Psychfest 2017: 'RealTalk'

Block One (10:15am - 11:45am)

1. Zak Witkower (Social; Jessica Tracy)

Two Signals of Social Rank:
Prestige and Dominance are Associated with Distinct Nonverbal Displays

Abstract: Converging evidence suggests that generalized high rank is communicated via various nonverbal behaviors (e.g., expansiveness), but studies have not examined whether two distinct forms of high rank – known as *prestige* and *dominance* –are communicated via distinct nonverbal displays. Across 5 studies using carefully controlled experimental designs and the assessment of spontaneously displayed behaviors during a group interaction and a real-world political contest, we found that these two strategies are associated with distinct sets of nonverbal behaviors. Specifically, prestige, or the attainment of rank through earned respect, and dominance, or the use of intimidation and force to obtain power, are communicated from different forms of expansive behaviors (i.e., subtle postural movements vs. more grandiose space-taking), head positions (i.e., tilted upward vs. downward), and smiling (i.e., presence vs. absence of a smile). These findings provide the first evidence for two distinct signals of high rank, which spontaneously emerge in social interactions and guide social perceptions and the conferral of social rank.

2. Kevin Roberts (Cognitive; Rebecca Todd / Alan Kingstone)

The Blur of Pleasure:
Appetitively Appealing Stimuli Decrease Subjective Temporal Perceptual Acuity

Abstract: Anecdotal reports that time "flies by" or "slows down" during emotional events are supported by evidence that the motivational relevance of stimuli influence subsequent duration judgments. Yet it is unknown whether the subjective quality of events as they unfold is altered by motivational relevance. In a novel paradigm, I measured the subjective experience of moment-to-moment visual perception. Participants judged the temporal smoothness of high-approach positive (desserts), negative (e.g. bodily mutilation), and neutral images (commonplace scenes) as they faded to black. Results revealed approach-motivated blurring (AMB), such that positive stimuli were judged as smoother and negative stimuli as choppier relative to neutral stimuli. Participant ratings of approach-motivation predicted perceived fade smoothness after controlling for low-level stimulus features. Electrophysiological data indicated AMB modulated relatively rapid perceptual activation. Results indicate that stimulus value influences subjective temporal perceptual acuity, with approach-motivating stimuli eliciting perception of a "blurred" frame rate characteristic of speeded motion.

3. Adri Khalis (Clinical; Amori Mikami)

Associations between Online and Offline Social Functioning in Emerging Adults

Abstract: More so than any other age demographic, emerging adults are more likely to use social networking sites (SNS) such as Facebook, in addition to face-to-face interactions, to establish and maintain social relationships. Yet, despite a growing reliance on SNS such as Facebook, there is a dearth of research overall regarding the nature of online social interactions and how they may relate face-to-face social functioning. Further, although psychopathology has been found to impact the face-to-face social functioning of emerging adults, it is unclear as to whether online social functioning may be similarly impacted. The current study documents different aspects of Facebook interactions and explores the associations between such aspects of Facebook interactions and important constructs in face-to-face relationships. In addition, we investigate the associations between these dimensions of online social functioning and common psychopathology (ADHD and anxious-depressive symptoms). Participants were 240 international and Aboriginal first year university students who attended a 2-week orientation program. Participants' Facebook profiles and activity were observationally coded. Sociometric procedures indexed participants' face-to-face peer acceptance and reciprocated friendships. Participants also reported on their ADHD and anxious-depressive symptomatology. Results revealed four aspects that constitute emerging adults' Facebook activity: Facebook involvement, positive Facebook interactions, negative Facebook interactions, and narcissistic self-presentation. Emerging adults' who reported more ADHD symptomatology had greater Facebook involvement but more negative Facebook interactions. Emerging adults who had more reciprocated friendships displayed greater Facebook involvement and narcissistic self-presentation. In contrast, more acceptance by peers predicted less narcissistic self-presentation.

