In House

Department of Psychology
Brooklyn College of CUNY

DEC 15
2015

2015 Annual Department of Psychology In-House Conference

Welcome to the conference!

The in-house conference presents an excellent cross-section of current research conducted at the Department of Psychology. There are 4 talk sessions, 1 poster session.

Each talk will last 12 minutes with 3 minutes for questions.

We look forward to hearing about the exciting work that is going on in the department. We hope that you find time to take in as many talks and posters as you can.

Schedule of Events

Session 1	10:00 - 11:00am
Session 2	11:00 -12:00pm
Lunch/Posters	12:00 - 2:00pm
Session 3	2:00 - 2:45pm
Session 4	3:00 - 4:00pm

Brooklyn College
The City University of New York

Brooklyn In-House Conference Schedule

Tuesday 15, December, 2015

Session 1 | 10:00 - 10:45

10:00 | Crump, Matthew | A hitchhiker's guide to the semantic galaxy

10:15 | Byers, Patrick | Functional linguistic analysis as a solution to epistemological issues in cognitive development research

10:30 | Brosowsky, Nicholaus | How Typists Talk to Their Fingers: Evidence for Word-Level Verbal Control of Skilled Action Sequencing

Session 2 | 11:00 - 12:00

11:00 | Garr, Eric | Reward Devaluation Effects in a Heterogeneous Instrumental Chain

11:15 | Grasso, Frank | Toward an Artificial Theory of Mind

11:30 | Ghirlanda, Stefano | Representation of stimulus sequences in animal short-term memory

11:45 | Alarcon, Daniel | The effect of conditioned inhibition on the specific Pavlovian-instrumental transfer (PIT) effect

Lunch & Posters | 12:00 - 2:00

Session 3 | 2:00 - 2:45

2:00 | Hoogendoorn, Claire | Anxiety in Pediatric IBD: A Predictor for Disease Relapse and Increased Health Care Use

2:15 | Gaynor, Alexandra M. | Hippocampal activity associated with eye movement measures of cued recall

2:30 | Behmer, Lawrence | Try not to think about what you're doing: Event-related

desynchronization (ERD) in the SMA and event-related synchronization (ERS) in the frontal lobe reveals a dissociation of hierarchically controlled outer and inner loop processes during typing.

Session 4 | 3:00 - 4:00

3:00 | Wolowiec Agnes | Buffering stress through support for positive events

3:15 | Aristomene, Theresa | Leadership Advancement of Minorities in the Workplace

3:30 | Paul, Laurie | When Black Clients Broach Race in Cross-Racial Counseling: Counselor Responses and Impact on Self-Disclosure and Ruptures in the Alliance

3:45 | Delamater, Andy | Rodgerian ANOVA Techniques: A Defense of Null Hypothesis Significance Testing

Brooklyn College In-House Conference, 2015

Long Abstracts

Talks

A hitchhiker's guide to the semantic galaxy

Session 1 | 10:00

Matthew J. C. Crump, Shawn Lauzon; Brooklyn College

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The broad aim of the current research is to better understand how people generate sequences of thoughts. One theoretical perspective on this issue derives from models of human memory which describe memory retrieval (or the generation of a previous thought) as a similarity driven process, where a current cue (e.g., doctor) retrieves similar ideas (e.g., surgery, hospital, nurse) from memory. This view could explain sequential generation of related thoughts easily, where each thought cues a next similar thought. However, this view does not easily extend to generation of sequences of unrelated thoughts. We asked online participants to generate sequences of words under the instruction to generate words that related or did not relate to their previously generated word. We measured the inter-word generation times, as well as the semantic distances between words using latent semantic analysis. The method provides a quantitative tool for measuring how people move from one thought to another in semantic space. The method and results are offered as a preliminary tool for exploring hypotheses about processes guiding thought generation.

