Program for the 2011 Psychology Department In-House Convention

Talk Session 1: 11:00 - 12:00

1. Sleep America: Managing the Crisis of Adult Chronic Insomnia and Associated Conditions (in press: Journal of Affective Disorders)

Stefanie Kraus & Laura Rabin

Chronic insomnia, a public health crisis affecting 10-15% of the U.S. population and costing billions of dollars annually, typically presents with one or more comorbid psychiatric or organic conditions. Historical classification of chronic insomnia as “secondary” to a presenting comorbid condition has resulted in under-recognition and under-treatment of both the insomnia and comorbid condition(s). Though critical in any model of comorbid disease management, chronic insomnia receives little, if any, public policy attention. We conducted a systematic review of recent empirical studies, review papers, books, government documents, press releases, advertisements, and articles pertaining to the classification, epidemiology, treatment, and physiology of sleep, insomnia, and comorbid conditions. Our goal was to provide an overview of the systems for classifying insomnia and available epidemiological data, and to review theoretical models regarding the etiology and maintaining factors of chronic insomnia along with research on the complex, bidirectional associations between chronic insomnia and various affective (and other) conditions. After thorough review of the literature, we propose several public policy measures as an initial step in managing chronic insomnia in the United States. These include introducing a nation-wide multi-modal educational and awareness campaign titled “Sleep America;” increasing the availability and demand for behavioral sleep medicine – the initially preferred treatment approach; and increasing the use of monitoring and enforcement activities by regulatory authorities to curtail false and misleading claims by sponsors of supplements or treatments for insomnia.

2. Sex, Space-time, and Vision

Israel Abramov, Alla Chavarga, Olga Feldman
(Applied Vision Institute, Psychology, Brooklyn College/CUNY)
James Gordon
(Psychology, Hunter College/CUNY)

The visual system encodes the retinal image of the world. Different types of retinal neurons act as filters that operate on the image – they analyze it into component elements that eventually result in sensations, which are then assembled into percepts of real things. We limit ourselves to probing psychophysically the properties of some of the various types of neurons. Spatial components of shapes and patterns are filtered by neurons sensitive, respectively, to coarse through to fine detail. To characterize them, we measure the Spatial Contrast Sensitivity Function (CSF) which yields sensitivity to gratings whose luminance profile varies sinusoidally. We include time variations by also flickering each grating at each of several temporal rates. The resulting spatio-temporal surface defines the information available to higher brain centers for perceptual and cognitive processing. Surprisingly, we find a significant sex difference at this low level of the visual system: males are more sensitive across the entire spatio-temporal surface. We rule out explanations due to differences in the eyes’ optics and anatomy. The effect is likely due to responses of neurons in primary visual cortex. While the differences are not large they point to a sex difference in development and maturation of the visual system: during embryogenesis cortical neurons send axons to the visual area in the thalamus; these descending fibers guide ascending axons and determine how responses of the lower neurons are combined. A plausible substrate for the sex difference in these combinations is that the cerebral cortex, especially the visual areas, is replete with receptors for testosterone!
3. Modeling Neural control of Muscular Hydrostat System: Squid Tentacle Extension

Grasso, F.W. 1, 2  

1 The BioMimetic and Cognitive Robotics Laboratory, Brooklyn College of The City University of New York, Brooklyn, NY  
2 Cognition, Brain and Behavior Program, The Graduate Center, CUNY  

Cephalopods (octopuses, squids, cuttlefishes and nautiluses) use their arms, tentacles and suckers to grasp and manipulate objects in physically complex, three dimensional environments. Their dexterity and precision in these tasks is remarkable given that these appendages are constituted without rigid parts. Object manipulation in these animals is effected muscular-hydrostat (MH) systems that operate through the coordination of the soft tissues: active force and stiffness generation by muscle and passive processes produced by connective tissues of varying degrees of flexibility. Motor neurons produce contraction on muscle fibers arranged in a single orientation in the appendage but interlaced fibers are arranged at many orientations within an MH. Different motor units (connected motor-neuron, muscle fiber groupings) control shape changes of the MH in different directions by cooperative and antagonistic activation constraints applied by the connective tissues embedded within the matrix. Our ABSAMS simulation environment permits exploration of MH control strategies with quantitative, geometric implementation of the muscle and connective tissue models. Prior studies showed that the arrangement of the connective tissue had significant effects on the performance to the model tentacle in speed and accuracy of the tentacle terminal (the club) delivery to a target. Those simulations, which quantitatively reproduced the 3d kinematics of tentacle strike in models, used a simple all-or-none activation of the motor units as the control strategy. New simulations, in which the pattern of activation was systematically varied under different control strategies (progressive directional activation along the appendage, ramp activation functions, time-dilating Gaussian functions and random activation functions) showed significant interactions of control scheme with connective tissue arrangement. Large initial activations led to the best speed. Accuracy of these could be improved by the inclusion of an initial ramp that pre-stiffened the tentacle before significant extension. A progressive activation from base-to-tip led to greater reliability of final club placement. These results agree with tentacle strike behavior in squid and provide an explanation for patterns of neural activity that produce it. Simple on-off activation functions were not as accurate as modulated activations suggesting that the state control of MH systems of greater complexity, both structurally and behaviorally, will benefit from flexible control strategies rather than all-or-one ones.

Talk Session 2: 2:00 - 3:35

4. Homocysteine and Cognitive Function in Very Elderly Nondemented Subjects  
(Published in The American Journal of Geriatric Psychiatry)  

Rebecca West, Michal Schnaider Beeri, James Schmeidler, et al.  

Objectives: To examine the association of homocysteine with cognitive functioning in very elderly community-dwelling individuals (80 years or older). Methods: Two hundred twenty-eight nondemented community-dwelling individuals were assessed with a broad neuropsychological battery. Bloods were drawn to measure homocysteine, serum vitamin B12, and folate levels and APOE genotype. Results: Higher homocysteine levels were associated with poorer executive/language functioning scores \((r = -0.311)\). The association persisted when serum B12 and folate levels were controlled for \((r = -0.308)\). Homocysteine levels were not associated with memory score \((r = 0.120)\). Conclusions: In very elderly, nondemented community dwellers, high homocysteine levels are associated with poorer executive/language functioning but not with memory. This possible differential effect of homocysteine on cognitive functions suggests that it may affect only specific brain regions or mechanisms underlying healthy executive functioning.
5. Trends in Neuropsychological Assessment of Ethnic Minorities: A Survey of Neuropsychologists in the U.S. and Canada

Milushka Charcape, Laura Rabin, Amanda Spadaccini, & Kevin Grant

Key challenges in the neuropsychological assessment of ethnic minorities include appropriate translation and validation of tests, utilization of appropriate norms to assist in the interpretation of raw scores, and clinicians’ cultural competence and linguistic proficiency. Challenges in providing services for ethnic minorities go beyond the domain of assessment, as neuropsychologists who identify as ethnic minorities are under-represented in the field. Despite the importance of this issue as our society becomes more demographically diverse, research has yet to survey neuropsychologists regarding their multicultural assessment perspectives and practices. Potential participants in the current survey were 2178 doctorate-level North American neuropsychologists randomly selected from the membership lists of the International Neuropsychology Society (INS) and the National Academy of Neuropsychology (NAN) and residing in the U.S. or Canada. As part of a larger survey of assessment practices, we surveyed issues related to: neuropsychologists’ assessment of ethnic/racial minority populations, proficiency in languages other than English, approaches to interpreting the cognitive scores of ethnic/racial minorities, and perceived challenges associated with assessing ethnic/racial minority patients. Surveys were sent by mail in March 2011 and participants had the option of responding via paper-and-pencil questionnaire or an online version of the survey. Data collection is ongoing and herein we present the results of our first 300 respondents. Final survey results will be disseminated broadly with the hope of contributing to better education and training of neuropsychologists in multicultural issues and more appropriate and valid assessments of ethnic/racial minorities.

6. Sin and Repentance: Incidental Sexual Thoughts Decrease Self-Esteem but Increase Altruism and Accessibility of God

Rick M. Cheung

Redemption requires feelings of remorse but also a resolution to do right and to be good. This truism is shown in novel ways, as implicitly activated sexual thoughts lowered women’s self-esteem and caused a compensatory recruitment of normative thought—when there were faces hung on the wall at eye level.

