



UNIVERSITY OF ALBERTA
DEPARTMENT OF PSYCHOLOGY

29TH ANNUAL

JOSEPH R. ROYCE PSYCHOLOGY RESEARCH CONFERENCE

April 14, 2015
8:30 am - 5:30 pm
CCIS L1-160

*Keynote Address by
Dr. Giuseppe Iaria
University of Calgary*

*Invited Presentation by
Dr. Sheree Kwong See
University of Alberta*

*Social and Cultural Psychology
Symposium organized by
Dr. Jeff Schimel
University of Alberta*

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Conference Organizing Committee

Sandra Wiebe (co-chair)
Kyle Mathewson (co-chair)
Kimberley Campbell
Sayeed Devraj-Kizuk
Kerrie Johnston
Lily Li

Acknowledgement

The Royce Conference Organizing Committee thanks the Department of Psychology, Faculty of Science, Campus Alberta Neuroscience, and Pearson Education for their generous support.

Program in Brief

8:30AM ► **COFFEE & LIGHT BREAKFAST**

9:00AM - 9:30AM ► **INTERNAL INVITED SPEAKER:
ON BECOMING STEREOTYPICALLY OLD: INFLUENCES
OF AGE STEREOTYPING ACROSS THE LIFETIME**
DR. SHEREE KWONG-SEE
DEPARTMENT OF PSYCHOLOGY, UNIVERSITY OF ALBERTA

9:30 - 10:30AM ► **PAPER PRESENTATION SESSION #1**

9:30AM ► **WHAT'S THE DIFFERENCE BETWEEN A BLUEBERRY, A CARROT
AND A PUMPKIN? THE INFLUENCE OF SEMANTICS AND PHO-
NOLOGY ON MORPHOLOGICAL DECOMPOSITION IN {PSEUDO}
COMPOUND WORDS**
J. Park, C. Gagné & T. Spalding (University of Alberta)*

9:45AM ► **MANDARIN NONWORD REPETITION IN MONOLINGUALS AND
BILINGUALS**
Z. Jiang (University of Alberta) & E. Nicoladis (University of Alberta)*

10:00AM ► **NO TIME LIKE THE PRESENT: HOW GESTURE RESTRICTIONS
AFFECT TENSE CHOICE IN STORYTELLING**
A. Hayat, L. Smithson & E. Nicoladis (University of Alberta)*

10:15AM ► **A STUDY OF WHITE MATTER ABNORMALITIES IN CHILDREN WHO
STUTTER: rFAT IS FAT!**
E. Misaghi & D. S. Beal (University of Alberta)*

10:30AM ► **COFFEE BREAK**

10:45AM - 11:45AM ► **PAPER PRESENTATION SESSION #2**

10:45AM ► **WEIGHING IN ON ANCHORING**
M.S. Lorico, O Schweickart & N. R. Brown (University of Alberta)*

11:00AM ► **UP, NOT DOWN: THE AGE CURVE IN HAPPINESS FROM EARLY
ADULTHOOD TO MIDLIFE**
S. Fang, N. L. Galambos, H. J. Krahn & M. D. Johnson (University of
Alberta); M. E. Lachman (Brandeis University)*

11:15AM ► **GEOGRAPHICAL DIFFERENCES IN EXPERIENCES OF VICTIMIZA-
TION AND CRIME REPORTING: RESULTS FROM SASKATCHEWAN
-WIDE SURVEY**
J. Myburgh (Department of Psychology, University of Saskatche-
wan), L. Jewell, PhD (Centre for Forensic Behavioural Science and
Justice Studies, University of Saskatchewan) & J. S. Wormith (De-
partment of Psychology & Centre for Forensic Behavioural Science
and Justice Studies, University of Saskatchewan)*

11:30AM ► **THE EFFECTS OF LOCALIZED CONTRALESIONAL HYPOTHERMIA
IN A RAT MODEL OF FOCAL ISCHEMIA**
A. Klahr (University of Alberta, Center for Neuroscience), K. Fagan
(MacEwan University), R. John (University of Alberta, Center for
Neuroscience), F. Colbourne (University of Alberta, Department of
Psychology, Center for Neuroscience)*

*PRESENTING AUTHOR

11:45AM	▶	<p>POSTER SESSION & LUNCH</p>
1:00PM - 2:30PM	▶	<p>SOCIAL AND CULTURAL PSYCHOLOGY SYMPOSIUM CHAIR: DR. JEFF SCHIMEL DEPARTMENT OF PSYCHOLOGY, UNIVERSITY OF ALBERTA</p> <p>DON'T LET IT BUG YOU: EXPLORING THE ROLE OF SELF-AFFIRMATION AS A BUFFER AGAINST THE DISTRESS CAUSED BY KILLING <i>J. Blatter*, J. Schimel, K. Howell & M. Sharp</i></p> <p>IDENTIFYING FORMS OF ABSORPTION THAT FACILITATE AESTHETIC RESPONSE <i>S. Douglas* & D. Kuiken</i></p> <p>NOT JUST IN THE CLASSROOM: LANGUAGE MINDSETS INFLUENCE MIGRANTS' ADJUSTMENT AND CANADIANS' ATTITUDES TOWARD LANGUAGE POLICY <i>M. Lou* & K. A. Noels</i></p> <p>"NO, NO.... THAT IS NOT CORRECT!": A CRITICAL DISCURSIVE PSYCHOLOGICAL ANALYSIS OF ACCOUNTS OF ALLEGED SEXUAL ASSAULT IN THE JIAN GHOMESHI CASE <i>V. Richard*</i></p> <p>INFLUENCE OF CULTURAL MEANING SYSTEM AND SOCIOECONOMIC DEVELOPMENT ON INDECISIVENESS IN THREE CULTURES <i>L. M. W. Li*, T. Masuda & F. Jiang</i></p>
2:30PM	▶	<p>COFFEE BREAK & BALLOT SUBMISSION</p>
2:45PM - 3:30PM	▶	<p>PAPER PRESENTATION SESSION #3</p>
2:45PM	▶	<p>DOES VISUAL ENTRAINMENT OF ALPHA OSCILLATIONS INTERACT WITH CUED SPATIAL ATTENTION? <i>S. A. D. Kizuk* & K. E. Mathewson (University of Alberta)</i></p>
3:00PM	▶	<p>IS A-B THE SAME AS B-A IN YOUR MEMORY <i>K. Kato* & J. B. Caplan (University of Alberta)</i></p>
3:15PM	▶	<p>WEIGHTED INTEGRATION OF LANDMARKS IN A ONE-DIMENSIONAL SPATIAL SEARCH TASK <i>Y. Du* (University of Alberta), N. McMillan (University of Alberta), C. R. Madan (Boston College) & M. L. Spetch (University of Alberta)</i></p>
3:30PM	▶	<p>COFFEE BREAK + POSTER & PRESENTATION AWARDS</p>
3:45PM	▶	<p>KEYNOTE ADDRESS: HUMAN TOPOGRAPHICAL ORIENTATION: INDIVIDUAL VARIABILITY AND DISABILITY DR. GIUSEPPE IARIA DEPARTMENT OF PSYCHOLOGY, UNIVERSITY OF CALGARY</p>

*PRESENTING AUTHOR

Poster Session (11:45AM - 1:00PM CCIS PCL Lounge)

- P-01 Weighing in on Anchoring**
M. S. Lorico, O. Schweickart & N. R. Brown (University of Alberta)
- P-02 Compound Words Are Still Under Construction In Pre-School Children**
P. Barbosa & E. Nicoladis
- P-03 Linking Anorexia Nervosa and Autism Spectrum Disorder: Is Anorexia a phenotype of Autism?**
V. A. Peynenburg (University of Alberta) & M. J. Cooper (University of Oxford)
- P-04 Using conceptual combination to examine the modification effect in compounds**
K. A. Nisbet, J. M. Chamberlain, C. L. Gagne & T. L. Spalding (University of Alberta)
- P-05 Constructing a large-scale database of English compound words: An interim report**
S. L. Gore, S. Laughton, C. L. Gagne & T. L. Spalding
- P-06 Passengers: The driving distraction we can't live without**
M. Chan, S. Nyazika & A. Singhal (University of Alberta)
- P-07 Making a story interesting: Children's tense and gesture use**
S. Witzke, N. Mahé & E. Nicoladis (University of Alberta)
- P-08 The Effect of Language Mindsets on International Students/ Immigrants' Adjustment: the Mediating Role of Language Anxiety and Goal Orientation**
N. Quang, V. D. P. Ramos, M. Lou & K. Noels (University of Alberta)
- P-09 The Effects of Entity and Incremental Language Mindsets on the Feedback given to Immigrants on their Failure in Language-Learning Class**
L. Gurney (University of Alberta), M. Lou (University of Alberta) & K. A. Noels (University of Alberta)
- P-10 Introducing TAMI-h: Investigating hand-related movements imagery**
C. M. Donoff (Department of Psychology, University of Alberta), C. R. Madan (Department of Psychology, University of Alberta; Boston College) & A. Singhal (Department of Psychology, University of Alberta)
- P-11 Co-Occurring Trajectories of Peer Victimization and Aggression in Middle Childhood**
W. L. G. Hoglund (University of Alberta) & P. Hau (Athabasca University)
- P-12 Validating the Implicit Emotional Reactivity Scale**
A. Fitzner, A. Porthukaran, T. Montour-McKinney & C. Westbury (University of Alberta)
- P-13 Snowboard and hockey stance as candidate proxies for cerebral lateralization**
N. T. Bartlett & P. L. Hurd (University of Alberta)
- P-14 Associations Between Friendship Quality and Aggression in Middle Childhood**
S. John & W. L. G. Hoglund

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S. John & W. L. G. Hoglund

- P-28 Does the positivity effect generalize to moderate severity dementia? An examination of attention to and memory for valenced information**
L. Bohn (University of Alberta), S. T. Kwong See (University of Alberta), H. H. Fung (The Chinese University of Hong Kong)
- P-29 Effects of Object Manipulability and Action Typicality on Associative Memory**
A. C. Ng, C. R. Madan & A. Singhal (University of Alberta)
- P-30 Successful Memory Aging: A Positive Phenotype for Healthy Brain and Cognitive Aging?**
K. L. McDermott (Neuroscience and Mental Health Institute, University of Alberta), G. P. McFall (Department of Psychology, University of Alberta) & R. A. Dixon (Neuroscience and Mental Health Institute and Department of Psychology, University of Alberta)
- P-31 EEG Alpha, but not Theta, Oscillations Predict Individual Memory Performance in an Old/New Recognition Task**
Y. Y. Chen & J. B. Caplan (University of Alberta)
- P-32 The Role of Cognitive Planning in Mathematics Ability**
D. Cai (Shanghai Normal University), G. K. Georgiou (University of Alberta), M. Wen (Shanghai Normal University) & J. P. Das (University of Alberta)
- P-33 Therapeutic Hypothermia Reduces Seizure Activity after Intracerebral Hemorrhage in Rats**
A. Klahr (Centre for Neuroscience, University of Alberta), C. Dickson (Centre for Neuroscience, Department of Psychology, Department of Physiology, University of Alberta) & F. Colbourne (Centre for Neuroscience Department of Psychology)
- P-34 Comprehensive Narrative Elaboration Technique (CNET): Studying Memory Interview Performance across Older and Younger Adults**
S. O. M. Keler, J. L. Briere & T. A. Marche (University of Saskatchewan)
- P-35 Individual Differences in Children's Gesture Frequency: The Role of Verbal and Visuo-spatial abilities**
Y. Mori, R. Furman & E. Nicoladis (University of Alberta)
- P-36 The Use of Shape and Motion Cues for Object Perception in Pigeons**
J. F. Nankoo, J. Sawalha, D. Wylie, A. Friedman, Q. Vuong & M. Spetch
- P-37 Preschooler's Working Memory Improves Following Brief Executive Function Training**
E. Blakey & D. J. Carroll (University of Sheffield)
- P-38 How Early in the Perceptual Processing Stream do Moral Words Bias Brain Activity?**
B. Steele (University of Alberta), A. Gantman (New York University), P. Mende-Siedlecki (New York University), J. Van Bavel (New York University), K. E. Mathewson (University of Alberta)
- P-39 ERP Correlates of Proactive and Reactive Attentional Control in Early and Middle Childhood**
S. Elke, K. Maki, T. Harrison, A. Abdul Rahman & S. A. Wiebe (University of Alberta)