4. Siba Ghrear (Developmental; Susan Birch)

The Curse of Knowledge in Children's False Belief Reasoning

Abstract: The ability to reason about other individuals' perspectives is key for navigating our social world. This capacity is however prone to bias. For example, one's current knowledge about a topic leads to overestimations about what others know, in turn limiting the ability to reason about less-knowledgeable perspectives (the curse of knowledge). The curse of knowledge is especially influential among young children who are more likely to over-attribute their own knowledge to others (Birch & Bloom, 2003). Young children's increased susceptibility to the curse of knowledge is arguably one reason for their difficulty in passing the classic False Belief tasks (Birch & Bernstein, 2007). Particularly, in the classic False Belief tasks, children are given *specific outcome information* and then asked to reason about less-knowledgeable perspectives. The current study examines the effect of the curse of knowledge on false belief reasoning. Three-to-6-year-olds were presented with four stories where a protagonist hides an object in one of four containers. Then, in the absence of the protagonist, another character placed the object in a different container—half of the time children were told exactly which container, the other half of the time they were not. Participants were asked to predict where the protagonist would look for the object. The current study suggests that children more accurately reason the protagonist's false belief when they do not have specific outcome information, compared to when they do.

5. Debra Bercovici (Behavioral Neuroscience; Stan Floresco)

Temporal Dynamics of Amygdala-Striatal Communication during
Cost/Benefit Decision-Making

Abstract: We often face decisions that require weighing the risk of not obtaining a reward against the prospect of a long-term payout. The ability to make assessments about options that vary in terms of reward magnitude and uncertainty is an adaptive behaviour which motivates us to make optimal choices. The basolateral amygdala (BLA) and the nucleus accumbens (NAc) are two interconnected brain regions that play key roles in facilitating optimal decision making and display distinct patterns of activity during different phases of the decision-making process. Yet, how these temporally-precise patterns of activity in this circuit influence choice behaviour is unclear. Using rats trained on a risk/reward decision making task, we assessed how temporally-discrete optogenetic silencing of the BLA→NAc pathway during specific task events (lasting 5-7s) influenced choice behaviour. We observed that during periods immediately prior to action selection, activity in this pathway aids in biasing choice towards more preferred rewards. In comparison, activity in response to non-rewarded actions helps modify future choices towards more certain options. In contrast, suppressing activity in this circuit after rewarded actions did not influence choice behavior. Collectively these data clarify how patterns of activity in BLA-NAc circuitry convey different information that guide action-selection during cost/benefit decision making in situations involving reward uncertainty.

6. Bradford Morrison (Social; Peter Suedfeld / Del Paulhus)

Tracking the Integrative Complexity and Motive Imagery
of the Irish Republican Movement through the Northern Ireland Peace Process

Abstract: Previous research has found that integrative complexity (IC) decreases prior to the decision to escalate conflict, for instance before declaring war. Along similar lines, research into motive imagery (MI) has found that need for power increases prior to the escalation of conflict. Conversely, in peace negotiations between the Mexican government and the Chiapas rebels, day-to-day IC was positively correlated with progress in the negotiations, as judged by the media. However, there is a gap in the research with respect to changes in IC and MI during a long-term peace process, in which there is running conflictual events, e.g. shootings, as well as negotiations. Situations such as these are common, and also complicated, as violence can be used as a bargaining tool, and in attempts to spoil the peace process. In this study, we look at the changes in the IC and MI of the Irish Republican Movement during the Northern Ireland peace process, from 1993 to 2003. We look at how the psychological variables of the Irish Republican Movement relate both to (A) different phases of the conflict (violence, cease-fire, and after the peace agreement), and (B) the count of violent events over time. Our results suggest that the relationship between these variables is nuanced, but is consistent with the logic of strategic bargaining, not only by the movement, but also within the movement.

Block Two (12:45am - 2:15pm)

7. Chelsea Christie (Health; Frances Chen)

Meal Choice Modeling in a Café: The Roles of Relationship and Awareness

Abstract: It is well established that the presence of other people affects how much people eat and the types of food they choose. Past research on food choice modeling has focused on snack foods and has primarily been conducted in artificial laboratory situations. The present study examines modeling of meal choice in a café with a focus on whether people are aware of being influenced and whether knowing the model affects whether modeling occurs. The lunch orders of 231 people were surreptitiously tracked in a café and participants were recruited after they paid for their lunch. Participants were asked whether they ordered the vegetarian or meat-based meal, whether they were influenced by the prior order, and what their relationship was to the person ahead of them in line. As hypothesized, participants consistently modeled the lunch choice of the person ordering ahead of them in line. Contrary to predictions about the role of relationship, participants did not model at different rates following a stranger compared to a non-stranger. Finally, hypotheses about whether modeling occurred consciously or not were partially supported. Even among participants who reported that their order was not influenced by the prior order (who constituted the majority of participants), modeling rates were significantly above chance. The modeling effect size was smaller, however, for participants who reported not being influenced compared to participants who reported being influenced by the prior order. This field study contributes to our understanding of social influences on eating behaviour in real-life situations.

