joanna Bhaskaran, University of Manitoba

(45) Can An Exaggerated Intonation Help Children Understand Sarcasm?
Jayanthi M. Parackel and Melanie R. Glenwright, University of Manitoba

(46) Children and Adults Interpret Verbal Irony from Different Perspectives
Jacqueline K. S. Rano[1], Melanie R. Glenwright[1], and Penny M. Pexman[2], [1]University of Manitoba, [2]University of Calgary

(47) Early Maladaptive Schemas (EMSs) in addicts and non-addicts
Jalil Hosseini, Ahmad Sohrabi, Farzin Rezaei, Yousefi Naser, and Farideh Faraji, University of Kurdistan

(48) Early Maladaptive Schemas (EMSs) in patients with borderline and obsessive-compulsive personality disorders and non-clinical population
Roghayie Ramezanzadeh Alizamini, Ahmad Sohrabi, Farzin Rezaei, and Arsalan Ahmadi Kani Golzar, University of Kurdistan

(180) Inferences from expository text: An individual differences analysis
Jeffrey C. Doering and Murray Singer, University of Manitoba

Saturday, June 25

Coffee (8:00 – 8:30) EITC Atrium

Paper Session I (8:30 – 10:00)

SESSION I: ATTENTION EITC E2-320

(49) 8:30 Broadening the focus of visual attention enhances mood
Asma Hanif and Mark J. Fenske, University of Guelph

(50) 8:45 Spatial Bias Induced by Emotional Valence and Gaze Direction of a Schematic Face;
Davood G. Gozli, Nicole White, Alison L. Chasteen, Adam K. Anderson, and Jay Pratt, University of Toronto

(51) 9:00 Attending in space and time: Is there just one beam?
Yoko Ishigami and Raymond M. Klein, Dalhousie University

(52) 9:15 A Watched Pot - Prospective Time Estimations and future vs. present focus
Janel Fergusson and Peter Graf, University of British Columbia

(53) 9:30 Explaining IOR-like Effects as a Disruption of Contextual Reinstatement
Adam Spadaro and Bruce Milliken, McMaster University

(54) 9:45 Exploration and internal simulation trade off in search
Grayden J. F. Solman and Daniel Smilek, University of Waterloo

SESSION II: ANIMAL BEHAVIOUR AND NEUROSCIENCE EITC E2-330

(55) 8:30 Which corner is correct? Pigeons and humans demonstrate different strategies for encoding and weighting the geometric properties of their environments
Danielle Lubyk, Brian Dupuis, Lucio Gutiérrez, and Marcia Spetch, University of Alberta

(56) 8:45 Latent spatial learning in an environment with a distinctive shape
Murray Ryan Horne, Kerry Gilroy, Steven Cuell, and John M. Pearce, Cardiff University

(57) 9:00 Waiting for 'The Go': Neural substrates of impulse control in the medial prefrontal cortex
Scott J. Hayton, Eric C. Dumont, and Mary C. Olmstead, Queen's University

(58) 9:15 Metacognition in Rats and People Using the Foote and Crystal Paradigm
Michael Grossman, Mark Cole, and Aaron Jolivet, Huron University College

(59) 9:30 Reelin as a putative susceptibility factor for depression
April L. Lussier[1], Raquel Romay-Tallón[2], Ekaterina Lebedeva[1], Hector J. Caruncho[2], and Lisa E. Kalynchuk[1], [1]University of Saskatchewan, [2]University of Santiago de Compostela

SESSION III: HORMONAL REGULATION AND FOOD MOTIVATION [SYMPOSIUM] EITC E2-350

(61) Insulin in the VTA suppresses excitatory synaptic transmission and hedonic feeding
Stephanie L. Borgland, University of British Columbia

(62) Contribution of Ghrelin to appetitive behaviors preceding a meal
Alfonso Abizaid and Zack R. Patterson, Carleton University

(63) Dopamine targets of leptin action
Stephanie Fulton, CRCHUM and Université de Montréal

SESSION IV: LANGUAGE COMPREHENSION: REP. & PROCESSES [SYMPOSIUM] EITC E3-270

(64) Memory for Literary Language: A Rose by Any Other Name would be Forgotten as Quickly
Peter Dixon and Marisa Bortolussi, University of Alberta

(65) Embodiment of Goals in Sentence Comprehension
Michael E. J. Masson and Daniel N. Bub, University of Victoria

(66) Generalized Event Knowledge is Activated during Online Language Comprehension
Ken McRae[1], Ross Metusalem[2], Marta Kutas[2], Thomas P. Urbach[2], Mary Hare[3], and Jeffrey L. Elman[2], [1]University of Western Ontario, [2]University of California San Diego, [3]Bowling Green State University

(67) Processes of Text Recognition
Murray Singer, University of Manitoba

Coffee (10:00 – 10:30) EITC Atrium

Paper Session 2 (10:30 – 12:00)

SESSION V: RECOGNITION AND RECALL EITC E2-320

(68) 10:30 Recognition without awareness: Encoding and retrieval factors
Fergus I. M. Craik, Nathan S. Rose, and Nigel Gopie, Rotman Research Institute at Baycrest

(69) 10:45 Comparing item-specific and relational generation tasks in the DRM paradigm.
Mark J. Huff and Glen E. Bodner, University of Calgary

(70) 11:00 Familiarity Bleeds Cement: Sounds Right on the Surface, but Time to Dig Deeper
Steve Joordens[1], Marty W. Fiati[1], and Jason Ozubko[2], [1]University of Toronto Scarborough, [2]University of Waterloo

(71) 11:15 Release from retrieval-induced forgetting: The importance of retrieval cues on a final test
Tanya R. Jonker, Paul Seli, and Colin M. MacLeod, University of Waterloo

(72) 11:30 Is Free Recall Actually Better than Cued Recall? Cues Helps Generation but Impair Recognition
Jason David Ozubko and Colin M. MacLeod, University of Waterloo

(84) 11:45 Reading words aloud makes them more…or less memorable
Glen E. Bodner and Alexander Taikh, University of Calgary

SESSION VI: COGNITION EITC E2-330

(73) 10:30 Conflict, metacognition, and analytic reasoning
Valerie Anne Thompson and Stephen C. Johnson, University of Saskatchewan

(74) 10:45 Gaze behavior during perception of singing
Frank A. Russo, Ryerson University

(75) 11:00 Action pre-empts identification in manually-assisted search
Grayden J. F. Solman, James Allan Cheyne, and Daniel Smilek, University of Waterloo

(76) 11:15 Investigating Parallel Response Selection using Lateralized Readiness Potentials
Sandra J. Thomson, Matthew T. Mazurek, Judith M. Shedden, and Scott Watter, McMaster University

(77) 11:30 Modules, Maps, and the Robots who Shun Them: A Behaviour-Based Model of Navigation
Brian Dupuis and Michael R. W. Dawson, University of Alberta

(78) 11:45 Response inhibition decreases affective ratings and reduces the incentive to interact with motivationally-relevant stimuli.
Anne E. Ferrey[1,2], Alexandra Frischen[1], Amanda Campbell[1], Angele Larocque[1], and Mark J. Fenske[1], [1]University of Guelph, [2]York University

SESSION VII: CATEGORIZATION AND LEARNING EITC E2-350

(79) 10:30 Interference In Visual Memory Can Obscure Explicit Awareness of Contingencies
Chris M. Fiacconi and Bruce Milliken, McMaster University

(80) 10:45 Implicit Learning of Associative Structure
Chrissy M. Chubala and Randall K. Jamieson, University of Manitoba

(81) 11:00 Perception of symmetry in fractal patterns
Brian R. Hauri and Randall K. Jamieson, University of Manitoba

(82) 11:15 The variability of feature form guides processing in categorization
Samuel Hannah[1] and D. J. K. Mewhort[2], [1]University of Queensland, [2]Queen's University

(83) 11:30 The Resolution Effect in Repeated Tip-Of-The-Tongue States
Maria C. D'Angelo and Karin R. Humphreys, McMaster University

SESSION VIII: COMPARATIVE COGNITION: THE NEXT GENERATION [SYMPOSIUM] EITC E3-270

(85) Sociality and cognition: fact or fiction? Insight from the cache protection behaviors of Clark's nutcrackers
Dawson Clary and Debbie M. Kelly, University of Manitoba

(86) Homeward bound: How desert ants integrate terrestrial and celestial information to successfully return to their nest after foraging
Eric L. G. Legge[1], Antoine Wystrach[2,3], Marcia L. Spetch[1], and Ken Cheng[3], [1]University of Alberta, [2]L'université Paul Sabatier, [3]Macquarie University

(87) Cerebral lateralization in a cichlid fish: A Study of Stimuli and Stress
Michele K. Moscicki and Peter L. Hurd, University of Alberta

(88) Anthropomorphism and the Domestic Dog
Krista Macpherson and William A. Roberts, University of Western Ontario

(89) Information-seeking strategies by orangutans
Heidi L. Marsh and Suzanne E. MacDonald, York University

(90) Acoustic features in black-capped chickadee song contain dominance and geographic information
Allison H. Hahn[1], Marisa Hoeschele[1], Lauren M. Guillette[1], Daniel Mennill[2], Ken Otter[3], Thibault Grava[3], and Christopher B. Sturdy[1], [1]University of Alberta, [2]University of Windsor, [3]University of Northern British Columbia

Lunch (12:00 – 1:30) Manitoba Rooms

Donald O. Hebb Lecture (1:30 – 3:00) EITC E3-270

Dr. Ellen Bialystok, "Reshaping the Mind: The Benefits of Bilingualism"

Coffee (3:00 – 3:30) EITC Atrium

NSERC Session (3:30 – 5:00) EITC E3-270

Poster Session 2 (5:00 PM – 7:00) EITC Atrium

(91) Rapid toxin-induced gustatory conditioning in rats: Examining responses to oral ingestion of LiCl in male and female rats.
Amber Good, Shelley K. Cross-Mellor, Martin Kavaliers, and Klaus-Peter Ossenkopp, University of Western Ontario

(92) The Effects of Prior Exposure to Alcohol and Stress on Dose-dependent Ethanol-Based Conditioned Place Preference
Charelle O'Dunn and Harinder Aujla, University of Winnipeg

(93) Prenatal exposure to propionic acid produces developmental delay in Long-Evans rats
Kelly A. Foley, Derrick F. MacFabe, Martin Kavaliers, and Klaus-Peter Ossenkopp, University of Western Ontario

(94) Time course of propionic acid induced performance deficits in the morris water maze in rats
Jennifer Mepham, Francis H. Boon, Klaus-Peter Ossenkopp, Donald P. Cain, and Derrick F. MacFabe, University of Western Ontario

(95) D1 Antagonist SCH23390 Affects Motivation But Not Time Estimation
Siu Hui Cheam and Douglas A. Williams, University of Winnipeg

(96) Dissociation between subjective agency and intentional binding: Influence of human and nonhuman co-actors in joint action contexts
Preston M. Hall, Wilfrid Laurier University

(97) The modulatory role of selective attention on auditory P50 sensory gating
Samuel P. Rumak, Pavel Kozik, Amy Burns, Season Johnson, and Colleen A. Brenner, University of British Columbia

(98) Investigating the Role and Nature of Prior Knowledge in Conceptual Change: an fNIRS Study
Eve Forster, Marty Fiati, Anthony Naimi, and Kevin Dunbar, University of Toronto Scarborough

(99) The Transfer of Action Control from a Semantic to a Structural System after Repeated Exposure
Scott Noel Macdonald, Mount Allison University

(100) Examination of Anti-Suppression Therapy for Amblyopia
Andrea K. Globa[1], Behzad Mansouri[2], and Pauline M. Pearson, [1]University of Winnipeg, [2]University of Manitoba

(101) Effects of Adaptation and Delay Time on Content and Perspective Ambiguous Figures
Pamela Stevenson and Biljana Stevanovski, University of New Brunswick

(102) Contingent salience: Further evidence of bottom-up contributions to contingent capture
Matthew Ryan Yanko, Hayley Lagroix, and Thomas M. Spalek, Simon Fraser University

(103) Disruption of the Ventral Frontoparietal Attention Pathway in Children with Alcohol-Related Neurodevelopmental Disorder
Carrie R. Kosinski[1], Krisztina L. Malisza[2], Richard Bruce Bolster[1], Patricia Gervai[2], Joan L. Buss, Lindsay Woods-Frohlich[3], Dorothy Schwab[4], Christine Clancy[5], Sally Longstaffe[3], and Albert E. Chudley[3], [1]University of Winnipeg, [2]Institute for Biodiagnostics – Winnipeg National Research Council of Canada, [3]University of Manitoba, [4]Manitoba FASD Centre, [5]Division of Rehabilitation Psychology, Children's Hospital and Regional Medical Center Seattle, Seattle, WA, USA

(104) Attentional blink is not dependent on backward masking of T2, T2-mask SOA, and T2 impoverishment
Ali Jannati, Thomas M Spalek, Hayley E.P. Lagroix, and Vincent Di Lollo, Simon Fraser University

(105) Attention Pupils: Indexing the processing load of multiple object tracking using pupillometry
John Brand, Bruno Richard, and Aaron Johnson, Concordia University

(106) Count on it: Calculation of average size exceeds the limits of focal attention
Catherin Beaudoin and Chris Oriet, University of Regina

(107) Top-down control attenuates dimensional interference in task switching
Leah Allerdings and Chris Oriet, University of Regina

(108) Timing is everything…or not? The effect of temporal expectancies on social attention
Marilena Cote-Lecaldare, Dana A Hayward, and Jelena Ristic, McGill University

(109) The effects of working memory on social attention
Dana A Hayward, Natasha Pestonji, and Jelena Ristic, McGill University

(110) Manipulations of attention enhance self-regulation
Asma Hanif[1], Anne Ferrey[1,2,3], Alexandra Frischen[1], Kathryn Pozzobon[1], John D. Eastwood[2], Daniel Smilek[3], and Mark Fenske[1], [1]University of Guelph, [2]York University, [3]University of Waterloo

(111) Emotional Faces and Cognitive Flexibility
Miriam Benarroch and Judith M. Shedden, McMaster University

(112) Unconscious control of accuracy: A target's affective effects
Kyle Plotsky, University of Lethbridge

(113) The predictability of inter-stimulus intervals in immediate serial recall modulates eye movements and recall performance
Cindy Chamberland[1], Jean Saint-Aubin[1], and Ian Neath[2], [1]Université de Moncton, [2]Memorial University

(114) Encoding Structure in Holographic Reduced Representations
Matthew A. Kelly[1], Dorothea Blostein[2], and D. J. K. Mewhort[2], [1]Carleton University, [2]Queen's University

(115) Extended Training Biases Judgments of Grammaticality Towards Exemplar Similarity
Evan T. Curtis[1] and Randall K. Jamieson[2], [1]Carleton University, [2]University of Manitoba

(116) Working memory and strategic performance in fraction comparison
Thomas J. Faulkenberry and Ariel R. Kelsey, Texas A&M University

(117) Cultural differences in computational estimation
Chang Xu, Jo-Anne LeFevre, and Emma Wells, Carleton University

(118) From Cooking to Counting: The Impact of Children's Interests and Parental Involvement on the Frequency of Home Numeracy and Literacy Practices
Ivanna K. Lukie[1], Sheri-Lynn Skwarchuk[1], Jo-Anne LeFevre[2], and Carla Sowinski[2], [1]University of Winnipeg, [2]Carleton University

(119) Children's Conceptual Shortcuts in Multiplication and Division Problems
Anna Maslany and Katherine M. Robinson, University of Regina

(120) A Dissociation Between Judgement and Action: The Role of Musical Expertise
Melissa Reimchen[1], John R. Vokey[1], and John E. Granzow[2], [1]University of Lethbridge, [2]Stanford University

(121) Neural Networks That Use Strange Circles To Encode Musical Harmony
Michael R. W. Dawson, University of Alberta

(122) Lateralization of Melodic Processing after Hemispherectomy
Victoria Harms and Lorin J. Elias, University of Saskatchewan

(123) Mapping the fretboard: Investigating spatial representation of note information in skilled guitarists
Matthew J. C. Crump, Brooklyn College of CUNY

(124) Conflict Detection in Dual-Process Theory: Are We Good At Detecting When We Are Biased?
Gordon Pennycook, University of Waterloo

(125) Priming Honesty Influences Self-Report Accuracy of Mind-Wandering
Melena Vinski, McMaster University

(126) Academic Cheating, Penalties, and Individual Differences
Bob Uttl, Carrie Ann Leonard, and Joanna McDouall, Mount Royal University

(127) Conceptual organization of self-representation: evidence for heuristic social categorizations
A. Nicole LeBarr, John G. Grundy, and Judith M. Shedden, McMaster University

(128) What is the Effect of a Negative Mood Induction on Attention to Emotional Images?
Kristin R. Newman and Christopher R. Sears, University of Calgary

(129) Assessing the Effect of Lexical Variables in Backward Recall
Katherine Guérard, Jean Guérard, and Jean Saint-Aubin, Université de Moncton

(130) The interactive effects of semantic neighbourhood density and concreteness on word recognition
Ashley N. Danguecan and Lori Buchanan, University of Windsor

(131) Additive and Interactive Effects in Word Identification: Evidence for Stages of Processing
Layla Gould[1], Jacqueline Cummine[2], and Ron Borowsky[1], [1]University of Saskatchewan, [2]University of Alberta

(132) Generating Better Readers without Generating
Andrea N. Burnett and Glen E. Bodner, University of Calgary

(133) Children with dyslexia have sophisticated spelling strategies
Derrick C. Bourassa[1], S. Hélène Deacon[2], Meghan Bargen[1], and Melissa Delmonte, [1]University of Winnipeg, [2]Dalhousie University

(134) Emotional Arousal enhances Memory, not Response Bias
Holly J. Bowen, Ronak Patel, and Julia Spaniol, Ryerson University

(135) The Role of Social Information in Event Segmentation
Julia Boggia and Jelena Ristic, McGill University

(136) A Call for Second-Generation Measures of Recall: The Recognized Recall Protocol
Jason David Ozubko and Colin M. MacLeod, University of Waterloo

(137) The Relationship Between Imagery and Priming on False Recognition
Alexandria Stathis and Lori Buchanan, University of Windsor

(138) Item-Method Directed Forgetting is Effortful and Impoverishes Memory for Abstract Images
Jonathan M. Fawcett, Michael A. Lawrence, and Tracy L. Taylor, Dalhousie University

(139) Prospective Memory Is Distinct from Vigilance/Monitoring
Bob Uttl, Joanna McDouall, Carrie Ann Leonard, Mount Royal University

(140) On the specificity of conflict adaptation effects in implicit sequence learning
Maria C D'Angelo[1], Juan Lupiáñez[2], Luis Jimenez[3], and Bruce Milliken[1], [1]McMaster University, [2]University of Granada, [3]University of Santiago de Compostela

(141) Greater executive function relates to reduced within- and cross-language lexical competition during spoken word recognition: Evidence from eye movements using the visual world paradigm.
Julie Mercier, Irina Pivneva, and Debra Titone, McGill University

(142) Risky decision making in addicts and non-addicts
Ahmad Sohrabi[1], Shahin Fakhraei Fakhraei[1], Zahed Abdollahi Abdollahi[2], Omid Saed Saed[3], and Arsalan Ahmadi Kany[1], [1]University of Kurdistan, [2]Medical University of Tehran, [3]Medical University of Shahid Beheshti

(143) Functional equivalence of the letter detection and proofreading tasks
Jean Saint-Aubin and Marie-Claire Losier, Université de Moncton