Internal Invited Speaker Presentation

9:00 On Becoming Stereotypically Old: Influences of Age Stereotyping Across the Lifetime

Sheree Kwong See (University of Alberta)

The study of old age stereotyping has been a key focus in the social gerontological literature for several decades. In recent years there has been a shift from documenting cultural age stereotypes (what we believe) to thinking about how age stereotyping impacts interactions with older people (ageism) and “aging” in multiple domains (internalization hypothesis). In this talk I will summarize what research tells us about the too often negative effects of age stereotyping across the lifetime, highlighting work from my own lab aimed at understanding how we become stereotypically old people. Implications at the individual and societal level will be discussed.

Paper Presentation Session # 1

9:30 What’s the Difference Between a Blueberry, a Carrot and a Pumpkin? The influence of semantics and phonology on morphological decomposition in (pseudo) compound words

J. Park, C. Gagné & T. Spalding (University of Alberta)

Despite the lack of a clear definition that distinguishes compounds (e.g., blueberry) from pseudo-compounds (e.g., pumpkin), our lab has previously shown that people process these two types of words differently. However, a variable that had not been taken into account in previous studies on pseudo-compounds is the pronunciation of their pseudo-constituents. In the same way that compound words do not constitute a homogeneous category, but rather vary in semantic transparency (e.g., blueberry is transparent because the meanings of blue and berry contribute to the meaning of the compound, whereas hogwash is opaque because the meanings of hog and wash are completely unrelated to the meaning of the whole word), pseudo-compounds present a large variability in phonological consistency (e.g., the pronunciation of pump and kin in pumpkin is consistent, whereas the pronunciation of car and rot in carrot is inconsistent). Using different tasks, we analyze whether the different levels of phonological consistency influence the way people respond to pseudo-compounds, similar to the way semantic transparency affects how people process compounds. More specifically, we examine whether having phonologically consistent pseudo-constituents makes people more or less likely to decompose the pseudo-compounds into the pseudo-morphemes that are embedded in them.

9:45 Mandarin Nonword Repetition in Monolinguals and Bilinguals

Z. Jiang (University of Alberta) & E. Nicoladis (University of Alberta)

The current study investigated whether there were significant differences in Mandarin nonword repetition between Mandarin-English bilingual children and Mandarin monolinguals. Seventy four children aged from 4–6 years participated in this study, including 38 Mandarin monolinguals and 36 age-matched Mandarin-English bilinguals. The Mandarin-English bilingual children were sequential bilinguals who spoke Mandarin at home and English at school. Children were tested on a nonword repetition task and other language measures including vocabulary size, semantic fluency and telling a story back. The results showed that bilingual children had significant lower scores on all the measures ($p < .01$). However, those who were matched in vocabulary size tended to get comparable performances in nonword repetition, indicating that their nonword repetition mirrored the vocabulary development. Correlation analyses showed a significant association between nonword repetition performance and vocabulary scores in bilingual group. However, there were no significant correlations in monolingual group. These results demonstrated that Mandarin nonword repetition task also measured general language learning ability in bilinguals when scored on syllables repeated.

nd to the order of the two constituents. The results are discussed according to a developmental perspective: younger children might pay more attention to the right-most constituent due to generalization from noun-noun compounds. As deverbal compounds are low in frequency, as children get older, they might get more exposure to them. Older children may have started to understand that deverbal compounds are different from noun-noun compounds, but have not yet understood exactly how the ordering of the constituents works.

10:00 **No Time like the Present: How Gesture Restriction Affects Tense Choice in Storytelling**

A. Hayat, L. Smithson & E. Nicoladis (University of Alberta)

Telling a story can draw on visuo-spatial memory. The vividness of the visuo-spatial memories can affect both storytellers' use of tense and gestures, with greater vividness being associated with increased use of the present tense and increased gesture use. One previous study has shown that storytellers' gesture rate is correlated with their use of the present tense (Furman & Nicoladis, 2014). The purpose of the present study was to test whether manipulating gestures would affect storytellers' tense use. We predicted that restricting gestures would lead to decreased use of the present and encouraging gestures would lead to increased use.

Participants were asked to read a story about confronting a wild animal. They were randomly assigned to one of two text-tense conditions: 1) past or 2) present. They were also randomly assigned to one of three elicitation conditions: 1) control (no instructions about gestures), 2) gestures restricted (wearing ski gloves velcroed to armrests) or 3) gestures encouraged. Participants were videotaped telling back the story and their verbs coded for past or present use.

The results showed a main effect for text-tense, with participants who read the story in the present being more likely to use the present themselves. There was also a main effect for elicitation condition, with the participants in the gesture encouraged condition producing the most present and those in the gesture restricted condition producing the least.

These results support the predictions. Manipulating gestures affects the vividness of visuo-spatial imagery, which affects tense choice.

10:15 **A Study of White Matter Abnormalities in Children who Stutter: rFAT is Fat!**

E. Misaghi & D. S. Beal (University of Alberta)

Speech production has been of interest to the neuroscience community since the first aphasia models proposed by Broca, Wernicke, and Geschwind in the 1800's. We now have advanced tools to investigate the structure and function of the human brain and the ability to correlate these measures with observable behaviour. Diffusion tensor imaging (DTI) is a neuroimaging technique that facilitates the measurement of white matter properties including fractional anisotropy (FA), mean diffusivity (MD) and tract volume. Previous studies have reported white matter differences in specific areas and tracts of the brains of people who stutter (PWS) compared to controls, such as lower FA in the left arcuate fasciculus, higher MD in the bilateral frontal aslant tract (FAT), lower FA in the corticospinal/corticobulbar tract and lower FA in the corpus callosum. We used deterministic tractography to assess all of the aforementioned tracts in eleven right-handed boys who stutter (aged 6-12) and compare them to eleven age-matched normal boys. We found that the only statistically significant difference in children who stutter (CWS) lies in the right FAT having more FA and more tract volume than the same tract in normal children and also the left FAT of CWS. Although left hemisphere abnormalities were not identified in the current sample, it is plausible that CWS demonstrate a pattern of white matter development that is compensating for the subtle left hemisphere problems at early ages by strengthening right hemisphere homologues of affected areas, a claim yet to be explored further.

Paper Presentation Session #2

10:45 Weighing in on Anchoring

M. S. Lorico, O. Schweickart & N. R. Brown (University of Alberta)

Judgmental anchoring—the assimilation of a quantitative estimate (e.g., In what year did Leonardo da Vinci start painting the Mona Lisa?) to an uninformative numerical standard (e.g., the sum of 1000 and the last three digits of your phone number)—is often presented as one of the prime examples of the susceptibility of human judgment to irrelevant information. While early theories attributed anchoring to a deliberate, but insufficient, adjustment process, later accounts have stressed the role of automatic, priming-based processes and have cast the bias as an inevitable consequence of processing quantitative information. Here, we introduce a new perspective on anchoring; consistency theory, which embeds anchoring within the broader context of information uptake and highlights the role of deliberate processes in numerical judgment. Predictions of this account were tested in a large classroom study in which participants were asked to (a) generate anchor values from their student ID numbers, (b) complete the standard anchoring task for the da Vinci question (see above), (c) provide plausibility ratings for the anchor value, and (d) report if and how the anchor was used in the target judgment. Consistent with our account, we found that anchoring effects only emerged if anchors fell into respondents' subjective range of metric indifference and that self-ratings of anchor use predicted whether or not the effect occurred. These findings challenge the view that anchoring is primarily the result of automatic, priming-based processes, and suggest that people have significant control over how they manage numerical information.

11:00 Up, not down: the age curve in happiness from early adulthood to midlife

*S. Fang, N. L. Galambos, H. J. Krahn & M.D. Johnson (University of Alberta);
M.E. Lachman (Brandeis University)*

Happiness is an important indicator of well-being and little is known about how it changes in the early adult years. We examined trajectories of happiness from early adulthood to midlife in a Canadian longitudinal sample of university seniors followed from age 23 to 37. Hierarchical linear models showed that, on average, happiness increased from age 23 to age 37. The rise in happiness after university remained after controlling for important baseline covariates (gender, parents' education, grades, self-esteem), time-varying covariates known to be associated with happiness (marital status, unemployment, self-rated physical health), and number of waves of participation. Specifically, women and those with higher baseline self-esteem were more likely to have higher baseline happiness. Having lower baseline self-esteem was associated with a faster rate of linear increase in happiness. Marriage and physical health covaried positively over time with happiness, while unemployment covaried negatively across time with happiness. The upward trend in happiness runs counter to some previous cross-sectional research claiming a high point in happiness in the late teens, decreasing into midlife. As cross-sectional designs do not assess within-person change, longitudinal studies are necessary for drawing accurate conclusions about patterns of change in happiness across the lifespan.

11:15 **Geographical Differences in Experiences of Victimization and Crime Reporting: Results from Saskatchewan-Wide Survey**

J. Myburgh (Department of Psychology, University of Saskatchewan), L. Jewell, PhD (Centre for Forensic Behavioural Science and Justice Studies, University of Saskatchewan) & J. S. Wormith (Department of Psychology & Centre for Forensic Behavioural Science and Justice Studies, University of Saskatchewan)

Past victimization research (Brennan, 2012) had demonstrated that a significant amount of crime goes unreported each year, illustrating incongruence between official and actual experiences of victimization. Research has also demonstrated that reporting behaviours differ between geographical locations; however, findings are inconclusive regarding differences in reporting behaviours between urban and rural centres (Barclay & Donnermeyer, 2007). In order to explore the prevalence of unreported crime, as well as the reasons for not reporting, two nearly identical telephone surveys were conducted with two samples of Saskatchewan residents (combined N=2,012). Preliminary results indicate that approximately 30% of all respondents reported that they had been the victim of at least one crime during the past year, totalling 4,318 distinct instances; however, only 22% of respondents reported any of these crimes to police. Reasons for not reporting include beliefs that police could not do anything about the crime, fear of retaliation from the perpetrator, or that the incident was too minor to warrant police involvement. Gang violence and property crimes were most likely to be reported to the police, while violent and hate crimes were least likely to be reported. Reporting behaviour also was examined in relation to various demographic variables (e.g., gender, ethnicity, location of residence, marital status) and will be presented. Implications for reporting behaviour and geographic location will be discussed, and future directions for research will be highlighted.