7. Evidence for inter-sucker coordination during different arm movements in the Giant Pacific Octopus

Hadjisolomou, S. P. and Grasso, F. W.
BioMimetic and Cognitive Robotics Laboratory
Department of Psychology, Brooklyn College, CUNY, Brooklyn NY,
Cognition, Brain and Behavior Program, The Graduate Center, CUNY, New York NY

Coleoid cephalopods have suckers on their arms and tentacles. Squids and cuttlefish use their suckers primarily for adhesion by suction. Octopus suckers have different morphology, specifically the extrinsic muscles (Kier and Smith, 1990), which allow for more elaborate functionality. The flexibility of octopus sucker behavioral repertoires is well known (Packard, 1988), but the mechanisms for control are just beginning to be understood. Octopuses are able to use their appendages to manipulate objects with a virtually infinite number of degrees of freedom. The mechanisms by which they achieve fine and forceful control of grasping are realized through the coordinated action of the suckers and the arms. Recent evidence (Grasso, 2008) supports the hypothesis that the suckers of the octopus arm, acting as part of this hyper-redundant system, are not passive agents, but actively contribute to grasping and manipulation. In this study, we hypothesized that motions of neighboring suckers would be more coordinated during goal-directed arm movements compared with passive movements. To examine this hypothesis in closer detail, we tracked the movements of suckers from digitized video footage of single
arms of Giant Pacific Octopuses, *Enteroctopus dofleini* (Hochberg, 1998) while they employed those arms to achieve different goals. In quantitative analysis, we calculated movements of sections of the arms carrying the suckers. We subsequently deducted the arm from sucker movements to estimate the individual sucker motions independent of the arm. We computed the pair-wise cross-correlation between the movements of 20-30 suckers along the arm. Significant correlations and anti-correlations \( p<0.01 \) were found that demonstrated neighborhoods of coordinated activity both locally and at distant intervals along the arm. The delays between these correlations were brief \(<10.0 \text{ ms}\) and therefore unlikely to have included closed-loop communication between the sucker and the supra-esophageal ganglia. These patterns of arm-independent sucker activity varied with the task to which the octopus applied the arm. These results agree with earlier evidence indicating that sucker movements are not passively generated; they are coordinated with arm movements in order to assist specific goal-directed behaviors. Further investigations of the mechanisms underlying sucker functionality will help to better understand octopus behavior as well as the phylogenetic differences among octopuses, squids and cuttlefish.


8. Maureen O’Connor, CUNY Graduate Center, Closing Thoughts

**Poster Session, 12:00 – 2:00, & then again 3:35 – 5:30**

**P1. Experience with sapid fluids stimulates MSG solution preference in mice.**

**Ackroff, K and Sclafani, A.**

C57BL mice are reported to prefer MSG over a range of concentrations in 48-h two-bottle tests. These animals had prior experience with other sapid solutions. In our first experiment, naive B6 mice failed to prefer to MSG at any concentration tested \(0.1-450 \text{ mM}\). To explore the effects of experience, the same mice were next given forced exposure to 300 mM MSG (for 4 days as the sole fluid source) and then retested. They now exhibited significant preferences for 1-300 mM MSG. New groups of naive mice were exposed to 0, 10, 100, or 300 mm MSG; only experience with 300 mM significantly increased subsequent MSG intake. Other naïve mice were given experience with 8% sucrose, 8% Polycose or 0.8% sucralose. Only the sucrose and Polycose groups subsequently preferred MSG. The preference threshold at which MSG intake significantly exceeded water intake was 1 mM after MSG experience, 10 mM after sucrose, and 100 mM after Polycose experience. These thresholds were inversely related to total preexposure intakes. The reported generalization of MSG and sucrose responses in rodents under some conditions suggests that they share some taste properties, which may be related to the T1R3 receptor common to the sweet and umami taste receptors. Polycose taste, however, is not mediated by the T1R3 receptor. The lack of effect of sucralose indicates that sweet taste alone is not sufficient to enhance MSG preference. Together these results suggest that a combination of oral and post-oral effects may be responsible for the experience effect, with MSG itself the most potent stimulus.

**P2. The Brief Symptom Inventory (BSI) as a screening tool for psychological disorders in patients with traumatic brain injury**

**Travis Alvarez, Laura Rabin, & Joseph Rath**

This study examines the usefulness of the Brief Symptom Inventory (BSI) as a screening tool for psychological disorders in patients with mild to severe traumatic brain injury (TBI). Psychological
disturbances are common among TBI patients, and commonly used standardized questionnaires such as the BSI are useful in detecting and characterizing such disturbances. It has been observed that BSI scores of TBI patients are higher than published normative data, which highlights the issue of misinterpreting TBI patient scores as an indicator of psychological disturbance. For this reason, it is important to develop BSI test norms specifically for individuals with TBI instead of using nonpatient normative comparisons. Participants were a demographically diverse group of 105 adult outpatients (ages 19 to 69) with traumatic brain injuries (ranging from mild to severe) and 51 non-TBI controls (ages 24 to 62) systematically recruited from an ongoing study at the NYU Rusk Institute of Rehabilitation Medicine. All participants completed the BSI, a 52-item self-report measure developed to measure psychological problems within 9 domains (e.g., depression, anxiety, hostility). Our goals were to compare differences across item-response distributions between those with TBI and nonpatients and to develop preliminary BSI normative data for patients with TBI. We present these results, which will prove useful to clinicians and researchers seeking to utilize the BSI in an effective and appropriate manner with a TBI population.

P3. BEHAVIORAL INVESTIGATIONS OF TACTILE SENSORI-MOTOR NEURAL NETWORKS IN THE OCTOPUS ARM

Josh Barocas*1 Savithri Nair1 and Frank W. Grasso1,2
1The BioMimetic & Cognitive Robotics Lab, Dept of Psychology, Brooklyn College, CUNY
2Program in Ecology, Evolution, and Behavior, (Biology) and The Cognition Brain and Behavior Program (Psychology) The Graduate Center, CUNY

Cephalopods in general and octopuses in particular possess the most sophisticated brains and nervous systems among invertebrates (Meinertzhagen, 2010) – comparable in complexity to that of a mammal. While the neuroanatomy of the cephalopod nervous system has received detailed study, including the network of ganglia in the arms. However, little attention has been given to the flow of information through these networks. We were interested in investigating the function of the connections between the various ganglia controlling the behavior of the suckers in octopus. Prior studies have shown that mechanical signals from the sucker rim are sent along the axial nerve cord to trigger reflex responses (Rowell, 1963). We hypothesized that greater numbers of suckers would be recruited to respond to mechanical stimulation of a single sucker by more intense mechanical stimuli. To test this hypothesis, we devised a method of restraint that made the suckers on all eight arms accessible to stimulation and simultaneous video recording. We stimulated single mid-arm suckers with rim-covering caps and varied the weights delivered and recorded the movements of the five nearest proximal and distal suckers. More suckers responded more often to heavier weights (F(9, 30) = 5.94, p < 0.05), and the nearest suckers responded the most frequently. This finding suggests that the mechno-receptors on the rim of the sucker can send differential signals along the ganglia of the arm that can differentially recruit adjacent suckers.

P4. The evolution of flexible behavioral repertoires in cephalopod molluscs

Jennifer A. Basil1,2, Robyn Crook3 and Frank W. Grasso2,4
1Department of Biology, Brooklyn College, CUNY, Brooklyn NY
2Program in Ecology, Evolution and Biology, Graduate Center, CUNY, New York NY
3Department of Integrative Biology and Pharmacology, University of Texas Medical School, Houston, TX
4BioMimetic and Cognitive Robotics Laboratory, Brooklyn College, CUNY, Brooklyn NY

Cephalopods are a large and ancient group of marine animals with a complex brain organization that supports a diversity of sophisticated and adaptive behaviors. Forms extant today are equipped with brains, sensors, and effectors that allow them not to just exist beside modern vertebrates as predators and prey; they also compete with marine vertebrates at every scale --- from small crustaceans to sperm whales. We discuss the evolution of the cephalopod nervous system, their learning capabilities, and their complex behavior. We also review recent evidence of learning and memory in chambered nautilus, considered to be plesiomorphic among cephalopods. While competition with bony fishes has left a deep
impression on the brains and behavior of modern cephalopods, the original re-organization of their complex brains from their molluscan ancestors may have been forged in ancient seas, millions of years before the advent of bony fishes.