(144) Females Scan More Than Males: A Potential Mechanism For Sex Differences in Face Memory
Jennifer J. Heisz[1], Molly M Pottruff[2], and David I. Shore[2], [1]Rotman Research Institute, [2]McMaster University

(145) Behavioral and gene expression analyses of lupus-prone MRL-lpr, wildtype and congenic control mice
Amber Ferris, Sadie Skarloken, Lauren Fields, Susan Larson, and Krystle Strand, Concordia College

(146) Approaching a unified psychology: Is unification possible?
Heath Matheson and Jonathan Fawcett, Dalhousie University

(147) Mental additions with and without carrying in children: How is working memory involved?
Sara Caviola, Irene Cristina Mammarella, Cesare Cornoldi, and Daniela Lucangeli, University of Padova

(148) One, 2, Thrie: Effects of Surface Format on the Intentional and Unintentional Activation of Quantity
Geoffrey Barnum and Jo-Anne LeFevre, Carleton University

(149) Cultural Differences in Computational Estimation Efficiency and Adaptivity
Emma Wells, Chang Xu, and Jo-Anne LeFevre, Carleton University

Banquet (7:00 – 9:00) Marshall McLuhan Hall

Sunday, June 26

Coffee (8:00 – 8:30) EITC Atrium

Paper Session 3 (8:30 – 10:15)

SESSION IX: REPRESENTATIONS IN NUMERICAL COGNITION [SYMPOSIUM] EITC E2-320

(151) 8:30 Retrieval-induced forgetting in adults' cognitive arithmetic
Jamie I. D. Campbell, Roxanne R. Dowd, and Valerie A. Thompson, University of Saskatchewan

(152) 8:50 How I ended up with less: Strategies in simple subtraction
Nicole D. Robert and Jo-Anne LeFevre, Carleton University

(153) 9:10 The Dynamics of the SNARC Effect: Evidence from Mouse Tracking
Thomas J. Faulkenberry, Texas A&M University

(154) 9:30 Are They Married? The Representation of Magnitude and Polarity Information of Positive and Negative Numbers
Geoffrey Barnum and Jo-Anne LeFevre, Carleton University

(155) 9:50 Does toddler's gestural use predict mathematical ability?
Joanne Lee, Donna Kotsopoulos, Samantha Makosz, and Anupreet Tumber, Wilfrid Laurier University

SESSION X: PERCEPTION AND COGNITION EITC E2-330

(156) 8:30 An Eyetracking Study of Emotion and Identity Processing
Heath Matheson[1], Jillian Filliter[1], Patricia McMullen[1], and Shannon Johnson[1,2], [1]Dalhousie University, [2]IWK Health Centre

(157) 8:45 Dissociation of Sensory and Motor Components of Multisensory Enhancement
Sean Rasmussen and Geneviève Desmarais, Mount Allison University

(158) 9:00 Evaluation of Oddness Depends on Awareness
Peter Graf, Laura Kwun, Lauren Siegel, and Zorry Belchev, University of British Columbia

(159) 9:15 A Dual Process Approach to Age-Associated Changes in Reasoning Performance
Jamie A. Prowse Turner and Valerie A. Thompson, University of Saskatchewan

(160) 9:30 A New Look at the Recognition of Disoriented Objects: A Natural Behavior Approach
Evan F Risko[1], Joseph Chisholm[2], and Alan Kingstone[2], [1]Arizona State University, [2]University of British Columbia

(161) 9:45 Contextual Distinctiveness Produces Long-lasting Priming of Pop-Out (PoP)
David R. Thomson and Bruce Milliken, McMaster University

(162) 10:00 Application of a voice frequency heuristic in criminal identification
Douglas W. Alards-Tomalin, Rita Davie, Todd Mondor, Jason Leboe-McGowan, and Launa Leboe-McGowan, University of Manitoba

SESSION XI: RECENT ADVANCES IN SYNAPTIC PLASTICITY [SYMPOSIUM] EITC E2-350

(164) Reinstatement of juvenile-like plasticity in the mature rat auditory cortex
Hans C. Dringenberg, Queen's University

(165) Plasticity in animal models of developmental disorders
Ana Klahr, Na Tian, and Tammy Leanne Ivanco, University of Manitoba

(166) Modulation of Hippocampal Long-term Potentiation by a Naturally Occurring Theta Rhythm During REM Sleep
Min-Ching Kuo and L. Stan Leung, University of Western Ontario

(167) An age-area dependent model for prognosis of brain injury during early and late adolescence
Farshad Nemati and Bryan Kolb, University of Lethbridge

SESSION XII: LANGUAGE, READING, AND MEMORY EITC E3-270

(168) 8:30 Beyond group level performance: Individual differences and models of the lexical decision task
Pablo Gomez, Manuel Perea, and Robert Zimmerman, DePaul University

(169) 8:45 Effects of phonological similarity and lexical stress on serial recall of pseudowords
Elisabet Service[1], Marcella Ferrari[2], and Paola Palladino[2], [1]McMaster University, [2]University of Pavia

(170) 9:00 An investigation of the effect of phonological similarity and word length on RAN performance
Kendall Kolne and Elisabet Service, McMaster University

(171) 9:15 The Influence of Relative Power on Referential Communication
Molly M. Pottruff, Kayley Brunsdon, and Karin R. Humphreys, McMaster University

(172) 9:30 Aging-Related Differences in Memorability Judgments of Emotional Scenes
Jennifer C. Tomaszczyk and Myra A. Fernandes, University of Waterloo

(173) 9:45 Weapon Presence Impairs Real Eyewitness Testimony
Jonathan M Fawcett[1], Emily J Russell[2], Kristine A Peace[3], and John Christie[1], [1]Dalhousie University, [2]Lakehead University, [3]Grant MacEwan University

(174) 10:00 Negative Affect Influences Time of Day Modulation of Automatic Processes in the Mind Wandering Paradigm
Melena Vinski, McMaster University

Coffee (10:15 – 10:45) EITC Atrium

Business Meeting (10:45 – 12:00) EITC E3-270

Lunch and Awards (12:00 – 1:30) Manitoba Rooms

President's Symposium (1:30 – 3:00) EITC E3-270

(175) Hippocampal Modulation as a Mechanism Underlying the Suppression of Unwanted Memories
Michael C. Anderson, University of Cambridge

(176) Unringing the bell
Amir Raz, McGill University

(177) Inhibition, cognitive control, and the immediate priming method
Bruce Milliken, McMaster University

(178) On the roles of competition and inhibition in memory retrieval
Colin MacLeod, University of Waterloo

(179) Inhibitory control in mind and brain: General and special models of response inhibition
Gordon D. Logan, Vanderbilt University

Abstracts

*** *Papers and Posters under consideration for student competition*

(1) Dopamine D2 antagonist effects on motivation and timing

Choon Hooi Toh and Douglas A. Williams, University of Winnipeg

Motivation and timing in rat appetitive conditioning were assessed after intraperitoneal injections of the selective dopamine D2-like antagonist, raclopride (vehicle, 0.4, 0.8 mg/kg). During conditioning, a single food pellet unconditioned stimulus was delivered 10 s after the termination of a 120-s white noise conditioned stimulus. During testing, head-entries into the food magazine were suppressed in a dose-dependent manner, and there was rightward shift in the peak times (delayed responding) under the high but not low dose. Our results suggest that D2 receptors in the midbrain play roles in both energizing and initiating conditioned behavior.

*** (2) Dystrophin Localization in the Mouse Cerebellum: Implications for Duchenne Muscular Dystrophy

Wanda M. Snow, Mark Fry, and Judy E. Anderson, University of Manitoba

Duchenne Muscular Dystrophy (DMD) occurs from a lack of dystrophin, typically present in muscle and brain, including cerebellar Purkinje cells. Cognitive impairments reported in DMD are theorized to stem from a lack of cerebellar dystrophin. No study, however, has investigated dystrophin in the lateral cerebellum, implicated in cognitive abilities. Using immunohistochemistry, we detected dystrophin in lateral cerebellar Purkinje cells of mice and noted an increased density in the lateral vs. the vermal region, associated with motor function. Results support the view that a loss of cerebellar dystrophin, which is preferentially localized to the lateral region, mediates cognitive deficits in DMD.

(3) Inner speech implication in self-reflection: A fMRI meta-analysis

Alain Morin and Breanne Hamper, Mount Royal University

The notion of an involvement of inner speech in self-reflection was examined by reviewing 74 studies assessing brain activation during self-referential processing in key self-domains: agency, self-recognition, emotions, personality traits, autobiographical memory, prospection, and miscellaneous (e.g., mental states and preferences). The left inferior frontal gyrus (LIFG), also known as Broca's area, has been shown to be reliably activated during inner speech production. The percentage of studies reporting LIFG activity for each self-dimension was calculated. 55.4% of all studies reviewed indicated LIFG (and presumably inner speech) activity during self-reflection tasks. Also, the LIFG was more frequently recruited during conceptual tasks (e.g., prospection, traits) than during perceptual tasks (agency and self-recognition). This constitutes additional evidence supporting the idea of a differential participation of inner speech in self-related thinking.

*** (4) Differences in the Relationship Between EEG Coherence and Working Memory Performance in Young Adults and High and Low Performing Older Adults

Erin K. Johns, Stephannie Davies, and Natalie A. Phillips, Concordia University

The role of functional neural connections in working memory (WM) remains unclear. We measured EEG coherence while performing an n-back task in 22 young adults (YA) and 30 older adults (OA). Accuracy was lower for OA versus YA for high WM load conditions. EEG coherence increased with WM load for both groups. Low performing OA (OALow) had higher coherence and larger coherence increase for intrahemispheric fronto-parietal electrode pairs (alpha band). Correlations between coherence and n-back performance were positive in YA and negative in OALow. Thus, higher WM load

involves higher coherence, which is differentially related to performance in these groups.

(5) Behavioural Distinction of Strategic Control and Spatial Realignment During a Viewing Window Task

Jane M. Lawrence and Jonathan J. Marotta, University of Manitoba

Strategic control and spatial realignment are visuomotor adaptation mechanisms which occur consciously or unconsciously, respectively. Traditionally, these mechanisms have been investigated with simplistic pointing tasks. To examine adaptation in a more perceptually challenging setting, we used a novel Viewing Window task. Subjects identified images behind a black mask by moving a small circular window through which only part of the image was visible, while distortions in movement were introduced either suddenly (strategic) or gradually (realignment). Behavioural distinction between these mechanisms was achieved using the Viewing Window task. This provides a powerful, engaging tool for investigating impairment following injury and disease.

(6) Posterior Cortical Atrophy: The role of Simultanagnosia in deficits of Face Perception

Keri Locheed and Jonathan J. Marotta, University of Manitoba

Posterior Cortical Atrophy (PCA) is a neurodegenerative disorder characterized by visual impairments in face recognition (prosopagnosia) and the ability to perceive more than one object or detail simultaneously (simultanagnosia). When viewing a face, prosopagnosics rely more on local features (e.g. mouth) at the cost of a holistic representation. Three PCA patients, and their age-matched controls, completed a same/different face discrimination task. PCA patients' gaze patterns suggested that their simultanagnosia contributed to an extreme form of local processing. Instead of shifting their attention from feature-to-feature, they seemed preoccupied with a single feature or area of contrast that differed between patients.

(8) Early Motor Behaviour in the VPA Rat Model of Autism

Ashley Pauls, Na Tian, and Tammy Leanne Ivanco, University of Manitoba

Prenatal exposure to valproic acid (VPA) in rats induces brain and behaviour changes that mimic autism, including abnormalities in brain structures involved in movement. In this study, pregnant rats received multiple injections of VPA or saline during fetal neural tube closure. Early gait and coordination were examined in 32 pups using footprint analysis and the ladder test. Relative to control pups, VPA-exposed pups had more foot slips in the ladder test on day 28. Overall, VPA-exposed rats performed similar to control rats, except on day 28, indicating that the VPA model does not closely mimic all aspects of motor impairment.

(9) Winning while losing? Misremembering losses as wins in multiline slot machine games

Candice Jensen, Mike J. Dixon, Kevin A. Harrigan, Michelle Jarick, Brian Cullen, and Jonathan A. Fugelsang, University of Waterloo

In multiline games, small "wins" often amount to less than the spin wager. These outcomes are termed losses disguised as wins (LDWs), because celebratory audio-visual feedback reinforces these monetary losses. We previously showed that novice gamblers miscategorize LDWs as wins in memory; recalling winning more often in games with many compared to few LDWs (despite identical numbers of real-wins). Here, we extend these findings showing that educating novices about LDWs reduces but does not eliminate this LDW overestimation effect. We conclude that LDWs bias gamblers to recall winning episodes despite financial loss, potentially contributing to the allure of multiline games.

(10) Role of the frontal lobes in processing narrative structure

Richard Bruce Bolster, Elyse J. M. Joubert, Ashley E. Langford, and Stephen D. Smith, University of Winnipeg

Participants viewed slide shows, in either chronological or scrambled order, of actors engaging in daily activities. Single-slide recognition accuracy was high and insensitive to presentation order. Accuracy of temporal order judgments for slide pairs was high for chronological slide shows but near chance for

scrambled-order shows, demonstrating that episodic timelines depend on inferred narrative content. In fMRI, cortical activation was scattered for scrambled slide shows, and concentrated in ventral frontal (BA 11) and premotor cortex (BA 6) for chronological presentations. Subtraction yielded strong activation in premotor cortex (BA 6), demonstrating engagement of mirror neuron systems in processing narrative structure.

(11) Chromaticity's Role in Natural Scene Recognition

Bruno Richard, Eliza Rainville, and Aaron Johnson, Concordia University

Humans can perceive the category of a scene under pre-attentive conditions. Yet colour's role in scene processing remains controversial. Here we investigated the temporal influence of chromaticity on gist. Participants performed a Go-No-Go task to detect the target (Mountains) ignoring distracters (either Coast or Valley). Chromatic conditions included normal chromatic, phase scrambled, chromatic and monochromatic RMS and isoluminant. For all presentation durations (32 & 128 ms) accuracy was high for normal chromatic, but low for scrambled, RMS and isoluminant conditions. Consequently, chromaticity can define natural scenes, yet other features, such as luminance and contrast are predominantly used in gist. "

(12) Use of geometric properties for orientation: Object arrays and extended surfaces

Weimin Mou, Jean-François Nankoo, Justin W. Witzke, and Marcia L. Spetch, University of Alberta

An important aspect of navigation is the ability to establish one's orientation within the environment. Research has shown that environmental geometry is a salient and potentially unique cue for determining orientation. In this study, we use a novel experimental paradigm to quantitatively measure subjective heading and investigate the use of geometric properties as provided by an array of objects and by extended surfaces (i.e., room walls). We found that humans successfully oriented using the geometry of room walls but not the geometry of an object array. Our findings suggest that humans extract geometric properties primarily from extended surfaces for orientation.

*** (13) Handwriting vs. Typing: The Influence of Learning Method on Visual Word Form Memory

Tina Weston[1] and Randy L. Newman[2], [1]York University, [2]Acadia University

As laptops become commonplace in classrooms, it is important to consider how computer learning compares to traditional methods. In this study, participants learned a series of nonwords either by typing on a laptop or handwriting using pencil and paper. Participants' memory for the nonwords was tested using a recognition memory test immediately after learning as well as one-week later. Results indicated a typing advantage at immediate testing; however, this benefit disappeared at delayed testing. Time had a more degrading effect on memory for typed compared to handwritten targets, providing some support for traditional writing methods as a long-term memory strategy.

*** (14) The more you know: Body-object interaction effects in semantic categorization tasks are modulated by task knowledge

Cody Tousignant and Penny M. Pexman, University of Calgary

We examined how effects of sensorimotor experience on semantic processing were modulated by task knowledge. Participants categorized low- and high-body-object interaction (BOI) words in four versions of an action/entity semantic categorization task. Facilitatory BOI effects on response time, but not classification accuracy, were observed regardless of whether the BOI words appeared on the affirmative or negative side of the decision. Critically, these effects were modulated by whether participants had knowledge that the task involved object words. This suggests a strong role for the decision context in semantic processing. Implications for an embodied framework for semantic processing are discussed.

*** (15) Impaired Visuomotor Functioning in Posterior Cortical Atrophy

Benjamin P. Meek and Jonathan J. Marotta, University of Manitoba

We investigated the ability of four individuals with posterior cortical atrophy (PCA), a rare neurodegenerative disorder, to execute grasps to

simple, rectangular objects under different viewing conditions. These individuals showed a relatively preserved ability to accurately scale their grasps to different sized objects located at their midline under normal viewing conditions. However, this ability was progressively lost with increasing delays between object viewing and object interaction. Additionally, these individuals showed abnormalities in their grip scaling and reach trajectories for objects located in their visual periphery. This study contributes important new knowledge to the effects of PCA on visuomotor systems.

(16) An approach to understanding embodied cognition

Heath Matheson and Nicole White, Dalhousie University

Theories of cognition typically account for psychological function using amodal, symbolic representations. Recently, embodied theories of cognition propose instead that simulations in modal neural systems underlie all cognition. Though interest in these theories has recently surged, there is no unified approach to understanding 'embodied cognition'. In 1949 D.O. Hebb published a theoretical account of neurophysiology, and recently, theories by neuroscientist A. Damasio and philosophers Lakoff and Johnson provide foundational concepts to the formation of an embodied theory. We attempt to show how these concepts provide a framework for understanding embodiment, and highlight the critical predictions such a theory makes.

(17) Inhibition of Return: Attentional and Motor Conflict Contributions

Yena Bi, Jason Rajsic, and Daryl E. Wilson, Queen's University

Research has suggested that attention is biased away from previously attended locations—a phenomenon termed inhibition of return (IOR). The current study investigated different cue-target tasks and their effect on IOR. Participants were assigned to three conditions differing in response instructions. A Target-Only condition replicated the classic IOR procedure. A Same-Response condition required participants to make identical responses to the cue and target. A Different-Response condition required participants to provide different responses to the cue and target. We found that both attentional factors and motor conflict contributed to IOR.

(18) Conjunction search onset following single-feature preview: Equating visual transients

Wafa Saoud, Elizabeth S. Olds, and Timothy J. Graham, Wilfrid Laurier University

Viewing the features of objects in a scene incrementally rather than simultaneously will affect visual selection in different ways-depending upon which feature is viewed first. We used Olds et al.'s (2009) feature-preview search paradigm to cue conjunction search items by presenting observers with a preview display that contained 1 of 2 features for all search items. Prior exposure to some features facilitated subsequent visual selection more than prior exposure to others; size-preview offered the greatest facilitation, followed by color-preview, and lastly, orientation-preview. Luminance transients do not mediate these effects. These feature-preview effects may reveal previously undiscovered visual processes.

(19) An evaluation of LCD monitors for presenting precisely-timed brief displays

Hayley E. P. Lagroix, Matthew R. Yanko, and Thomas M. Spalek, Simon Fraser University

Many cognitive and perceptual phenomena require precisely-timed brief displays. A critical requirement is that the images should not remain visible after their offset. It is commonly believed that liquid-crystal displays (LCD) are unsuitable because of poor temporal response characteristics relative to cathode-ray-tube (CRT) screens. We report psychophysical and photometric estimates of LCD and CRT temporal characteristics. Compared with CRTs, LCDs produced far less display persistence (dark-adapted viewing: CRT: >2s, LCD: <2ms; light-adapted viewing: CRT:~100ms, LCD:<2ms) and only slightly slower response times (LCD: 3-4ms, CRT: <1ms). Contrary to common belief, LCDs are preferable over CRTs when precisely-timed brief displays are required.