11:30 **The effects of localized contralesional hypothermia in a rat model of focal ischemia**

A. Klahr (University of Alberta, Center for Neuroscience), K. Fagan (MacEwan University), R. John (University of Alberta, Center for Neuroscience), F. Colbourne (University of Alberta, Department of Psychology, Center for Neuroscience)

Animal studies find that brain damage from ischemic stroke can be mitigated by therapeutic hypothermia (TH), provided a mild and prolonged intervention is used (e.g., 32°C for 24 hr). Clinical trials are currently evaluating this therapy, which normally involves cooling the whole body. This approach not only treats the injured hemisphere but also the undamaged area of the brain, which may help mediate recovery. This could be harmful. Thus, we tested whether selectively cooling the non-damaged hemisphere affects recovery. After stroke, many compensate for deficits by depending on their unaffected arm, a behavior that contributes to learned non-use of the paretic limb. This learning is undesirable as it impedes rehabilitation of the impaired arm. In this study, rats were initially trained in a reaching test for food pellets. Subsequently, they underwent motor cortex injury contralateral to the preferred paw that was determined in the reaching test. This was followed by implantation of a cooling device overlying the contralesional motor cortex and several TH protocols were examined (e.g., varying intervention delay). Many of the normothermic rats (controls) switched paw preference in the reaching task whereas this was attenuated in the TH groups. This suggests that TH influences the development of learned non-use perhaps by blocking plasticity in the undamaged motor cortex. Further work, however, is needed to rule out possible alternatives and to isolate more precise mechanisms of action.

Social and Cultural Psychology Symposium

Don't let it bug you: Exploring the role of self-affirmation as a buffer against the distress caused by killing

J. Blatter, J. Schimel, K. Howell & M. Sharp

Research shows that killing at war is a critical factor in determining if a soldier will develop post-traumatic stress disorder (PTSD). Given the growing number of soldiers returning from war, it seems especially pertinent to examine if there are factors that may help buffer against the distress caused by killing. Thus, a laboratory bug-killing paradigm was used as an approximation of real-life killing to determine whether buttressing one's self-esteem (through self-affirmation) may serve to alleviate killing-related distress. Across two studies, participants completed a self-affirmation manipulation or comparable control task and then completed a bug extermination task. The degree of distress (i.e., guilt and shame) was then measured. In Study 1, participants who first engaged in self-affirmation reported significantly less shame and guilt after choosing how many bugs to kill, compared to those in the control condition. However, in Study 2, when all the participants were required to kill a specified number of bugs (rather than choosing how many to kill), those who first engaged in self-affirmation reported significantly more shame and guilt after killing, compared to those in the control condition. Additionally, an interesting gender effect occurred, such that males reported less distress on self-report measures compared to females, however, a behavioral (hand-washing) measure of guilt indicated that males experienced the same level of distress as females. These findings and their potential implications will be discussed in more detail.

Identifying Forms of Absorption that Facilitate Aesthetic Response

S. Douglas & D. Kuiken

Diverse conceptions of absorption (e.g., transportation, immersion) during literary reading are complemented by equally diverse conceptions of its purported effects (e.g., attitude change, aesthetic feeling). Rather than attempting theoretical integration of such diversity, it may be more useful to contrast different forms of absorption and their various effects. We have developed a questionnaire (Absorption-like States Questionnaire; ASQ) to assess those different forms of absorption, and a previously developed questionnaire (Experiencing Questionnaire; EQ) (Kuiken, Campbell, & Sopcak, 2012) enables differentiation of pragmatic (e.g., attitude change) and aesthetic outcomes (e.g., sublime feeling). We conducted a study in which 360 participants read an excerpt from a novella called *On Chesil Beach* before completing the ASQ and EQ. A Structural Equation Model incorporating story attention, expressive reading, and integrative comprehension indicates that story attention and expressive reading distinctively predict sublime feeling and being moved, whereas integrative comprehension distinctively predicts explanatory coherence and narrative reconstruction.

Not just in the classroom: Language mindsets influence migrants' adjustment and Canadians' attitudes toward language policy

M. Lou & K. A. Noels

Previous studies have found that learners who hold an incremental language mindset (i.e., a belief that language intelligence is malleable) are more motivated and less anxious in a language class compared to learners who hold an entity mindset (i.e., a belief that language intelligence is inherent). The present two lines of research investigate the effect of language mindsets outside the classroom context. The first line of research examines the relation between international students' language mindsets and cultural adjustment. A correlational study and an experimental study found that language anxiety mediated the relation between language mindsets and international students' and immigrants' cultural adjustment, such that participants who held stronger entity (vs. incremental) language beliefs were more anxious about interacting with English speakers and in turn less well-adjusted to Canada. The second line of research examined the relation between Canadians' language mindsets and their attitudes toward language policy. We

found language mindsets were correlated with attitudes toward language policy and interaction with immigrants among 1426 Canadians. Two more studies demonstrated that Canadians who held or were primed with an entity mindset were more likely to provide consoling feedback (e.g., “Not everyone can learn a second language well”) to immigrants who failed in an English class, while those with an incremental mindset were more likely to provide constructive feedback (e.g., suggesting strategies to improve). These results suggest that Canadians who hold an incremental mindset are more supportive of immigrants’ language training. Thus, language mindsets influence not only students’ motivation in the language

“No, no... That is not correct!”: a critical discursive psychological analysis of accounts of alleged sexual assault in the Jian Ghomeshi case

V. Richard

The media scandal unfolding around former CBC personality Jian Ghomeshi provides a case study in the production of public perceptions and behaviour toward sexual assault, its perpetrators and its survivors. A pivotal moment in this scandal came in response to a post on Ghomeshi’s Facebook page: two women, one who has remained anonymous and the other Lucy Decoutere, gave radio interviews during which they alleged he sexually assaulted them. In this mixed-methods qualitative study, I examined how in articulating personal and social stakes these women reoriented the emerging narrative of the scandal. Informed by grounded theory, I coded and analyzed Ghomeshi’s Facebook post. I also transcribed, coded and analyzed the interviews with his alleged victims. I then subjected the data to conversation analysis using a critical discursive psychological approach. For this study, this meant focusing on the sequential structure of the interviews (“how people take turns talking”), and deconstructing the expressed interpretative repertoires (“how people make sense of others’ in talk”). This also involved analyzing the discursive strategies being used (“how talk accomplishes certain goals, such as attributing blame”), and identifying their rhetorical organization (“how the talk counters anticipated counter-talk”). Results from this project will contribute to a broader study of the dynamics and social repercussions of this scandal, and will include an analysis of social media discussions. The broader study will have implications for public policy concerning sexual assault, some trauma counselling approaches for sexual assault survivors, and have implications for the content of sexual education programs.

Influence of Cultural Meaning System and Socioeconomic Development on Indecisiveness in Three Cultures

L. M. W. Li, T. Masuda & F. Jiang

Psychologists have debated two external factors that influence human behaviors: perception of current socioeconomic changes and perception of a historically shared cultural meaning system. By conducting triangular comparisons among Hong Kong Chinese, mainland Chinese, and European Canadians, the current study examined whether these two factors differentially influence people’s indecisiveness. We found that (i) Hong Kong Chinese participants’ level of indecisiveness was highest, and there were no differences between the two other groups; (ii) both dialectical beliefs (the cultural factor) and optimism toward the future (the socioeconomic factor) predicted participants’ indecisiveness across cultures and explained cultural variations in indecisiveness; and (iii) different from European Canadians’ optimism, optimism about the future promoted by rapid societal change made mainland Chinese more decisive. The importance of within-region analyses to disentangle varying factors in decision-making processes is discussed.

Paper Presentation Session #3

2:45 **Does visual entrainment of alpha oscillations interact with cued spatial attention?**

S. A. D. Kizuk and K. E. Mathewson (University of Alberta)

Oscillatory processes are a fundamental feature of the physical world. Furthermore, regular temporal rhythms can provide information about the timing and predicted state of sensory objects, facilitating their processing. Oscillatory rhythms can also serve cognitive functions like attention, allowing for a modulation of sensory processing by phase and amplitude, and multiple frequency-specific bands have been measured in the brain through electrophysiology. Recently, it has been shown that oscillations in the alpha (8-14 Hz) band can be entrained to repetitive visual stimuli. It has also been shown that visual stimuli that appear out-of-phase with the same repetitive visual stimulation are more difficult to detect. Because of known links between alpha oscillations and attentional biasing, here we tested whether the direction of attention in the visual field would interact with these entrainment effects on alpha oscillations. The current study entrains alpha oscillations with repetitive visual stimuli in the peripheral visual field, and presents target in or out-of-phase with those stimuli in a left-right discrimination task, following a predictive directional cue at the start of each trial. EEG recordings are used to demonstrate that performance on this task is dependent on an interaction between the phase and power of these preparatory alpha oscillations.

3:00 **Is A-B the same as B-A in your memory?**

K. Kato & J. B. Caplan (University of Alberta)

Episodic memory for associations has been extensively studied. One hallmark is associative symmetry. When you study a word pair, A-B, the accuracy for A-? (forward cued recall) is the same as for ?-B (backward); cueing-direction does not affect probability of retrieving the target. To determine whether order within associations is stored as a part of the association memory, we divided participants into two main groups, an Order-Focus group and an Order-Ignore group. Participants studied sets of word-pairs, followed by cued recall tests and recognition tests. The recognition test for the Order-Focus group was to judge whether presented pairs were intact (A-B) or reverse (B-A) so participants knew that order was important. For the Order-Ignore group, the test was associative recognition, judging intact (A-B) or recombined from two different pairs (A-D) and did not require memorizing order. After such rounds, there was an unanticipated recognition tests on all studied pairs. The results showed: (1) both the Order-Focus and the Order-Ignore groups performed equally well in the cued recall; (2) participants were much better than chance at order-recognition, but not as good as associative-recognition; and (3) the Order-Focus group performed better in order recognition than the Order-Ignore group but the difference was not statistically significant. Therefore, the effort to intentionally memorize within-pair order does not strongly affect association-memory performance, and order-memory is not substantially improved. This suggests that associations are learned with some, but not a great deal, of within-pair order, and may not be substantially improved with deliberate effort.