Functional linguistic analysis as a solution to epistemological issues in cognitive development research

Session 1 | 10:15

Patrick Byers | patrickdbyers@gmail.com

The study of children's conceptual knowledge has been hampered by the difficulty of distinguishing procedural knowledge (i.e., rote skills) from conceptual knowledge on the basis of behavior. To address and clarify this issue, a functional linguistic analysis was carried out on knowledge claims in research articles. Knowledge claims are propositional characterizations of what someone knows (e.g., s/he knows the meaning of the number five). The analysis focused on how these claims were asserted, justified, and contested. The results suggest that, regardless of whether the knowledge being described is conceptual or procedural, knowledge claims appear to be descriptions of dispositions. The difference between so-called procedural and conceptual knowledge is only a matter of the generality of the description, rather than a categorical distinction. From this perspective, the often-asserted conclusion that a child has conceptual knowledge, but is unable to show it, is incoherent and results from a misunderstanding of how knowledge claims normatively function. More generally, the results of this research suggest that psychologists would be well served by examining the semiotic and discursive functioning of the concepts that they take for granted, since this functioning may hold the key to resolving long-standing issues in the field.

How Typists Talk to Their Fingers: Evidence for Word-Level Verbal Control of Skilled Action Sequencing

Session 1 | 10:30

Nicholaus Brosowsky, Lawrence P. Behmer Jr., Matthew J. C. Crump; Brooklyn College of CUNY

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Hierarchical theories of action planning in skilled domains like typing (Logan & Crump, 2011) have proposed a distinction between inner and outer loop control processes that represent higher-order planning (outer loop) processes and lower-level motor execution (inner loop) processes. Specifically, the outer loop control processes retrieve words as plans, and serves word-level representations to the inner loop, which then translates them to individual keystrokes at the letter level. A critical implication of the dual-loop theory is that typists rely on verbal processes to control serial-ordering between finger movements. The current

study tests the role of verbal processes in controlling fluent typing. In Experiments 1 and 2 we show that typing performance is worse under conditions where verbal processing is disrupted. In Experiment 1, typing was disrupted under several conditions of verbal suppression and in Experiment 2, under conditions of delayed auditory feedback. Taken together, these results provide supporting evidence for the dual-loop hierarchical control theory and suggests a role for verbal processes in the control of fluent typing.

Reward Devaluation Effects in a Heterogeneous Instrumental Chain

Session 2 | 11:00

Garr, Eric; Delamater, Andrew R.

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The concept of chunking is commonly invoked in the context of working memory. However, actions can also become chunked together to form whole units of behavior. This is an especially important idea in instrumental conditioning, in which chunking actions together can save an animal time and increase reinforcement rate. Yet, despite the possible increases in reinforcement rate, it is also possible that chunking can cause each individual action to become driven by its preceding action rather than its consequence. This account provides a tantalizing explanation for why actions are sometimes insensitive to changes in reward value. To test the hypothesis that chunking leads to insensitivity to reward devaluation, we ran a pilot experiment in which rats pressed a left and right lever in sequence for one type of food pellet. We found that rats were able to inhibit sequence performance when sated on the pellet type earned during training compared to when sated on a different but equally desirable pellet type. Limitations and ongoing work are discussed.

Toward an Artificial Theory of Mind

Session 2 | 11:15

Frank W. Grasso, BCR lab, Brooklyn College

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Premack and Woodruff (1978) advanced the concept of Theory of Mind (ToM) as a process through which "…the individual imputes mental states to himself and to others" in order to explain complex social behavior in chimpanzees. That ToM exists in humans constitutes an "existence proof" that it is possible to realize representations of mental states in physical systems. That "ToM-similar" processes are realized in diverse biological systems suggests similar competencies in simpler systems. And the possibility of man-made ones. A method for testing theories of processes that cannot be directly observed is to build an artificial system that implements the theory. If the implementation reproduces the properties of ToM observed in biological systems, it would constitute weak evidence favoring that theory. More importantly, a failure of an implementation constitutes strong evidence for rejecting that theory. Cooperative robotics provides a context to reproduce the essentials of ToM, such as embodiment, a physical environment to provide context, and multiple agents with similar control architectures. I will outline a framework to test alternative architectures that develop through experience, not ToM itself, but internal representations of the intentions of other robots. I will discuss the approach's merits as a concrete step toward understanding ToM.

Representation of stimulus sequences in animal short-term memory

Session 2 | 11:30

Stefano Ghirlanda, Brooklyn College; Johan Lind, Stockholm Univeristy; Magnus Enquist, Stockholm University

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Animals can be trained to discriminate between sequences of stimuli that differ in the duration, timing, or order of the component stimuli. These experiments often show systematic mistakes that can be used to make inferences about how stimulus sequences are represented in memory. We present a simple model that extends the classic trace model of memory to the discrimination of input sequences, and we show that the model can be fit successfully to data, with a

mean Pearson correlation of 0.89 across 20 data sets (range: 0.6 - 1). Notably, the model does not assume that animals represent explicitly the order in which stimuli occur. Rather, order is represented implicitly (and imperfectly) by the relative strength of memory traces. We present a method to construct stringent empirical tests of the model.