*** (20) Voluntary task switching and concurrent timing

Charles Viau-Quesnel and Claudette Fortin, Université Laval

In the voluntary task switching (VTS) paradigm, participants decide whether to switch or repeat tasks. As the decision is up to the participants and not guided by external cues, it is expected that VTS will involve top-down cognitive control to some extent. We present two experiments in which participants had to execute VTS concurrently to a time production task. In previous experiments using involuntary task switching, no switch costs were found when producing time intervals. In the present VTS study switch costs are obtained. Results imply that VTS elicits resources not involved in involuntary task switching, possibly top-down cognitive control.

*** (21) Context in Cognitive Control

Alex William Gough, McMaster University

One method for measuring cognitive control processes varies the proportion of trials in which a cue matches a following target. Studies have shown that such proportion manipulations can be learned, but relatively little is known about the extent to which learning in one context is specific to that context, or alternatively generalizes to other contexts. In these experiments, participants performed the same cued-target localization task in two contexts, one with a proportion-validity manipulation, the other with an unpredictive cue. The results indicate that, together, distinct location and temporal contextual cues can produce context-specific learning, whereas either cue alone is insufficient.

*** (22) Goldilocks and the "3" Errors: Attention Lapses and Speed-Accuracy Conflict

Paul Seli, James Allan Cheyne, and Daniel Smilek, University of Waterloo

In two studies of a GO-NOGO task, the Sustained Attention to Response Task (SART), we report that instructions emphasizing accuracy over speed reduce NOGO commission errors and alter the distribution of GO trial response times. We observed that correlations between errors and increasing response times produced a U-function. Response times that "wander" beyond optimal ranges account for almost all of the variance of errors. The standard instructions for sustained attention tasks, emphasizing speed and accuracy equally, appear to produce errors arising attempts to conform to the misleading requirement for speed, which then become conflated with errors arising from attention lapses.

(23) Prior Experience and the Implementation of Cognitive Control

Ellen K. MacLellan, Bruce Milliken, and David I. Shore, McMaster University

One important function of cognitive control is that it allows us to devote encoding resources selectively to relevant information, so that it can be remembered at some later point in time. The AB (two-target) procedure is a tool used to study this aspect of cognitive control. We used an AB-like method to study ways in which prior experience influences the implementation of processes that produce AB-like effects. The results provide evidence that both violations of local expectancy and violations of preparatory states, governed by recent prior experience, control the engagement of such processes.

*** (24) Does covert attention alter perceived contrast? Evidence from gender perception

Jason Rajsic and Daryl E. Wilson, Queen's University

Russell (2009) showed that manipulating the contrast of an ambiguous face alters its apparent gender. We therefore used ambiguous faces, varying in contrast, to test whether attention increases perceive contrast. Participants performed a forced-choice task wherein the locus of attention was manipulated prior to stimulus presentation. Participants reported which of two faces was more female (Experiment 1) or more male (Experiment 2). In both Experiments, increasing the contrast of a face caused it to appear more male. Critically, attention did not produce a consistent effect on perceived gender, meaning that attention did not increase perceived contrast.

(25) Measuring Inner Speech: Are Existing Self-Reports Reliable and Valid?

Bob Uttl, Alain Morin, and Breanne Hamper, Mount Royal University

People often talk to themselves for various reasons. We examined the reliability and validity of available measures of inner speech. Over 300 undergraduate students were asked to list as many instances of what they talk to themselves about as they could recall and they also completed widely-used self-reports of inner speech including the Self-Verbalization Questionnaire, the Self-Talk Scale, the Inner Speech Questionnaire, the Self-Talk Inventory, and the Rumination-Reflection Questionnaire. The results showed that self-reports of inner speech are generally reliable but have limited convergent and divergent validity.

(26) Testosterone and Emotion Recognition in Men: Individual Differences and Diurnal Fluctuations

Layla A. Gould and Laurie Sykes Tottenham, University of Regina

Few studies have examined endogenous testosterone effects on emotion recognition. This study made two novel contributions to this area by examining diurnal testosterone effects on emotion recognition in men, using both facial and prosodic emotion recognition tasks (past research focuses solely on facial emotions). Using a within-subjects design and salivary EIA, results showed men's facial emotion recognition was poorer in the morning (high testosterone) than the afternoon (low testosterone); afternoon testosterone negatively correlated with facial emotion recognition. No significant results were observed for prosody recognition. Results suggest that testosterone is related to inter- and intra-individual differences in facial emotion recognition.

(27) The Effects of Oral Contraceptives on Emotion Processing

Jessica Yelland and Laurie Sykes Tottenham, University of Regina

Previous studies investigating estradiol and progesterone effects on emotion recognition in women have focused solely on endogenous effects. This study investigated exogenous estradiol and progesterone effects by testing facial and auditory emotion recognition in 9 oral contraceptive (OC) users during 3 pill phases. Correlational analyses showed higher estradiol concentrations (determined using salivary EIA) were associated with poorer facial and auditory emotion recognition; progesterone was not related to recognition. Estradiol and progesterone concentrations and emotion recognition scores did not vary by pill phase. These results suggest that, in oral contraceptive users estradiol is related to emotion recognition in a nonphasic fashion.

(28) Individual Differences in the Allocation of Attention to Emotional Images: An Eye Tracking Study

Kristin R. Newman, Jody E. Arndt, Jennifer D. Ference, Charmaine L. Thomas, and Christopher R. Sears, University of Calgary

Researchers studying selective attention in clinical and non-clinical populations have documented biases in the allocation of attention to emotional information (Yiend, 2010). For example, relative to depressed individuals, non-depressed individuals spend significantly more time attending to positive images when multiple images compete for attention (Sears et al., 2010). To better understand this phenomenon, in this study participants viewed slides containing emotional and neutral images while their eye fixations were tracked and recorded throughout each 10-second trial; each trial was then subdivided into five 2-second intervals during analyses to determine when group differences in attention emerged.

(29) It's not all phonological: Visual discrimination and visual attention predict growth in children's rapid automatized naming

Cassia Luther Ruban and Richard S. Kruk, University of Manitoba

Although links between rapid automatized naming (RAN) and visual processes have been identified, few studies have explored their predictive relationships. A longitudinal study involving 171 Grade 1 students from 12 Winnipeg schools was conducted to determine if visual processing abilities predict future RAN ability. Data from five testing occasions were obtained over two and a half years. These included measures of visual discrimination and visual attention, phonological awareness, and RAN. Results from multilevel modeling demonstrated that visual discrimination and visual attention uniquely influenced growth in RAN, consistent with research indicating that key

components of emerging RAN abilities involve more than phonological processes.

(30) Negative, But Not Erotic, Images Lead to Over-Estimations of Exposure Duration

Michelle L. Crease, Michelle. S. J. Di Nella, and Stephen D. Smith, University of Winnipeg

Emotion alters our sense of time, leading us to over- or under-estimate the duration of emotional events. However, most studies demonstrating this effect use time periods that were long (seconds) rather than brief durations consistent with neural responses to emotional stimuli. In the current study, positive, negative, or neutral images were presented for durations ranging from 100-200 msec. Participants were asked to indicate the whether the image was presented for 100, 133, 166, or 200 msec. The results demonstrated that negative, but not positive or neutral, stimuli were judged to have been presented for longer than they actually were.

(31) The Production Effect in Memory: The Aging of Recollection

Olivia Ying-Hsin Lin and Colin MacLeod, University of Waterloo

The production effect refers to the benefit in memory for items read aloud relative to items read silently. We investigated the influence of aging on this benefit using both recall and recognition tests. Results showed a production benefit for both younger and older adults; however, this benefit was reliably larger for younger adults on both measures of memory. This difference in the production effect is consistent with the idea that recollection of distinctive information is less successful in older than in younger adults.

(32) A reversed production effect in reality monitoring

Jacqueline A. Spear and Randall K. Jamieson, University of Manitoba

People remember words that they have vocalized better than words they have not, a result called the production effect. We report a reversed production effect in reality monitoring. Participants typed or imagined typing words and then attempted to sort the words accordingly. Memory was better for the words that participants imagined typing than the words they did type. In another experiment, we manipulated the distinctiveness of production and reversed the reversed production effect. Our data fit with the view that distinctiveness underlies the memorial benefit in the production effect and challenge the idea that production is the critical factor.

(33) Contextual Control in the Diversion Paradigm of Directed Forgetting

Melena Vinski and Molly Pottruff, McMaster University

Manipulating internal mental context between list presentations in the directed forgetting paradigm produces differing memory impairments when individuals daydream about international vs. domestic locations. These results have previously been shown to vary with distance, however, cultural or language differences could also have had an effect. Using the diversion paradigm, the current research manipulates internal mental context (both distance and language independently) and finds differential memory impairments and proactive interference in both recall and recognition memory performance. These findings suggest that memory impairments, previously attributed to geographic location, are likely confounded by the strength of the context representation during diversionary thoughts.

(34) Item-Method Directed Forgetting is Effortful and Impoverishes Memory for Abstract Images

Jonathan M. Fawcett, Michael A. Lawrence, and Tracy L. Taylor, Dalhousie University

Abstract images were presented monochromatically followed by an R or F instruction and then a visual target requiring a speeded detection response. Participants were tested for these items using a yes-no recognition and color selection task. Recognition performance was better for R than F items. Participants were also slower to detect targets presented following study phase F than R instructions. Importantly, color judgments were more accurate for successfully recognized R than F items. Our findings suggest that intentional forgetting is an effortful process resulting in an

impoverished memory trace even when the to-be-forgotten information is successfully retrieved.

(35) The Role of Visual Working Memory in Visual Enumeration

Biljana Stevanovski, University of New Brunswick

The present study investigated the role of object and spatial working memory (WM) in visual enumeration. Participants performed an enumeration task (indicated the number of items in a visual display). Participants also performed an object WM or a spatial WM task (encoded the colour or location of a set of items, respectively). The enumeration and WM tasks were performed concurrently or alone. Of interest was whether the WM tasks would interfere with enumeration task performance, which would suggest that one or both WM stores is important for enumeration. Results are discussed with respect to the role of WM in subitizing and counting in visual enumeration.

(36) Where do we look when reaching and grasping objects in a memory-delay task?

Steven L. Prime and Jonathan J. Marotta, University of Manitoba

Our laboratory has previously shown a relationship between where we look and where our index finger lands on an object during grasping. But, sometimes we reach out to grab an object without looking at it (e.g. in the dark). Where do we look during a memory-guided grasp? Eye position and hand kinematic data were recorded as subjects reached and grasped symmetrical blocks in memory-delay and closed-loop conditions. Our main results show subjects looked more at the block's centre in the memory-delay condition compared to open-loop grasping, suggesting subjects analyse the block's shape to build an overall perceptual representation for open-looped actions.

*** (37) Examining the impact of different types of working memory load in different numerical comparison tasks

Nathaniel Barr[1], Erin A. Maloney[1], Evan F. Risko[2], and Jonathan Fugelsang[1], [1]University of Waterloo, [2]Arizona State University

We examined the roles of verbal and visuo-spatial working memory (WM) on the numerical distance effect (NDE), indexed by two variants of the numerical comparison task- Comparison to a standard (CS) & Simultaneous presentation (SP). In the visual-spatial WM condition, there was no interaction between task, WM load and distance (despite main effects of WM load and significant NDEs). However, in the verbal WM load condition there was a significant 3-way interaction: while the size of the NDE increased as WM load increased in the CS task, the NDE was eliminated under a high WM load in the SP task.

(38) Fixation Patterns in Single-Digit Multiplication

Evan T. Curtis and Jo-Anne LeFevre, Carleton University

Adults solved single-digit multiplication problems with operands from 2 to 9. We compared response times and accuracy rates to eye movements and fixations. Participants were slower and less accurate for problems with larger solutions, demonstrating a typical problem size effect. However, patterns of fixations did not vary across problem or digit size. Participants generally fixated on the middle of the screen with few fixations on either operand. These results suggest that stimuli can be processed without direct fixations. This introduces new methodological constraints on tracking eye movements in experimental tasks typically used to study mathematical cognition.

(39) Attributional Retraining: A Cognitive Treatment to Assist Failure Prone Individuals in Achievement Settings

Jeremy M. Hamm, Raymond P. Perry, Tara L. Stewart, Kate M. A. Dubberley, and Gregory D. Boese, University of Manitoba

Attributional retraining (AR) is a cognitive treatment designed to alter maladaptive explanatory thinking of failure prone individuals. Students' pre-existing levels of failure preoccupation (low, high) and perceived primary control (low, high) were used to create four student distinct typologies. These were crossed with AR (no, yes) in a 4 x 2 pre-post quasi-experimental randomized treatment design to test longitudinal effects on students' GPAs, causal

attributions, achievement emotions, and perceptions of control. AR positively impacted all students' GPAs, but had unique effects on the most failure prone students in fostering an adaptive mind-set (e.g., enhancing positive emotions and perceived control).

(40) On The Dual Basis Of Mirror Effects: Recognition of Normal versus Obscured Faces

John R. Vokey[1] and William E. Hockley[2], [1]University of Lethbridge[1], [2]Wilfrid Laurier University

We separately manipulated same versus different depictions of individual faces and whether or not the faces were partially obscured. The results of two simulations and four experiments suggest that the test-based, mirror effect observed by Hockley et al. (1999) is actually two separable effects. We conclude that the mirror pattern more generally is the result of the inter-play of two separate processes, although the particular two processes underlying any given mirror-effect may not always be the same in different situations.

(41) Cross-cultural differences in arithmetic concepts

Katherine M. Robinson, University of Regina

Differences in factual and procedural knowledge of arithmetic have been found in Canadian and Asian adults (Campbell & Xue, 2001; Imbo & LeFevre, 2009). This study examined whether there are also differences in conceptual knowledge. Canadian and Asian adults solved addition/subtraction and multiplication/division three-term problems to assess understanding of inversion (8 x 27 ÷ 27, the answer is easy if participants understand that multiplication and division are inverse operations) and associativity (8 + 27 - 24, the answer is easier if participants understand that subtraction can be performed before addition). Preliminary findings suggest that there Asian-educated participants are more likely to use conceptually-based shortcuts when solving three-term arithmetic problems.

(42) The Effects of Imageability and BOI on Multisyllabic Words

Stephen D. R. Bennett[1], A. Nicole Burnett[2], Paul D. Siakaluk[1], and Penny M. Pexman[2], [1]University of Northern British Columbia, [2]University of Calgary

We examined the effects of imageability and body-object interaction (BOI) on multisyllabic words in picture naming, word naming, lexical decision, and semantic categorization. Results from hierarchical multiple regression analyses showed that imageability and BOI separately accounted for unique latency variability in each task, even with several other predictor variables (e.g., print frequency, number of syllables, age of acquisition) entered first in the analyses. Importantly, our findings demonstrate that imageability and BOI effects extend to multisyllabic words. We interpret our findings within perceptual symbol systems theory (Barsalou, 1999) and a semantic feedback account of lexical processing.

*** (43) Availability of constituents' conceptual representations during the processing of opaque and transparent compound words

Kristan A. Marchak, Christina L. Gagné, and Thomas L. Spalding, University of Alberta

It is unclear whether the conceptual representations of constituents of opaque compounds (e.g., hogwash is unrelated to its constituents' meanings) are activated (Sandra, 1990; Zwitserlood, 1994). We manipulated the opacity of the first or second constituent of compound primes across four experiments using semantic associates of the compounds' constituents as targets. The results show clear semantic priming, except for the first constituents of completely opaque compounds, suggesting that constituent conceptual representations are available. Constituent representations might be activated, but then suppressed due to a conflict between the compound's constructed and retrieved meanings (Gagné & Spalding, 2009; Ji, 2008; Libben, 2005).

(44) Infants detect dependency relationships in the absence of an explicit inflectional marker

Melanie Soderstrom and Joanna Bhaskaran, University of Manitoba

Over the past decade, a number of perceptual studies have shown that toddlers are sensitive to dependency relations in the perceptual domain (e.g. Santelmann & Jusczyk, 1998; Soderstrom et al., 2007). However, to date all of these studies have examined infants' ability to detect grammaticality violations involving explicit

inflection markers (e.g. "the baker is baking bread" vs. "the baker can baking bread"). The current study demonstrates that 18-month-olds can detect dependency violations in the absence of an explicit inflectional marker (e.g. "the baker can bake__ bread" vs. "the baker is bake__ bread"), suggesting that infants represent grammatical information abstractly.

(45) Can An Exaggerated Intonation Help Children Understand Sarcasm?

Jayanthi M. Parackel and Melanie R. Glenwright, University of Manitoba

Studies requiring children to recognize sarcasm on the basis of intonation have varied in definitions of sarcastic intonation. Adult studies, however, have isolated auditory features of sarcastic intonation using acoustic analysis. Sarcastic utterances can be distinguished from sincere utterances by a reduction in mean frequency (pitch). This study assesses whether intonation strength (or exaggeration) influences children's understanding of sarcasm. Children ranging from 5 to 7 years of age watched conversations that varied by statement type (literal, sarcastic) and by speaker's intonation strength (neutral, medium, high). The results highlight the importance of intonation as a cue for children's understanding of sarcasm.

(46) Children and Adults Interpret Verbal Irony from Different Perspectives

Jacqueline K. S. Rano[1], Melanie R. Glenwright[1], and Penny M. Pexman[2], [1]University of Manitoba, [2]University of Calgary

Adults see humor in verbal irony and this perception is modulated depending on whether one takes the perspective of the speaker or the addressee. Children do not find verbal irony funny and they tend to identify with the addressees of ironic remarks. We extended this research by investigating whether children's and adults' perceptions of ironic criticisms vary according to 1) the parties present when the remark is made, and 2) interpretive perspective. We presented 9- to 10-year-old children and 40 adults with criticisms directed at present and absent addressees with and without a bystander. Group differences are described and explained.

(47) Early Maladaptive Schemas (EMSs) in addicts and non-addicts

Jalil Hosseini, Ahmad Sohrabi, Farzin Rezaei, Yousefi Naser, and Farideh Faraji, University of Kurdistan

The Early Maladaptive Schemas (EMSs) are at the core of personality psychology and psychological distress, including addiction. The purpose of this study was to examine EMSs in Addicts and Non-Addicts (75 meeting DSM-IV criteria for Substance Dependence divided to three groups, NA group of 25, 25 patients under Methadone Maintenance Therapy (MMT), outpatient addict group of 25, and 25 non-clinicals). All groups completed the Young Schema Questionnaire-Short Form-3rd Edition (YSQ-SF). The data were analyzed using MANOVA. The results showed significant differences between Addicts and Non-Addicts. The Addicts were significantly different from non-addicts especially in Social Isolation, Unrelenting Standards, and Entitlement/Superiority.

(48) Early Maladaptive Schemas (EMSs) in patients with borderline and obsessive-compulsive personality disorders and non-clinical population

Roghayie Ramezanzadeh Alizamini, Ahmad Sohrabi, Farzin Rezaei, and Arsalan Ahmadi Kani Golzar, University of Kurdistan

The purpose of this study was to examine the Early Maladaptive Schemas (EMSs) in patients with Borderline Personality Disorder (BPD) and Obsessive-Compulsive Personality Disorder (OCPD) and Non-Clinical (NC) population. In this study 75 individuals (25 BPD, 25 OCPD, and 25 NC completed EMSs). The results showed significant differences between clinical and non-clinical groups in terms of the (EMSs). The BPD was significantly different from NC in all five domains and most of 18 schemas. The OCPD was significantly different from NC in 12 schemas. Also, patients with OCPD, but not those with BPD were higher in EMSs compared to NC.