Weighted integration of landmarks in a one-dimensional spatial search task

Y. Du (University of Alberta), N. McMillan (University of Alberta), C. R. Madan (Boston College) & M. L. Spetch (University of Alberta)

Organisms can locate spatial goals using multiple landmarks as different sources of information. However, it is unclear whether the different sources of information are integrated or are used independently. Here we investigated how humans use multiple landmarks to locate a goal, as well as how they resolve conflicts when landmarks are displaced. Participants searched for a hidden goal location along a one-dimensional line between two distinct landmarks on a computer screen. On baseline trials, the location of the landmarks and goal varied on the screen, but the landmarks always appeared in the same locations relative to the goal, with one landmark always closer to the goal. In Experiment 1A and 1B, some baseline trials provided one landmark and some provided both. On probe trials, both the landmarks were shifted farther away from the previous-learned goal location. We found that participants' search locations shifted part-way toward the nearer landmark, suggesting a weighted integration of the two landmarks when they provided conflicting information. Using a computational modeling approach, we found that the two cues were integrated based on Bayesian weightings. In Experiment 2A and 2B, when participants were trained only with each of the single landmarks, we found that participants' search on probe trials was best explained as treating each landmark as an independent source, but again based on Bayesian weightings. The different results from the two experiments suggest that both cues are only integrated into a combined representation if they are presented together during the initial learning experience.

Keynote Address (CCIS L1-140)

3:45 **Human Topographical Orientation: Individual Variability and Disability** *Giuseppe Iaria (University of Calgary)*

Human topographical orientation refers to the ability of individuals to orient in the surrounding in order to reach a given target location. This important function can be accomplished by adopting a variety of cognitive strategies, which may or may not rely on the use of salient landmarks available within the environment. One such cognitive strategy consists of orienting by means of cognitive maps, i.e. mental representations of the surrounding in which environmental landmarks and, importantly, their spatial relationships, are represented. Cognitive maps are critical for navigation since, when formed, they allow individuals to reach any target location from anywhere within the environment by following any route (including routes that have never been travelled). In this talk, I am focusing on examining some of the behavioural and neural mechanisms that we have found to explain some of the variability observed across individuals in their ability to orient by means of cognitive maps. In addition, I am providing clinical evidence confirming the detrimental effects of not being able to form cognitive maps, which supports the fundamental role of cognitive maps for human orientation.

Poster Abstracts

P-01 Effect of amnesic agent anisomycin on online brain function

J. D. Dubue, T. L. McKinney, D. R. Treit, & C. T. Dickson (University of Alberta)

New memories are thought to be solidified by de novo proteins subsequent to learning since protein synthesis inhibitors (like anisomycin; ANI) administered in this period because impairments of future memory retrieval. However, intrahippocampal infusions of ANI cause the suppression of evoked and spontaneous neural signalling in addition to impairing protein synthesis. This suggests that ANI could impair memory expression by simply inactivating the brain. In order to test this idea, we evaluated the influence of intrahippocampal ANI infusions on spatial navigation behaviour using the Morris Water Maze, a task well-known to require dorsal hippocampus integrity. We implanted male Sprague Dawley rats with bilateral dorsal hippocampal cannulae and assessed their abilities to swim to a hidden platform following infusions of ANI, tetrodotoxin (sodium channel blocker; TTX), and vehicle (PBS). Prior to infusions, all groups demonstrated normal spatial navigation (training on days 1 and 2), whereas 30 minutes following infusions on day 3 ANI and TTX groups showed significant impairments in allocentric navigation compared to PBS treated animals. This impairment was not due to deficits in swimming or general performance since all groups of animals could swim successfully to a cued platform. Spatial navigational deficits appeared to resolve on day 4 in the ANI and TTX groups. These results suggest that ANI and TTX inhibit the online function of the dorsal hippocampus and highlights the importance of neural signaling as an intervening factor between molecular and behavioural processes.

P-02 Compound Words Are Still Under Construction In Pre-School Children

P. Barbosa & E. Nicoladis

The purpose of the present study was to test whether preschool children are sensitive to the ordering of constituents within compounds in a comprehension task. Seventy-six children between the ages of three and five years were randomly assigned to one of two groups (N = 38 in each group): the Conventional group (interpreting Noun-Verb-er compounds like "ball pusher") and the Reversal group (interpreting Verb-er-Noun compounds like "pusher ball"). For each item, we asked children to choose among four options: the noun doing the verb (e.g., a house hugging someone) and someone doing the verb to the noun (e.g., someone hugging a house) and two other distractors. The results showed that 3-year-olds preferred the noun as the object of the action in the Conventional group, and the noun as the agent of the action in the Reversal group. However, 4-5-year-olds did not show a consistent pattern of preference for either of the two-targeted items, suggesting that they did not attend to the order of the two constituents. The results are discussed according to a developmental perspective: younger children might pay more attention to the right-most constituent due to generalization from noun-noun compounds. As deverbal compounds are low in frequency, as children get older, they might get more exposure to them. Older children may have started to understand that deverbal compounds are different from noun-noun compounds, but have not yet understood exactly how the ordering of the constituents works.

P-03 Linking Anorexia Nervosa and Autism Spectrum Disorder: Is Anorexia a phenotype of Autism?

V. A. Peynburg (University of Alberta) & M. J. Cooper (University of Oxford)

Individuals with Anorexia Nervosa (AN) demonstrate emotional deficits and are more likely than healthy controls to meet the diagnostic criteria for Autism Spectrum Disorder (ASD). Lasting emotional deficits and similar systemic cognitive styles suggest that AN may be a phenotype of ASD. Thirty-two patients enrolled in the Capital Health Eating Disorder Program will be recruited, along with 32 healthy controls from the undergraduate population. Following an initial screening for Axis 1 disorders, participants will complete self-report questionnaires on their eating behaviours, ASD symptoms, emotional deficits, and repetitive behaviours/restricted interests. We will use one-tailed t-tests, ANOVA, and repeated measures of variance to test whether there is a positive correlation between AN and ASD severity. If our findings support our hypothesis, we will assess how eating disorder therapies can be adapted to minimize cognitive rigidity and enhance emotional skills.

P-04 Using conceptual combination to examine the modification effect in compounds

K. A. Nisbet, J. M. Chamberlain, C. L. Gagne & T. L. Spalding (University of Alberta)

A primary feature of the conceptual system is that it has the ability to produce novel combinations of concepts. A topic of discussion in this field focuses on whether information from the constituent concepts is inherited in the combined concept or not (Hampton, Jonsson, and Passanisi, 2009; Connolly, Fodor, Gleitman, and Gleitman, 2007). Compound words (e.g., blueberry) provide some interesting insight into this debate. For example, in fully transparent compound words (e.g., blackbird), both the constituents (black and bird) contribute to the overall meaning of the compound. This can be compared to the process of combining noun concepts and has the potential to offer insight into the system used in combining semantic meanings from multiple concepts. In this experiment, participants were presented with a statement regarding how often a property is true using “some”, “almost all” or “almost none” of a modified noun (e.g., almost all birds require graminoids in their diet). They were then asked a follow up question about the statement (e.g., what percentage of blackbirds require graminoids in their diet) and answered on a scale from 1% to 100%. A follow up experiment looked at conceptual combination using unknown modifiers to create novel compounds (e.g., flegbird). We are interested in how people decide the likelihood of properties being true of unmodified and modified nouns in fully transparent and non-word compounds. The current project investigates how the percentage estimates change depending on the information participants are given prior to their rating.

P-05 Constructing a large-scale database of English compound words: An interim report

S. L. Gore, S. Laughton, C. L. Gagne & T. L. Spalding

The study of compound words (e.g., snowball) allows us to explore the productivity of language and cognition. This research further allows us to examine the ways in which individuals engage in everyday tasks (e.g., reading, problem solving). In exploring the ways in which the processing of compound words is impacted by semantic transparency and morphological structure, we refer to English language databases to gather data significant to our study of compound words. Corpora play a significant role in linguistic research as they provide scientists with a place to acquire information and collect stimuli. Although existing databases do contain measures pertaining to multi-morphemic words (i.e., words made up of more than one meaningful unit), they fail to provide extensive and easily accessible compound-specific information. Multi-morphemic words include those words made up of free morphemes (i.e., compounds) as well as those containing affixes (e.g., [snow]+[ed]). This ongoing project aims to construct a comprehensive compound-specific database containing measures of word construction (e.g., word length), frequency, and semantic transparency. In this presentation, we explore the processes that support the creation and development of this corpus. We examine the methods and techniques undertaken by researchers and their assistants in stimuli collection and classification, as well as the role of participants in providing ratings of semantic transparency.

P-06 Passengers: The driving distraction we can't live without

M. Chan, S. Nyazika & A. Singhal (University of Alberta)

The human attention system is limited in capacity, and when performing two concurrent tasks there is competition for cognitive resources. This is particularly important in dangerous scenarios, such as driving a car in heavy traffic where deficits in performance can be caused by various sources of distraction, including the presence of passengers in the vehicle. In the present study, 20 participants performed a dual-task paradigm to examine the nature of attentional limits while operating a driving simulator under cognitive load. The primary driving task had two levels of difficulty, and we had conditions with and without a passenger present. We also collected event-related potentials (ERP) from a secondary competing task. Our primary hypothesis was that the presence of a passenger would consume more attentional resources, reflected in the morphology of the P300, particularly in the more difficult driving conditions. Results showed that operators drove faster and had better lane control in the easy driving conditions compared to difficult. As expected, we observed a decrease in P300 amplitude and an increase in its latency from single to dual-task conditions. Importantly, the presence of a passenger was associated with smaller P300 amplitudes in only the difficult driving conditions. Taken together, these data show that in-car passengers may bleed away valuable resources in difficult driving situations that require more attentional focus in the first place.

P-07 Making a story interesting: Children's tense and gesture use

S. Witzke, N. Mahé & E. Nicoladis (University of Alberta)

When attempting to make a story interesting, adults use a variety of techniques, including switching to the present tense (Dudukovic, Marsh, & Tversky, 2004) and using a lot of gestures (Hostetter, 2011). The purpose of the present study was to test whether the same would hold true of children. We focused on children between 7 and 11 years old, as previous research has shown that at around this age, children can shift between tenses in telling stories (Berman, 1988).

We asked children to watch a Pink Panther cartoon and to tell the story of what happened twice, once making it as interesting as possible and once telling it as accurately as possible. The order of the two conditions was counterbalanced. The initial results show that the children used more present tense ($M = 29\%$) in the interesting condition than in the accurate condition ($M = 13\%$). In contrast, there is no difference between conditions in how frequently children gesture.

These results suggest that by middle childhood, children have begun to learn some techniques for making a story interesting. We discuss possible reasons that shifting frequency of gesture use may be a later-learned technique.

P-08 The Effect of Language Mindsets on International Students/Immigrants' Adjustment: the Mediating Role of Language Anxiety and Goal Orientation

N. Quang, V. D. P. Ramos, M. Lou & K. Noels (University of Alberta)

There are many factors that can affect international students' and immigrants' adjustment to a new society. Following previous studies by Lou & Noels (2015), this study investigates how and why language mindsets would affect migrants' adjustment in academic, personal, and general domains. Language mindsets refer to one's belief in whether language ability is unchangeable (entity-based) or language is malleable (incremental-based). We hypothesized that the effect of language mindsets on adjustment would be mediated by goal orientation and anxiety. Participants were randomly assigned to either an entity or incremental language mindset condition, and then they answered questionnaire on their adjustment in Canada. The results showed that participants in the entity condition were more likely to adopt performance-approach and performance-avoidance goals. Both types of performance goals were positively associated with their language anxiety, which in turn resulted on lower adjustment. Regardless of the condition, a mastery-goal orientation was associated with less anxiety and better adjustment. Holding an incremental language mindset not only benefits language learners in the classroom. Since learning a new language is often an important requirement of international migration, migrants can benefit from adopting an incremental mindset that will decrease their language anxiety and help them be better adjusted in the new country.