The effect of conditioned inhibition on the specific Pavlovian-instrumental transfer (PIT) effect

Session 2 | 11:45

Alarcon, Daniel; Bonardi, Charlotte, University of Nottingham

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In the specific transfer effect, a conditioned stimulus (CS) selectively increases those responses that have been trained with the same outcome (O). A series of experiments were conducted to assess the effect of a conditioned inhibitor (CI) on the specific transfer effect, by using a Pavlovian-to-instrumental (PIT) transfer design with human participants. In the instrumental training, two responses were reinforced with two outcomes (R1->O1. R2->O2), and in the Pavlovian phase two CSs were paired with those outcomes (A->O1, B->O2). Also, a CI that signaled the absence of one of the outcomes was established (e.g. A->O1, AX->nothing). At test, the CSs+ were presented in compound with pre-exposed control stimuli or in compound with the CI. The specific transfer effect was found in the presence of the control compounds, but this effect was significantly reduced by the presence of the CI. The theoretical implications of these results will be discussed.

Anxiety in Pediatric IBD: A Predictor for Disease Relapse and Increased Health Care Use

Session 3 | 2:00

Hoogendoorn, Claire; Ankita Satpute, Case Western Reserve University School of Medicine; Laura Reigada, Brooklyn College of the City University of New York

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Background: Anxiety is linked with worsened health-related outcomes and increased healthcare seeking behaviors among pediatric patients with chronic illness, though this has received little attention in pediatric patients with inflammatory bowel disease (IBD). The aim of this study is to examine whether greater anxiety symptoms predicted increased risk for repeated disease relapse and higher gastrointestinal (GI) health care utilization for the subsequent year. Methods: 86 pediatric patients, ages 11–18, and their caregivers completed a validated anxiety questionnaire at their GI visit check-in. Medical records were reviewed to record number of disease relapses and GI health care utilization, and generate disease activity scores. Analysis of variance and Poisson regressions were used to test study hypotheses. Results: Patients with high disease relapse frequency (≥2) reported significantly higher anxiety at baseline compared to those with fewer disease relapses ($p<.05$). Child- and caregiver-reported anxiety also predicted greater GI health care utilization ($ps<.01$), which remained significant after controlling for disease severity ($ps<.05$). Conclusions: Elevated self-reported anxiety may signal those children at risk for repeated disease relapses and hospital-based interventions. Future studies should test the health and cost benefits of treating anxiety in pediatric IBD.

Hippocampal activity associated with eye movement measures of cued recall

Session 3 | 2:15

Gaynor, Alexandra M.; Solinger, Lisa A., Washington University in St. Louis; Chua, Elizabeth F., Brooklyn College, CUNY

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Relatively few fMRI studies have investigated cued recall because of difficulties associated with collecting verbal responses during scanning. We used eye movements to index recall while participants completed a memory task in the scanner. Participants studied pairs of objects during an associative memory paradigm that resembles the board game “Memory”. Participants were presented with a grid of face-down “cards”. During each study trial, two unique,

nonmatching cards were upturned. Participants were instructed to remember where matching cards were located, and also which cards were presented at the same time. Each test trial included a cued-recall phase—wherein a single card was upturned and participants were asked to look to the location of the card that appeared at the same time—followed by a 3-alternative forced choice recognition phase. In our analyses, an eye movement to the correct location indexed recall, whereas a lack of eye movements to the correct location indicated a failure to recall. Of all correctly recognized trials, there was, surprisingly, less hippocampal activity during correctly recalled trials compared to non-recalled trials, with deactivation below baseline during recalled trials. Although recollection has often been associated with greater hippocampal activity at retrieval, our findings are consistent with a small number of studies that propose hippocampal deactivation may facilitate accurate retrieval of associative spatial memory, perhaps reflecting a suppression of the default mode network.

Try not to think about what you're doing: Event-related desynchronization (ERD) in the SMA and event-related synchronization (ERS) in the frontal lobe reveals a dissociation of hierarchically controlled outer and inner loop processes during typing.