SESSION 1: ATTENTION

*** (49) Broadening the focus of visual attention enhances mood

Asma Hanif and Mark J. Fenske, University of Guelph

Attention and emotion work together to prioritize efforts toward task-relevant objects and actions. Such attention-emotion interactions include reciprocal effects. Not only emotional significance of an item determines how strongly it attracts attention, but the attentional status of an item can also determine its subsequent emotional evaluation. Here we report that the affective consequences of attention extend beyond specific items to influence general mood. Broad-focus of attention resulted in a significant enhancement in mood (valence and arousal) compared to narrow-focus attention. This study lays a promising foundation for testing the possibility that simple attention-based interventions may be useful for enhancing mood.

(50) Spatial Bias Induced by Emotional Valence and Gaze Direction of a Schematic Face

Davood G. Gozli, Nicole White, Alison L. Chasteen, Adam K. Anderson, and Jay Pratt, University of Toronto

Processing words with positive and negative valence can facilitate visual processing above and below fixation, respectively (Meier & Robinson, 2004). We report two experiments wherein centrally presented faces varied in emotional valence (happy vs. sad) and gaze (upward vs. downward). Following each face, a target appeared above or below fixation. A main effect of gaze direction was found when subjects performed a simple detection task (Experiment 1), whereas a main effect of valence compatibility was found when subjects responded differently based on valence (Experiment 2). The two effects did not interact suggesting different mechanisms may underlie the two spatial effects.

(51) Attending in space and time: Is there just one beam?

Yoko Ishigami and Raymond M. Klein, Dalhousie University

Snyder (1972) and McLean et al. (1982) examined attentional sloppiness separately in the spatial and temporal domains. The purpose of the current study was to replicate their methods to further explore relationships between sloppiness in the temporal and spatial domains. The participants identified and localized targets in visual search and rapid serial visual presentation (RSVP). Consistent with the previous studies, sources of errors came predominantly from neighboring items of the targets. The correlation between measures of the sloppiness in space (visual search) and time (RSVP) were near zero, suggesting that different attentional beams bind features in space and time.

(52) A Watched Pot - Prospective Time Estimations and future vs. present focus

Janel Fergusson and Peter Graf, University of British Columbia

Two common sayings describe conflicting subjective experiences of time: "time flies when you're having fun" and "a watched pot never boils". When engaged in an activity, it often seems like time passes quickly, but when waiting for another task to begin, time appears to crawl by at a snail's pace. The present research addressed two questions: whether or not this discrepancy in subjective experience is reflected in prospective time estimations and if it is a result of looking forward in time vs. focusing on the present task. Correlates of individual differences in time estimation were also examined.

(53) Explaining IOR-like Effects as a Disruption of Contextual Reinstatement

Adam Spadaro and Bruce Milliken, McMaster University

It has been well established that remembering can be improved under conditions of context reinstatement (Smith, 1979). Increasingly, context reinstatement has also been useful for explaining effects that are measured with tasks that do not require "remembering" (Chun & Yiang, 1998). In the current study, we examine the role of context disruption/reinstatement in a simple 2-AFC task that requires participants to perceive and act rather than remember. The results suggest that an IOR-like repetition cost can occur under conditions in which context is disrupted between consecutive displays, whereas it is not observed under conditions that foster context reinstatement.

(54) Exploration and internal simulation trade off in search

Grayden J. F. Solman and Daniel Smilek, University of Waterloo

Search, properly generalized, consists of an interplay between perceptual analysis, internal simulation, and physical exploration. We present data from several experiments suggesting that the relative influence of each of these components is largely determined by the specifics of individual search contexts. In other words, we propose that "context effects" can be understood in terms of cost-benefit tradeoffs. In particular, we show that increases in the cost of physical exploration, and increases in the difficulty of perceptual analysis, lead to stronger memory effects in search. As the cost of exhaustive random sampling increases, internal simulation steps in to mitigate these costs.

SESSION II: ANIMAL BEHAVIOUR AND NEUROSCIENCE

(55) Which corner is correct? Pigeons and humans demonstrate different strategies for encoding and weighting the geometric properties of their environments

Danielle Lubyk, Brian Dupuis, Lucio Gutiérrez, and Marcia Spetch, University of Alberta

The current study sought to directly compare the different types of environmental geometric cues employed for orientation and navigation in pigeons and humans. Subjects were trained to locate two geometrically-equivalent goal corners in a parallelogram-shaped environment, which provided the two completely separate properties of angular amplitude and wall length. Either property could be used independently to locate the goal corners. Following training, pigeons and humans were tested in three manipulated environments designed to determine if each geometric cue was encoded independently, as well as whether a preference for either one was present. Results and cross-species comparisons will be discussed.

(56) Latent spatial learning in an environment with a distinctive shape

Murray Ryan Horne, Kerry Gilroy, Steven Cuell, and John M. Pearce, Cardiff University

As a step towards identifying the associations that are responsible for spatial learning, the training stage in a series of experiments involved repeatedly placing a rat on a submerged platform in one corner of a rectangular pool. During a 60-s test trial in the absence of the platform, more time was spent in the two correct corners, which possessed the same geometric properties as the corner where the rat was placed for training, than in the remaining two, incorrect corners. This effect, however, was observed only when the shape of the training environment was the same as that of the test environment.

*** (57) Waiting for 'The Go': Neural substrates of impulse control in the medial prefrontal cortex

Scott J. Hayton, Eric C. Dumont, and Mary C. Olmstead, Queen's University

We used patch-clamp electrophysiology to identify changes to the mPFC after rats learned to withhold a lever press (i.e., impulse control) until they were signaled to respond. Learning this task produced a dramatic upregulation in excitatory neurotransmission between neurons in the prelimbic region of the mPFC. These changes increased proportionally as subjects learned the task, and were eliminated by extinguishing the response inhibition. Learning the response inhibition also decreased neuronal excitability, producing less action potentials in response to current injection than behavioural controls. Thus we report two distinct changes to mPFC neurons after learning to withhold an inappropriate response.

(58) Metacognition in Rats and People Using the Foote and Crystal Paradigm

Michael Grossman, Mark Cole, and Aaron Jolivet, Huron University College

Rats classified tones as long or short by pressing different levers. Correct and incorrect responses produced 6 and 0 pellets, respectively. On selected trials, opt outs were permitted, leading to 3 pellets. Rats did not opt out more on more-difficult discriminations, nor did they do better when they elected to take the test. Humans discriminated tone durations by clicking buttons on a computer screen, getting $0.10 if correct and $0.00 if incorrect. On trials permitting opt outs, opt outs for $0.05 increased with discrimination difficulty; and when they elected to take the test, humans did better.

*** (59) Reelin as a putative susceptibility factor for depression

April L. Lussier[1], Raquel Romay-Tallón[2], Ekaterina Lebedeva[1], Hector J. Caruncho[2], and Lisa E. Kalynchuk[1], [1]University of Saskatchewan, [2]University of Santiago de Compostela

Stress is a risk factor for depression, but the biological links between stress and depression are not well understood. We have shown that alterations in an extracellular matrix protein called reelin may be one of these links. We found that exposure to repeated stress in rats decreases hippocampal reelin expression in a time- and dose-dependent manner, but only in rats that show increased depression-like behavior. We then found that repeated stress has greater depressogenic effects in reelin-deficient mice than in wildtype mice. These results suggest that reelin levels may influence individual susceptibility to stress and the onset of depressive symptoms.

SESSION III: HORMONAL REGULATION OF FOOD MOTIVATION

***Symposium description**: The study of the pathways and mechanisms by which hormones and nutrient signals influence food intake and energy expenditure has substantially advanced our knowledge of the CNS controls of energy homeostasis. The view that sensing of metabolic signals is the exclusive function of hypothalamic and hindbrain cells has been modified by several lines of evidence indicating that hormones like leptin, ghrelin and orexin target neuronal populations in reward-relevant brain regions to modulate motivation for food and locomotor behaviours. The proposed symposium would be composed of three junior investigators from across Canada whose research has significantly contributed towards our understanding of the neurobehavioral mechanisms by which orexin, ghrelin and leptin directly impact the mesolimbic dopamine system and modulate reward and energy balance (Organizer: Stephanie Fulton)*

(61) Insulin in the VTA suppresses excitatory synaptic transmission and hedonic feeding

Stephanie L. Borgland, University of British Columbia

The prevalence of obesity has drastically increased over the last few decades. Exploration into how hunger and satiety signals influence the reward system can help us to understand non-homeostatic mechanisms of feeding. There is substantial evidence suggesting that insulin may act in the ventral tegmental area (VTA), a critical site for reward-seeking behavior, to suppress feeding. However, the neural mechanisms underlying insulin effects in the VTA remain unknown. We demonstrate that insulin, a circulating catabolic peptide which inhibits feeding, can cause a long-term depression (LTD) of excitatory synapses onto VTA dopamine neurons. This effect requires endocannabinoid-mediated presynaptic inhibition of glutamate release. Insulin-mediated LTD onto VTA dopamine neurons was occluded in animals pre-fed high fat food. Furthermore, insulin in the VTA inhibited sated hedonic feeding. Taken together, these results suggest that insulin acts in the mesolimbic reward system to suppress excitatory synaptic transmission and regulate hedonic feeding.

(62) Contribution of Ghrelin to appetitive behaviors preceding a meal

Alfonso Abizaid and Zack R. Patterson, Carleton University

Ghrelin, a stomach hormone associated with food intake and energy balance regulation. These effects are mediated by receptors in hypothalamic and extrahypothalamic regions that include the ventral tegmental area (VTA) and it forebrain projections to the nucleus accumbens. We hypothesized that ghrelin receptors in these regions are also implicated in the anticipatory locomotor responses that precede restricted meals. Results show that GHSR KO mice moved less and had attenuated Fos expression in the VTA and other regions in anticipation of scheduled meals compared to WT mice. This suggests that ghrelin on reward circuits enhancing appetitive behaviours in anticipation of food.

(63) Dopamine targets of leptin action

Stephanie Fulton, CRCHUM and Université de Montréal

Leptin is an adipose-derived hormone that potently regulates neural circuits controlling energy balance. Apart from its hypothalamic actions, leptin modulates brain reward circuitry, activates STAT3 in dopamine (DA) and GABA neurons of the midbrain and is critical for DA function. Leptin receptor (LepRb) knockdown in the midbrain has been show to increase food

intake, food-motivated responding and locomotion. To address the role of STAT3 signalling in midbrain DA neurons we generated DA-specific STAT3 knockout mice using Cre-Lox technology. The gender-dependent effects of STAT3 loss-of-function on feeding, activity and body weight data we observe suggest that the neurobehavioral actions of leptin in the midbrain depend on the cell type and signalling pathway involved.

SESSION IV: LANGUAGE COMPREHENSION: REPRESENTATION AND PROCESSES

***Symposium description**: Language comprehension is supported by the complex interplay of processes of perception, memory, attention, and other fundamental cognitive functions. Comprehension, furthermore, is posited to result in representations of the surface form, idea network, and situations conveyed by sentences and discourse. Using behavioural and neural methodologies, the investigators of this symposium refine our understanding of the representation of text form; and of the impact of goal and event knowledge on text situation models. Models of text memory that mesh with contemporary memory theory are considered (Organizer: Murray Singer)*

(64) Memory for Literary Language: A Rose by Any Other Name would be Forgotten as Quickly

Peter Dixon and Marisa Bortolussi, University of Alberta

In discourse processing, it is commonly assumed that memory for the surface structure is short lived and is lost shortly after a sentence has been read. It is sometimes suggested that literary language must be an exception, though: Indeed, in many cases the precise form of the surface structure is part of what makes a work "literary." However, using several different criteria for literariness, we found no evidence that literary language was more memorable than more mundane language. If the surface structure of a literary passage cannot be remembered, why should it matter how well something is written?

(65) Embodiment of Goals in Sentence Comprehension

Michael E. J. Masson and Daniel N. Bub, University of Victoria

Using a priming paradigm in which subjects execute cued hand actions, we demonstrate that hand-action representations associated with manipulable objects are evoked when subjects listen to sentences describing actions involving such objects. Crucially, we show that the pattern of activation of hand-action representations changes in a striking manner with a simple change in sentence syntax. These results are not compatible with the idea that sentence comprehension involves a straightforward mental simulation of the events described in the sentence. Instead, the findings can be readily understood when the hierarchy of goals distinguishing how and why actions are performed is considered.

(66) Generalized Event Knowledge is Activated during Online Language Comprehension

Ken McRae[1], Ross Metusalem[2], Marta Kutas[2], Thomas P. Urbach[2], Mary Hare[3], and Jeffrey L. Elman[2], [1]University of Western Ontario, [2]University of California San Diego, [3]Bowling Green State University

Research demonstrates that people's knowledge of common events guides incremental language comprehension. We investigated the generality of online event knowledge activation. ERPs were recorded as participants read three-sentence scenarios describing common events. The final sentence contained a target word that was expected (smallest N400), anomalous and unrelated to the event (largest N400), or anomalous but event-related (middling N400 in this novel condition). Therefore, comprehenders do activate general event knowledge, even when a specific concept is not an appropriate continuation of the linguistic input at that point. Thus, generalized event knowledge is available to immediately influence predictive and integrative language processing.

(67) Processes of Text Recognition

Murray Singer, University of Manitoba

A theory of text retrieval would ideally derive from general principles of memory. This study compared text recognition with certain profiles of item recognition. Participants read stories either once (unrepeated) or twice consecutively (repeated) and later performed a sentence recognition task. Signal-detection analysis revealed the application of a more lenient

recognition criterion to probes from unrepeated than repeated stories. This mimicked "criterion shifts" observed in within-list comparisons of weak versus strong individual items. This and other signatures suggest the convergence of principles of text memory and item memory.

SESSION V: RECOGNITION AND RECALL

(68) Recognition without awareness: Encoding and retrieval factors

Fergus I. M. Craik, Nathan S. Rose, and Nigel Gopie, Rotman Research Institute at Baycrest

We report findings from a novel paradigm in which participants are given a set of 4-alternative forced choice tests of recognition memory. Participants are informed that only about half of the tests contain a target item, but that nevertheless they must always choose one item. Participants also gave a confidence rating in which '0' signified 'pure guess.' The interest is in the proportion of correct choices where a target is present and when confidence is given as 0. Chance is 0.25 yet some proportions are as high as 0.50. We discuss manipulations that affect these proportions and their theoretical implications.

(69) Comparing item-specific and relational generation tasks in the DRM paradigm.

Mark J. Huff and Glen E. Bodner, University of Calgary

Using the DRM paradigm, we compared item-specific and relational-processing versions of a generation task relative to a read control condition. Both generate tasks increased correct recognition relative to the read condition, but only the item-specific task decreased false recognition. Signal-detection analyses showed that both generate tasks induced a distinctiveness heuristic at test, but only the item-specific task participants were effectively able to use the distinctiveness heuristic to reduce false recognition. We conclude that it is the type of processing induced by an encoding task, not the encoding task per se, that determines whether a distinctiveness pattern is obtained.

(70) Familiarity Bleeds Cement: Sounds Right on the Surface, but Time to Dig Deeper

Steve Joordens[1], Marty W. Fiati[1], and Jason Ozubko[2], [1]University of Toronto Scarborough, [2]University of Waterloo

The word frequency mirror effect is the finding that low frequency words have a higher hit rate and lower false alarm rate than high frequency words in an old/new recognition paradigm. Researchers found that when recollective performance was decreased, the hit rate portion of the mirror effect was reduced or eliminated (Joordens & Hockley, 2000). Whereas past experiments presume a direct view of familiarity but have not focused on familiarity, the present paper describes a series of experiments that focus on manipulations and influences of familiarity, and highlights aspects of the data that suggest a deeper understanding is required.

*** (71) Release from retrieval-induced forgetting: The importance of the retrieval cues on the final test

Tanya R. Jonker, Paul Seli, and Colin M. MacLeod, University of Waterloo

Retrieving a subset of items can impair subsequent recall of other related but not retrieved items, a phenomenon called retrieval-induced forgetting (RIF). We modified the RIF paradigm to explore the role of subcategory cues provided at test. Retrieving items from one of two subcategories (e.g., Pet Bird but not Bird of Prey) led to RIF for the other subcategory when the overall category cue (BIRD) was provided at test. However, providing both subcategories as test cues eliminated RIF. This finding parallels the release from proactive interference pattern demonstrated by Gardiner, Craik, and Birtwistle (1972). Both inhibition and interference explanations are considered.

*** (72) Is Free Recall Actually Better than Cued Recall? Cues Helps Generation but Impair Recognition

Jason David Ozubko and Colin M. MacLeod, University of Waterloo

The notion that cued recall is superior to free recall is so widespread that it is rarely questioned. However, traditional comparisons between free and cued recall may be unreliable due to differing test demands between the two test formats, such as informed guessing and

response pressure. To control for these confounds, we developed the recognized recall paradigm. Using this paradigm, we find that cues help subjects generate studied words, but often impair the recognition of generated items. Furthermore, cues always lead to a significant rise in false memories. We conclude that free recall is actually less biased than cued recall.

SESSION VI: COGNITION

(73) Conflict, metacognition, and analytic reasoning

Valerie Anne Thompson and Stephen C. Johnson, University of Saskatchewan

In four reasoning tasks, participants (N = 42) gave a fast, intuitive answer, a feeling of rightness (FOR) judgment about that answer, and then a final answer. Half of the problems provided conflicting cues to judgment (e.g., valid but unbelievable conclusions); for the other half, the cues did not conflict. FORs for the conflict problems were lower than their non-conflict counterparts; in turn, the extent of analytic thinking engaged to reach the final answer was higher for the conflict problems. Participants whose FOR judgments were sensitive to conflict were also more likely to differentially engage analytic thinking for conflict problems.

(74) Gaze behaviour during perception of singing

Frank A. Russo, Ryerson University

We used eye tracking to examine the relative influence of the mouth and eyes on perception of singing. Gaze was tracked while participants judged the size of sung melodic intervals presented under three signal-to-noise conditions, corresponding to high, medium and low audibility. Interval size judgments were linearly related to veridical size of intervals across conditions. Frequency and duration of gaze fixations revealed that the mouth was the most salient aspect of the visual channel. However, gaze was diverted away from the mouth and toward the eyes with increasing audibility, interval size, and tonal consonance of intervals.

*** (75) Action pre-empts identification in manually-assisted search

Grayden J. F. Solman, James Allan Cheyne, and Daniel Smilek, University of Waterloo

We introduce a remarkable behavioural error, reflecting a strong dissociation between perception and action in a context where one would expect these processes to be closely coordinated. Using a novel search paradigm, in which observers use a mouse to sort through a 'heap' of items to locate the target, we find that participants frequently select the target item but fail to recognize it, moving the item out of the way in order to continue search. Evidence from three experiments indicates that this error arises because movements are often initiated and carried out prior to identification of the items being moved.

(76) Investigating Parallel Response Selection using Lateralized Readiness Potentials

Sandra J. Thomson, Matthew T. Mazurek, Judith M. Shedden, and Scott Watter, McMaster University

One challenge to the widely supported theory of serial response selection in dual-task performance is evidence of backward response-level crosstalk between tasks. However, it is difficult to distinguish if response information from Task2 is priming response selection in Task1, or instead a later motor execution stage, which would not violate the bottleneck theory. We evaluate this possibility by examining lateralized readiness potentials (LRPs) in a dual task procedure. The influence of Task2 response information on latency or amplitude of Task1 LRPs would suggest that backward crosstalk occurs at a central response selection stage, rather than the later motor execution stage.