8. Nada Alaifan (Cognitive; Peter Graf)

Memories for Smilies & Frownies: Sex Differences in Memory

Abstract: Research indicates that men and women differ in their memory for emotional events. The present study aims to investigate gender differences in episodic memory for emotional using normed pictures. In the study phase, participants were presented with a long series of pictures some of them are positive, some negative and some neutral. Half of the participants rate the attractiveness of the pictures and half of them rate the repulsiveness of the pictures. After a delay of filler tasks, memory for the pictures was measured using a recognition test. Participants were asked to decide for each picture whether its old (previously seen) or new (not previously seen). Our findings indicate that there were no gender differences for accuracy of memory and for response time for emotional pictures. Interestingly, a significant gender difference emerged in the rating of the negative pictures. Women rated negative pictures more negatively than men did.

9. May Luu (Clinical; Sheila Woody)

Predictors of Poor Conditions in the Home

Abstract: Although popular media portrays hoarding to be a problem of shockingly poor housekeeping, most hoarded homes are relatively clean - they just have too much stuff to be functional. Maintaining household hygiene is undoubtedly challenging in extreme clutter, yet

most residents of hoarded homes maintain basic standards of cleanliness. Some hoarded homes, however, develop poor living conditions like filth or disrepair. The aim of the study was to identify predictors and generate ideas about complex processes involved in the development of poor living conditions in hoarding. Our community partners agreed to share in-home assessment data for referred clients with problematic living conditions, such as hoarded or filthy homes. These community agencies were the Hamilton Gatekeeper's Program (n=209) in Hamilton, ON, the Metropolitan Boston Housing Partnership (n=115) in Boston, MA, and the Hoarding Action Response Team (n=137) in Vancouver, BC. Each site completed in-home assessments from 2011-2014 to evaluate client characteristics and housing circumstances using the HOMES: Multidisciplinary Hoarding Risk Assessment, the Clutter Image Rating Scale, or a similar measure. Preliminary results indicate that approximately 30-50% of clients within sites lived in squalor. Furthermore, 9-11% of clients from each site had household disrepair. Correlates and predictors for of poor living conditions will be discussed.

10. Bill Chen (Quantitative; Victoria Savalei)

Two-stage Maximum Likelihood Estimator for Item-level Missing Data in Regression

Abstract: Psychologists often use scales composed of multiple items to measure underlying constructs, such as happiness, depression, and professionalism. Missing data often occurs at the item-level. For example, participants may skip items on a questionnaire for various reasons. If existing variables in the model can account for the missingness, the data is missing at random (MAR). Modern missing data approaches can deal with MAR missing data effectively, but existing analytic approaches cannot accommodate item-level missing data. A very common practice in psychology is to average all available items to produce scale means. This approach, called available-case maximum likelihood (ACML) may produce biased results in addition to incorrect standard errors. Another approach is scale-level full information maximum likelihood (SLFIML), which treats the whole scale as missing if even one item is missing. SLFIML is an inefficient, wasteful approach. A new maximum-likelihood based analytical approach, called the two-stage approach (TS), was recently developed as an alternative (Savalei & Rhemtulla, 2016). The original work showed that the method outperformed ACML and SLFIML in structural equation models with parcels. The current simulation study examines the performance of the TS approach in the context of regression. It is shown that when item loadings or item means are unequal within the composite, ACML and SLFIML produce biased estimates on regression coefficients even when the missing mechanism is MAR, especially for larger sample sizes. The TS approach performs well in all simulated conditions, showing little bias, high efficiency, and good coverage.