P5. Differential Object, Surface, and Object-On-Surface Manipulation in 10-Month-Old High-Risk Infants

Y. Bensinger-Brody 1,2,3, J.M. Gardner 2,3, L. McDonough 1, B.Z. Karmel 2,3
1Ph.D. in Psychology, Subprogram: Cognition, Brain & Behavior, CUNY Graduate Center, New York, NY
2 Center For Developmental Neuroscience, College of Staten Island/NYS Institute for Basic Research, Staten Island, NY.
3 Infant Development, NYS Institute for Basic Research in Developmental Disabilities, Staten Island, NY.

The current study investigated the ability of high-risk 10-month-old infants to differentially manipulate objects and surfaces of varied composition. Prior work with typically developing 10-month-olds demonstrated differential object, surface, and object-on-surface manipulation. Since early motor activity can be modulated by arousal, and infants with central nervous system injury often have difficulties with these systems, we hypothesized that high-risk infants may have decreased regulatory abilities for manipulation. 38 infants recruited from the neonatal intensive care unit were tested at 10 months of age. Using a task modified from Bourgeois et al., 2005, infants’ action behaviors were videotaped and coded. The high-risk infants in this study as a group were able to differentially manipulate objects and surfaces similarly to previous reports. Group differences for many behaviors were found based on subject characteristics of gestational age and level of central nervous system injury. This task may be a valuable tool for assessing infants’ regulatory abilities for manipulation, and could potentially be developed as a tool to assess risk of Developmental Coordination Disorder.

P6. Opioid mediation of sugar and starch preference in the rat

Bonacchi, KB, Ackroff, K, Touzani, K, Bodnar, RJ and Sclafani, A.

The brain opioid systems are implicated in food palatability, particularly related to sweet taste. Many studies report that opioid receptor blocking drugs (naltrexone) suppress the intake of sweet drinks and foods in rats. Yet, in prior work we found that systemic naltrexone failed to suppress learning or expression of flavor preferences conditioned by sugar solutions relative to saccharin solutions. This may have occurred because both training solutions were sweet. In this study we compared the effects of naltrexone on preference for sugar vs. starch drinks and for flavors paired with these drinks. In Experiment 1, hungry rats were adapted to consume 8% corn starch and 8% sucrose drinks in 30-min sessions. They were then given two-bottle choice tests following saline or naltrexone (1, 3 mg/kg) treatment. Overall, naltrexone decreased both sucrose and starch intake with the effect being slightly greater at the 3 mg/kg dose. However, compared to the saline baseline, the drug increased the preference for sucrose (65% to 81%). This was true in animals that equally preferred sugar and starch following saline (53% to 73%) as well as in animals that were sucrose preferrers (78% to 89%). In Experiment 2, we investigated drug effects on the expression of a flavor preference conditioned by the carbohydrates. Rats were trained to consume 8% starch and 8% sucrose drinks flavored with grape or cherry Kool-Aid in 30-min sessions on separate days. In a choice test with the two flavors each presented in a mixture of 2% starch and 2% sucrose, the rats preferred the starch-paired flavor (71%). They lost this preference, however, when treated with a 3 mg/kg naltrexone dose (57%). Novel outcomes of this study include increased rather than a predicted decrease in sugar preference by naltrexone. Starch unexpectedly conditioned the stronger flavor preference, and this preference was blocked by naltrexone. Apparently, starch preference and starch-conditioned flavor preference are more dependent on opioid receptor activation than are sugar preferences.

P7. Using Neural Network Architectures to Arbitrate Simultaneous Performance of Conflicting Behaviors in a Mobile Robot Performing a Spatial Search Task
Neural network algorithms are known for their ability to simulate properties of biological nervous systems, learning input-output patterns through the manipulation of connection weights between simulated neurons. In this experiment, we search for the optimal set of connection weights for an “instinctual” hard-wired network in a mobile robot, with the aim of developing a basic platform that can be combined with other networks to model more complex behaviors. Connection weights in a neural control network governing two behaviors, phototaxis and obstacle avoidance, were varied at three levels in a factorial experimental design (3x3=9 conditions, 7 replications). The robot was tested in a cluttered environment which contained a single light source, forcing the obstacle avoidance and phototaxis behaviors into conflict. A trial was successful if the robot arrived at the light source without crashing. A two-way ANOVA was performed, comparing different weight combinations on success. Performance was significantly different between levels of phototaxis (F(2,54)=11.27, p<.001) but not obstacle avoidance (F(2,54)=1.18, p=.314), with stronger phototactic connection weights producing a higher success rate. An interaction was found (F(4,54)=2.82, p=.034) which made the tested combinations of low or high obstacle avoidance with high phototaxis particularly effective. These two weight combinations produced perfect performance, making them promising candidates for multi-network systems in the future.

**P8. THE ROLE OF THE DORSAL HIPPOCAMPUS IN APPETITIVE RENEWAL OF MAGAZINE APPROACH USING PHYSICAL AND TEMPORAL CONTEXTS**

Vincent Campese and Andrew R. Delamater
Brooklyn College (CUNY)

Dorsal hippocampal (DH) manipulations eliminate fear renewal (Corcoran & Maren 2001; 2004; Ji & Maren 2005; Maren & Hobin, 2007). However, appetitive renewal is unaffected by DH inactivation (Campese & Delamater, 2009 SFN). In two new experiments we show that neither ABA nor ABC appetitive renewal were disrupted by lesions of the DH. In a third experiment DH inactivation did not impair ABA renewal when the time of day served as a contextual cue.

**P9. Learning-related changes in prospective coding: a multi-voxel pattern analysis of fMRI data**

Elizabeth Chua, Aaron Heller, & Charan Ranganath

Learning associations between auditory and visual stimuli is an important means by which we learn about objects in our world. Here, we used multi-voxel pattern analysis (MVPA) of functional magnetic resonance imaging (fMRI) data to examine the dynamics of learning and retrieval of auditory-visual associations. Subjects were scanned on 2 consecutive days during learning and testing phases. On Day 1 (learning phase), participants were asked to learn faces or novel sounds (‘single-object trials’), and arbitrary face-sound associations (‘cross-modal trials’). On cross-modal trials, a sound or a face was presented, and after an 8 s delay, its associate (which was always in the other modality) was presented. Subjects were instructed to learn each pair such that given the first stimulus they could predict the second stimulus. On single object trials, subjects were presented with either an auditory or visual stimulus and were instructed to learn the item, but not to associate it with anything. On Day 2 (test phase), subjects were scanned while performing a delayed paired associate task with the previously learned cross-modal pairs and while performing a delayed-match-to-sample task on the previously learned single-objects. We tested the hypothesis that, over the course of learning, presentation of one of the objects in a cross-modal pair would elicit spontaneous retrieval of its associate. Functional MRI data from Days 1 and 2 were analyzed by training a simple neural network classifier to distinguish delay period activity between trials in which faces were to be maintained and trials in which sounds were to be maintained. We then used the classifier to analyze data from the delay period of cross-modal trials during Day 1 and Day 2.
examining the output for face and sound units, we could examine the extent to which delay period activity reflected the previously presented stimulus and the retrieval and maintenance of its associate. Similar to the behavioral data, activity in the classifier output unit associated with maintaining the second stimulus showed a significant quadratic effect with increasing activity across the learning session, and greater activity for Day 2 compared to Day 1. These data suggest that MVPA may be a useful tool for making inferences about associative learning and demonstrate that after successful learning there is anticipatory activity, or prospective coding, related to the predicted associate.