(77) Modules, Maps, and the Robots who Shun Them: A Behaviour-Based Model of Navigation

Brian Dupuis and Michael R. W. Dawson, University of Alberta

The ability to navigate around in the world is fundamental to nearly every mobile creature. The challenge with investigating the mechanisms behind this ability lies with the difficulty in understanding the agents of interest: a brain is in many respects too complex to completely explain. This difficulty can be mitigated somewhat through the use of models, constructed to follow known processes and tested against empirical

data. Most current models of navigation and reorientation are exclusively representational and place great emphasis on abstract concepts such as cognitive modules, mental maps and choice rules. We propose an alternative model that focuses instead on the role of behaviour and the environment - with no representation required in an agent that has access to immediately-available stimuli. We explore this model through a behaviour-based robot, capable of reproducing many signature reorientation results, and posit that this method of modelling can prove fruitful in further developing existing theories of behaviour.

*** (78) Response inhibition decreases affective ratings and reduces the incentive to interact with motivationally-relevant stimuli.

Anne E. Ferrey[1,2], Alexandra Frischen[1], Amanda Campbell[1], Angele Larocque[1], and Mark J. Fenske[1], [1]University of Guelph, [2]York University

Stimuli from which attention or a behavioural response has been withheld subsequently receive more negative emotional evaluations than the targets of attention/response. Here we show that, as well as having affective consequences, response inhibition decreases the subsequent incentive salience of motivationally-relevant stimuli. Images with strong approach-incentive (erotic and monetary-gain associated stimuli) received more negative affective evaluations after being encountered as 'No-go' items than as 'Go' items. The frequency of key-presses rewarded by erotic images was also reduced when the images were previously encountered as 'No-go' items than as 'Go' items. Response inhibition reduces stimulus 'wanting' as well as 'liking'.

SESSION VII: CATEGORIZATION AND LEARNING

(79) Interference In Visual Memory Can Obscure Explicit Awareness of Contingencies

Chris M. Fiacconi and Bruce Milliken, McMaster University

In the current set of experiments we explore the relationship between visual memory and explicit awareness of statistical regularities. Previous work using a spatial priming task has demonstrated that participants can remain profoundly unaware of very strong prime-probe contingencies when these contingencies involve feature mismatches. In two experiments, we provide evidence that representations in visual memory can be vulnerable to interference from subsequent visual displays that partially match the initial displays. However, this interference depends on binding processes that occur in response to the subsequent display. The results suggest a close link between object file updating, visual memory, and awareness.

(80) Implicit Learning of Associative Structure

Chrissy M. Chubala and Randall K. Jamieson, University of Manitoba

Cognitive theorists have historically studied implicit learning apart from the tradition of associative learning, despite obvious similarities between the two. Indeed, one can conceptualize associative learning as an implicit learning of the associative structure between stimuli. To examine the problem, we present data from work with retrospective revaluation, a phenomenon whereby a previously established behavioural response to one stimulus is modified in light of new information about a different stimulus. Such learning provides an ideal arena for an analysis and potential integration of the two fields, providing a new perspective on old problems.

(81) Perception of symmetry in fractal patterns

Brian R. Hauri and Randall K. Jamieson, University of Manitoba

People process symmetric patterns more efficiently than asymmetric patterns. We illustrate the point by reflection/rotation in two-dimensional dot patterns. We extend the analysis of scale-symmetry in fractal patterns. In both cases, empirical estimates of processing speed predict peoples' preference judgements. However, the direction of that relationship differs depending on the kind of symmetry considered.

(82) The variability of feature form guides processing in categorization

Samuel Hannah[1] and D. J. K. Mewhort[2], [1]University of Queensland, [2]Queen's University

In Medin, Wattenmaker and Hampson's (1987) category construction task, people are shown

novel objects and asked to sort them into two categories. In two experiments, we showed that people preferred sorts that minimized variability in the form of the objects' features. Form variability also influenced memory performance, with low-variability features being better recognized than high-variability features. Feature variability was also inversely related to the perceived coherency of the participants' categories. The present results show that variance in the contents of features, as well as the content itself, is also a source of information used in categorization.

(83) The Resolution Effect in Repeated Tip-Of-The-Tongue States

Maria C. D'Angelo and Karin R. Humphreys, McMaster University

Tip-of-the-tongue (TOT) states occur when individuals have the feeling that a currently inaccessible word will be recalled in the future. Recent work has demonstrated that repeated TOTs are likely to occur unless participants resolve a TOT state on an initial test, in which case they are less likely to re-experience a TOT on a subsequent test. We tested whether resolutions aided by orthographic cues would provide the same protection against repeated TOTs. After a 48-hour delay participants were less likely to repeat TOTs, and more likely to know target words for cued and un-cued test1 resolutions.

(84) Reading words aloud makes them more…or less memorable

Glen E. Bodner and Alexander Taikh, University of Calgary

The production effect is a memory advantage for words studied aloud over words studied silently. Using a list-discrimination source-judgment task, Ozubko and MacLeod (2010) supported a distinctiveness account over a memory strength account of the effect. We replicated their findings while including additional groups to further test these accounts. The pattern across our experiments, including reverse production effects, was not readily explained by either account. We propose an account in which attributions of list source are jointly determined by memory strength, knowledge of the composition of each list, and a recency bias.

SESSION VIII: COMPARATIVE COGNITION: THE NEXT GENERATION

Symposium description: The goal of this symposium is to bring together Canada's young researchers in the area of Comparative Cognition to a forum that will show case their work. All of the presenters are from departments across Canada and are currently enrolled in graduate programs. The symposium will focus on the excellent research by these young scientists. The research to be presented truly shows a comparative approach to examining cognition as species such as ants, cichlids, chickadees, Clark's nutcrackers, dogs and orangutans will all be represented (Organizer: Debbie Kelly)

*** (85) Sociality and cognition: fact or fiction? Insight from the cache protection behaviors of Clark's nutcrackers
Dawson Clary and Debbie M. Kelly, University of Manitoba

Living in large social groups has been suggested as the primary selection for the evolution of complex cognition. Success of social corvid species in tasks examining complex cognition, specifically social cognition, lent support to theories implicating the role of group living. However, non-social species have seldom been tested in similar tasks; thus, evidence supporting theories of group living are lacking a fundamental control. In the present study, a relatively non-social corvid, Clark's nutcracker (Nucifraga columbiana), was given a caching task in which a bird was allowed to cache alone, with a conspecific, or in the presence of an object.

*** (86) Homeward bound: How desert ants integrate terrestrial and celestial information to successfully return to their nest after foraging

Eric L. G. Legge[1], Antoine Wystrach[2,3], Marcia L. Spetch[1], and Ken Cheng[3], [1]University of Alberta, [2]L'université Paul Sabatier, [3]Macquarie University

Navigating ants are known to rely on both celestial (e.g., polarized light) and terrestrial (e.g., panoramic skyline) information to relocate places of interest such as stable food sources or their

nest. Here we present experiments in which we tested how the Central Australian desert ant, Melophorus bagoti, retrieves a homebound direction when presented with conflicting terrestrial and celestial information. Conflict tests revealed that ants did not choose to follow a particular source of information but integrated the two, choosing an intermediate direction. How the information was integrated will be discussed in regards to recent navigational models (e.g., Bayesian-like integration; view-based matching).

*** (87) Cerebral lateralization in a cichlid fish: A Study of Stimuli and Stress

Michele K. Moscicki and Peter L. Hurd, University of Alberta

Cerebral lateralization, the preferential partitioning of cognitive function into one brain hemisphere, is ubiquitous among vertebrates. Recent research has demonstrated that the emotional valence of stimuli (i.e., appetitive or aversive) may affect the direction and potentially the strength of this cerebral asymmetry. Here we introduced an aversive stimulus into a perceived social and non-social detour task and used these tasks to assess the direction and strength of behavioural lateralization of convict cichlid fish (Amatitlania nigrofasciata). We found that both direction and strength of lateralized responding was affected by exposure to the aversive stimulus and males and females were affected differently.

*** (88) Anthropomorphism and the Domestic Dog

Krista Macpherson and William A. Roberts, University of Western Ontario

Though once not a popular subject in psychological research, the past 10 years have brought about a significant increase in the amount of research being conducted with domestic dogs. Dogs are an interesting subject in comparative cognition due to their unique relationship with humans--because of this relationship, however, dogs are also heavily anthropomorphized. Data from experiments in bystander apathy, numerical discrimination, and spatial memory demonstrate that human belief in the cognitive ability of dogs is often contradicted by research findings. Caution should thus be exercised to ensure that human bias does not negatively impact the study of domestic dogs.

*** (89) Information-seeking strategies by orangutans

Heidi L. Marsh and Suzanne E. MacDonald, York University

Although empirical research suggests that non-human primates are aware of their knowledge states because they seek information only when necessary, critics argue this may instead reflect a 'hardwired' generalized search strategy. The present series of experiments eliminated this possibility, by demonstrating flexibility in the information-seeking strategies of orangutans. In particular, subjects refrained from seeking information when the location of a hidden food item could be inferred by exclusion, and modulated their behaviour appropriately according to varying costs and benefits. Other associative explanations cannot account for these results. Therefore, it is likely that the orangutans were in fact using metacognitive strategies.

*** (90) Acoustic features in black-capped chickadee song contain dominance and geographic information

Allison H. Hahn[1], Marisa Hoeschele[1], Lauren M. Guillette[1], Daniel Mennill[2], Ken Otter[3], Thibault Grava[3], and Christopher B. Sturdy[1], [1]University of Alberta, [2]University of Windsor, [3]University of Northern British Columbia

The fee-bee song of the black-capped chickadee is a relatively simple acoustic signal, shown to have little geographic variation across its range (i.e., most of North America). Using bioacoustic analysis, we examined six features of fee-bee songs produced by chickadees originating from two locations: Eastern Ontario and Northern British Columbia. Linear discriminant analyses correctly classified songs based on dominance status or location of origin. These results not only suggest that differences may exist in the acoustic features of the fee-bee song as a function of dominance status, but also that there is geographic variation in this song.

POSTER SESSION 2

(91) Rapid toxin-induced gustatory conditioning in rats: Examining responses to oral ingestion of LiCl in male and female rats.

Amber Good, Shelley K. Cross-Mellor, Martin Kavaliers, and Klaus-Peter Ossenkopp, University of Western Ontario

Conditioned taste avoidance/aversion can be produced by pairing a novel taste with the systemic effects of LiCl in rats. Animals foraging in the wild need to choose foods that do not have a large toxin load and such decisions are typically based on flavour characteristics of these foods. We examined the drinking behaviour of male and female rats when presented with a sucrose solution (0.3 M) containing either NaCl or LiCl (both 0.15 M). Following 5 days of testing with these solutions the animals were then switched to the opposite solution for 5 days. LiCl produced strongly reduced intake by the 2nd session but to a lesser extent following 5 days of drinking NaCl, providing evidence of latent inhibition.

(92) The Effects of Prior Exposure to Alcohol and Stress on Dose-dependent Ethanol-Based Conditioned Place Preference

Charelle O'Dunn and Harinder Aujla, University of Winnipeg

Exposure to stress or ethanol dysregulates systems related to motivation and anxiety-like behaviours. While previous studies have typically focused on the acute effects of stress, drug relapse often occurs during protracted withdrawal – a period not characterized by overt physical symptoms. Male Wistar rats received either a 6-week chronic unpredictable stress regimen, ethanol liquid diet, or both; a naive control condition was also included. Following two-weeks, subjects were tested on the elevated plus maze and for ethanol-conditioned place preference (CPP). Results replicate and extend previous findings by demonstrating dose-response changes in ethanol CPP resulting from stress and ethanol history.

(93) Prenatal exposure to propionic acid produces developmental delay in Long-Evans rats

Kelly A. Foley, Derrick F. MacFabe, Martin Kavaliers, and Klaus-Peter Ossenkopp, University of Western Ontario

Prenatal infection may be a risk factor for autism spectrum disorders (ASD). Propionic acid (PPA) is a short chain fatty acid and an enteric bacterial product. Intracerebroventricular PPA in adult rats produces behavioural and brain changes similar to those seen in ASD patients. Pregnant Long-Evans rats were injected once/day subcutaneously with PPA (500 mg/kg; G12-16) or phosphate buffered saline. Pups exposed to PPA prenatally displayed developmental delay compared to vehicle treated pups (eye opening, incisor eruption, pinna detachment). These results support the hypothesis that PPA may be an environmental factor contributing to the development of ASD.
(94) Time course of propionic acid induced performance deficits in the morris water maze in rats

Jennifer Mepham, Francis H. Boon, Klaus-Peter Ossenkopp, Donald P. Cain, and Derrick F. MacFabe, University of Western Ontario

Perseveration is common in autism spectrum disorders (ASD). Propionic acid (PPA) is a short chain fatty acid and an enteric bacterial product. Intracerebroventricular (icv) infusions of PPA in rats produce behavioural changes similar to those observed in ASD, including perseveration. PPA induced performance deficits were assessed in rats given icv infusions of either PPA (0.26M, pH 7.4, 4 microL) or phosphate buffered saline (0.1M) twice/day for 7 days and then testing for water maze acquisition and reversal. PPA treated rats showed impaired maze acquisition and reversal. After a recovery period the PPA rats performed at control levels indicating that behavioural impairments had dissipated.

(95) D1 Antagonist SCH23390 Affects Motivation But Not Time Estimation

Siu Hui Cheam and Douglas A. Williams, University of Winnipeg

We examined the effects of the D1 antagonist SCH23390 (0.05 and 0.1 mg/kg) in rats previously trained in appetitive trace conditioning in a drug-free state. As expected, SCH23390 suppressed food-cup responding during and shortly after the termination of the conditioned stimulus. Although diminished, responding continued to peak at the previously learned arrival time of the pellet unconditioned stimulus. Similar results were found when random pellets were featured in the

intertrial interval, although the extra pellet deliveries further inhibited responding. These results suggest that dopamine D1 specifically influences the animal's motivation to respond without affecting time estimation.

(96) Dissociation between subjective agency and intentional binding: Influence of human and nonhuman co-actors in joint action contexts

Preston M. Hall, Wilfrid Laurier University

Intentional Binding (IB), the perceived shortening of the interval between an action and its effect, has been suggested to be an implicit measure of agency. Little is known about IB during joint actions. We assessed self-reported agency and implicit agency via IB during joint actions and investigated the influence of post-movement feedback on the experience of agency and whether IB occurs in human-computer joint actions. Self-reported agency, but not IB, is influenced by post-movement feedback and explicit knowledge about who acted. IB is abolished when coacting with a computer. We suggest that human-human partnerships result in a "we" agentic identity.

(97) The modulatory role of selective attention on auditory P50 sensory gating

Samuel P. Rumak, Pavel Kozik, Amy Burns, Season Johnson, and Colleen A. Brenner, University of British Columbia

This study examines the modulatory role of selective attention on auditory P50 sensory gating. EEG was recorded while 30 participants completed three dual-click tasks (one passive, two modified versions) designed to direct attention to either the first or the second click in each pair. Results indicate that the amplitude of the P50 ERP is augmented with respect to baseline depending on where attention is directed. This research has implications for the interpretation of the P50 sensory gating metric. Average wavelet data from the beta and gamma bands will also be presented to further examine the modulatory role of selective attention.

(98) Investigating the Role and Nature of Prior Knowledge in Conceptual Change: an fNIRS Study

Eve Forster, Marty Fiati, Anthony Naimi, and Kevin Dunbar, University of Toronto Scarborough

Using functional Near-Infrared Spectroscopy (fNIRS) and a split ratio paradigm, this study investigated the role and nature of prior knowledge in conceptual change in science. Sixteen participants, eight physicists and eight non-physicists, were presented with two types of videos, Newtonian (two balls of unequal mass falling at the same rate), and Impetus (two balls of unequal mass, the larger one falling faster), to vary their exposure to plausible and implausible information. Non-physicists showed increased frontopolar and DLPFC recruitment. Studies implicating these regions in integration and working memory support the notion that prior knowledge held by novices is flexible and context-dependent.

(99) The Transfer of Action Control from a Semantic to a Structural System after Repeated Exposure

Scott Noel Macdonald, Mount Allison University

We aimed to determine whether semantic information impacts novel action production and whether this changes with training. Participants were asked to learn the associations between novel objects, actions, and either semantically similar or distinct labels, over five days. On Day 1 and Day 5, participants either named or produced actions in response to objects and words. Generally, initial action reaction times were faster in response to objects than in response to words, and were faster when gesturing to objects associated with semantically distinct labels - both effects disappeared with training. Results are discussed within a hierarchical model that includes semantics.

(100) Examination of Anti-Suppression Therapy for Amblyopia

Andrea K. Globa[1], Behzad Mansouri[2], and Pauline M. Pearson, [1]University of Winnipeg, [2]University of Manitoba

Amblyopia is defined by a deficit in visual acuity in the amblyopic eye (AE), which cannot be optically corrected. Hess et al. (2010, Optometry & Vision Science) demonstrated that binocular perceptual training can reduce binocular suppression and improve visual acuity and stereoacuity. We

examined the influence of binocular perceptual learning in severe amblyopia. Initially, participants demonstrated impaired visual acuity and stereoacuity. After training, all participants demonstrated better visual acuity and less crowding. Neither stereoacuity measured on the Randot tests nor suppression measured on the Worth 4-dot test improved, whereas binocular motion coherence thresholds and binocular integration evidenced individual variation.

(101) Effects of Adaptation and Delay Time on Content and Perspective Ambiguous Figures

Pamela Stevenson and Biljana Stevanovski, University of New Brunswick

The perception of ambiguous figures has been investigated by manipulating the viewing period (i.e., adaptation period) of a biased figure prior to the presentation of an ambiguous figure (e.g., Long, Toppino, & Mondin, 1992). Long and Moran (2007) observed that manipulating the delay between the presentation of the biased and ambiguous figure further modulates the viewer's perception. The current study manipulated adaptation and delay period to observe the differential effects on the perception of two types of ambiguous figures: perspective and content. Findings are discussed in relation to current models of perception that clarify the nature of ambiguous figures.

(102) Contingent salience: Further evidence of bottom-up contributions to contingent capture

Matthew Ryan Yanko, Hayley Lagroix, and Thomas M. Spalek, Simon Fraser University

Lamy et al. (2004) found that distracter salience contributes to attentional capture even when observers are in feature-search mode. We extended these findings using RSVP streams of differently-coloured distracter letters containing a target-letter of a specific colour. A distracter-ring surrounded one item in the RSVP stream prior to the target. We show that increasing the salience of the distracter (via the thickness of the ring) increases the capture effect but only when the distracter matches the target feature. Reaction time to detect a ring confirms that the thicker ring is more salient than the thinner one, regardless of ring colour.

(103) Disruption of the Ventral Frontoparietal Attention Pathway in Children with Alcohol-Related Neurodevelopmental Disorder

Carrie R. Kosinski[1], Krisztina L. Malisza[2], Richard Bruce Bolster[1], Patricia Gervai[2], Joan L. Buss, Lindsay Woods-Frohlich[3], Dorothy Schwab[4], Christine Clancy[5], Sally Longstaffe[3], and Albert E. Chudley[3], [1]University of Winnipeg, [2]Institute for Biodiagnostics – Winnipeg National Research Council of Canada, [3]University of Manitoba, [4]Manitoba FASD Centre, [5]Division of Rehabilitation Psychology, Children's Hospital and Regional Medical Center Seattle, Seattle, WA, USA

Twenty-two participants (ages 10-14) with alcohol-related neurodevelopmental disorder (ARND) and age-matched controls underwent fMRI during two visual search tasks - a feature disjunction task, and a feature conjunction task. There was a significant task by group interaction with most of the differences seen in the conjunction task. During conjunction search, activation in dorsal and ventral attentional networks was much lower in ARND than control subjects. ARND children failed to activate posterior components of the ventral network in this task, and exhibited poor integrity of the inferior longitudinal fasciculus (ILF) in diffusion tensor imaging, suggesting a functional disconnection within this pathway.