11. Shun-fu Hu (Developmental; Janet Werker)

Tracking Ethnicity-Language Co-occurrences among 10-month-old Bilingual Infants

Abstract: How bilinguals keep the languages separate is of long standing interest. We propose, in line with Kandhadai, Danielson and Werker (2014), that tracking the co-occurrences between language and cultural cues as one mechanism. Besides biological endowment, evidence suggests

that bilinguals also attend more to the acoustic information and talking faces, which would help them differentiate languages. These, we propose, may prepare bilinguals, especially bicultural ones, for tracking the language-cultural co-occurrences, including the language-ethnicity links, which may, in turn, help them differentially activate the language most frequently experienced with that ethnicity. To test this hypothesis, we recruited 45 Chinese-English learning bilingual and 67 English learning monolingual 10-month-olds. Both groups were first shown either static Caucasian or East Asian faces to provide them with information of the ethnicities associated with each of their languages. Next, in the habituation phase, they were repeatedly presented with either one Chinese (non-English) or English (non-Chinese) syllable accompanied with a visual stimulus. After the infant's looking time dropped significantly, the 2-trial test phase began: one trial comprised the same syllables as in the previous phase, while the other featured a different sound in the same language. Infants' discriminatory ability was inferred from the increased looking time to the "different" trial from the "same". The results partly support our hypothesis: bilinguals discriminated the Chinese contrast better when primed East Asian faces, but Caucasian faces did not boost English. This could be due to the lack of exposure to Caucasian faces or the difficulty of the English stimuli.

12. Cindel White (Social; Ara Norenzayan / Mark Schaller)

Belief in Karma:
The Content and Correlates of Supernatural Justice Beliefs Across Cultures

Abstract: Karmic beliefs, centered on the notion of ethical causation within and across lifetimes, appear in religious traditions and spiritual movements around the world, yet they remain an unexplored topic in psychology. I developed and validated a 16-item measure of belief in karma, and used this measure to assess the cultural distribution, cognitive content, and correlates of karmic beliefs among participants from culturally and religiously diverse backgrounds, including Canadian students (Sample 1: $N = 3193$, Sample 2: $N = 3072$) and broad national samples of adults from Canada ($N = 1000$) and India ($N = 1006$). Belief in karma showed predictable variation based on participant's cultural (e.g., Indian) and religious (e.g., Hindu and Buddhist) background, but was also surprisingly common among people from cultural groups with no tradition of karmic beliefs (e.g., nonreligious or Christian Canadians). I demonstrate how karmic beliefs are related to, but distinct from, conceptually-similar beliefs, including belief in a just world and belief in a moralizing god. Finally, I provide preliminary evidence of intuitive conceptions of karma, and investigate how karma is related to self-reported prosocial behaviour and moral judgments. Karma is a form of supernatural justice belief, endorsed by many people from diverse cultural and religious backgrounds that lies at the intersection between beliefs about justice and morality, and beliefs about supernatural forces that shape the course of life's events.

Block Three (2:30pm – 4:00pm)

13. Brandon Tomm (Cognitive; Jiaying Zhao)

Attentional Trade-offs Under Resource Scarcity

Abstract: Resource scarcity poses challenging demands on the cognitive system. Budgeting with limited resources induces an attentional focus on the problem at hand, but it also comes with a cost. Specifically, scarcity causes a failure to notice beneficial information in the environment, or remember to execute actions in the future, that help alleviate the condition of scarcity. This neglect may arise as a result of attentional narrowing. Attentional trade-offs under scarcity can further determine memory encoding. In seven experiments, we demonstrated that participants under scarcity prioritized price information but neglected a useful discount when ordering food from a menu (Experiment 1); they showed better recall for information relevant to the focal task at a subsequent surprise memory test (Experiments 2 and 3); they performed more efficiently on the focal task but neglect a useful cue in the environment that could save them resources (Experiments 4-6); and they failed to remember the previous instructions to execute future actions that could save them resources (Experiment 7). These results collectively demonstrate that scarcity fundamentally shapes the way people process information in the environment, by directing attention to the most urgent task, while inducing a neglect of other information that can be beneficial. The attentional neglect and memory failures may lead to suboptimal behaviors that further aggravate the condition of scarcity. The results provide new insights on the behaviors of the poor, and also important implications for public policy and the design of welfare services and programs for low-income individuals.