P10. The Relationships Among Schizotypal Traits, Dermatoglyphics, and Neurocognition Among Healthy Young Adults

Maureen P. Dalya,b, Luz Ospinaa,c & Deborah J. Waldera,b,c,
a The Graduate Center of the City University of New York
b Department of Psychology at Queens College of the City University of New York
c Department of Psychology at Brooklyn College of the City University of New York

Consistent with a neurodevelopmental model, prenatal disruptions during critical periods are believed to contribute to schizophrenia risk. Dermatoglyphics provide one method of measurement to capture the prenatal environment. Neurocognitive deficits are well documented in schizophrenia, and generally indicate premorbid impairments. This study examined the relationships among schizotypal traits, dermatoglyphics, and neurocognition in a non-clinical sample of young adults (57F/9M). Measures included the SPQ-B, dermatoglyphics (e.g., palmar a-b ridge counts (ABRC); 2D:4D), and a brief neurocognitive battery including the WTAR, WAIS-III Block Design and Digit Span, and COWAT. Inconsistent with findings in schizophrenia, dermatoglyphic fluctuating asymmetry (FA) was inversely associated with schizotypal traits, and positively associated with estimated IQ, visuospatial abilities, and phonemic fluency in the total sample. Among White/Caucasians, rightward ABRC was associated with lower right 2D:4D and greater 2D:4D asymmetry. Preliminary examination of sex differences indicated: 1) among females, schizotypal traits were positively associated with greater FA and better performance on neurocognitive measures; 2) among males, schizotypal traits were inversely associated with estimated IQ, but not associated with dermatoglyphics; 3) females had a greater proportion of leftward ABRC directionality than males. Findings will be discussed in the context of developmental stability and a neurodevelopmental model of psychopathology.

P11. THE EFFECT OF DORSAL HIPPOCAMPAL LESIONS ON ACQUISITION OF CONDITIONAL CONTROL BY TEMPORAL CUES IN A FEATURE POSITIVE OCCASION-SETTING TASK

Rifka C. Derman, Vinn Campese, Andrew Delamater
Department of Psychology, Brooklyn College-CUNY

Previous studies have shown that simple Pavlovian learning can be brought under conditional control by temporal stimuli (Bouton & Hendrix 2011). Other research has suggested that the hippocampus may play a role in the development of conditional control by temporal cues (Campese & Delamater, 2010). In one experiment, we studied the role of the dorsal hippocampus (DH) in the acquisition of conditional control by temporal cues in a feature positive occasion-setting task. Long Evans rats received either neurotoxic lesions of the DH or control surgeries. After recovery, the subjects then underwent training in a Pavlovian learning task in which the offset of a 10-sec auditory conditioned stimulus (e.g., a tone) was reinforced with two food pellets when it followed a 16-min intertrial interval (ITI), but not when it followed a 4-min ITI. Preliminary results suggest that the DH lesions may slightly impair the acquisition of this discrimination compared to control subjects.

P12. Temporal and Competitive Processes in the US Preexposure Effect in Pavlovian Learning
We investigated the potential contribution of temporal and competitive learning processes in the US preexposure effect with rat subjects. Animals were pre-exposed for 21 sessions to unsignaled pellets according to a fixed time 30-second schedule or a variable time 30-second schedule. The control group was given two sessions of unsignaled pellet preexposure followed by 19 days of context alone exposure. The animals then received light-pellet pairings for 16 days in a physical context that was either the same or different from where pellet preexposure took place. During this training, the light stimulus was presented for 30s and the pellet was delivered immediately after its offset. We observed that (1) variable time preexposure more severely impaired learning of the light-pellet association than fixed time preexposure, that (2) pellet preexposure in the same context used for conditioning impaired learning more than pellet preexposure in a different context, and (3) fixed time preexposure in a different context actually facilitated learning of the light-pellet association. These results suggest that temporal and competitive learning processes both contribute to the US preexposure effect.

P13. Idiomatic Representation: Can Live Bodies Wake Up Dead Metaphors?

Kendall J. Eskine & Natalie Kacinik

Embodied and grounded accounts of cognition claim that our sensorimotor experiences play fundamental roles in our conceptual and representational systems (Barsalou, 1999; Gibbs, 2006; Lakoff & Johnson, 1980), even in the case of some figurative expressions like metaphors (Gibbs & Matlock, 2008; Ritchie, 2008). Idioms belong to a family of figurative expressions whose meaning are not derived from the systematic processing of their component words. While they vary in decomposability and transparency, idioms are sometimes called dead metaphors because the original metaphorical link between conceptual domains that gives their meaning is no longer evident. However, recent research suggests that idioms are not dead and that they actively recruit somatotopic motor regions, mental imagery, and underlying conceptual metaphors (Boulenger, Hauk, & Pulvermüller, 2009; Gibbs & Bogdonovich, 1999; Nippold & Duthie, 2003). To determine whether the idiomatic (and figurative) representational system is at least partly grounded in bodily experience, participants were directed to hold specific postures or engage in certain actions, while they read a sequence of vignettes describing a courtroom drama and responded to subsequent questions. These actions, vignettes, and questions were designed to test the following idioms: sticking your neck out, sitting on the fence, sitting on the edge of your seat, and burying the hatchet. Our results indicated that idiomatic meaning can be induced through sensorimotor experience. Unlike other models of idiomatic representation, which focus on the lexical components of idioms, this research provides evidence that at least some idioms have an embodied component in their representational structure.


Melody Goldman1, Katalin Weinhoffer 2, & Laraine McDonough1,2

The Graduate Center at CUNY1 and Brooklyn College2

Two studies assessed the ability of pre-school children with Autism Spectrum Disorder (ASD) or Specific Language Impairment (SLI) to use semantic context and eye gaze to infer the meanings of novel nouns, and to recall those meanings after a delay. In Experiment 1, the children heard statements containing a familiar verb. The target items were presented along with either 3 other familiar items or 3 other novel items. Children were asked to point to the correct referent. On day 2, they were asked to point out the novel referents that were now rearranged in different displays without reference to the previous semantic context. In Experiment 2, the children saw a representation of a face with eyes oriented to one of 4 items, each located in a different quadrant around the face. Children were asked about the cartoon face’s desires using various non-constraining verbs. On Day 2, the children were asked to point to the
previously labeled items that were arranged in a new display without reference to the previous social context. All participants performed better using semantic context than eye gaze, but the children with ASD had greater difficulty with eye gaze than those with SLI. The children with SLI, however, had greater difficulty retaining the meaning of the novel words when given social context. Results are discussed in terms of language acquisition and future teaching interventions.

P15. Chromatophore control mechanisms underlying crypsis and communication in cuttlefish

Hadjisolomou, S. P. and Grasso, F. W.
BioMimetic and Cognitive Robotics Laboratory
Department of Psychology, Brooklyn College, CUNY, Brooklyn NY,
Cognition, Brain and Behavior Program, The Graduate Center, CUNY, New York NY

Cephalopods control light reflected off the skin for crypsis and communication. Muscle-effected dilation and contraction of chromatophores allow for sub-second changes in skin reflectance to match benthic substrata or for signaling to conspecifics or predators. These behaviors are modulated by visual input from the optic lobes. From the optic lobes, the bilateral, interconnected lateral basal lobe and anterior and posterior chromatophore lobe networks contribute to motor programs that control the state of chromatophores. While the anatomical arrangement of the neuro-muscular components and the sensory contributions of the visual system have been documented, the organizing mechanisms that control body patterns have received less attention. We recorded high speed (100 Hz) video of changes in skin reflectance from a European cuttlefish, *Sepia officinalis* (Linnaeus, 1758), following brief (100 microsecond duration) intense light flashes presented to the eyes. This stimulus is adequate to trigger chromatophore responses, producing spatial gradients of contrast across the mantle. These responses were slow to be triggered, initiating with a delay of 130 milliseconds. These responses could be long, lasting up to 4 seconds. The responses also suggest potential opponent processes at work. This slow response to flash is consistent with a system that adapts to ambient light level which changes slowly in the natural environment. The long duration of these responses may reflect the persistence of a sensory trace of our intense flash input.

REFERENCES


Claire J. Hoogendoorn, Alexis M. Briggie, Melissa V. Auerbach, Sarah J. Kahn, Laura C. Reigada

Background: Comorbid anxiety in youth with Crohn's disease, a chronic autoimmune disorder, is common and has the potential to exacerbate physical symptoms and medical management. Further, somatic symptoms related to undiagnosed anxiety can become intertwined with disease symptoms, and can further complicate medical treatment. As cognitive-behavioral therapies (CBT) have shown efficacy in treating anxiety disorders in children, this study aims to assess the efficacy of disease-specific anxiety interventions in youth with Crohn's. **Method:** Seven children ages 11 to 17 (M=14.28) with Crohn’s Disease and comorbid anxiety participated in a 12-session CBT program. Youth were recruited and treated in a tertiary medical clinic. **Results:** Dependent-sample t-tests were used to examine pre- to post-treatment outcomes. Findings demonstrate a reduction in anxiety symptoms based on self-report
(p<.05) and a semi structure interview (p<.01). Child self-report of current pain was significantly reduced (p<.05). While not statistically significant, gastrointestinal (M_{pre}=10.29, M_{post}=8.86, p=.533) as well as non-gastrointestinal (M_{pre}=5.86, M_{post}=4.43, p=.118) symptoms decreased pre- to post- treatment. Lastly, disease activity scores, completed by their physician, suggests symptom improvement (p=.064), with four out of seven children reducing their activity classification (severe, mild, or inactive). **Conclusion:** Results provide preliminary support that CBT may reduce anxiety and physical symptom in youth with Crohn’s disease. While the study is limited with a small sample size, results have potential implications for anxiety (disease-specific and general) and functioning in youth with a chronic illness.