(104) Attentional blink is not dependent on backward masking of T2, T2-mask SOA, and T2 impoverishment

Ali Jannati, Thomas M Spalek, Hayley E.P. Lagroix, and Vincent Di Lollo, Simon Fraser University

When two targets (T1 and T2) are inserted in a rapidly presented stream of distracters, T2 identification is impaired when presented within about 500ms of T1. This attentional blink (AB) is believed to arise from a delay in T2 processing during which T2 is vulnerable to masking. We used a ceiling-free threshold-tracking procedure to examine the effect of (a) presence/absence of T2 mask, (b) T2-mask SOA, and (c) signal-to-noise ratio of T2 stimulus on the AB. All three factors modulated the overall level of performance but not the AB magnitude. The relationship among these factors and the AB is discussed.

(105) Attention Pupils: Indexing the processing load of multiple object tracking using pupillometry.

John Brand, Bruno Richard, and Aaron Johnson, Concordia University

Alvarez and Franconeri (2007) have shown that observers can simultaneously track four objects. Using a similar multiple-tracking task, we quantified the attention/processing load during this task with pupillometry. Observers simultaneously tracked 1 to 8 dots, while having their pupil size monitored. Results were analyzed using a novel bootstrapping approach in which differences were inferred from 95% CIs constructed around median pupil size. Pupil diameter systematically increased as the number of to-be-tracked dots increased to capacity (four), and then declined when it was exceeded. Such results corroborate previous research, suggesting that pupillometry can be used as a measure of processing load.

(106) Count on it: Calculation of average size exceeds the limits of focal attention

Catherin Beaudoin and Chris Oriet, University of Regina

Working memory limits the number of objects that can be focally attended to about four. When the number of objects in a set exceeds four, do people know more about the set than expected based only on the attended objects? Subjects compared the average size of a set of 16 circles with 1, 2, 4, 8, or 16 unique circle sizes to a probe (mean judgment) and reported the number of unique circle sizes present (enumeration task). Enumeration accuracy was high whether mean judgment was accurate or not, suggesting both tasks involved evaluation of more circles than could be attended.

(107) Top-down control attenuates dimensional interference in task switching

Leah Allerdings and Chris Oriet, University of Regina

Top-down control attenuates inter-trial (proactive) interference. We tested whether top-down control also attenuates intra-trial interference. Subjects identified which stimulus differed from three others under low and high interference conditions. The relevant dimension was cued in advance; thus, subjects knew whether the task would repeat or switch. When a switch was cued, sometimes it specified the relevant dimension (switch-to cues) and sometimes it did not (switch-away cues). Switch-to cues, but not switch-away cues were effective in eliminating task switch costs with both low and high interference. The results suggest a role for both proactive and reactive control in task switching.

(108) Timing is everything…or not? The effect of temporal expectancies on social attention

Marilena Cote-Lecaldare, Dana A Hayward, and Jelena Ristic, McGill University

Attentional orienting is influenced by both spatial and temporal information about the target. We investigated the effects of temporal preparation to respond to the target (i.e., the foreperiod effect) on the magnitude of social attention. If social orienting is reflexive, it should be unaffected by volitionally generated temporal expectancies. We found that while the magnitude of the foreperiod effect was modulated by our manipulations, the magnitude of social orienting remained unaffected. This suggests that social attention is not susceptible to the internally generated temporal expectancies, and provides additional support for the notion that social orienting is reflexive.

*** (109) The effects of working memory on social attention

Dana A Hayward, Natasha Pestonji, and Jelena Ristic, McGill University

Perceived gaze direction triggers attentional orienting. Some researchers argue that this effect is under volitional control because orienting is elicited by a central cue. If so, the magnitude of social orienting should be susceptible to increased demands for cognitive resources. Participants oriented to nonpredictive and predictive gaze cues while performing a working memory task. In contrast to the nonpredictive condition where the magnitude of social orienting remained stable, the magnitude of social orienting increased with increasing working memory load in the predictive condition. This suggests that social attention is reflexive, as the effect grew with increased demand for cognitive resources.

(110) Manipulations of attention enhance self-regulation

Asma Hanif[1], Anne Ferrey[1,2,3], Alexandra Frischen[1], Kathryn Pozzobon[1], John D. Eastwood[2], Daniel Smilek[3], and Mark Fenske[1], [1]University of Guelph, [2]York University, [3]University of Waterloo

Goal-directed behaviour requires self-regulation to override competing impulses. We addressed the often-implicit assumption that attention is critically involved in self-regulation, by examining the effect of two attention mechanisms – one controlling the breadth of attention; the other controlling inhibition of inappropriate responses – on self-regulation. Participants significantly improved self-regulation performance after a broad focus of attention was induced (Experiment 1) and after completing an inhibitory-practice task (Experiment 2). Attention may serve to selectively allocate resources during self-regulation that would otherwise be consumed by goal-irrelevant mental processes. The concomitant conservation of cognitive resources therefore ensures that more reserves are available for continued self-regulation.

(111) Emotional Faces and Cognitive Flexibility

Miriam Benarroch and Judith M. Shedden, McMaster University

Three studies are presented that examined modulations in attention as a result of viewing emotional stimuli. Positive or negative facial expressions preceded a hierarchical figure within which a global or local target was presented. Reaction time on local or global target trials was examined as a function of the preceding facial expression. Work demonstrating that viewing negative facial expressions can speed responses to the local features of hierarchical stimuli was replicated only when the face was shown for an extended time. Study three investigated whether an increase in cognitive control is at the root of this global-local shift by examining performance on a Stroop task when a negative or positive face preceded it.

(112) Unconscious control of accuracy: A target's affective effects

Kyle Plotsky, University of Lethbridge

We looked at conscious versus unconscious control of dart throwing accuracy as a function of a target's likeability. There were three separate experiments, two of which were attempting to replicate the original findings of Rozin, Millman, and Nemeroff (1986). The third was performed to look at conscious control of the effect and if awareness of the effect affected participants performance. Although participants threw less accurately at likeable target, neither conscious control nor awareness of the effect produced significant results.

(113) The predictability of inter-stimulus intervals in immediate serial recall modulates eye movements and recall performance

Cindy Chamberland[1], Jean Saint-Aubin[1], and Ian Neath[2], [1]Université de Moncton, [2]Memorial University

In the current study, we manipulated the predictability of inter-stimulus intervals in immediate serial recall. We compared a condition in which the inter-stimulus intervals were constant within sequence with a condition in which they varied randomly. Results of two experiments showed a better recall performance when the inter-stimulus intervals were random than when they were constant. The analyses of eye movements during item presentation also revealed that fixation duration decreased as a function of serial positions in the constant condition, but not in the random condition. Our findings are discussed in light of temporal distinctiveness models.

*** (114) Encoding Structure in Holographic Reduced Representations

Matthew A. Kelly[1], Dorothea Blostein[2], and D. J. K. Mewhort[2], [1]Carleton University, [2]Queen's University

Holographic Reduced Representations (HRRs) are a type of associative memory used to model biological memory. Unfortunately, HRRs can only store information when the vector representations have certain statistical properties. Previous research uses vectors of random Gaussian values. We analyze HRRs in terms of Latin squares and show that structured (non-random) vectors can be stored if manipulated appropriately. Results are illustrated with image data, but are applicable to any structured data. The ability to store structured data allows for more detailed modelling of stimuli in HRR

models. We discuss advantages, challenges, and techniques of using structured vectors in an HRR.

(115) Extended Training Biases Judgments of Grammaticality Towards Exemplar Similarity

Evan T. Curtis[1] and Randall K. Jamieson[2], [1]Carleton University, [2]University of Manitoba

Adults (N = 61) studied letter strings constructed according to rules (e.g., MTTTTV) in an artificial grammar task and then were required to discriminate novel rule-bound from rule-violating test items. As in previous research, participants sorted the two classes of test items but they did not articulate the rules. We varied how much exposure participants had to training exemplars and found that their judgment of test items became increasingly biased towards items similar to exemplars with extended training. The data provide a basis for discriminating among existing computational accounts of learning in the artificial grammar task.

(116) Working memory and strategic performance in fraction comparison

Thomas J. Faulkenberry and Ariel R. Kelsey, Texas A&M University

We tested the effects of working memory load (phonological and visual) on strategic performance with a simple fraction comparison task. Since RT tends to be quite variable across participants in such tasks, we normalized across participants by using the numerical distance effect as a metric for the representation of numerical magnitude. We found that an active phonological load (recalling 4-digit strings) affected magnitude representation in the execution of component-based strategies. On the other hand, active visual loads (recalling the positions of asterisks on a 4 x 4 grid), affected magnitude representations in the strategy-selection phase.

(117) Cultural differences in computational estimation

Chang Xu, Jo-Anne LeFevre, and Emma Wells, Carleton University

Previous research has demonstrated differences between Chinese- and Canadian-educated participants for exact calculation of multi-digit arithmetic problems. The purpose of this study was to examine if this advantage would transfer to computational estimation. I compared the estimation performance of Chinese- and Canadian-educated participants solving double-digit multiplication problems (e.g., 23x48) under different time limits. Chinese participants were more efficient than the Canadian-educated participants. Time limits caused the Chinese-educated participants to use less complex strategies and to be more adaptive than the Canadian-educated participants. I concluded that the advantage of exact arithmetic skills for the Chinese-educated participants extends to computational estimation.

(118) From Cooking to Counting: The Impact of Children's Interests and Parental Involvement on the Frequency of Home Numeracy and Literacy Practices

Ivanna K. Lukie[1], Sheri-Lynn Skwarchuk[1], Jo-Anne LeFevre[2], and Carla Sowinski[2], [1]University of Winnipeg, [2]Carleton University

Research has substantiated the importance of the home environment in literacy and numeracy development; now, specific home factors are being explored. Parents of 170 preschoolers completed a home environment survey. Questions involving activity interests and parental involvement were examined in relation to home practices. Regressions revealed that parents whose children preferred enriched exploratory play reported more frequent advanced practices, compared to those preferring active or sedentary play. Parents with child-focused approaches reported more home literacy/numeracy involvement than other parents. These background variables are important when considering literacy and numeracy development.

(119) Children's Conceptual Shortcuts in Multiplication and Division Problems

Anna Maslany and Katherine M. Robinson, University of Regina

This study examined the effects of demonstrations of conceptually-based arithmetic shortcuts in Grade 6 to 8 children. The inversion shortcut (i.e., for d x e / e, the answer is the first number) and the associativity shortcut (i.e., for d x e / f, division is solved before multiplication) can yield faster, more accurate responses than using left-to-right

computation. Participants solved three sets of multiplication and division 3-term problems. Half the participants were in the demonstration group. Accuracy, speed and verbal reports of problem solving strategies were measured. The demonstration group used both shortcuts more than the no demonstration group.

(120) A Dissociation Between Judgement and Action: The Role of Musical Expertise

Melissa Reimchen[1], John R. Vokey[1], and John E. Granzow[2], [1]University of Lethbridge, [2]Stanford University

Musical expertise is associated with the ability to resolve complex harmonic tones to implied fundamental frequencies regardless of conflicting perceptual information produced by an associated overtone series. In three experiments comparing musicians to nonmusicians on their judgements of the pitch direction of tone pairs lacking the fundamental, a marked dissociation between sung-direction accuracy and judged direction accuracy was observed for nonmusicians, but not musicians. It is suggested that through training, musicians become sensitive to subtle vocal tract movements to make judgements of pitch direction.

(121) Neural Networks That Use Strange Circles To Encode Musical Harmony

Michael R. W. Dawson, University of Alberta

PDP networks are typically used to study musical cognition to capture regularities that cannot be expressed using formal rules. However, the internal structure of trained networks can reveal novel formal musical properties. Two networks are used to illustrate this claim. One was trained to generate the next chord in the important II-V-I jazz progression. The other was trained to classify "added note" chords. The analysis of the internal structure of both networks revealed that harmonic structure was encoded using hierarchically organized circles of major seconds and major thirds. The implications of this representation for human representation of harmony are discussed.

(122) Lateralization of Melodic Processing after Hemispherectomy

Victoria Harms and Lorin J. Elias, University of Saskatchewan

Melodic processing is often attributed to the right hemisphere, however evidence suggests that the left hemisphere governs analytic processing whereas the right hemisphere governs holistic processing. Using an unfamiliar melody recognition task, we assessed the relative contribution of the left and right hemispheres to music processing in two hemipsherectomy patients (P1 - right hemisphere intact, P2 - left hemisphere intact) and a neurologically-normal control group. Overall performance revealed a strong advantage for P2 compared to P1. Control group performance revealed no significant bias in hemispheric processing. These results support the view that the left hemisphere is important for melodic processing.

(123) Mapping the fretboard: Investigating spatial representation of note information in skilled guitarists

Matthew J. C. Crump, Brooklyn College of CUNY

The ability to identify note names on the guitar fretboard was investigated in a group of skilled guitarists. Guitarists were shown a schematic version of the guitar neck, and small circles containing a congruent or incongruent note name were placed on different frets across trials. Guitarists either named the note location, named the letter inside the fret marker, or played the note location on the guitar. Naming and playing RTs were influenced by the congruency manipulation, and by familiarity with different locations on the fretboard.

(124) Conflict Detection in Dual-Process Theory: Are We Good At Detecting When We Are Biased?

Gordon Pennycook, University of Waterloo

Recent research from Dual-Process theorists has suggested that people are highly efficient at detecting conflicting intuitive and analytic outputs (De Neys & Glumicic, 2008; De Neys, Vartanian & Goel, 2008). However, much of the support for this hypothesis has come from base-rate neglect problems constructed with very large probabilities (e.g., 995 doctors and 5 nurses). Over five experiments, it was demonstrated that the integral increase in response time for

stereotypical responses was fully mediated by the large probabilities. We conclude that humans are not as efficient at detecting when we are biased as is claimed by De Neys and colleagues.

(125) Priming Honesty Influences Self-Report Accuracy of Mind-Wandering

Melena Vinski, McMaster University

Mind wandering episodes are inferred from behavioural and self-report measures. Self-report is validated by concurrence with systematic fluctuations in behavioural measures, but is vulnerable to social influences and thus independently remains an unreliable indicator of off-task thought. The current research investigates the effect of an honesty prime task on the accuracy of self-report of off-task thought. Results indicate that implicitly activating honesty-based goal states prior to task performance selectively influences self-report measures and increases the congruency between self-report and behavioural indicators of off-task thought. These results implicate the validity of self-report measures currently used to infer mind wandering episodes.

(126) Academic Cheating, Penalties, and Individual Differences

Bob Uttl, Carrie Ann Leonard, and Joanna McDouall, Mount Royal University

Academic cheating is on the rise. We examined students' perception of what constitutes cheating, what penalties are appropriate for various cheating acts, and whether penalty judgements are related to individual differences (e.g., gender, intelligence, personality) and type of excuses offered for cheating. The results showed that sanction judgements were influenced by both individual differences and type of excuses.

(127) Conceptual organization of self-representation: evidence for heuristic social categorizations

A. Nicole LeBarr, John G. Grundy, and Judith M. Shedden, McMaster University

Heuristics generated from self-conceptualization could affect social categorizations. Other people share commonalities with us, which may lead us to classify them as "self-similar (SS)" or "self-dissimilar (SD)" and use this classification to predict unknown characteristics about them. Participants learned about SS and SD characters and predicted the characters' answers to new questions. Difference scores (between participants' predictions and their own answers on the same questions) were lower for the SS than the SD characters. This indicates that SS and SD information is used to make predictions about others and that self-conceptualization lends itself to heuristic categorization.

(128) What is the Effect of a Negative Mood Induction on Attention to Emotional Images?

Kristin R. Newman and Christopher R. Sears, University of Calgary

Researchers have documented attentional biases in the processing of emotional information, such that positively valenced information is attended to more than negatively valenced information (e.g., Yiend, 2010). This phenomenon is thought to reflect either a mood-congruent processing bias or a mood regulation strategy (e.g., Isaacowitz et al., 2008). To distinguish between these accounts we induced a transient negative mood in participants and assessed the impact on their attention to emotional images. Increased attention to negative images and decreased attention to positive images would be evidence of a mood-congruent processing bias, whereas the opposite outcome would be evidence of a mood regulation strategy.

(129) Assessing the Effect of Lexical Variables in Backward Recall

Katherine Guérard, Jean Guérard, and Jean Saint-Aubin, Université de Moncton

Recently, Bireta et al. (2010) abolished typical short-term memory effects, like phonological similarity, by asking participants to recall lists of items in the reverse order. They suggested that in backward recall, more attention is devoted to the recall of order information at the expense of item information, leading to the abolition of item-based phenomena. We tested this hypothesis by manipulating four lexical factors well known to influence item retention: word frequency, lexicality, semantic similarity and imageability. All four phenomena were maintained in backward recall. Those results contradict the item/order

trade-off hypothesis and are best interpreted within a semantic retrieval hypothesis.

(130) The interactive effects of semantic neighbourhood density and concreteness on word recognition

Ashley N. Danguecan and Lori Buchanan, University of Windsor

Unanswered questions remain regarding how semantic neighbourhood density (SND; Buchanan, Westbury, & Burgess, 2001) interacts with other word properties to influence recognition times. One such property is concreteness and the goal of this study was to examine the effects of SND for abstract versus concrete nouns. Participants categorized words as food/beverage or not and, contrary to several previous studies, but like Pexman et al. (2007), we found an abstract word advantage. We also found an interaction whereby abstract-low SND words were categorized faster than abstract-high SND words, though no SND effects were found for the concrete words.

(131) Additive and Interactive Effects in Word Identification: Evidence for Stages of Processing

Layla Gould[1], Jacqueline Cummine[2], and Ron Borowsky[1], [1]University of Saskatchewan, [2]University of Alberta

Models of word identification can be broadly classified into two categories, those that claim processing is: 1. parallel among subsystems, or 2. stage-like/cascaded among subsystems. We examined word identification reaction time using an additive factors method and general linear models. With sufficient power to demonstrate that all variables interact with at least one other variable, the pattern of additive and overadditive joint effects among the variables supports an underlying cognitive architecture consisting of at least three stages of processing. We argue that this pattern of joint effects strongly supports the notion of stage-like/cascaded processing in basic word identification.

(132) Generating Better Readers without Generating

Andrea N. Burnett and Glen E. Bodner, University of Calgary

Replicating deWinstanley and Bjork (2004), across two study-test blocks we found that a generation effect on Test 1 was eliminated on Test 2 due to improvement for read items. deWinstanley and Bjork argued that experiencing the memorial benefits of generation on Test 1 leads participants to develop better encoding strategies for read items. Challenging this claim, we found that participants who did not receive any generate items also became "better readers" across tests. Thus, either the improvement for read items is a practice effect or participants who do not experience the memorial benefits of generation also alter their encoding strategies.

(133) Children with dyslexia have sophisticated spelling strategies

Derrick C. Bourassa[1], S. Hélène Deacon[2], Meghan Bargen[1], and Melissa Delmonte, [1]University of Winnipeg, [2]Dalhousie University

An important aspect of spelling development involves children's sensitivity to consistency in the spelling of roots in related words (e.g., rock in the related word rocking). In the study reported here, we used a spelling-level match design (e.g., Bourassa & Treiman, 2008) to examine the extent to which children with dyslexia and younger typically developing children use morphology in this way. We found that the dyslexic children and their spelling-ability matched peers used the root consistency principle to a similar degree. Notably, neither group used this principle to its maximum extent. Our findings provide support for the idea that spelling performance in children with dyslexia is characterized by developmental delay rather than deviance.