P-09 The Effects of Entity and Incremental Language Mindsets on the Feedback given to Immigrants on their Failure in Language-Learning Class

L. Gurney (University of Alberta), M. Lou (University of Alberta) & K. A. Noels (University of Alberta)

An incremental mindset frames language ability as having the potential to grow, whereas an entity mindset construes language ability as fixed. This study examined the effect of established Canadians' mindsets regarding immigrants' language abilities on the type of feedback they provide to immigrants, including constructive feedback (e.g., providing strategies for learning) and consoling feedback (e.g., "not everyone is good"). We hypothesized that participants primed with an incremental language mindset would promote more constructive feedback, while those with an entity language mindset would promote more consoling feedback to immigrants. Participants were 169 English-speaking, native-born Canadian students, who were told that they would take part in two different studies. Under the guise of the first study, they were randomly placed in either the incremental- or entity-priming condition, in which they were required to read a priming article promoting either an entity or an incremental theory of language intelligence. In the second "study", participants completed an open-ended question asking them to provide feedback as a teacher to an immigrant student who failed a test in their class, and also filled out the consoling and constructive feedback scale. Consistent with our hypothesis, coded responses to the open-ended question showed that participants in the fixed condition were more likely to provide consoling feedback to the immigrant student, while participants in the incremental condition were more likely to provide constructive feedback. A similar pattern was found in

the responses on the feedback scale: participants in the fixed condition more strongly endorsed consoling feedback than participants in the incremental condition, although there was no difference between these two groups in their endorsement of constructive feedback. We conclude that members of the receiving society who hold incremental mindsets are more supportive of immigrants' language learning. These results could provide insightful information for immigrants' language instruction as well as immigration policy-making.

- P-10** **Introducing TAMI-h: Investigating hand-related movements imagery**
C. M. Donoff (Department of Psychology, University of Alberta), C. R. Madan (Department of Psychology, University of Alberta; Boston College) & A. Singhal (Department of Psychology, University of Alberta)

Previous studies of movement imagery have found inter-individual differences in ability to imagine whole-body movements. The majority of these studies have used subjective scales to measure imagery ability, which may be confounded by other factors such as confidence. Madan and Singhal (2013) developed a Test of Ability in Movement Imagery (TAMI) to address these confounds by using a multiple-choice format with objectively correct responses. Here we have developed a modified version of TAMI that specifically focused on the imagery ability of fine-motor hand movements (TAMI-h). TAMI-h is a paper-and-pencil test comprised of two types of questions: Hand, which requires selecting the correct final hand form, and Object, which asks which object would most likely be used with the imagined hand form. All participants were right-handed participants, allowing us to measure effects of hand dominance on hand-related movement imagery. We found that participants were significantly better at responding to the right-hand than left-hand Hand response questions. A smaller difference was also observed in the Object response questions, in the same direction. To allow us to evaluate the validity of TAMI-h and how it compares to extant measures of movement imagery, the questionnaire was administered as part of a battery including the original TAMI (whole body movements), as well as the Florida Praxis Imagery Questionnaire (FPIQ; Ochipka et al., 1997).

- P-11** **Co-Occurring Trajectories of Peer Victimization and Aggression in Middle Childhood**
W. L. G. Hoglund (University of Alberta) & P. Hau (Athabasca University)

Peer aggression and victimization are important indicators of the quality of children's peer relationships. Children who are both aggressive and victimized are likely most vulnerable to a range of academic and social-emotional problems. Traditionally, children who both engage in peer aggression and who experience victimization have been studied as categorical subgroups using mean-level cut-offs (e.g., a SD above the mean on both aggression and victimization at a given point in time). However, a priori decisions to identify subpopulations of children who are both aggression and victimized does not account for variability in these subpopulations and limits understanding of whether there are qualitatively different subpopulations of children who follow similar trajectories of aggression and victimization over time. This study takes a person-oriented approach by using growth mixture modeling to identify subpopulations of children who both engage in peer aggression and who experience peer victimization or who only engage in peer aggression or experience peer victimization. We also examine both predictors and outcomes that are common to and differentiate between peer aggression and victimization. Participants included 506 low-income children in kindergarten to grade 3 who were followed over two school years and six waves of data. This study contributes to understanding how peer aggression and victimization and aggression co-occur over time in middle childhood.

- P-12** **Validating the Implicit Emotional Reactivity Scale**
A. Fitzner, A. Porthukaran, T. Montour-McKinney & C. Westbury (University of Alberta)

Inappropriate affective responses and problems with emotion regulation are implicated in numerous psychopathologies. Thus, developing a scale to assess emotional reactivity could have clinical relevance as a screening tool. We created a scale assessing emotional reactivity that we titled the Implicit Emotional Reactivity Scale (IERS). Emotional reactivity was defined as the likelihood of a stimulus to elicit an emotional response in an individual. The scale was validated psychometrically using the Emotion Reactivity Scale (ERS), the Behavioural Inhibition System/ Behavioural Activation System (BIS/BAS), the Positive and Negative Affect Schedule (PANAS), as well as anxiety and social desirability scales. Pilot

data indicated that the present scale correlates better with established and related scales (BIS/BAS) than the ERS, attributed to the IERS inferring emotionality based on responses rather than explicit self-reports of emotionality. The current study aims to replicate our pilot study, as well as extend the validation through physiological measures (facial electromyography and galvanic skin response) in response to emotionally arousing picture and word stimuli. To this end we attempt to experimentally explore the relationship of all scales to the naturalistic expression of emotional reactivity. Preliminary results replicate our pilot study, with correlations to the BIS/BAS once again higher than an established scale (ERS).

P-13 Snowboard and hockey stance as candidate proxies for cerebral lateralization

N. T. Bartlett & P. L. Hurd (University of Alberta)

The strength and direction of handedness is weakly associated with behavioural traits in humans and is assumed to reflect some consequence of cerebral lateralization of function. Handedness is not the only form of behavioural asymmetry. Here we investigate other forms of lateralized behaviour and their association with both handedness and personality-like traits in humans. Snowboarding stance (which foot rides in front) and hockey stance (which hand is top and bottom when holding a hockey stick) are two examples of handedness-like behavioural asymmetries that may also reflect cerebral lateralization. We found that handedness, snowboard stance, and hockey stance are all unrelated to each other. A sex difference in snowboard stance preference was present, suggesting that, like handedness, this trait is somehow related to sexual differentiation. Aggression, a trait that has shown variation in sex depending on the strength of handedness, was also investigated. An interaction for aggression by snowboard stance and the strength of handedness was observed, indicating a possible relationship between stance preference and cerebral lateralization. Board sports are one of the few activities humans engage in that require relatively long durations of movement in a sideways fashion. Not only will environmental information be different depending on stance preference, the processing of that information may also differ. We shall propose a possible sensory lateralization which may explain the basis of stance preferences.

P-14 Associations Between Friendship Quality and Aggression in Middle Childhood

S. John & W. L. G. Hoglund

In middle childhood, friends play an influential role as companions and sources of emotional support (Rubin et al., 2008). During this time, children's conceptions of friendship are focused on reciprocity and supporting the needs of others (Selman, 1980). Studies have shown that friendship quality contributes to children's socioemotional adjustment, especially if the relationship is described as close (Bregden et al., 2013). Although friendships tend to be stable over middle childhood, it has been found that friendship quality can vary over a short time period (Poulin & Chan, 2010; McChristian et al., 2012). However, few studies have assessed changes in friendship quality in ethnically diverse children. Friendship quality includes both closeness and conflict and betrayal. Children who are more aggressive tend to experience more conflict in their friendships (Bregden et al., 2002). Children who are aggressive tend to use more aggressive strategies to resolve conflicts with peers and these strategies may increase their risks for conflicts in their friendships (Crean & Johnson, 2013). The current study investigates changes in friendship quality over time in an ethnically diverse sample, and how aggression and aggressive interpersonal negotiation strategies predict changes in friendship quality over time. As associations between friendship quality and aggression may also be affected by gender, we further assess whether gender moderates the associations between friendship quality, aggressive behaviours and aggressive interpersonal negotiation strategies.

P-15 Measuring the oscillatory correlates of successful vs. unsuccessful movement imagery in the TAMI

K. Lambert (University of Alberta), Y. Y. Chen (University of Alberta), C. R. Madan (University of Alberta) & A. Singhal (University of Alberta)

Research has indicated that the oscillatory correlates of movement imagery are less intense, but otherwise similar to those evoked during actual movements. However, previous research has not investigated how oscillations may vary based on successful vs. unsuccessful movement imagery. By recording EEG while participants completed the Test of Movement Imagery (TAMI; Madan & Singhal, 2013), which objectively measures movement imagery ability, we were able to explore these potential variations. The TAMI requires participants to visualize a sequence of movements, participants select the final body positioning from a set of images. Results indicated that, in comparison to inaccurate performance, accurate performance on the TAMI was accompanied by higher delta amplitudes (0-4 Hz) at frontal and central cortical regions. As previous research has indicated that the alpha rhythm (8-12 Hz) consistently desynchronizes during movement imagery, we anticipated this desynchronization to be more pronounced during accurate performance on the TAMI. Contrary to our hypothesis, no significant differences based on performance accuracy were detected in alpha rhythms. Previous research has suggested that delta rhythms are linked to an individual's ability to maintain engagement during cognitive tasks. Thus, our results suggest that imagery success may primarily have been due to increased attention. Until now, delta rhythms had not been implicated in movement imagery, however, prior studies had not investigated imagery success.

P-16 Discrimination of acoustically similar Parid and Estrildid vocalizations by black-capped chickadees (*Poecile atricapillus*)

J. J. H. Young, A. H. Hahn, K. A. Campbell, J. V. Congdon, J. Hoang, N. McMillan, E. N. Scully & C. B. Sturdy (University of Alberta)

The chick-a-dee call of the black-capped chickadee (*Poecile atricapillus*) is composed of four notes that are normally produced in a fixed order [A->B->C->D] although notes may be repeated or omitted. D notes are broad band, contain harmonic-like features, and are longer in duration compared to the other notes in the call. Previous studies have found that black-capped and mountain chickadees (*P. gambeli*) learn to discriminate D notes of both species faster compared to the other note types, suggesting that D notes contain the most discriminable and species-specific acoustic features. The current study examined black-capped chickadees' ability to discriminate vocalizations that are acoustically similar to D notes (i.e., notes that have a harmonic-like acoustic structure), but are produced by songbird species that vary in phylogenetic relatedness to black-capped chickadees. Birds were trained to discriminate among six types of vocalizations [black-capped chickadee D notes, reversed black-capped chickadee D notes, chestnut-backed chickadee D notes, tufted titmouse D notes, male zebra finch contact calls, and female zebra finch contact calls] in a between-category discrimination task (i.e., responding to one type of vocalization was reinforced with food and responding to the other vocalizations was not reinforced). We examined whether the phylogenetic relatedness between subjects and the signaler affected discrimination performance. Our results add to a number of studies examining the perception of conspecific and heterospecific calls by songbirds.