**P17. RELATIONSHIP OF PARENT-CHILD REPORTS OF ANXIETY IN A PEDIATRIC IBD SAMPLE**

Sarah J. Kann, Gerri Connaught, Dina Khaimova, Claire J. Hoogendoorn, Alexis M. Briggie, Laura C. Reigada, Department of Psychology, Brooklyn College-CUNY, Brooklyn NY, 11210

**Background:** The Screen for Child Anxiety Related Emotional Disorders (SCARED) has been documented as the gold standard for self- and parent-report of anxiety symptoms. Multiple studies have found the correlation between parent and child report on the SCARED to be weak, while parents consistently report lower anxiety ratings than children. However, some research using chronically ill samples have shown that parents report higher anxiety symptoms than children on measures for emotional functioning. The present study will assess whether the relationship between parent-child SCARED reports is unique for a sample of children suffering from Inflammatory Bowel Disease (IBD), and particular whether parents report higher anxiety scores than children.

**Method:** One hundred and three children, ages 11 to 17 (M= 14.21) with IBD and their parents filled out SCARED during a medical visit at a gastroenterologist office.

**Results:** A t-test for correlated groups revealed that the average total child SCARED score (M= 14.00, SD=11.57) was not significantly different from the average total parent score (M=13.21, SD=11.85). Pearson’s r correlations revealed that total and subscale scores were strongly to moderately correlated.

**Conclusion:** Incongruent with community samples and samples using other chronic illnesses, our sample had high correlations, and no significant differences between scores. As the literature concerning the relationship between parent and child reports within the IBD population is sparse, these results may help to establish a unique relationship for this population. These results also have implications for clinicians and researchers using this measure within this population.

**P18. Are there hemispheric differences in Generating Literal versus Figurative Meanings?**

Natalie A. Kacinik, Rita El-Haddad, & Isabel Rodriguez
Brooklyn College and the Graduate Center, City University of New York

There are indications that the right hemisphere (RH) is preferentially involved in processing figurative language (e.g., Anaki et al., 1998; Klepousniotou & Baum, 2005; Schmidt et al., 2007), but many studies have failed to find evidence of this preferential RH involvement (e.g., Coulson & Van Petten, 2007; Kacinik & Chiarello, 2007; Rapp et al., 2004). In normal, non brain-injured, participants the vast majority of this research has investigated the processing of figurative expressions, particularly the activation and integration of their meaning, using comprehension paradigms. The present study used visual half-field presentation and a word generation procedure to examine hemispheric differences in the generation and production of literally versus figuratively related nouns in response to adjectives with a literal and figurative sense. The typically robust processing advantage for words presented to the right visual field left hemisphere (RVF/LH) was not obtained, in accordance with previous work by Chiarello et al. (2006) suggesting that the RH may be important for generating and maintaining the activation of potential word responses. However, in contrast to our expectations, but in accordance with previous work by Kacinik and colleagues (Kacinik & Chiarello, 2007; Kacinik et al., 2008) participants were NOT more likely to generate figuratively related words in response to stimuli in the LVF/RH and literal responses in the RVF/LH. These
findings thus provide further evidence that the RH does not seem to be preferentially involved in either the comprehension or generation and production of figurative meanings.

P19. Religiosity of the Experimenter and Motivated Processing of an Anti-Religion Text

Feiga H. Kieval, F. H.* & Rick M. Cheung
Note: * = undergraduate student

Personal religiosity is known to regulate motivation. But what about the religiosity of others—like those who happen to be around? Making fewer type I and II errors, participants were more sharp-eyed on typos when reading Marx’s criticisms of religion, in the presence of a religious (vs. neutral) experimenter.

P20. Effects of the Preliminary Stimulus State on Perceived Grouping of Ambiguous Patterns

Daniel D. Kurylo and Temimah Friedman
Department of Psychology, Brooklyn College

Background. For complex stimuli viewed within a spatial context, complex dynamics guide grouping processes. Previous studies have suggest two opposing effects that are produced by the preliminary stimulus state: one that enhances grouping towards the existing structure (hysteresis), and another that opposes this structure (pattern contrast). In order to examine preliminary states on grouping directly, measurements were made of the perceived grouping of dot patterns that followed a visual prime.

Methods. Three stimuli were presented in sequence: prime, test stimulus, and mask. The prime either corresponded to or opposed the predominant organization of the test stimulus. Subjects indicated the dominant perceived grouping.

Results. Contrary to the initial hypothesis, solid-line primes biased grouping away from the structure of the prime, even when the prevailing organization of dot patterns strongly favored the primes' structure. Conclusions. Effects found here may be attributed to a type of pattern contrast, in which the sustained representation of the prime does not enhance its matched pattern in the test stimulus, but instead establishes a framework against which a contrasting pattern gains saliency. A neural model is proposed in which the partial activation of multiple grouped configurations are compared to the contiguous pattern of cortical activation produced by the solid-line primes. Grouping is thereby established progressively, in which pattern contrast contributes to modifying the initial afferent representation of the ambiguous structure.


Daniel D. Kurylo, Sowmya Reddy, Joseph Lanza
Department of Psychology, Brooklyn College

Background. Luminance contrast sensitivity of sinusoidal gratings is enhanced when target stimuli are flanked by superthreshold gratings that are co-linear and co-axial to targets. This effect has been attributed to a system of cortical connections that bind neurons with common response characteristics. In order to allow direct analysis of this effect at a neural level, an animal model of perceptual capacities has been developed.

Methods. Rats were trained on a contrast sensitivity task in which flanker stimuli varied in relative orientation and distance to the targets. Psychophysical measures were made in a customized operant conditioning chamber that allows precise control of stimulus parameters relative to the corneal surface. Rats responded to the onset of target stimuli, for which the frequency distribution of reaction times followed a characteristic pattern. Detection thresholds were based upon approximately 1600 trials for each rat on each condition. It was hypothesized that flanker enhancement would extend to 2 mm separation on the cortical surface, which represents the extent of intrinsic lateral connections in rat primary visual cortex.

Results. Measurements are ongoing, and to date it has been found that enhanced contrast sensitivity did not occur for low spatial frequencies of large targets. However, a trend occurred for a co-linear flanker enhancement for higher spatial frequencies, across a range of spatial frequencies.
and separations predicted for rat cortical physiology. **Conclusions.** These results suggest that enhanced contrast sensitivity produced by adjacent stimuli are evident in rats, but operate within a restricted spatial frequencies and lateral separations of rat visual capacities. The establishment of an animal model of flanker enhancement allows examination of specific anatomical sites and chemical mediation of these capacities.

**P22. DOES ANTI-ATHEIST PREJUDICE PROTECT PARENTAL RELATIONSHIPS?**

Michael W. Magee & Curtis D. Hardin  
Department of Psychology, Brooklyn College-CUNY, Brooklyn, NY 11210

Anti-atheist prejudice in the U.S. is socially accepted and rife—and not just because most Americans are religious. This research suggests that hostility toward atheists is related in part to protecting parental relationships: When religious people interact with atheists, their automatic, unconscious attitudes toward atheists become more positive or more negative depending on the quality of their parental relationships. Because religious beliefs are normally established within the context of parental relationships, and because research shows that religious beliefs are defended to the extent parental relationships are perceived to be vital, we reasoned that anti-atheist prejudice might also be animated by parental attachment. From this perspective, negative feelings religious people have about atheists are a consequence of love and loyalty to their parents.

Religious participants completed a measure of anti-atheist prejudice in the presence of an experimenter who casually mentioned that he was an atheist (or did not). Participants indicated as quickly and accurately as possible whether the word ‘good’ or the word ‘bad’ had been presented on the computer screen, unaware that half of the presentations were imperceptibly preceded by the word *atheist*. Prejudice is indicated by the degree to which people respond faster to the word *bad* than the word *good* in the trials preceded by the word *atheist*.