(134) Emotional Arousal enhances Memory, not Response Bias

Holly J. Bowen, Ronak Patel, and Julia Spaniol, Ryerson University

The current study examined the effect of emotional arousal on memory sensitivity and response bias as a function of study-test lag. Participants completed an old/new recognition task with 300 IAPS images (high vs. low-arousal) either 24 hours or 7 days after study. Ratcliff's (1978) diffusion model was used to obtain separate estimates of memory processes and response bias. Memory processing of high-arousal

items was better than low-arousal items, in both delay conditions. Low-arousal items produced a more liberal response bias at the longer compared with the short delay. These findings are consistent with evidence of arousal effects on long-term memory.

(135) The Role of Social Information in Event Segmentation

Julia Boggia and Jelena Ristic, McGill University

Faces play an important role in social cognition. We investigated whether perception of faces influences how participants parse and understand dynamic visual information. Participants viewed a 15-minute clip from a classic western and were asked to segment the clip into 'meaningful units' or 'meaningful social units'. Breakpoint analysis determined that the units of segmentation differed across the two groups. Critically, breakpoints identified by the group that received 'social' instructions contained the most images of close up faces. This result suggests that faces contain key information that allows one to parse and understand complex social events.

(136) A Call for Second-Generation Measures of Recall: The Recognized Recall Protocol

Jason David Ozubko and Colin M. MacLeod, University of Waterloo

With advances in understanding of memory have come more sophisticated methods for measuring memorability. Unlike in recognition, however, there has been little development of second-generation protocols in recall. Here we present a new general recall method called recognized recall. One of the strengths of recognized recall is that it separates the influence of guessing from that of subjective memorability, whereas traditional recall paradigms conflate these. Furthermore, we demonstrate that this paradigm accurately measures memorability regardless of response pressure, recognition delay, and cue reliability. We conclude that the recognized recall paradigm is a robust alternative to traditional recall paradigms and we advocate adopting this approach over traditional measures of recall.

(137) The Relationship Between Imagery and Priming on False Recognition

Alexandria Stathis and Lori Buchanan, University of Windsor

This study evaluated whether imagery could reduce occurrence of false recognition in the Deese-Roediger-McDermott paradigm. Ninety-five participants were randomly assigned to one of four study conditions: Roediger-McDermott lists without imagery instruction; Roediger-McDermott lists with imagery instruction; randomized lists without imagery instruction; and randomized lists with imagery instruction. Upon completion of the lists, participants were then given a recognition task. Results indicated that imagery did significantly increase the correct rejection of the unstudied words, but only under the condition where the lists were randomized. Imagery did not reduce false alarms to unstudied items in the ordered lists.

(138) Item-Method Directed Forgetting is Effortful and Impoverishes Memory for Abstract Images

Jonathan M. Fawcett, Michael A. Lawrence, and Tracy L. Taylor, Dalhousie University

Abstract images were presented monochromatically followed by an R or F instruction and then a visual target requiring a speeded detection response. Participants were tested for these items using a yes-no recognition and color selection task. Recognition performance was better for R than F items. Participants were also slower to detect targets presented following study phase F than R instructions. Importantly, color judgments were more accurate for successfully recognized R than F items. Our findings suggest that intentional forgetting is an effortful process resulting in an impoverished memory trace even when the to-be-forgotten information is successfully retrieved.

(139) Prospective Memory Is Distinct from Vigilance/Monitoring

Bob Uttl, Joanna McDouall, Carrie Ann Leonard, Mount Royal University

Unique function of prospective memory proper (ProM proper or episodic ProM)is to bring back to awareness previously formed plan at the right time and place. Vigilance differs from ProM proper in that the plan remains in consciousness. We examined the effect of a delay between ProM

instructions and an ongoing task start (I-O delay) and a delay between the ongoing task start to the appearance of the first ProM cue (O-C delay) on ProM task performance. The results showed that both the I-O and O-C delays influenced ProM task performance, supporting the distinction between ProM proper and vigilance/monitoring.

(140) On the specificity of conflict adaptation effects in implicit sequence learning

Maria C D'Angelo[1], Juan Lupiáñez[2], Luis Jimenez[3], and Bruce Milliken[1], [1]McMaster University, [2]University of Granada, [3]University of Santiago de Compostela

Previous research has shown that conflict adaptation effects are conflict specific. Additionally, conflict adaptation effects (i.e. sequential effects) can be measured even when the source of congruency is implicit, such as in implicit learning tasks. We tested whether conflict adaptation effects can be measured when participants implicitly learn motor and perceptual sequences concurrently, and whether sequential effects (conflict adaptation) generalize or are sequence specific. We report consistent and independent perceptual and motor implicit learning effects. However, sequential effects were only observed for the motor sequence, and were specific to the congruency of the motor sequence in the previous trial.

(141) Greater executive function relates to reduced within- and cross-language lexical competition during spoken word recognition: Evidence from eye movements using the visual world paradigm.

Julie Mercier, Irina Pivneva, and Debra Titone, McGill University

Spoken language processing requires the suppression of unintended words that are phonological similar to an intended word. In bilinguals, unintended words from two languages must be suppressed. We investigated whether individual differences in executive function (EF) affect second-language (L2) spoken word processing, and whether this relationship is modulated by L2 skills. We tested 48 French-English bilinguals on the visual world paradigm and a battery of EF tasks. Less proficient bilinguals experienced more within- and cross-language competition than high proficient bilinguals. EF modulates cross-language competition regardless of L2 proficiency, but impacts within-language competition to a lesser extent in less proficient bilinguals.

(142) Risky decision making in addicts and non-addicts

Ahmad Sohrabi[1], Shahin Fakhraei Fakhraei[1], Zahed Abdollahi Abdollahi[2], Omid Saed Saed[3], and Arsalan Ahmadi Kany[1], [1]University of Kurdistan, [2]Medical University of Tehran, [3]Medical University of Shahid Beheshti

The current study was aimed to elucidate the differences between addicts (primarily opiate) and non-addicts in risky decision making with a modified Cambridge risk task. The participants had to decide between a risky and a safe gamble based on their chance of winning which were either high (66%) or low (33%). Also the number of points to win/lose was different (2/2, 6/6, 2/6, or 6/2). The addicts group showed slower RT and more risky behaviour especially when the chance to win was low. However, when the chance to win was high, the non-addicts group took more risk than the addicts.

(143) Functional equivalence of the letter detection and proofreading tasks

Jean Saint-Aubin and Marie-Claire Losier, Université de Moncton

Word processing in connected texts can be investigated with two simple detection tasks: a letter detection and a proofreading task. Traditionally, those two tasks have been investigated separately. Here, 160 participants read a text and either search for the target letter d or for misspellings. There were 24 function and 24 control content words with the target letter. Half of them were misspelled. The same pattern of results was found with both tasks: Readers missed more d's and more misspellings in function than in content words. Results are interpreted in light of the Attentional Disengagement model of the missing-letter effect.

(144) Females Scan More Than Males: A Potential Mechanism For Sex Differences in Face Memory

Jennifer J. Heisz[1], Molly M Pottruff[2], and David I. Shore[2], [1]Rotman Research Institute, [2]McMaster University

Females typically have better memory for faces than males, an effect often modulated by own-sex effects. By monitoring eye movements, we show that females make more fixations to a face during their first encounter, and that this scanning behaviour correlates with their subsequent memory performance for that face. After repeated exposures to the same face, sex differences in face memory are reduced for recognition but not for recall. We argue that differences in initial encoding of a face provide a potential mechanism for the sex differences typically seen in episodic memory and that recall and recognition memory are differentially affected.

(145) Behavioural and gene expression analyses of lupus-prone MRL-lpr, wildtype and congenic control mice

Amber Ferris, Sadie Skarloken, Lauren Fields, Susan Larson, and Krystle Strand, Concordia College

Systemic lupus erythematosus is an autoimmune disease of unknown etiology that results in damage to many organs, including the brain. Many individuals with lupus exhibit changes in behaviour or cognitive functioning. To better understand these effects, we analyzed behaviour and cognitive functioning of 18- and 24-wk-old MRL-lpr lupus prone and control mice. Lupus-prone animals exhibited differences in behaviour congruent with elevated levels of anxiety. They showed disrupted passive avoidance learning at 18 weeks and spatial learning at 24 weeks. Microarray analysis of hippocampal RNA in these mice revealed differences in expression of genes involved in several biological processes.

(146) Approaching a unified psychology: Is unification possible?

Heath Matheson and Jonathan Fawcett, Dalhousie University

Psychology and the Neurosciences have become increasingly specialized, resulting in many subfields that are often incapable of communicating their findings to non-specialists. This lack of communication is problematic if these fields are to represent a unified understanding of the human brain and its behavioural correlates. We suggest key points for approaching a unified psychology, recognizing that a single over-reaching theory is unlikely. These points encompass unification at a methodological, theoretical and epistemological level.

(147) Mental additions with and without carrying in children: How is working memory involved?

Sara Caviola, Irene Cristina Mammarella, Cesare Cornoldi, and Daniela Lucangeli, University of Padova

The involvement of working memory (WM) into the children's solution of mental additions was investigated using a dual task paradigm. In two Experiments the role of verbal and visuo-spatial WM in resolution of addition problems with and without carrying, in children attending primary school, were examined. On the basis of Trbovich and LeFevre (2003) and Kalaman and LeFevre (2007) studies, both the presentation format (i.e., horizontally vs. vertically presented) and the type of mental calculation (i.e., exact vs. approximate) were manipulated. Results confirmed that different WM components are caught up into the solution of mental additions, according to the different task constraints.

(148) One, 2, Thrie: Effects of Surface Format on the Intentional and Unintentional Activation of Quantity

Geoffrey Barnum and Jo-Anne LeFevre, Carleton University

The intentional and unintentional activation of quantity for numbers in different surface formats (digits, words, pseudohomophones) were examined by comparing the size congruity effect and distance effect on numerical and physical comparisons. The size congruity effect occurs when responses are slower when physical and numerical information conflict. The distance effect occurs when participants are slower to respond to numbers that are close relative to those farther apart. The results indicated that when numbers, in any format, are intentionally processed they activated quantity. However, only digits unintentionally activated quantity. The results are discussed in terms of current models of numerical representation.

(149) Cultural Differences in Computational Estimation Efficiency and Adaptivity

Emma Wells, Chang Xu, and Jo-Anne LeFevre, Carleton University

Chinese- (n = 24) and Canadian-educated adults (n = 24) solved computational estimation problems (e.g., 23 x 78) in a choice/no-choice paradigm. They used three rounding strategies; round both operands down, round both operands up and round one operand down and the other operand up. Chinese participants were more efficient in that they responded more quickly and accurately than the Canadian participants. However, both groups were equally adaptive in using problem characteristics to select strategies that resulted in accurate solutions. These findings challenge recent work suggesting that Chinese-educated participants are less adaptive than those educated in other cultures.

SESSION IX: REPRESENTATIONS IN NUMERICAL COGNITION

***Symposium description**: Speakers in this symposium will address the issue of how numbers are mentally represented. This topic is explored using familiar methodologies (e.g., retrieval induced forgetting, priming) and novel approaches (e.g., mouse tracking). The topics and participants cover a wide range of situations, from toddlers' gestures to adults' selection of strategies on simple subtraction problems. In all of the papers, the researchers will address issues of how numerical representations are similar to and different from those of other common cognitive tasks and thus the symposium will be of interest to a range of researchers interested in human cognitive processes (Organizer: Jo-Anne LeFevre).*

(151) Retrieval-induced forgetting in adults' cognitive arithmetic

Jamie I. D. Campbell, Roxanne R. Dowd, and Valerie A. Thompson, University of Saskatchewan

We investigated retrieval-induced forgetting (RIF) of simple-addition facts (2+3=5) from practice of their multiplication counterparts (2×3=6). Experiment 1 demonstrated a response time cost (RIF) for addition with multiplication practiced in word format (three × four) and addition tested later in digit format (3 + 4). This is evidence that digit and written-word formats for arithmetic accessed a common semantic retrieval network. In Experiment 2, Chinese-English bilinguals presented RIF when multiplication practice and addition test were in the same language relative to different languages. Language-specific RIF implies language-specific memory stores for arithmetic.

(152) How I ended up with less: Strategies in simple subtraction

Nicole D. Robert and Jo-Anne LeFevre, Carleton University

Two experiments evaluated participants' performance and self-reported strategies on simple subtraction problems with answers ranging from -9 to 9 excluding zero (e.g. 5 – 3 and 3 – 5). Participants took longer to solve problems with a negative answer valence and reported retrieval less frequently compared to problems with positive answer valences. Experiment two evaluated the degree to which the strategies depend on verbal and spatial working memory resources. Consistent with the response time and strategy reports data, problems with negative answer valences required more working memory resources to solve indicating a greater reliance on working memory to process these subtraction facts.

(153) The Dynamics of the SNARC Effect: Evidence from Mouse Tracking

Thomas J. Faulkenberry, Texas A&M University

Several current models of numerical representation formation agree that interference between numerical magnitude and spatial position occurs in the response selection stage, after which a manual response is initiated. However, these models assume no differences in the execution of the response stage, indicating that such interference effects are pre-motor in nature. Two experiments involving basic numerical tasks with a computer mouse yield data that are in conflict with this viewpoint, giving rise to the possibility that numerical decision-making is more tied to bodily affordances than previously thought.

(154) Are They Married? The Representation of Magnitude and Polarity Information of Positive and Negative Numbers

Geoffrey Barnum and Jo-Anne LeFevre, Carleton University

Negative numbers contain both magnitude and polarity information that may be represented

together (holistic hypothesis) or separately (componential hypothesis). These hypotheses were examined using masked priming. Undergraduates (N = 34) judged the parity (odd/even status) of positive (e.g., +2) and negative targets (e.g., -2) after a masked positive, negative number, or neutral (i.e., **) prime had been briefly presented. Participants' reaction times indicated that masked priming had occurred and that the magnitude of the priming effect was not affected by the congruity of the prime-target polarity. The results are discussed in terms of the validity of the holistic and componential hypotheses.

(155) Does toddler's gestural use predict mathematical ability?

Joanne Lee, Donna Kotsopoulos, Samantha Makosz, and Anupreet Tumber, Wilfrid Laurier University

Gestures have been shown to promote mathematical learning in elementary school children (Cook, Mitchell, & Goldin-Meadow, 2008). However, little is known about the role of gesture on children's early mathematics development. This research examined whether gestures predict toddlers' numeracy development a year later. Twenty-eight children between 26-35 months old and their caregiver participated in a 30-minute play session at home. Each play session was coded for mathematically-related talk and gestures. The children's mathematics abilities were also assessed using TEMA-3 a year later. Results from the multiple regression revealed that child gestural use, gender and SES significantly predicted children's mathematics abilities.

SESSION X: PERCEPTION AND COGNITION

(156) An Eyetracking Study of Emotion and Identity Processing

Heath Matheson[1], Jillian Filliter[1], Patricia McMullen[1], and Shannon Johnson[1,2], [1]Dalhousie University, [2]IWK Health Centre

People preferentially look at the internal features of face. How looking preferences are affected by different facial expressions and different tasks remains unclear. In this study, participants decided whether two sequentially presented faces showed a) the same person, b) the same emotion or c) identical photographs. Results indicated: a) more time was spent looking at eyes than other features for all tasks b) more time was spent looking at eyes for the identity task c) more time was spent looking at lips and noses for the emotion task, and d) different emotional expressions elicited different looking patterns.

(157) Dissociation of Sensory and Motor Components of Multisensory Enhancement

Sean Rasmussen and Geneviève Desmarais, Mount Allison University

Multisensory enhancement potentially consists of at least two distinct processes: sensory enhancement (two stimuli interact with each other directly during sensory processing) and motor enhancement (two stimuli activate similar motor responses). To differentiate between these processes, participants responded to a target stimulus by pressing a key ipsilateral or contralateral to it to indicate detection of the stimulus. A secondary-modality, task-irrelevant stimulus could therefore be presented at the location of the target stimulus, at the location of the motor response, or both. Although sensory and motor enhancements were not perfectly isolated, the results demonstrated some evidence of both.

(158) Evaluation of Oddness Depends on Awareness

Peter Graf, Laura Kwun, Lauren Siegel, and Zorry Belchev, University of British Columbia

Participants made liking ratings about visually-masked words. Most words were displayed with a standard density mask, while a small portion (8%) was displayed with a higher density mask or a lower density mask. In order to influence subjects' awareness of the non-standard masks, the latter—non-standard—masks differed from the standard mask by either a minimal amount or a substantial amount. Consistent with discrepancy attribution theory, we expected participants to give higher liking ratings for words displayed with a non-standard mask, but only if they were not aware of the non-standard mask.

(159) A Dual Process Approach to Age-Associated Changes in Reasoning Performance

Jamie A. Prowse Turner and Valerie A. Thompson, University of Saskatchewan

The ability to resolve conflict between logic and belief, in favour of logic, is known to decline sharply with age (De Neys & Van Gelder, 2009). We sought to provide a comprehensive examination of the factors that may contribute to this decline. Older and younger adults were given measures of verbal ability, working memory, processing speed, response inhibition, and belief inhibition and completed two deductive reasoning tasks. Across both tasks, the ability to inhibit beliefs was the only consistent predictor of performance on conflict problems. These results provide further evidence for dual process accounts of reasoning and aging.

(160) A New Look at the Recognition of Disoriented Objects: A Natural Behaviour Approach

Evan F Risko[1], Joseph Chisholm[2], and Alan Kingstone[2], [1]Arizona State University, [2]University of British Columbia

A natural behaviour approach is applied to the act of recognizing a disoriented object. We demonstrate that individuals, when free to do so, will often rotate their body while trying to identify disoriented objects. The frequency of this behaviour is modulated by both the degree of rotation and the complexity of the stimulus, consistent with a cognitive offloading account.

(161) Contextual Distinctiveness Produces Long-lasting Priming of Pop-Out (PoP)

David R. Thomson and Bruce Milliken, McMaster University

PoP (Maljkovic & Nakayama, 1994) has been argued to reflect the transient activation of feature gains for previously attended stimuli, primarily because PoP has been shown to persist for only 5-8 trials, and is therefore subject to decay. Others have argued that PoP reflects the operation of episodic memory, in which proactive interference is responsible for the short-lived nature of the effect. Our data show that when search arrays are displayed within unique contexts, PoP can be observed from trial n-15 to trial n. We argue that when pop-out search is performed, an episodic representation is laid down in memory.

(162) Application of a voice frequency heuristic in criminal identification

Douglas W. Alards-Tomalin, Rita Davie, Todd Mondor, Jason Leboe-McGowan, and Launa Leboe-McGowan, University of Manitoba

It has been found that people exhibit a tendency to rely on heuristics when making probability estimates (Tversky & Kahneman, 1974). The impact of heuristics has since been demonstrated in memory judgments (Whittlesea & Leboe, 2000), where people base recognition responses globally on contextual information and feeling states, often resulting in incorrect systematic biases (Metcalfe, 1998). In the current study, participants based their identification responses on the frequency of the voices presented in the lineup, exhibiting a bias towards incorrectly selecting lower frequency voices as the criminal.