P-17 Non-contact measurement of cognitive, emotional, and physiological changes in heart rate with a webcam

T. Harrison (University of Alberta), C. R. Madan (University of Alberta & Boston College), & K. E. Mathewson (University of Alberta)

Heart rate, measured in beats per minute (BPM), can be used as a diagnostic indicator of general health. Each time the heart beats blood is expelled and travels in a radial motion through the body. This radial motion of blood can be detected in the face using a webcam, as the webcam is able to detect small changes in colour that cannot be seen by the naked eye. These changes in colour are analyzed using a technique known as photoplethysmography (PPG): the detection of variations in transmitted or reflected light. Due to the light absorption spectrum of blood, we are able to use PPG to detect differences in the amount of green light absorbed by the blood flowing just below the skin. Using cognitive, emotional, and physical stress to elicit changes in heart rate, we explored the degree to which a webcam could be used with the purpose of physiological monitoring during psychological tasks. Findings demonstrate a high level of agreement between well-established physiological measures [electrocardiogram [EKG] and blood pulse oximetry]. We thus present the use of webcams as a quick, inexpensive, and readily available method for measuring heart rate that is also non-invasive and even non-contact. This can allow people to monitor their heart's health at their own convenience or to monitor another person's heart rate easily during an experiment.

P-18 Relational distributions: Effects of semantic transparency
A. M. Loverock, W. A. Fox, K. Nisbet, C. L. Gagné & T. L. Spalding (University of Alberta)

There is debate in the literature concerning the processing of compound words (e.g., jaw-bone). Does this processing involve the constituents (e.g., jaw + bone) being used to construct meaning or is the meaning retrieved from the mental lexicon using the full form (e.g., jawbone) only? This question is investigated using measures of ease of processing (e.g., lexical decision times) for compound words. In the current work, we are interested in whether the number of possible interpretations affects ease of processing. If compound word meanings are constructed, the number of possible interpretations of a compound should affect the ease of processing, whereas if they are retrieved there should be no effect of the number of possible interpretations. We describe a technique for determining the number of possible interpretations of a given compound word: In the possible relations task, participants are instructed to pretend that they are learning English, and only know the meanings of the constituents, but do not know the meaning of the words used together as a phrase. Participants are presented with the constituents, and are then asked to select the most likely meaning of the phrase from a list of sixteen possible relational interpretations (e.g., jaw MADE OF bone, jaw CAUSES bone, etc.). The number of acceptable relations varies, creating a distribution of relations for each compound. Using these distributions, we are able to predict lexical decision times to compound words, as expected if compound word meanings are computed.

P-19 Effect of rehabilitation on oxidative injury following intracerebral hemorrhage
M. R. Williamson, K. Dietrich (University of Alberta), M. DeSouza (University of Alberta, Federal University of Pampa), M. J. Hackett, S. Caine, H. Nichol, Phyllis G. Paterson (University of Saskatchewan) & Frederick Colbourne (University of Alberta)

Intracerebral hemorrhage (ICH) is a devastating subtype of stroke. Oxidative stress is a significant contributor to secondary injury following the initial dissection of blood through tissue. Chronic hemolysis (breakdown of erythrocytes) is thought to result in increased intraparenchymal iron, causing acute and prolonged Fe-mediated oxidative damage and cell death. Rehabilitation after stroke is associated with improved outcome and reduced cell death through unclear mechanisms. Rehabilitation may reduce cell death by attenuating oxidative stress, specifically in the peri-hematoma region, which is thought to contribute greatly to recovery following ICH. Rats were trained in a skilled reaching task and then subjected to ICH via a striatal injection of collagenase. Groups were subjected to either enriched rehabilitation (ER) or control treatments. Initially, oxidation was measured using assays for reduced and oxidized glutathione. Injured hemisphere in ER animals had less oxidation compared to injured hemisphere in controls, suggesting a reduction in oxidative stress due to rehabilitation. However, biochemical assays for oxidative markers are limited by their poor spatial specificity. We now aim to further clarify the effects of rehabilitation pertaining to oxidative injury using spectroscopic imaging methods. Such techniques allow for quantitative and spatial determination of relevant markers not possible with biochemical techniques. Spatial mapping of hemoglobin will allow for demarcation of hematoma and peri-hematoma regions. Additional imaging will co-localize Fe and aggregated proteins (indicating oxidative damage) within defined regions. Results from this study will provide insight into the importance of oxidative stress relating to chronic cell death and the neuro-protective mechanisms of rehabilitation.

P-20 Neural correlates of reaching up and down from memory
P. Bacus, L. Cruikshank, J. Caplan & A. Singhal (University of Alberta)

Abstract: The N170 is an event related potential (ERP) component that has been shown to reflect visual perceptual processes and has sources in the lateral occipital cortex (LOC) and temporal lobe regions. Previous work suggests that the LOC is re-recruited for action tasks where the target is not visibly available and a perceptual memory of the target must be used. An open question is whether the LOC is recruited in the same way for actions to objects in the upper visual field compared to the lower.

Method: In our study, 32 participants were auditorily cued to reach-to and touch a target appearing on a touchscreen monitor. In one condition the target was present during action preparation [visually guided], and in the other condition it was not [memory-guided]. We also varied target location such that they could appear in the upper and lower visual fields. We recorded electroencephalographic (EEG)/ERP activity from 256 electrodes during the experiment.

Results: The results showed that memory-guided actions were slower compared to visually guided, and memory guided were less accurate than visually guided actions. Moreover, this effect was largest for actions to targets in the lower visual field. This may be due to the fact that the lower visual field is associated with the majority of human hand actions in every-day life. As expected, the N170 was larger during memory-guided compared to visually guided actions, suggesting more perception is required for the memory-guided trials. Preliminary results suggest that this effect was larger for memory-guided trials in the lower visual field.

P-21 The use of geometric shape and vertical height cues for reorientation in an enclosed environment by pigeons (*Columbia livia*)

N. Mahdi, Y. Du & M. L. Spetch (University of Alberta)

The current study was conducted to compare two orientation cues — geometry and wall height— and identify which is used more dominantly by pigeons to locate their goal. Pigeons were trained to locate correct corner in a rectangular arena with two opposite sides twice as high as the other two sides. Trays were placed on each of the corners but only two trays in corners of geometric equivalence contained hidden food. Pigeons were rotated prior to each trial to disorient them, and the arena was rotated within sessions to prevent use of external cues to locate the correct corners. In the training phase, pigeons could use either the geometrical information from the rectangular arena or the height information from the walls to locate the food. The arena was then modified to test pigeons' performance in reorientation task when 1) only geometric orientation cues were available 2) only wall height cues were available or 3) both height and geometry cues were available but made to conflict the training arena. We found that pigeons were able to locate the correct corner when given geometrical cues only but fail to find the correct corner when only height cues were given. The results indicated that geometric shape of the arena played a more dominant role in this orientation task compared to height.

P-22 An electrophysiological study on the influence of emotion on conflict processing abilities in children

A. Abdul Rahman (University of Alberta), S. Elke (University of Alberta), A. Yan (University of Alberta) & S. A. Wiebe (University of Alberta)

Early childhood is marked by rapid development in children's cognitive and emotion regulation abilities. In this study, we examined how emotion influenced children's ability to resolve conflict and how the neural correlates were modulated. Two groups of children, in early childhood ($n = 19$) and middle childhood ($n = 18$) participated in a face flanker paradigm while scalp EEG was recorded. Children saw a target face, that was either emotional (happy or angry) or neutral, flanked by two distractor faces and pressed a button to indicate the colour of the border around the target face. Dependent measures included accuracy, response time (RT) and event related potential (ERP) measures (N2 and P3 amplitude and latency). Children responded faster in congruent trials (where target and distractor borders were the same colour) and slower in trials with an angry target face. Accuracy was higher when target was a happy face. ERP findings revealed N2 to be a more sensitive marker of conflict processing than P3. N2 latency was earlier for angry target faces than for happy target faces but this effect was only observed in older children. Our findings indicate that while emotions are thought to be 'relevance detectors', their effect on cognitive processes may differ based on the nature of the emotion. In addition, although N2 occurred earlier for angry target faces, children's RT was longer for angry target faces. This suggests that the influence of emotions may be expressed differently at the neural and behavioural level.

P-23 Change in sexual frequency over four years among committed couples

J. Chen (University of Alberta), J. R. Anderson (Kansas State University) & M. D. Johnson (University of Alberta)

Sexuality is a fundamental component in intimate relationships. Higher frequency of sexual activities and greater sexual satisfaction have been linked with relationship stability in marriage and cohabiting union (Christopher & Sprecher, 2000; Yabiku & Gager, 2009). The present study aimed to expand knowledge in committed couples' sexuality in two ways. Firstly, although much research on sexuality of couples in a committed relationship has found a decrease in sexual frequency over time, especially in the earlier years of a relation-

ship, few studies have investigated possible variations from this downward trend (i.e., intraindividual differences in intraindividual change). Using growth mixture modeling (GMM) the present study identified distinct trajectories of change in sexual frequency across four time points over a four-year period among a sample of 1,231 young and middle-aged adults in committed relationships from a longitudinal German study, the Panel Analysis of Intimate Relationships and Family Dynamics (Pairfam) project. Secondly, based on the vulnerability-stress-adaptation model (VSA; Karney & Bradbury, 1995), we derived a set of variables assessing participants' individual and relationship characteristics, physical and psychological well-being, stressful events in daily life, and romantic relationship qualities and processes. ANOVA showed significant differences among the trajectory groups on these variables. These findings have important implications for the hypothesis that age-related diminish in physical health, habituation with the sex partner, and time- and energy-consuming events in daily life (e.g. working and child care) are associated with a decrease in couples' sexual frequency (Call, Sprecher, & Schwartz, 1995).

P-24 "Hot" and "Cool" Executive Functions in Early Childhood: Relations with Cognitive Stimulation and Family Stress

D. M. Vrantsidis (University of Alberta), C. A. C. Clark (University of Arizona), N. Chevalier (University of Edinburgh), K. A. Espy (University of Arizona), & S. A. Wiebe (University of Alberta)

Executive function (EF) is a set of cognitive abilities important for goal-directed behaviour. It is thought to be especially susceptible to social and environmental influences with both cognitive stimulation and family stress have been found to predict EF abilities in early childhood. Recent research suggests that EF can be divided into "cool" EF, used in neutral contexts, and "hot" EF, required for motivationally or affectively charged contexts. The present study's goal is to further investigate the nature of hot EF in preschool-aged children, parsing motivational from affective demands. Participants are 156 3-year-old children, drawn from the Midwestern Infant Development Study cohort. Children completed a battery of tasks assessing cool and hot EF, including several motivationally loaded hot EF tasks, where children had to delay eating a treat or playing with attractive toys, and several affectively loaded hot EF tasks, where children played a "broken" computer game or received a disappointing gift. Data analysis is currently underway. Confirmatory factor analysis will be used to test the factor structure of EF, and structural regression will be used to explore whether cognitive stimulation and family stress differentially predict hot and cool EF.