Interacting with an atheist reduced anti-atheist prejudice among those with low parental attachment but, if anything, increased anti-atheist prejudice among those who with high parental attachment.

Results were replicated in another experiment that manipulated parental attachment with an essay task.

**P23. Convergence Across A Performance-Based Executive Function Measure and Behavioral Ratings of Real-World Executive Functions in a College Sample**

Jonah Mishaan, Katherine Eskine, & Laura Rabin

Executive functions are a group of brain processes that enable higher order abilities such as planning, cognitive flexibility, initiation of actions, and the overriding of automatic responses. Executive functioning may be assessed through performance-based laboratory tasks or behavioral reports. Some studies have found agreement between objective and subjective measures of executive functioning in children (Marby, 2005), while others have found little to no relationship (McAuley et al., 2010). We investigated the relationship between scores on the D-KEFS Design Fluency Test (Delis et al., 2001), a widely used executive function task, and the Behavior Rating Inventory of Executive Function-Adult Version (BRIEF-A; Roth et al., 2005), a self-report questionnaire that taps everyday executive behaviors. Participants were 84 cognitively normal young adults (aged 18-30). Overall, results revealed minimal and modest associations between the measures suggesting that they may be tapping separable subcomponents of executive functioning. We offer several possible explanations for the observed findings and the implications for use of executive function measures in clinical settings.

**P24. INVESTIGATIONS OF MECHANOCJENDORY AND CHEMOSENSORY STIMULATION ON INTER-SUCKER COORDINATION IN OCTOPUS BIMACULOIDES**

Savithri Nair¹, Josh Barocas¹ and Frank W. Grasso¹²
With over 50 million neurons, the central nervous system of the octopus is amongst the most complex of those found in invertebrates. The arms, which house 3/5 of these neurons, are complex nervous systems in their own right. Octopus suckers which contain one hundred thousand neurons each, are also complex processing units, which are coordinated during goal-directed arm movements and object manipulation. Each sucker has a committed sucker ganglion and a corresponding expansion of the brachial ganglia chain that run the length of the arm. 20,000 chemo- and mechano-receptors on the sucker rim inform these ganglia in their guidance of sucker movements. We hypothesized that when presented with chemical and mechanical stimuli, a stimulated sucker would transmit information to adjacent suckers to coordinate behavior. Chemical stimuli of four different types (acid, base, octopus and ASW) were delivered to the rims of individual mid-arm suckers. In separate trials we stimulated single suckers with small mechanical loads. We videotaped the stimulated sucker, along with 5 proximal and 5 distal adjacent suckers and scored the frequency of their movements, as well as attachment of the stimulated sucker to the stimulus. We used the total number of suckers in motion as a measure of recruitment. Responses were collected from 7 different octopuses. Sucker recruitment increased with weight $[F(9,30)=5.94,p<0.05]$, but was not significantly affected by chemical stimulation. However, differential sucker attachment showed chemical information was supra-threshold and processed $[\chi^2(3)=78.23, p<0.01]$. This indicates that sucker-rim sensors were able to support discrimination of chemicals by the sucker ganglion. It also suggests separate processing of chemical and mechanical inputs: perhaps the former is processed in the sucker ganglion, and the latter in both the sucker and brachial ganglia.

P25. **A Role for Outer Ear Features in the Ability of Bats to Localize Sound?**

**Perrin, Gregory E.*; Wang, Fuxun; Müller, Rolf; Grasso, Frank W.**

BioMimetic and Cognitive Robotics Lab, Brooklyn College, CUNY, Brooklyn, NY; School of Physics, Shandong Univ., Jinan, China; Dept. Mechanical Engineering, Virginia Tech Danville, VA

gregory.e.perrin@gmail.com

The ability to localize sources of acoustic signals is important in the majority of terrestrial animals and the diversity of sophisticated neural-acoustic information-processing mechanisms to support it has received intense attention. The diversity of ear shapes seen across mammals has received less attention and its functional significance is poorly understood. Echolocating bats rely on acoustic signal-processing and across species show a wide diversity of ear-shapes. We explored the impact of simple, geometric features of ear shape on the directivity of single model ears by building scaled, physical models. We recorded sounds received inside these model ears (at the ear canal) and mapped the sensitivity to broadband signals delivered to equidistant positions along a hemisphere around the ear. Geometric features included pinna shape (degree of ellipse eccentricity, conic section depth), surface features such as flaps and ridges, as well as the size and orientation of larger structures such as the tragus. The dimensions of the model ears and the wavelengths of sound used were scaled to match those of typical echolocating bat species. The results showed frequency-swept fan-beams which could encode the vertical location of a sound-source as a function of frequency. Simulation studies with geometrically similar, idealized ears produced comparable results. These findings support the hypothesis (advanced elsewhere) that such variations in ear structure may convey sound localization information to the bat’s brain in a way that complements the well-studied horizontal localization mechanisms produced by computation of inter-aural delay in the bat’s brainstem.

P26. **YEAR-ROUND NEST MAINTENANCE VARIES WITH MATING CYCLE IN AN INVASIVE PARROT**

**Chris Petersen¹ and Frank W. Grasso¹,²**

¹Brooklyn College, The City University of New York, Brooklyn, NY
Monk Parakeets (*Myiopsitta monachus*), are native to Argentina, and thrive as an invasive species throughout North America and Europe. Their communal maintenance and year-round inhabitation of large, multi-chambered stick-nests is unique amongst parrots. We conducted focal studies on 7 nests located in Brooklyn for which background data were available for the past nine years. We made video recordings of the nests at regular intervals during the parrots' mating, incubation and fledging phases during 2009-2010. From these videos we scored the frequency with which parakeets added, manipulated, relocated, and removed sticks from the nests. For the 2009 season we found that stick addition $F(2,62)=4.47, p<0.01$ and on-nest stick manipulation $F(2,62)=4.97, p=0.01$ were highest during the incubation phase followed by a precipitous drop in the fledging period. Two forms of stick relocation (within and between chamber) were highest during the mating phase $F(2,62)=10.21, p<0.01$, and $3.14, p=0.05$ respectively. The available data from the ongoing 2010 season agree with this pattern. We conclude that year-round nest maintenance by monk parakeets varies with the phases of the breeding cycle.

**P27. Predicting Dementia Using Memory Tests, Memory Complaints, And Informant Reports Of Cognitive Decline**

**Laura A. Rabin, Cuiling Wang, Mindy J. Katz, Carol A. Derby, & Richard B. Lipton**

**Background:** The development of treatments to prevent dementia in individuals at high risk depends upon robust definitions of intermediate states that precede dementia. For amnestic mild cognitive impairment current definitions are based on a clinical impression derived from patients' memory complaints, informant reports, and neuropsychological data. This study tested the independent contribution of each of these variables to the prediction of incident dementia in non-demented, older adults. Variables examined were: self-report of impaired cognition (CERAD, Cognitive Impairment Questionnaire), informant report of cognitive decline (IQCODE, Informant Questionnaire on Cognitive Decline in the Elderly), and memory tests (FCSR, Free and Cued Selective Reminding; LM, Logical Memory from the Wechsler Memory Scale-Revised). **Methods:** Participants were 981 non-demented elders [% female = 60%; mean (SD) age = 78.8 (5.4); mean (SD) education in years = 13.2 (3.6)] systematically recruited from the community. All participants had at least two annual waves of data (median follow-up = 2.3 yrs, range = 0.8 to 13.6 yrs). Dementia was diagnosed based on a conference applying DSM-IV criteria (clinical dementia) and independently based on Blessed Information-Memory-Concentration scores ($\geq 8$) and functional decline ($\geq 1$ item impaired on the four Instrumental Activities of Daily Living Scale; algorithmic dementia). Statistical analyses utilized Cox proportional hazards models (using age as the time scale), adjusted for education and depression (Geriatric Depression Scale) and stratified by gender. **Results:** Seventy-eight participants developed incident dementia during follow-up using our algorithmic definition (median time to dementia = 2.4 yrs). FCSR, LM, and IQCODE all had significant univariate effects. In multivariate models considering all the variables, only FCSR (Hazard Ratio=0.856, $p<0.0001$) and IQCODE (Hazard Ratio=4.912, $p=0.026$) predicted dementia. A likelihood ratio test that compared the Cox models confirmed the incremental effect of IQCODE in addition to FCSR ($p=0.030$). Results were similar modeling time to incident clinical dementia. **Conclusions:** Informant reports of cognitive decline and memory impairment as measured by the FCSR independently contributed to the prediction of dementia. Combining these measures may provide a useful, empirical method for identifying individuals at high risk for future dementia. Self-reported memory complaints did not contribute to the prediction of future dementia.