SESSION XI: RECENT ADVANCES IN SYNAPTIC PLASTICITY

***Symposium description**: Work in various (non-human) species has been instrumental in advancing our understanding of plasticity mechanisms in the central nervous system (CNS). In this symposium, we will present recent studies on the role of synaptic plasticity in experience-dependent cortical development, as well as information storage (learning/memory) in mature, synaptic circuits. Further, the role of plasticity mechanisms in neurological and psychiatric conditions (autism, fragile X, substance abuse/addiction) will also be discussed (Organizer: Hans Dringenberg)*

(164) Reinstatement of juvenile-like plasticity in the mature rat auditory cortex

Hans C. Dringenberg, Queen's University

Sensory cortices show a decline in synaptic plasticity (e.g., long-term potentiation, LTP) during postnatal maturation. In the primary auditory cortex (A1) of rats, significant levels of LTP are apparent during early postnatal life, but little LTP can be induced in adults. This developmental LTP decline can be altered by pharmacological manipulations or modifications of the acoustic environment. For example, deprivation of patterned sound by continuous white noise exposure can arrest the developmental decline in LTP, resulting in juvenile-like LTP in adulthood. Together, these data provide insights into the properties and mechanisms of synaptic plasticity in developing and mature neocortical circuits.

(165) Plasticity in animal models of developmental disorders

Ana Klahr, Na Tian, and Tammy Leanne Ivanco, University of Manitoba

Although many are aware of what Autism is, fewer have heard of Fragile X Mental Retardation (FXS) or Rett Syndrome (RTT). FXS is the leading inherited cause of mental retardation and a risk factor for Autism . Rett Syndrome falls within the Autism Spectrum Disorders (ASD). We have been investigating plasticity in mouse models of FXS and RTT and rat models of ASD. In studies of the FXS mouse we have discovered that the ko mice show altered responses to stimulation and derivation than wt mice. Rat models of Autism appear to express altered levels of related proteins.

(166) Modulation of Hippocampal Long-term Potentiation by a Naturally Occurring Theta Rhythm During REM Sleep

Min-Ching Kuo and L. Stan Leung, University of Western Ontario

Recent studies demonstrate a strong link between hippocampal theta rhythm and long-term potentiation (LTP), both known to play important roles in learning and information processing. To further investigate the role of the naturally occurring theta rhythm on modulating synaptic plasticity, we study the effects of a 4-pulse (400 Hz) burst stimulation in CA1 during different phases of the theta rhythm recorded in CA1 stratum radiatum during natural REM sleep. Five bursts during the positive phase of theta rhythm induced LTP of the apical dendritic excitation for more than 1 hours. Bursts during the theta negative phase induced LTD.

(167) An age-area dependent model for prognosis of brain injury during early and late adolescence

Farshad Nemati and Bryan Kolb, University of Lethbridge

Human brain undergoes extensive reorganization during adolescence. The nature and outcomes of such reorganization may differ according to various age-area dependent models of brain injuries. A rat model was used to systematically study this possibility via lesion studies during adolescence. Behavioural tests in adulthood indicated poor performances following motor cortex injury in early adolescence and virtually complete recovery following the injury in late adolescence. Dendritic reorganization found in the relevant brain areas explains the behavioural outcomes. Almost opposite outcomes were found following medial prefrontal cortex injuries. Such neurobehavioral profile is consistent with the prognosis of some neurological or psychiatric conditions.

SESSION XII: LANGUAGE, READING, AND MEMORY

(168) Beyond group level performance: Individual differences and models of the lexical decision task

Pablo Gomez, Manuel Perea, and Robert Zimmerman, DePaul University

There is a robust, but rarely reported phenomenon in the lexical decision task: Across participants, there is zero correlation between accuracy for nonwords, and accuracy for words. We have analyzed myriad of data sets from our lab, and also mega-study data sets (e.g., Dutch Lexical Project), and have consistently found that $r = 0$. This is a somewhat unexpected finding given that within word types (e.g., different word frequencies), or within nonword categories (e.g., TL nonwords and substitution nonwords), the accuracies show significant correlations. In addition, the correlations between RTs for words and nonwords are usually larger than .95. This finding is very hard to reconcile with accounts of subject performance inspired in signal detection theory, which would postulate that the difference between good and bad participants reflect differences in d'. We discuss the implications for diffusion models, the Bayesian reader, and the MROM models.

(169) Effects of phonological similarity and lexical stress on serial recall of pseudowords

Elisabet Service[1], Marcella Ferrari[2], and Paola Palladino[2], [1]McMaster University, [2]University of Pavia

Memory for pseudoword lists was studied in three experiments. Experiment 1 showed that recall of lists of three-syllable English pseudowords was harmed if they shared the first syllable and had first-syllable stress but helped if stress was on the second syllable. Experiments 2 and 3 showed that in Italian, where lexical stress

is predominantly on the second syllable, recall was harmed if items shared the second syllable and generally if stress was on the first syllable. The results suggest that syllable recall in pseudoword lists is affected by language-specific effects of main stress and discriminatory cue value of previous syllable.

*** (170) An investigation of the effect of phonological similarity and word length on RAN performance

Kendall Kolne and Elisabet Service, McMaster University

The ability to rapidly and continuously update phonological representations is critical to skilled reading. Performance on Rapid Naming (RAN) tasks is established as a reliable predictor of reading success, although the factors driving this relationship remain unclear. The present study explored the role of articulatory planning in RAN performance. Naming times were measured in typical readers completing the standard RAN, as well as tasks manipulated for phonological similarity and word length. Phonologically similar words, and longer words generated significantly longer naming times than the standard task, indicating competition rather than facilitation between similar forms in updating phonological representations during RAN.

(171) The Influence of Relative Power on Referential Communication

Molly M. Pottruff, Kayley Brunsdon, and Karin R. Humphreys, McMaster University

Do winners use more egocentric language than losers? While previous research has demonstrated the effect of a power imbalance on theory of mind use (Rutherford, 2004), we were interested in whether this effect would translate to perspective taking in verbal communication. In our set of studies we demonstrate that people who are given more power in an experimental dyad are significantly more egocentric in a communication task than people with less power. Here, we describe this effect, and a series of additional experiments to see what factors can modulate how egocentric we are when we communicate.

*** (172) Aging-Related Differences in Memorability Judgments of Emotional Scenes

Jennifer C. Tomaszczyk and Myra A. Fernandes, University of Waterloo

Older adults sometimes have better memory for positive, than negative or neutral, information. We examined whether this may result from older adults actively selecting positive information to encode. Older and younger adults viewed positive, negative, and neutral scenes and were asked to select a subset that they judged to be memorable before recalling the scenes. Results indicated that older adults selected more positive scenes, whereas younger adults' scene selection did not differ by emotional valence. Interestingly, both age groups recalled more positive scenes. Findings are consistent with the view that older adults use cognitive control to preferentially encode positive information.

*** (173) Weapon Presence Impairs Real Eyewitness Testimony

Jonathan M Fawcett[1], Emily J Russell[2], Kristine A Peace[3], and John Christie[1], [1]Dalhousie University, [2]Lakehead University, [3]Grant MacEwan University

Weapon focus is frequently cited as a factor in eyewitness testimony, and is broadly defined as a weapon related decrease in performance on subsequent tests of memory for those elements of an event or visual scene concurrent to the weapon. However, this effect has never been identified in the real world. Meta-analytical techniques were applied to evaluate the prospect of weapon focus in real-world criminal investigations. Our findings provide seminal evidence for an effect of weapon presence on actual eyewitness performance. Implications for public policy as well as modern theoretical approaches shall be discussed.

(174) Negative Affect Influences Time of Day Modulation of Automatic Processes in the Mind Wandering Paradigm

Melena Vinski, McMaster University

Previous research suggests that non-automatic processes are vulnerable to time of day modulation, but automatic processes are not. Mind wandering episodes are inferred from systematic fluctuations in both automatic (RT) and non-automatic (errors) processing, and self-report. The current research investigates time of day effects on mind wandering in moderate-

extreme chronotypes, while controlling for individual differences in affect and working memory capacity (WMC). Automatic processing and components of working memory capacity were vulnerable to time of day effects after controlling for negative affect, a finding that contradicts current theory of automatic processing and contributes to theory of WMC in mind wandering.

PRESIDENT'S SYMPOSIUM

***Symposium description**: Inhibition has become a central theme in cognitive psychology, with research relating it to diverse domains of information processing. The speakers in this symposium have investigated and applied this concept across the range of these domains. They will discuss the role of inhibition in (a) attentional processes, (b) cognitive control, (c) memory, and (d) behavioural control, providing a broad picture of the concept and considering alternative conceptual frameworks as well. The goal of the symposium is to provide an integrative discussion of how inhibition contributes to cognition. (Organizers: Colin MacLeod and Jonathan Fawcett)*

(175) Hippocampal Modulation as a Mechanism Underlying the Suppression of Unwanted Memories

Michael C. Anderson, University of Cambridge

We have all had moments when an object reminds us of an experience we would prefer not to think about. When this happens, we often exclude the unwanted memory from awareness. Previously, we discovered that suppressing retrieval of unwanted memories engages prefrontal cortical control mechanisms that down-regulate hippocampal activation, impairing retention. Here we show that this hippocampal modulation induces a temporally extended window of forgetting around the epoch of suppression, affecting memories irrespective of their relevance to the target. These findings indicate that hippocampal modulation is targeted systemically at the hippocampus, and not individual traces, to inhibit unwanted memories.

(176) Unringing the bell

Amir Raz, McGill University

Cognitive scientists distinguish between controlled and automatic mental processes. Controlled processes can become automatic, but can automatic processes become deautomatized and regrouped under the purview of control? Drawing on top-down control, we demonstrate how specific individuals can govern involuntary behaviors. Comparing highly- to less-suggestible individuals, we collected data on classic Stroop and McGurk tasks and our findings suggest an "unringing of the bell," which paves the road to innovative thinking about automaticity and control. We discuss how our results are likely transferable from the lab to the clinic and applicable to many a psychopathological context.

(177) Inhibition, cognitive control, and the immediate priming method

Bruce Milliken, McMaster University

The immediate priming method is a tool commonly used to study inhibition processes. The general idea is that inhibition processes can control the content of short-term memory at one point in time, and that the consequences of this control process can be measured immediately after in responses to identical or related items. However, the set of assumptions, often unstated, that accompany attributions of performance effects to inhibition processes has led to almost as many putatively distinct inhibition processes as there are tasks to measure them. This talk will take a critical look at this set of assumptions.

(178) On the roles of competition and inhibition in memory retrieval

Colin MacLeod, University of Waterloo

A fundamental assumption of the inhibition account of retrieval-induced forgetting (RIF; see Anderson, 2003) is that, to be suppressed, related information must compete with target information during retrieval practice. After considering evidence regarding this competition assumption, I will describe new experiments (Jonker & MacLeod, 2011) showing that (a) RIF does not always occur when there is competition during retrieval practice, and (b) RIF can occur when there is no competition during retrieval practice. Such results undermine the competition assumption and hence the inhibition account.

Could RIF result from the context changes that occur between study, retrieval practice, and test?

(179) Inhibitory control in mind and brain: General and special models of response inhibition

Gordon D. Logan, Vanderbilt University

The independent race model explains response inhibition as a race between stop and go processes; the winner determines whether responses are inhibited or executed. The model is very general but provides limited insight into the underlying processes. We extended the independent race model in two ways, maintaining its generality and specifying the underlying processes. The "general" race model expresses both go and stop processes as races with generic finishing times. "Special" race models make parametric assumptions about the runners in the race (Poisson counters or Weiner diffusions). The special models allow tests of capacity limitations in stop and go processes.

(180) Inferences from expository text: An individual differences analysis

Jeffrey C. Doering and Murray Singer, University of Manitoba

Singer and Ritchot (1996, *Memory & Cognition*) proposed that reading span and readers' access of relevant knowledge are independent indices of reading comprehension. We hypothesized that added (ALL CAPS) text in sentences like *Some fireworks burn with a crimson flame, SPECTATORS' FAVOURITE COLOUR, because they contain calcium salt* would particularly thwart crucial inferences by low-reading-span but not low-access readers. To the contrary, both low-span readers and high-span/low-access readers exhibited low inferential accuracy. As previously, the correlation between reading span and access was negligible. Low-access readers likely construct text situation models deficient for supporting complex inferences.

Author-Abstract Index

Restaurants (by neighbourhood)

UNIVERSITY OF MANITOBA

Earl's // 2005 Pembina Highway // (204) 275-1250 // Restaurant and bar

The Pony Corral // 1700 Pembina Highway // (204) 275-3687 // Restaurant and bar

Tavern United // 1824 Pembina Highway // (204) 261-4233 // Pub grub and pints

DOWNTOWN

Amici/Bombolini // 326 Broadway Ave. // (204) 943-4997 // Excellent Italian cuisine in two price ranges,

East India Company Pub & Eatery // 349 York Ave. // (204) 947-3097 // Arguably the best Indian food in Winnipeg

The Keg Steakhouse and Bar // 115 Garry Street // (204) 942-7619 // The Keg

Palm Lounge // Fort Garry Hotel, 222 Broadway Ave. // 942-8251 // Very nice lounge in a premiere hotel

Earl's // 191 Main St. // (204) 989-0103 // Restaurant and bar

Tavern United // 260 Hargrave St. // (204) 944-0022 // Pub fare. Roof top patio.

OSBORNE VILLAGE

Fude // 303-99 Osborne St. // Emphasis on using local ingredients (Vegetarian Friendly)

Wasabi // 105-121 Osborne St // Sushi

Carlos and Murphy's // 129 Osborne St. // Mexican fare

Segovia Tapas Bar & Restaurant // 484 Stradbrooke Ave. // Spanish food, wine, tapas

Buccacino's Cucina Italiana // 155 Osborne St. // (204) 452-8251 // Italian

Deadfish Café & Lounge // 167 Osborne St. // (204) 477-6609 // Hip joint

THE FORKS

Current Restaurant and Lounge at the Inn at the Forks // 75 Forks Market Road (204) 942-6555 // Good hotel restaurant

Muddy Waters Smokehouse // 15 Forks Market Road // (204) 947-6653 // BBQ, patio

Old Spaghetti Factory // 110-25 Forks Market, The Forks // 957-1391 // Italian

Sydney's at the Forks // 215-1 Forks Market Road // (204) 942-6075 // Fusion

THE EXCHANGE

Hermanos Restaurant & Wine Bar // 179 Bannatyne Ave. // South American

Hy's Steakhouse // 1 Lombard Place // (204) 942-1000 // Steakhouse

King's Head Pub // 120 King St. // (204) 957-7710 // British pub; live music; taps 'o' plenty.

Blufish // 179 Bannatyne Ave. // (204) 779-9888 // Sushi

Bailey's // 185 Lombard Ave. // (204) 944-1180 // Comfortably fancy; broad menu; good bar

Don Pedro's // 114 Market Ave. // (204) 956-7465 // Mexican

Tre Visi // 173 McDermot Ave. // (204) 949-9032 // Traditional Italian

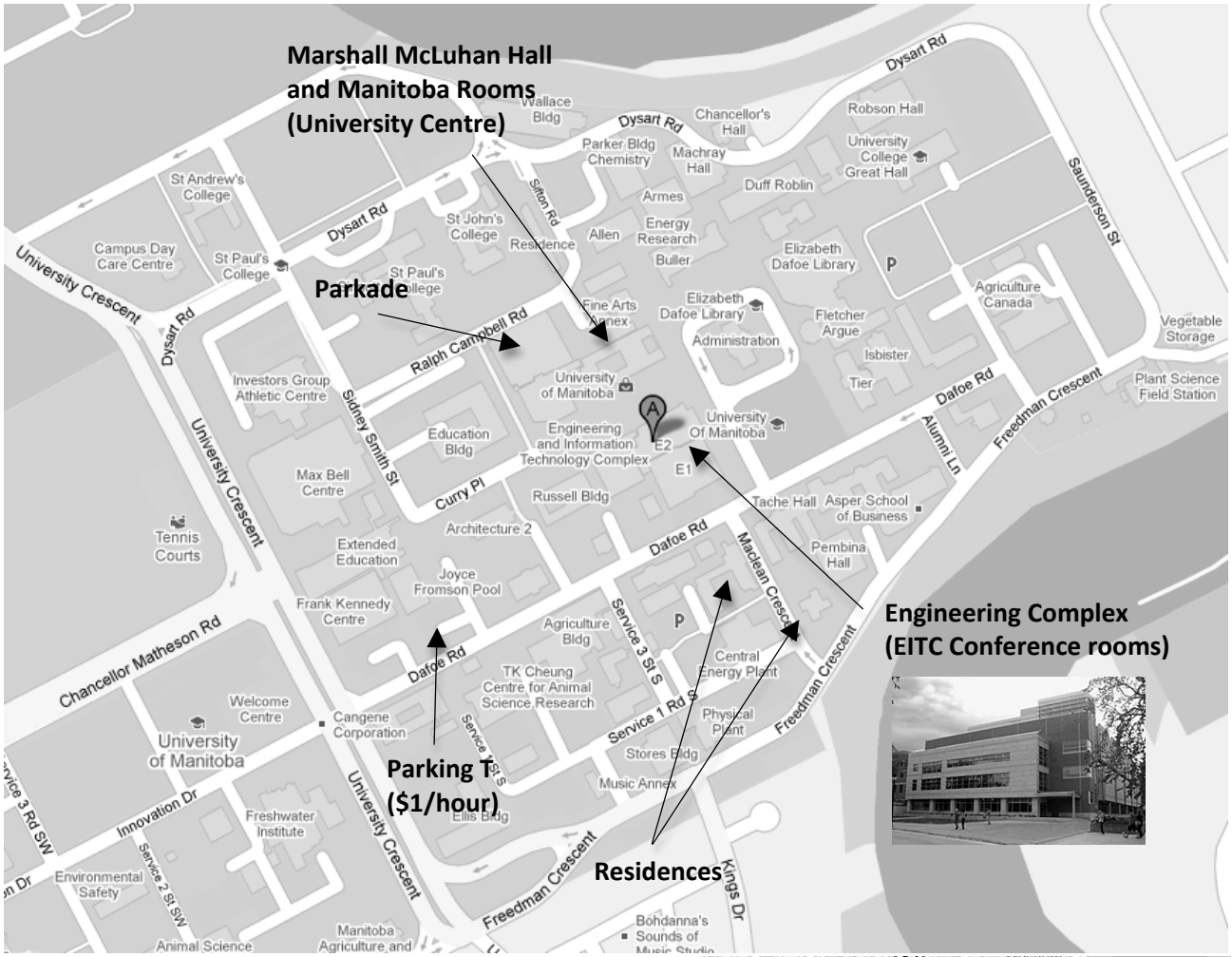
OFF THE BEATEN PATH

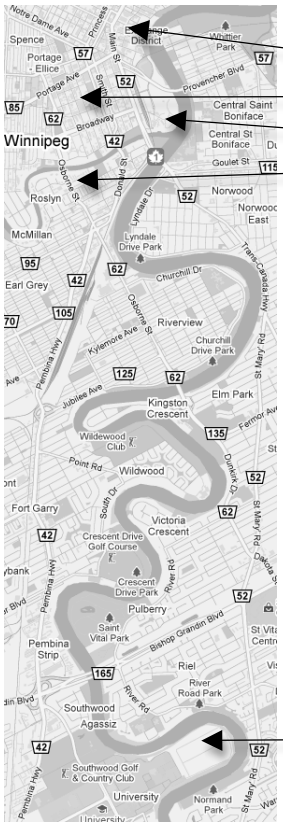
Bistro 7 1/4 // 725 Osborne St. // (204) 777-2525 // Lively atmosphere; good food

Fusion Grill // 550 Academy Road // (204) 489-6963 // Emphasis is on local

Inferno's Bistro // 312 Des Meurons St. // 262-7400 // Best priced great food in the city

529 Wellington Steakhouse // 529 Wellington Crescent // (204) 487-8325 // Famous steakhouse





The Exchange
Downtown
The Forks
Osborne Village

University of Manitoba