Session 3 | 2:30

Lawrence P. Behmer Jr., and Matthew J. C. Crump; Brooklyn College of CUNY

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Attention to the details of actions disrupts performance. For example, forcing people to type letters of a word assigned to one hand compared to all letters leads to slower RTs (Logan & Crump, 2009). Given that people are generally fast at normal typing, this suggests that there may be a two-loop control system for skilled actions in which an outer loop is involved in planning, and an inner loop executes kinematic actions, independent of outer loop oversight. Previous EEG studies have focused only on measuring parallel response ordering by the inner loop during normal typing (Logan, Miller, & Strayer, 2011; Pinet et al., 2015). Here,

we present behavioral and EEG evidence dissociating outer and inner loop processes. Participants typed four letter words under conditions that varied whether the outer loop closely monitored the details of action execution. Explicit monitoring required that participants type only the letters exclusively assigned to the left or right hand. Normal typing required considerably less monitoring; participants typed all of the letters of the word with both hands. RTs were significantly faster for normal versus monitored typing. Also, alpha-ERD in bilateral clusters of the SMA at about 500 ms prior to the first keystroke was significantly greater during normal versus monitored typing. Finally, during the typing interval, alpha-ERS in the frontal cluster was greater during monitored typing. This suggests outer loop monitoring of the output of the inner loop leads to deficits in performance and an increase in premotor and higher cognitive processing.

Buffering stress through support for positive events

Session 4 | 3:00

Wolowiec, Agnes; Cheryl Carmichael, Brooklyn College

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This experiment examined whether capitalization (receiving supportive feedback to the social sharing of good news) buffers stress in a similar manner to receiving support for a negative event, and whether stress-buffering effects were moderated by attachment security. Participants (N=146) completed a measure of attachment security, and recalled a capitalization, support, or control event prior to experiencing social exclusion. Capitalization buffered the negative emotional effects of social exclusion for participants who were relatively higher in attachment anxiety, but recalling support for a negative event, or control condition did not. The benefits associated with receiving support for positive and negative events appear to be dependent on attachment security particularly in terms of stress-buffering ability. This research demonstrated one context, capitalization, where attachment anxiety was associated with enhanced stress buffering. Recalling support for positive experiences prior to social exclusion appears to have soothed abandonment concerns of anxious people.

Leadership Advancement of Minorities in the Workplace

Session 4 | 3:15

Theresa Aristomene, Brooklyn College; Lorena Solis, Brooklyn College; Jennifer Feitosa, Brooklyn College

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As minority populations are experiencing continuous growth in the United States workforce, it is apparent that members of minority groups are still underrepresented in leadership positions. A significant discrepancy exists between the number of minorities in the workforce and their positions held within organization's top leadership roles. Consequently, this presentation draws insight from theoretical and empirical literature that focuses on Latinos and African Americans in the workplace. The review of literature indicates reasons for the lack of representation in leadership as being attributed to contextual factors, stereotype threat, and lack of mentorship. In order to reduce these disparities when addressing the issues of Latinos and African Americans, i changes in organizational culture needs to occur through the provision of mentorship and diversity training. Future research and limitations are discussed.

When Black Clients Broach Race in Cross-Racial Counseling:

Counselor Responses and Impact on Self-Disclosure and Ruptures in the Alliance

Session 4 | 3:30

Paul, Laurie; Veeramani, Viloshanakumaran; Sonnenfeld, Danae; Oldham, Ajableu; Kurzer, Dylan; & Chang, Doris

Paul, Laurie | lauriebp@gmail.com

Discussions of race are challenging, especially in interracial contexts. This analogue study explores White counselor responses when Black clients broach race-related topics in counseling and their relationship to counseling process. Using Bitney and Chang's (2012) dataset, videos of 20 counseling interactions

were qualitatively analyzed using pattern coding (Miles & Huberman, 1994; Saldaña, 2009) to identify counselor responses, changes in client self-disclosure, and relational ruptures during discussions of race. Race was broached by clients 37 times across the 20 sessions. Clients were more likely to make deep self-disclosures when the counselor asked exploratory questions, attended to the racial content of patients' statements, or shared experiential self-disclosures. When counselors responded by attending only to universal dimensions of experience, a rupture resulted nearly half of the time. Counselors who appeared less anxious tended to elicit deeper self-disclosures from clients and had smoother interactions overall. Many clients engaged in efforts to smooth over ruptures resulting from discussions of race.