**P28. Academic procrastination in college students: The role of self-reported executive function**

**Laura Rabin, Katherine Eskine, & Joshua Fogel**

Procrastination, or the intentional delay of due tasks, is a widespread phenomenon in college settings. Because procrastination can negatively impact learning, achievement, academic self-efficacy, and quality
of life, research has sought to understand the factors that produce and maintain this troublesome behavior. Procrastination is increasingly viewed as involving failures in self-regulation and willition, processes commonly regarded as executive functions. The present study was the first to investigate subcomponents of self-reported executive functioning associated with academic procrastination in a demographically diverse sample of college students aged 30 years and below (n = 212). We included each of nine aspects of executive functioning in multiple regression models that also included various demographic and medical/psychiatric characteristics, estimated IQ, depression, anxiety, neuroticism, and conscientiousness. The executive function domains of initiation, plan/organize, inhibit, self–monitor, working memory, task monitor, and organization of materials were significant predictors of academic procrastination in addition to increased age and lower conscientiousness. Results enhance understanding of the neuropsychological correlates of procrastination and may lead to practical suggestions or interventions to reduce its harmful effects on students’ academic performance and well-being.

P29. Level of Recall, Retrieval Speed, and Variability on the Cued-Recall Retrieval Speed Task in Individuals with Amnestic Mild Cognitive Impairment

Wendy Ramratan, Laura Rabin, Cuiling Wang, et al.

Individuals with amnestic mild cognitive impairment (aMCI) show deficits on traditional episodic memory tasks and reductions in speed of performance on reaction time tasks. Herein, we present results on a novel task, the Cued-Recall Retrieval Speed Test (CRRST), designed to simultaneously measure level and speed of retrieval. 465 older adults (mean age of 81.2 years), 77 of whom at aMCI, learned 16 words based on corresponding categorical cues. In the retrieval phase, we measured accuracy (% correct) and retrieval speed or reaction time (RT; time from cue presentation to voice onset of a correct response) over 6 trials. We also examined improvement across the six trials. Compared to healthy elderly controls, the aMCI group exhibited poorer performance in both retrieval speed (difference = -0.11, p<.0001) and accuracy on the first trial (difference = -0.169, p<.0001), and their rate of improvement was slower over subsequent trials. Those with aMCI also had greater within-person variability in processing speed (variance = 1.25, p = 0.005) and greater between-person variability in accuracy (variance = 1.733, p = 0.004) relative to controls. Results are discussed in relation to the possibility that computer-based measures of cued-learning and processing speed variability may facilitate early detection of dementia in at-risk older adults.

P30. Comorbid Symptoms in Adolescents at Clinical High-Risk for Psychosis

Eva Rapariaa, Deborah Walderab, Maureen Dalyc, Kathy Chuab, Neyra Azimovc, Alex Crumbleyd, Jill Harkavy-Friedmand, Shelly Ben Davidad, Cheryl Corcorand

a Brooklyn College of The City University of New York
b The Graduate Center of The City University of New York
c Queens College of The City University of New York
d New York State Psychiatric Institute

Schizophrenia, a serious mental illness with onset typically during late adolescence into young adulthood, is characterized by positive symptoms (e.g., delusions, hallucinations and odd behavior) negative symptoms (e.g., absence of normal behaviors such as flat affect and decreased function) and disorganized symptoms (e.g., disorganized thoughts). Recently, researchers have focused on the “prodromal” phase of illness, which is marked by attenuated positive symptoms; that is, mild positive symptoms that are detectable but still shy of full-blown psychosis. The prodromal period provides insight into the etiology of schizophrenia and a window of opportunity to potentially thwart the progression of psychosis in individuals at high risk. Individuals in the prodromal phase frequently display a constellation of concurrent non-psychotic clinical symptoms. One aim of the current project is to expand newly emerging literature investigating co-occurrence and pattern of various psychiatric symptoms in the
prodromal phase of psychosis. Participants include a subsample of individuals (n~23), ages 19-30 years, in the COPE observational cohort study of clinical high-risk patients, derived from a larger diverse urban sample. Participants are evaluated using the Structured Interview for Prodromal Syndrome and the Diagnostic Interview of Genetic Studies. Data analyses will be primarily correlational in nature to assess co-occurrence of prodromal symptoms with non-psychotic spectrum symptoms (e.g., depression). Results will be discussed with respect to etiology and comorbidity in the development, course and prognosis of psychosis, with consideration of implications for early identification and prevention of acute illness.

P31. GOAL-DIRECTED DISCRIMINATIVE INSTRUMENTAL RESPONDING AFTER LIMITED AND EXTENDED TRAINING

Rudy Saint-Dic and Andrew R. Delamater
Brooklyn College-CUNY, Brooklyn, NY 11210

Rats were trained for either 12 or 36 sessions to lever press for food pellets in the presence of one discriminative stimulus and for sucrose in the presence of a second (S1: R-O1; S2: R-O2). One of the rewards was then devalued (through aversion training), and the effect of this treatment on lever pressing in the presence of the two Ss was assessed during an extinction test. Instrumental responding in this test remained goal-directed after both limited and extensive training conditions.

P32. GENERALIZATION AND SEQUENTIAL UNDERSTANDING OF NOVEL AND FAMILIAR EVENTS IN CHILDREN WITH COGNITIVE AND LANGUAGE DELAYS

Tashana S. Samuel and Laraine McDonough
Department of Psychology, The Graduate Center-CUNY, New York, NY 10016 and Brooklyn College-CUNY, Brooklyn, NY 11210

Although a growing literature has investigated generalization and event representation in typically developing children, to date, this issue has been largely unexplored in children with developmental delays. The current research used the generalized imitation paradigm to assess whether children with cognitive and language delays generalize their observations of novel and familiar events with perceptually varied objects while retaining correct sequential ordering of modeled actions. Test events consisted of causal, arbitrary and conventional actions and sequences. Two sets of props were used for each of the eight tasks: modeling and generalization objects. The generalization objects were functionally similar, yet perceptually dissimilar to modeling objects. Assessments were conducted at baseline, generalization and at imitation. Results indicate that children with cognitive and language delays were apt at generalizing the functions of artifacts to those with variable physical dimensions while retaining correct sequential order in novel and familiar event sequences. In particular, they generalized a lower proportion of causal actions than arbitrary and conventional ones, and no differences were found for sequences at generalization. Ceiling effects were found at imitation, which demonstrated recall for the modeled objects. The findings suggest that despite difficulty of generalizing causal actions, sequential understanding of event representations remained intact.

Supported by The Graduate Center, CUNY Doctoral Student Research Grant

P33. The relationship of creativity with schizotypal personality traits among healthy young adults

Marta Statucka, M.A.,¹,² Regina Belokovskaya, B.A.,³ Deborah J. Walder, Ph.D.¹,²,³
¹The Graduate Center at The City University of New York
²Department of Psychology at Queens College of The City University of New York
³Department of Psychology at Brooklyn College of The City University of New York
An evolutionary paradox exists regarding the persistence of schizophrenia spectrum disorders considering their association with a fundamental reduction in reproductive fitness. Some authors have suggested that subclinical schizotypal traits within the normal population may be associated with certain highly desirable characteristics – namely creativity – and thereby, enhanced adaptive functioning and fitness. The current study aimed at investigating the relationship of schizotypal personality traits with one manifest indicator of creativity (e.g., humor styles) in a non-clinical sample. Subjects (49F/7M, mean age = 22.91 years, SD = 7.05) were administered a measure of creativity (i.e., Humor Styles Questionnaire) and measures of mood and personality (e.g., SPQ-B, BDI-II, NEO-FFI). Preliminary results indicate that aggressive and self-defeating humor styles are significantly associated with lower conscientiousness. Furthermore, self-defeating humor style is associated with greater neuroticism and depressive symptomatology, as well as more cognitive-perceptual, interpersonal, disorganized, and total schizotypal traits. Conversely, self-enhancing humor style is associated with greater openness, and affiliative humor style is associated with greater extroversion and fewer cognitive-perceptual, interpersonal, and total (but not disorganized) schizotypal traits. Implications of findings will be discussed with respect to the role of humor styles (and creatively, more broadly) in vulnerability for psychopathology.