14. Theresa Pauly (Health; Christiane Hoppmann)

How We Experience being Alone:
Moderating Influences of Age and Social Relationships

Abstract: Spending time alone constitutes a frequent experience in daily life in adulthood. It is thus important to identify factors that are associated with more favorable solitude experiences. This study tries to better understand affective and biological correlates of solitude across the adult lifespan and tests the relevance of individuals' social relations (e.g., relationship quality, marital status) to affect when in solitude. 185 adults aged 20 to 81 years (M age = 49 years, 51% female, 74% Caucasian) completed questionnaires on solitude (alone vs. not alone) and current affect on a handheld device and provided concurrent saliva samples up to seven times a day for 10 consecutive days. Data were analyzed using multilevel models, controlling for the overall amount of time participants spent alone during the study. Solitude was associated with reduced high arousal positive affect, increased low arousal positive affect, increased low arousal negative affect, and increased cortisol. Greater age was associated with increased high arousal positive affect, reduced low arousal negative affect, and reduced cortisol during solitude. Furthermore, individuals with strong positive relations and those who were married reported less low arousal negative affect when alone. In conclusion, solitude can be a double-edged sword as evidenced by both positive and negative well-being implications. Importantly, greater age is linked to more favorable affective and biological correlates of solitude. Furthermore, for individuals with a backdrop of positive relations and social partners solitude might be a less negative experience.

15. Ryan Tomm (Behavioral Neuroscience; Kiran Soma / Stan Floresco)

Local Androgen Synthesis in the Male Rat Brain:
Effects on Behavioral Flexibility

Abstract: Androgens are known to regulate sexual and aggressive behavior in males. However, little attention has focused on the effects of androgens on cognition and executive function. Androgens are produced in the gonads but are also produced locally in the brain, which might be particularly important when systemic androgen levels are low. Here, we examined the effects of gonadectomy (GDX; reducing systemic androgens) and/or an androgen synthesis inhibitor (ABI; reducing neural androgens) on behavioral flexibility in rats. Behavioral flexibility was assessed using a strategy set-shifting task in operant chambers. First, animals learn to choose the option associated with a visual-cue. Analogous to the Wisconsin card sorting task, the reward strategy then changes. Animals must inhibit choices based off the first strategy, to successfully learn the new rule. There were no effects of GDX or ABI on the ability to learn an initial, visual-cue based strategy. However, during the strategy shift only ABI affected behavioral flexibility, by decreasing perseveration on the previous visual-cue based strategy. These data suggest that neural androgen synthesis may serve to enhance persistence of behavior, which in some instances may suppress behavioral flexibility. Furthermore, GDX+vehicle subjects performed similarly to SHAM+vehicle subjects, suggesting that neural androgen synthesis might promote persistence when circulating androgens are low. These data provide novel evidence for the behavioral functions of neurally produced androgens in mammals.

16. Rachele Benjamin (Social; Steven Heine)

The Pain of Regret and Uncertainty

Abstract: When people discuss negative psychological experiences, they characterize them in pain-related terms. For example, when someone insults us, we report having "hurt feelings". Theorists have noted that social rejection, uncertainty, error evaluation, and cognitive dissonance all activate the same neural substrates as physical pain; specifically, the dorsal anterior cingulate cortex (dACC). Furthermore, studies have shown acetaminophen, a painkiller that is used to treat aches and pains, attenuates our sensitivity to various sources of psychological pain. Together, these findings suggest that the relationship between physical and psychological pain is more than just metaphorical. However, there is little evidence to suggest that psychological pain is, in any real sense, a physically painful experience. In this talk, I explore the hypothesis that psychological pain is painful by investigating purchase patterns of over-the-counter painkillers and how they are predicted by psychologically painful events. In this way, I shed some light on how psychological pain might impact people's subjective interpretation of their internal state, leading to behavioural change. I also discuss a lab-based study in which we use acetaminophen to determine whether regret is among the experiences that can be understood to cause psychological pain.