Rodgerian ANOVA Techniques: A Defense of Null Hypothesis Significance Testing

Session 4 | 3:45

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Null hypothesis significance testing (NHST) approaches have been widely used in psychological research for many decades, but have also been criticized in recent years on grounds that these approaches offer less quantitative information concerning statistical conclusions than other approaches (e.g., use of confidence intervals, Bayesian statistics). The statistical approach advocated by R.S. Rodger (e.g., Rodger, 1974; 1975) is based on the Neyman-Pearson approach to NHST (not that of Fisher), and may not be subject to the usual sorts of complaints regarding NHST. It offers a decision-based definition of error rates and power and rests on the assumption that specific measures of contrast effect sizes can be used to induce a clear and precise quantitative estimate of the true population means implied by the statistical analyses together with an estimate of Δ (the parameter that defines the non-central F distribution). The purpose of this talk will be to present an overview of the methods employed.

Posters

EFFECTS OF BRAIN STIMULATION ON MEMORY AND METAMEMORY

Elizabeth Chua, The Graduate Center of the City University of New York; Rifat Ahmed, Brooklyn College of the City University of New York

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Previous research has shown that activity in the prefrontal and temporal cortices correlates with successful retrieval of semantic information and has been implicated in the “feeling-of-knowing” that currently inaccessible information can be retrieved later. The goal of this study was to use high definition transcranial direct stimulation (HD-tDCS), a non-invasive form of brain stimulation, to determine if these regions had a causal role in memory and the feeling-of-knowing. Participants attempted to recall the answer to a general knowledge question, then gave a feeling-of-knowing (FOK) judgment, followed by a 4 alternative forced choice recognition task under 3 different tDCS conditions: left frontal stimulation, left temporal stimulation, and sham stimulation. Participants receiving tDCS over the DLPFC showed worse recall than those receiving tDCS over the temporal cortex. There was a significant accuracy x stimulation interaction [$F(2,52)=7.52$, $p<0.001$], with a bigger difference in FOK ratings for hits and misses for the frontal group compared to the other groups, suggesting that the frontal group was more metacognitively accurate. Trial-by-trial measure of metacognitive accuracy, da, showed frontal stimulation had better FOK accuracy compared to the temporal group, $t(26)=2.55$, $p<0.02$. These data show that HD-tDCS over the left DLPFC has effects on both memory and metamemory.

Metaphorical Color Representations of Emotional Concepts in English and Chinese Speakers: Evidence from Reaction Times

Junqing Chen, The Graduate Center and Brooklyn College, CUNY Natalie Kacinik, Brooklyn College and The Graduate Center, CUNY Yingjun Chen, Shanghai Normal University Nianyang Wu, Shanghai Normal University

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This project was designed to examine whether the linguistic experience of individuals from English or Chinese language backgrounds can result in different metaphorical representations in those speakers. In this study, we used the Brief Implicit Association Test (BIAT) to measure how strongly various colors are

associated with anger, sadness, happiness, fear, envy, shame and shyness. The data from native English and Chinese speakers collected to date support our hypothesis that red is associated with anger and blue with sadness in English speakers' representations; whereas red is associated with both anger and happiness, pink is associated with Envy, and black is associated with fear in Chinese speakers. Moreover, we detected gender difference in the metaphorical representation of fear in English speakers and shyness in Chinese speakers. Our findings therefore show that metaphorical color-emotion representations differ between English and Chinese speakers, what is due to their different linguistic and cultural experience.

Methods to Study Spatial Learning in the Fiddler Crab, Uca pugilator.

Stephen Volz, BCR Lab, Brooklyn College, CUNY; Frank W. Grasso BCR Lab, Brooklyn College, CUNY

Grasso, Frank | FGrasso@brooklyn.cuny.edu

Fiddler crabs' innate burrow homing behavior makes them natural subject for studies of invertebrate spatial memory. Since most evidence is from field studies one goal of our project is to develop and validate methods for studying spatial learning in fiddler crabs under controlled lab conditions. We hypothesize that this burrow-homing ability extends to a generalized spatial memory ability. To that end we have developed a new method for implanting electrodes in the gills of fiddler crabs, through which we can deliver electric shocks to freely behaving animals. We developed a new arena to study crab spatial memory in a place learning paradigm. In this a crab is free to explore and electric shock is administered when the animal enters an experimenter determined region of the arena. We present results from animals that experienced 3 days of 3 hour training sessions, and a subsequent extinction trial in day 4where shock is not present. Our initial results indicate, with high variability, weak preference for the non-shock side of the arena. Currently we will present preliminary results of our first series of trials, and a discussion of some methodological issues we have encountered implementing this new experimental paradigm.