P-25 Imagery-based memory strategies change the way people learn associations: an event-related potential study

S. S. Sahadevan, Y. Y. Chen, S. A. Wiebe & J. B. Caplan (University of Alberta)

People are able to learn associations between pairs of words (e.g., BALL-GLASS), particularly when using imagery-based strategies. Event-related potentials (ERPs) could provide insight on the processes underlying paired-associate learning: for example, Kim et al. (2009) found a frontocentral positive slow wave during study of the second word (GLASS), but not the first word (BALL), that predicted later memory-success. In our study, we compared the learning and subsequent memory of associations with imagery-based strategies, the Peg List Method and Interactive Imagery strategies, by looking at the ERPs. Participants were randomly assigned to two groups: 1) Peg List Method (N=30) participants used a pre-memorized list of ten highly imageable words, "pegs," that rhyme with numbers (e.g., one-bun) to learn new lists, by forming an image of the list item with the corresponding peg; 2) Interactive Imagery (N=30) participants formed images between the paired items in an interactive relationship (e.g., a BALL inside a GLASS). The Peg List Method is applied to each item, so we predicted that ERPs reflecting encoding would be apparent after both Words 1 and 2. In contrast, the Interactive Imagery strategy is applied after the participant knows both words, so the ERPs reflecting encoding would be apparent after Word 2, as in Kim et al. (2009). We compared subsequently remembered (correct) and subsequently forgotten (incorrect) trials and compared slower with faster trials (among all correct trials, based on a median split). We found the ERPs for Interactive Imagery and Peg List Method to be different; however, further analyses are being completed to determine the nature of these patterns.

P-26 To Speak and Not to Speak: Intrinsic Motivation in Nonverbal and Verbal Cues in Controlling and Autonomy-Supportive Conditions

D. Strelau (University of Alberta), K. E. Chaffee (University of Alberta) & K. A. Noels (University of Alberta)

The current study is a conceptual replication that explores the impact of a controlling versus autonomy supportive experimenter on the intrinsic motivation of participants (e.g. Deci, 1971). The study represents a second attempt at creating effective scripts (i.e. verbal) and training experimenters (i.e. nonverbal) to fulfill both controlling and non-controlling roles. The current scripts, largely influenced by Sheldon and Filak (2008), exhibit elements of decreased participant choice and increased emotional distance in the controlling compared to the autonomy-supportive condition. Both verbal and non-verbal components were included to emphasize relatedness (e.g. handshake and name introduction) as well as rationale and choice (e.g. order of puzzles completed) in the autonomy-supportive condition and highlighting commanding language (e.g. "must"), attire (i.e. lab coat), and demeanour (e.g. impatient, stone-faced) in the controlling version (Sheldon & Filak, 2008). Participants were 25 male and 25 female native English-speaking students at a Canadian university. Intrinsic motivation was measured by the amount of time participants engaged with a puzzle activity during the absence of the experimenter. In light of prior research, we expect to find that those participants who feel more controlled by the experimenter will play with the puzzle less than those in the autonomy-supportive condition, who will demonstrate more engagement during the absence of the experimenter. Through the use of nonverbal and verbal elements within each of the conditions, we hope to elicit more distinct participant reactions in intrinsic motivation as a result of the experimenter playing a more convincing role.

P-27 Friendship Quality and Internalizing Problems in Middle Childhood

L. Chamberlain & W. L. G. Hoglund

The quality of children's early peer friendships are foundational for their ongoing peer relations. However, children who experience internalizing problems (e.g., feelings of anxiety, sadness) may have difficulty forming close, supportive relationships with friends. Similarly, children who share close, supportive friendships may experience fewer internalizing problems because they have a friend who can provide the sense of security and support that they need. The purpose of this research was to assess the directional association between friendship quality and internalizing problems with a sample of children during middle childhood. Internalizing problems were measured via child reported feelings of anxiety and depression on the Behavior Assessment System for Children II (BASC-2; Reynolds & Kamphaus, 2004). Friendship quality was assessed from child-reports on the Friendship Quality Questionnaire (Parker & Asher, 1993) on two separate dimensions (closeness and conflict). Participants included 461 low-income, ethnically diverse children in kindergarten to grade.3. Results indicated that children's internalizing problems negatively contributed to prospective levels of friendship closeness. Internalizing problems were related to concurrent but not prospective levels of friendship conflict. In turn, experiencing internalizing problems has meaningful implications in the resulting quality of children's friendships. Ongoing feelings of sadness and anxiety appear to inhibit the ability of developing closer bonds within friendships. Moreover, children who experience internalizing problems may be preoccupied with such feelings and lack age and context appropriate social skills, indirectly leading to higher levels of conflict within friendships.

P-28 Does the positivity effect generalize to moderate severity dementia? An examination of attention to and memory for valenced information

L. Bohn (University of Alberta), S. T. Kwong See (University of Alberta), H. H. Fung (The Chinese University of Hong Kong)

The positivity effect describes a lifespan shift in the processing of emotional information whereby healthy older adults, and not younger adults, preferentially attend to and remember positive over negative information (Carstensen & Mikels, 2005). Nearly a decade has passed since the positivity effect was first reported, and since that time a wealth of literature has been generated in support of its existence. Limited work, however, has explored the extent to which persons with dementia also demonstrate increased attention to and memory for positively valenced stimuli. The present study sought to remediate these gaps in our understanding. To make comparisons across the adult lifetime and as a comparison to aging in the presence of dementia, participants were young, young-old, old-old adults,

and individuals with moderate severity dementia. Attentional preferences for emotional images were explored by a dot-probe paradigm. Participants then completed a recall and recognition memory task. Results of the dot-probe task did not reveal evidence of the positivity effect. Examination of memory performance did however indicate an age-related advantage for positive over negative material. Young-old adults recognized a higher ratio of positive-to-negative images relative to young adults. Compared to young adults, old-old adults showed an increased positive-to-negative ratio in recall and recognition memory. Those with dementia were also more inclined than young adults to recall and recognize a greater ratio of positive-to-negative images. These findings have practical merit. Communicating information in a positive context to individuals with dementia will arguably make it more appealing, memorable and persuasive, thus improving health outcomes.

P-29 Effects of Object Manipulability and Action Typicality on Associative Memory

A. C. Ng, C. R. Madan & A. Singhal (University of Alberta)

Recent findings indicate that object manipulability can influence memory. In particular, recent research has shown that high-manipulable word-pairs lead to worse cued-recall performance. Here, we further explored the effects manipulability has on associative memory using images and combinations of characters and objects. Participants engaged in a mental imagery task where they were presented with three items: an image of a 3D character, an image of an object, and instructions on how to imagine the character interacting with the object. We also explored the effects congruency may have on mental imagery and associative memory. In the first phase, participants received congruent and incongruent Body-Action-Object (BAO) combinations. When BAO combinations were congruent, the action instruction presented is typically associated with the object presented. On the other hand, incongruent BAO combinations were action instructions that is atypically associated with the presented object. Incongruent BAO combinations were further subdivided into sensible and bizarre. A 9-AFC recognition task was given after each BAO combination to measure the accuracy of the mental imagery. In the second phase, participants were given an incidental cued recall task, where they were asked to recall the object associated with the presented character. In the final phase, participants completed two imagery questionnaires: the Test of Ability in Movement Imagery (TAMI) and the Florida Praxis Imagery Questionnaire (FPIQ). These findings will inform our understanding on the role of inter-individual differences in mental imagery processes on mental imagery success and how it is influenced by the typicality of body-object interactions.

P-30 Successful Memory Aging: A Positive Phenotype for Healthy Brain and Cognitive Aging?

K. L. McDermott (Neuroscience and Mental Health Institute, University of Alberta), G. P. McFall (Department of Psychology, University of Alberta) & R. A. Dixon (Neuroscience and Mental Health Institute and Department of Psychology, University of Alberta)

Alzheimer's disease (AD) and dementia are progressively emerging as major health crises and economic challenges. Recent literature has validated the importance of supplementing the focus on disease phenotypes with the investigation of positive brain aging phenotypes. Given the importance of episodic memory (EM) to normal memory aging (NMA), amnesic mild cognitive impairment (aMCI), and AD, we plan to investigate whether a Successful Memory Aging (SMA) phenotype can be differentiated by biomarkers correlated with AD risk. The data include non-demented older adults from the Victoria Longitudinal Study, focusing on $n = 323$ eligible cases. First, we use longitudinal (nine-year, three-wave) EM performance trajectories to classify three clinical groups based on slopes of observed memory change: (a) SMA with slopes ≥ 1 SD $> M$, (b) NMA with slopes -1 to 1 SD around M , and (c) aMCI with slopes > 1 SD $< M$. Second, we characterize the risk and protective profiles of each group on the basis of genetic, lifestyle, and health factors using chi-square and analysis of variance tests. Third, we predict associations between indicators from these domains and clinical status classification using logistic regression. We expect the SMA group will have a more favorable profile of protective factors and an attenuated profile of risk factors. The aMCI group is expected to have the opposite profile to that of the SMA group, whereas the NMA group will be more variable. Finally, we expect selective status predictions based on epidemiological AD risk research.

P-31 EEG Alpha, but not Theta, Oscillations Predict Individual Memory Performance in an Old/New Recognition Task

Y. Y. Chen & J. B. Caplan (University of Alberta)

Human EEG alpha and theta oscillations have been linked to memory outcome, when recorded during study and test phases of recognition-memory tasks. At test, the retrieval-success effect (activity during retrieval of remembered item minus activity during forgot item) also reveals reduced alpha and increased theta power associated with better memory (Burgess and Gruzelier 1997, Duzel et al, 2003, 2005; Klimesch, 1997). Here we take an individual-differences approach, measuring the difference in alpha and theta oscillations between hits and misses, to test the involvement of oscillations in a simple old/new verbal recognition-memory. Theta activity at early versus late latencies has been suggested to correspond to familiarity and recollection processes, respectively. We tested this hypothesis by comparison with well studied retrieval-related event-related potentials (ERPs) that have previously been implicated in familiarity and recollection: the FN400 and the Late Parietal Positivity, respectively. Alpha desynchronization correlated significantly with the FN400 across participants, consistent with the hypothesis that alpha desynchronization could reflect familiarity. However, the theta-oscillation measure, despite differentiating hits from misses, did not explain individual variability in the Late Parietal Positivity, as predicted, nor the FN400. This is inconsistent with the hypothesis that theta oscillations support recollection-based recognition-memory, or even item-memory altogether. Moreover, the alpha measure correlated significantly with d' and faster response times across participants, supporting alpha's relevance to memory outcome. However, theta was not correlated with d' or response times. Our findings are consistent with alpha oscillations reflecting visual inattention, which can modulate item-memory, and with frontal-midline theta oscillations reflecting relational memory processes that are not essential for item-memory tests.