17. Serene Qiu (Clinical; David Klonsky)

Deciding to Die: Decision Making Styles and Suicide

Abstract: Despite decades of intervention efforts, suicide rates have remained largely unchanged. A key reason for this is that most identified risk factors for suicide (e.g. depression, hopelessness)

predict suicidal thoughts, but not acts. Neurocognitive abilities mediate the relationship between thoughts and behaivours, and thus may be involved in the transition from suicidal thoughts to suicidal acts. The current project is the first to examine decision making styles in relations to suicidal thoughts and suicidal acts. A total of 600 participants (191 suicide attempters, 201 suicidal ideators, 208 non-suicidal controls) were recruited using Amazon's Mechanical Turk (MTurk.com). Participants who passed a brief pre-screen questionnaire were invited to complete the full set of questionnaires that measured five different decision making styles (Spontaneous, Intuitive, Avoidant, Dependent, Rational), suicidality, among other psychological, cognitive and psychiatric variables. Replicating prior findings, common predictors such as hopelessness and impulsivity were strongly associated with suicidal ideation but not attempts. Rational decision making style differentiated attempters from ideators as well as or better than any of the other predictors, with attempters exhibiting lower rational decision making style. Avoidant and dependent styles also distinguished attempters from ideators, with dependent decision makers less likely to be attempters, while the reverse was true for avoidant decision makers. Decision making styles may help to distinguish individuals who act upon their suicidal thoughts and make an attempt from those who do not. Decision making may not only contribute to suicide risk assessment but also serve as potential intervention targets in reducing suicidality.

18. Ru Qi Yu (Cognitive; Jiaying Zhao)

How Statistical Learning Shapes Object Representations

Abstract: The environment is highly stable with widespread regularities, such as the reliable co-occurrences between individual objects. Statistical learning is a cognitive process that supports the extraction of regularities from the environment. This learning process occurs implicitly and operates in multiple sensory modalities and feature dimensions. One basic question about statistical learning is how learning of regularities influences representations of individual objects. In a series of experiments, I first demonstrate that the representations of co-occurring objects become more similar to each other (Experiments 1 to 3). I then demonstrate that changes in one object are automatically transferred to the co-occurring object (Experiments 4 to 7). These studies support the unitization hypothesis which states that learning co-occurring objects results in a unitized representation of the individual objects. Such representation can lead to more efficient processing of objects, reducing the perceived complexity of the information in the environment.

Block Four (4:15pm - 530pm)

19. Ryan Dwyer (Social; Elizabeth Dunn)

Staying Connected in a Wireless World: The Costs of Phone Use for Well-being

Abstract: Decades of research on human happiness points to one central conclusion: Engaging in positive social interactions is critical for well-being. The current technological revolution, however, may be altering how and when we derive these benefits. Smartphones enable us to connect with friends and family throughout the day, potentially allowing us to reap

the benefits of social interactions even when we are alone. But could these devices—with their ability to connect us with anyone, anywhere—distract us from enjoying interactions with the people sitting right next to us? Using a field experiment and experience sampling, we found the first evidence that phone use may undermine the enjoyment people derive from real world social interactions. In Study 1, we recruited over 300 community members and students to share a meal at a restaurant with friends or family. Participants were randomly assigned to keep their phones on the table or to put their phones away during the meal. When phones were present (vs. absent), participants felt more distracted, which reduced how much they enjoyed spending time with their friends/family. We found consistent results using experience sampling in Study 2; during in-person interactions, participants felt more distracted and reported lower enjoyment if they used their phones than if they did not. This research suggests that despite their ability to connect us to others across the globe, phones may undermine the benefits we derive from interacting with those across the table.

20. Sheri Choi (Developmental; Janet Werker)

Sensorimotor Influences on Perception of Native and Non-native Speech in Infancy

Abstract: Language is a complex cognitive mechanism that is a fundamental human trait. Understanding how speech is acquired can give insights into this uniquely human capacity. Speech perception is not only auditory, but also multisensory from early in infancy. Indeed, recent work indicates that relevant oral-motor movements influence discrimination of never before heard speech sounds in pre-babbling infants. When a teething toy limited English-learning 6-month-old infants' tongue tip movements, infants no longer discriminated the non-English Hindi dental/da/-retroflex/Da/ speech contrast (Bruderer et al., 2015). My research further investigates the role of articulator-specific sensorimotor influences on 6-month-old infants' speech perception. In the first set of studies, infants were again tested for discrimination of the dental /da/-retroflex /Da/ speech contrast while a tongue-tip-movement-limiting toy was held in their mouth. In the second set of studies, infants were tested for discrimination of bilabial /ba/ and alveolar /da/ native speech contrast while they were given a toy that specifically limited the lip but not the tongue movements. The outcome of the studies will disambiguate whether an articulator-specific sensorimotor influence is generalizable to both sound contrasts, or restricted only to sound contrasts that have not been previously heard by the infant. The research further contributes to our understanding of how multisensory information influences speech perception in the early stages of language acquisition.