P34. THE EFFECT OF MATING CYCLE PHASE ON NEST SIZE IN A NATIVIZED POPULATION OF ARGENTINIAN MONK PARAKEETS IN BROOKLYN, NEW YORK

Alfie Supan¹ and Frank W. Grasso¹²

¹ Brooklyn College, The City University of New York, Brooklyn, NY
² Ecology, Evolution and Behavior Program, The Graduate Center, CUNY

Monk parakeets (Myiopsitta monachus) are an invasive species in Brooklyn, NY that construct and maintain large, multi-chambered stick nests year round. These nests are built on manmade as well as natural substrates. A more complete understanding of the factors that determine their unusual nest construction behavior would aid ongoing efforts to reduce their impact on human farming and urban infrastructure. A digital, photographic record was made of eight nest sites of nativized monk parakeets in Brooklyn, NY at regular intervals over a two year period. Estimates of nest size were made from these photographs to quantify variations in nest size over the period between the spring of 2008 and the spring of 2010. Significant differences in nest size were found to follow a seasonal pattern with two peaks of construction, one during the spring breeding season and one during the fall (F(3, 90) = 11.309, p < 0.001). This seasonal pattern indicates that monk parakeet nest construction activity, while year-round, shows epochs of intensified construction that counter-intuitively occurs after the annual fledging period. Initial comparisons with annual patterns of temperature indicate a significant correlation (r = .392, p < .001). Effect of nest size remain significant (F(9, 67.05) = 3.17, p = .003) even after the co-variation of nest size with temperature is taken into consideration. The increase in nest construction that occurs after the fledging phase of the mating season indicated alternative purposes for the nest other than rearing young.

P35. Eliciting Accounts of Child Sexual Abuse: Do Children Spontaneously Report Touch?

Yee-San Teoh³, Zephyr H. Johnson³, Margaret Ellen Pipe³, and Michael E. Lamb³

³ Department of Psychology, Brooklyn College, City University of New York

Presenter: Zephyr H. Johnson (Undergraduate student)

In investigative interviews with children suspected of having been sexually abused, interviewers frequently question children about any touching or bodily contact that might have occurred. In the present study, we examined the frequency and spontaneity with which children reported bodily contact as touch, and the conditions under which they used alternative referents to report bodily contact. This study included forensic interviews of 192 alleged sexual abuse victims, between the ages of 4 and 13 years. Our findings suggest that even young alleged victims of sexual abuse report bodily contact as touch, and
they reported touch more frequently in response to recall than recognition prompts. Further, regardless of age, children were more likely than the interviewers to refer to touch first. These findings demonstrate that young children understand “touch” and are able to use the concept spontaneously in the context of child abuse investigations.

**P36. Activation of dopamine D1-like receptors in the medial prefrontal cortex is required for the acquisition of flavor preferences conditioned by intragastric glucose infusion in rats.**

Touzani, K, Bodnar, RJ and Sclafani, A

In this study, we investigated the role of D1/D5 receptor-mediated dopamine (DA) signaling within the medial prefrontal cortex (mPFC) in flavor preference learning induced by post-oral glucose. Male rats were implanted with bilateral cannulae in the mPFC and a chronic gastric catheter. In Experiment 1, the rats were trained (30 min/day) with a flavor (e.g., cherry, CS+) paired with intragastric (IG) infusions of 8% glucose and alternately a different flavor (e.g., grape, CS-) paired with IG water infusions. The CS+ preference was evaluated in subsequent two-bottle tests (30 min/day) 10 min following bilateral injections of the DA D1-like receptor antagonist, SCH23390, into the mPFC at total doses of 0, 12 or 24 nmol (0, 6 or 12 nmol/0.5 μl/side). SCH23390 produced dose-dependent reductions in CS+ intakes, but did not block the CS+ preference (0 nmol: 90%; 24 nmol: 87%). In Experiment 2, new groups of naive rats were injected daily in the mPFC with either saline or SCH23390 (12 nmol/brain), prior to training sessions (30 min/day) with CS+/IG glucose and CS-/IG water. In the two-bottle choice tests (30 min/day), SCH rats, unlike the Control rats, failed to prefer the CS+ (50 vs. 74%). To ensure that this SCH23390-induced blockade of the preference was not mediated by serotonin 5-HT2C receptor stimulation, a separate group of rats was trained as in Experiment 2 with intra-mPFC injections of 0.2 μg/brain of MK 212 (5-HT2C agonist) 10 min prior to training sessions. In two-bottle choice tests, these rats exhibited a CS+ preference (70%) that was not different from that of the Control rats in Experiment 2. Collectively, the results show that DA D1-like receptor activation in the medial prefrontal cortex plays a crucial role in the acquisition of flavor preferences induced by the post-oral reinforcing properties of glucose.

**P37. THOUGHTS OF RELIGION (RELATIVE TO SCIENCE) INCREASE SUPERSTITIOUS THINKING IN RELIGIOUS PEOPLE**

Gavin Young1 and Michael W. Magee2,

BASE1 high school and Department of Psychology, Brooklyn College-CUNY2, Brooklyn, NY 11210

Even though we live in the modern age of science and understand more about the natural world and how the universe works than ever before, superstitious thinking and behavior continue to play a large role in many people’s lives. This research explores how religion and science relate to superstitious thinking and behavior. Results of a survey administered to a sample of BASE high school students, students from Brooklyn College, and an older, almost completely atheistic internet sample revealed a significant positive correlation between paranormal belief and religiosity r(131) = .522, p < .001, and revealed a significant negative correlation between superstitious thinking and scientific knowledge, r(131) = -.606, p < .001. Inspired by these results, an experiment was conducted to test the hypothesis that religion causes people to be more superstitious. Participants were subliminally primed with words related to religion (versus words related to science); asked to read six short scenarios, and to indicate the degree to which particular events in the story might be related; and to evaluate snowy pictures for possible hidden images. Religious participants who were subliminally exposed to religious words made significantly more connections between the events contained in the scenarios (M = 3.42, SD = 1.04) than those who were subliminally exposed to science words (M = 2.90, SD = 1.15), t(75) = 2.112, p = .038, d = 0.48. However, no significant differences were observed in the snowy picture task. Interpretations and possible reasons for this discrepancy and suggestions for future research are discussed.

**P38. Residual glucose taste in T1R3 knockout but not TRPM5 knockout mice.**
Zukerman, S, Margolskee, RF and Sclafani, A

Deletion of the genes for the sweet taste receptor subunit T1R3 or the taste signaling protein TRPM5 greatly attenuates sweetener preference in mice. However, knockout (KO) mice missing T1R3 or TRPM5 develop preferences for glucose but not fructose in 24-h tests which is attributed to the post-oral reinforcing actions of glucose. The present study probed for residual glucose taste sensitivity in KO mice. Water deprived T1R3 KO, TRPM5 KO and C57BL/6 (B6) control mice displayed similar lick rates for 8% glucose and 8% fructose in 1-min, 2-bottle choice tests. However, when food deprived the KO mice licked very little for either sugar while B6 mice continued to lick for both sugars in 1-min tests. Yet, when the test was extended to 1 h, T1R3 KO mice now displayed a significant glucose preference (66%) while the B6 mice initially preferred fructose (59%). In 1-h, 1-bottle tests, T1R3 KO and B6 mice licked more for glucose than fructose and both groups preferred glucose in a subsequent 1-h, 2-bottle test. However, the glucose preference was greater in T1R3 KO than B6 mice (86 vs. 67%). The TRPM5 KO mice remained indifferent and licked very little for either sugar in these 1-h tests. In 24-h tests, however, the TRPM5 KO mice licked much more for glucose than fructose. The 1-h data suggest a residual glucose taste sensitivity in T1R3 KO mice which may be mediated by their intact T1R2 sweet receptor or a glucose polymer (polycose) taste receptor. TRPM5 KO mice lack this residual glucose taste but learn to prefer glucose to fructose in 24-h tests based on post-oral glucose reinforcement. Post-oral reinforcement can also explain the preference B6 mice develop for glucose over fructose.