P-32 The Role of Cognitive Planning in Mathematics Ability

D. Cai (Shanghai Normal University), G. K. Georgiou (University of Alberta), M. Wen (Shanghai Normal University) & J. P. Das (University of Alberta)

Despite the fact that cognitive planning has been found to be a significant predictor of reading ability (particularly of reading comprehension), very little is known about its contribution to mathematics. Thus, the purpose of this study was to examine the contribution of cognitive planning to mathematics ability. Eighty grade 2 Chinese children were assessed on measures of cognitive planning (Matching Numbers, Planned Codes, and Planned Search), nonverbal intelligence (Nonverbal Matrices), working memory (Digit Span Backwards and N-Back), and mathematics (Math Fluency, Math Problem Solving and Math Reasoning). The results showed that cognitive planning accounted for 6 to 12% of unique variance in mathematics over and above the effects of nonverbal intelligence and working memory. These findings suggest that measures of cognitive planning could improve our ability to detect children at-risk for mathematics disabilities and that cognitive planning intervention programs could boost children's mathematics performance.

P-33 Therapeutic Hypothermia Reduces Seizure Activity after Intracerebral Hemorrhage in Rats

A. Klahr (Centre for Neuroscience, University of Alberta), C. Dickson (Centre for Neuroscience, Department of Psychology, Department of Physiology, University of Alberta) & F. Colbourne (Centre for Neuroscience Department of Psychology)

Seizures are a common complication after intracerebral hemorrhage (ICH). We have found that seizures also occur in a rat model of ICH which mimics what occurs in ICH victims. Therapeutic hypothermia (TH), reducing brain temperature to $\approx 33^{\circ}\text{C}$, reduces edema and improves neurological outcome in ICH patients. In this study, we hypothesized that TH reduces seizure activity after ICH in rats, as a new means to potentially confer neuroprotection. We implanted rats with a telemetry probe that records electroencephalographic activity, induced an unilateral ICH, and attached a focal cooling device over the same hemisphere. Rats were then randomized to receive TH (HYPO; N=12) or normothermia (NORMO; N= 11). We observed that 63% (7/11) of NORMO rats experienced seizures whereas TH reduced this number to 33% (4/12), although this did not reach significance ($p=0.220$). The number of seizures, which varied considerably from 0 to 86 episodes, was reduced by 52% in the HYPO group but it was not statistically significant (NORMO: M= 19.82; HYPO: M= 9.58, $p=0.294$).

The present findings suggest that cooling will have a large impact on seizure activity in the days following an ICH. At present, however, additional animals (total = 24/group) are being added to reach 80% power to detect a 50% reduction in seizure incidence, our primary endpoint. In conclusion, our preliminary results suggest that hypothermia has the potential to reduce seizure activity after ICH. Further study is needed to evaluate how this ultimately affects cell death and functional recovery after ICH.

P-34 Comprehensive Narrative Elaboration Technique (CNET): Studying Memory Interview Performance across Older and Younger Adults

S. O. M. Keeler, J. L. Briere & T. A. Marche (University of Saskatchewan)

This research examines the efficacy (accuracy & comprehensiveness) of 3 eyewitness interviewing protocols in younger (18-25 years) and older (55+ years) adults. Approximately 1 week after witnessing a staged argument between a researcher and assistant, participants took part in 1 of 3 interviewing protocols: free recall, the Narrative Elaboration Technique (NET; Saywitz & Snyder, 1996), or the Comprehensive Narrative Elaboration Technique (CNET; Marche, Briere, & von Baeyer, 2015). Interviews were transcribed verbatim and coded for number of accurate and inaccurate details given from each of 6 autobiographical memory components (sensory/somatosensory, affective/emotional, behavioural, cognitive, contextual, and procedural). Based on previous findings that both older and younger adults benefit from increased memory retrieval support, it is expected that free recall, which provides no cues, will result in the least detailed recall, followed by the NET which provides some retrieval support through the use of 4 pictorial cues, with CNET evoking the most detailed reports due to the use of 8 pictorial cues, and therefore the most retrieval support. CNET is also expected more memory components, due to its 8 cues. It is also expected that older adults, who may experience age-related memory decline, will give less detailed memory reports than younger adults. Older adults are expected to benefit more greatly than younger adults from the cued support of the NET and CNET as older adults have been especially responsive to structured and cued recall interviews. No differences in inaccuracy were expected. Potential applications of the results and future directions are discussed.

P-35 Individual Differences in Children's Gesture Frequency: The Role of Verbal and Visuo-spatial abilities

Y. Mori, R. Furman & E. Nicoladis (University of Alberta)

Though some people gesture more than others do, it is unclear why this difference exists. Previous research has found mixed results across the lifespan, from 21 month olds (Alcock & Krawczyk, 2010), to adults (Gillespie, James, Federmeier, & Watson, 2014) for how language and cognitive abilities predict an individual's gesturing frequency. One study showed that adults with high scores on a spatial visualization task gestured significantly more when describing the events of a cartoon, compared to adults with high verbal fluency scores (Hostetter & Alibali, 2011). The purpose of this study was to test if visuospatial and verbal abilities predict gesture use in children. Children aged 4-5 years old completed a cartoon retelling task using a Pink Panther cartoon clip, and their speech and gesture were coded. Children's language abilities were examined using several measures including a standardized vocabulary test. Children's visuospatial abilities were examined using multiple measures including Corsi blocks and the number of words used in retelling the cartoon. We found that some verbal measures were negatively predictive of gesture rate and some visuospatial measures were positively predictive of gesture rate. These results suggest that children, who gesture a lot, are likely to have high visuospatial abilities and low verbal abilities, similar to adults (Hostetter & Alibali, 2011). This interpretation supports the notion that gestures are produced when individuals can image what they want to say but have difficulty accessing relevant language.

P-36 The Use of Shape and Motion Cues for Object Perception in Pigeons

J. F. Nankoo, J. Sawalha, D. Wylie, A. Friedman, Q. Vuong & M. Spetch

Shape and motion cues can reliably be used to identify objects in the environment. Research has shown that birds tend to rely more on motion when shape and motion are presented simultaneously. In contrast, humans appear to have a bias towards using shape for object recognition. In the present study, we combined shape and motion using 3D dynamic objects to determine if pigeons can identify objects using either cue. Contrary to previous research, we used non-rigid motion given that motion generated from organisms tends to be non-rigid. The pigeons were trained to discriminate between two objects, each with a specific type of shape and motion. Testing was done by varying the difference in the shape, motion or both shape and motion of the S+ to the S-. Our results show that pigeons are able to reliably differentiate between two objects using either shape or motion. Only when both the shape and motion were simultaneously changed did performance decrease. Our results suggest that pigeons likely weigh shape and motion cues equally for object discrimination. These findings suggest that the bias for motion in pigeons may be specific to low-level vision. Furthermore pigeons may interpret non-rigid motion differently to rigid motion with respect to object recognition.

P-37 Preschooler's Working Memory Improves Following Brief Executive Function Training

E. Blakey & D. J. Carroll (University of Sheffield)

Executive functions are the set of cognitive skills underpinning controlled, goal directed behaviour. They include working memory, inhibitory control and cognitive flexibility. A recent body of research has reported improvements in executive functions after cognitive training during middle childhood and adulthood. However, few training studies have targeted the preschool years – a time when executive functions undergo rapid development. It is also unclear how far any training benefits transfer to structurally different tasks and domains; whether beneficial effects can arise from short training programs; and whether improvements are short-term or long-lasting. The present study tested the effects of executive function training, both one week post-training and at three months post-training. Fifty-four 4-year-olds (M age: 54 months) completed four computerised training sessions over one month. The training group significantly improved their working memory from pre-training relative to an active control group one week after training. Notably, this effect extended to a task that shared few surface features with the training tasks, and continued to be apparent three months later. In addition, the benefits of training extended to an untrained measure of mathematical reasoning, indicating that during the preschool years, a short EF training program conveys improvements that are both long-lasting and wide-ranging.

P-38 How Early in the Perceptual Processing Stream do Moral Words Bias Brain Activity?

B. Steele (University of Alberta), A. Gantman (New York University), P. Mende-Siedlecki (New York University), J. Van Bavel (New York University), K. E. Mathewson (University of Alberta)

Morality has unique influences on behaviour and brain activity. Recently it has been shown that judgements about masked strings of letters being words or non-words is more accurate for morally charged words than for length and frequency matched other words. This reveals an interesting interaction between morality of visual words and their perceptual processing. Although it is well known that top-down influences and bottom-up features can bias perceptual processing, the precise mechanisms by which the morality of words comes to influence behaviour remains poorly understood. The current study sought to test how early in the perceptual process there is differential activity for moral vs non-moral words. Masked words and non-words were presented above fixation and at an intensity level picked so that subjects were correct roughly 50 percent of the time for non-moral words. Subjects made word vs non-word judgements, and were more accurate for moral words as opposed to control words. Event-related potentials locked to word onset are tested to find the earliest reliable difference between moral and non-moral words, as well as how these differences interacted with accuracy in the task. The results will inform our understanding of the mechanisms of moral perceptual processing in the brain.

P-39 ERP Correlates of Proactive and Reactive Attentional Control in Early and Middle Childhood

S. Elke, K. Maki, T. Harrison, A. Abdul Rahman & S. A. Wiebe (University of Alberta)

The engagement of cognitive control has been described as occurring in two forms: reactive control, where cognitive control is engaged only as needed, and proactive control, where cognitive control is engaged in anticipation of future control demands. This study used event-related potentials (ERPs) to investigate the neural correlates of proactive and reactive cognitive control strategies in children. The sample included groups of younger children ($n = 17$, 4 years, 6 months to 5 years, 11 months) and older children ($n = 19$, 7 years to 8 years, 6 months). Children completed a cued task-switching paradigm while their EEG was recorded. On each trial, children were presented with a cue indicating whether to sort by colour or shape followed by an image to be sorted by the cued dimension, which children indicated on a touch-screen. Upon cue presentation, the task allowed children to prepare for the upcoming trial (i.e., a proactive strategy), activating the cued task set and selecting their response hand, or wait until stimulus presentation to do so (i.e., a reactive strategy). Based on previous research, we predicted that younger children would favour a reactive control strategy, whereas older children would favour a proactive strategy. To determine which form of control children were using, we examined the P3, an index of working memory load. The P3 was analyzed after both the cue and the stimulus. Older children responded more accurately than younger children and their stimulus-evoked P3s had faster latencies than those of younger children in trials where they performed the same task twice in a row (stay trials). However, ERP findings suggested that these performance differences were not due to a shift in strategy, as both age groups showed patterns consistent with both proactive and reactive strategies. It was found that children had larger cue-P3s in switch trials, when they performed different tasks on consecutive trials, than in stay trials. Together, these results suggest that when presented with a complex task involving maintenance of multiple rule hierarchies, older children may use a reactive strategy, contrary to previous findings in a similar age group but with a simpler task (Chatham, Frank, & Munakata, 2009). Due to differing findings depending on task complexity, future research should examine the interplay between working memory demand and proactive cognitive control in a developmental context.

Campus Map