21. Patrick Laflamme (Cognitive; Jim Enns)

An Evaluation of Superstitious Perception

Abstract: Superstitious perception allows one to estimate the visual internal representations of participants for specific objects or concepts. This technique involves a simple signal detection task, where participants look at images of white noise, like static from an old TV, and report whether or not they believe the object of interest is present in the image. The end result is a classification image that shows the participant's internal representation of the object or concept

of interest. To our knowledge, however, the evaluation of the accuracy of the internal representation estimate is made in a largely qualitative manner, leaving researchers in the dark with regards to how well their generated classification image the participants' internal representation. In the current work, we developed new techniques to quantitatively evaluate how well the classification images estimate the participant's internal representations. These techniques are derived from the underlying statistics of superstitious perception and provide critical information about the classification image's goodness of fit to the participants' responses. Using these new techniques, we tested the effect of recruiting executive function to the task on the accuracy of the resulting estimates of internal representation. Our results suggest that task strategy has a large influence on the accuracy of the generated estimates. Specifically, participants who minimize the recruitment of executive function during the task tend to yield more accurate classification images than do participants who maximize the recruitment of executive function.

22. Nicole Jenni (Behavioral Neuroscience; Stan Floresco)

Modulation of Probabilistic Discounting and Reversal Learning by Dopamine
within the Medial Orbitofrontal Cortex

Abstract: Weighing the value of a reward against its likelihood of delivery in order to optimize long-term utility is a fundamental component of adaptive decision making. Both animal and human studies have implicated the medial subregion of the orbitofrontal cortex (mOFC) in this form of cognition, but whether dopamine (DA) modulates mOFC function has been virtually unexplored. We assessed how DA D_1 and D_2 receptors within the mOFC may promote adaptive decision making— specifically in the face of probabilistic outcomes. One series of experiments assessed risk/reward decision-making, while another assessed cognitive flexibility during probabilistic reversal learning. We selectively blocked D_1 or D_2 receptors within the mOFC of well-trained rats prior to test sessions. Across both behaviours, we found that D_1 and D_2 receptors within the mOFC play opposing roles in the regulation of adaptive decision making. During risk/reward decision making, blocking D_1 receptors reduced, while blocking D_2 receptors increased choice of the large/risky option. During probabilistic reversal learning, blocking D_1 receptors reduced, while blocking D_2 receptors increased the number of reversals completed. Together, these findings highlight a novel role for mOFC DA in guiding adaptive behavior in situations of reward uncertainty. Elucidating how DA within different nodes of mesocorticolimbic circuitry influences choice behaviour will expand our understanding of the mechanisms regulating optimal and aberrant decision-making.

23. Mario Ferrari (Clinical / Cognitive; Luke Clark)

Slot Machine Gambling & Testosterone: Evidence for a 'Winner-Loser' Effect?

Abstract: Testosterone can be seen to modulate cognition and behaviour in many ways. One such way is by promoting risky decision-making. According to a phenomenon termed the "winner-loser effect," testosterone has also been observed to fluctuate in response to winning or losing competitions with others, with wins causing increases and losses causing decreases. Surprisingly, few studies have investigated the effects of gambling on testosterone levels, including whether

resulting increases or decreases are related to changes in risk-taking attitudes or behaviour. The winner-loser effect may extend beyond social gambling (e.g., poker) to solitary gambling (e.g., slot machine play) due to players' tendency to anthropomorphize slot machines. Therefore, this study used a quasi-experimental design wherein testosterone fluctuations were examined with regard to wins and losses after a period of authentic slot machine gambling. Anthropomorphism was investigated as a potential moderator of a winner-loser effect on testosterone. Novice gamblers (n = 120) provided saliva samples before and after a period of gambling on an authentic slot machine. Participants also provided measures for anthropomorphic tendencies. No differences in testosterone fluctuations were observed between winners and losers. Similarly, anthropomorphism did not moderate testosterone fluctuation, despite systematic individual differences in the tendency to anthropomorphize the machine. Consistent with the 'dual-hormone hypothesis', among individuals with low basal cortisol, testosterone was associated with a faster pace of play during the gambling session. These results suggest that individual differences in testosterone and cortisol can modulate risky gambling behaviour.