Crayfish Procambarus Clarkii Show Shelter Fidelity Under

Laboratory Conditions

Anastasia Pluish, BCR Lab, Brooklyn College, CUNY; Stephen G. Volz, BCR Lab, Brooklyn College, CUNY; Frank W. Grasso, BCR Lab, Brooklyn College, CUNY

Grasso, Frank | FGrasso@brooklyn.cuny.edu

Demonstrations of spatial memory in insects abound, but despite a common brain organization, crustaceans have seen limited attention. A natural indicator of spatial memory is burrow fidelity, the persistent re-occupancy of one burrow. We investigated burrow fidelity in the crayfish P.clarkii in the laboratory using controlled environmental conditions and identified individuals. We hypothesized P.clarkii would show shelter fidelity when given a choice. We tested 11 P.clarkii in a three-phase experiment: phase-one had no shelter; phase-two a single shelter; phase-three two shelters. Placements of initial shelters were counter-balanced to control for side preferences. We recorded each animal's location and shelter occupancy 5 times daily. The initial shelter was occupied significantly more frequently than the second shelter during phase–3 ($\chi^2(1)=88.89$ $p<<0.001$). The time spent in the initial shelter quadrant was significantly different across the three phases ($F(2,108)=24.18$ $p<0.0001$, $\chi^2=0.31$). Phase-one showed significantly lower first-shelter quadrant occupancy compared to Phase-two and 3; two and three were not significantly different. We conclude that P.clarkii have strong capacity for distinguishing shelter locations and speculate that they have much stronger capacities for spatial memory than previously asserted. This is consistent with the theory that spatial memory evolved in the common ancestor of insects and crustaceans.

A Phylogenetic Analysis of Spatial Memory in Freshwater Crustaceans

Flora Muslumova, BCR Lab, Brooklyn College; Frank W. Grasso, BCR Lab, Brooklyn College

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Crayfishes are a successful and diverse taxonomic group with world-wide distribution that have been intensely studied for their behavior and neurobiology.

Studies of their spatial memory capacity indicate several evolutionary innovations and losses. Knowledge of the distribution of spatial memory ability across these species will aid understanding the ecological fit of memory ability to environmental demands. A literature search on 191 species allowed us to accumulate quantitative values of 11 attributes related to lifestyle and spatial memory abilities for 27 species of crayfish. A cluster analysis using these attributes, divided these 27 species into five classes. These classes were rank-ordered based on their degree of suitability for spatial memory. We mapped these five classes onto a published molecular phylogeny to study the relative evolutionary relationships between these species. We found the ancestral state of our crayfish species showed heavy reliance on correlates of spatial memory and that while these correlates were lost for some sub-taxa, they (particularly burrowing behavior) reappeared in some derived species, indicating reinvention. The genera Procambarus and Orconectes genera contain high variability in spatial-memory correlated attributes and, according to our analysis, are best candidates for comparative studies of the mechanisms and evolution of spatial memory in crayfishes.

Does Chemo-Tactile Sensory Discrimination Ability Influence of Space Use in Fiddler Crabs Uca pugilator ?

Arthur Golub, BCR Lab, Brooklyn College; Stephen G. Volz BCR Lab, Brooklyn College; Frank W. Grasso, BCR Lab, Brooklyn College

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The ecology, phylogeny and innate burrow-homing behavior of fiddler crabs suggest they could possess generalized spatial memory ability. Previous research showed that arthropods including crustaceans such as lobsters and crabs, including fiddler crabs, use chemoreceptors on their feet for chemo-tactile (touch-taste) object discrimination .We hypothesized that fiddler crabs use these faculties to support spatial memory. We designed a testing arena with three regions a wet area containing brackish water (60% of the arena), a food-flavored sand area (20%) and non-flavored sand area (20%). We measured the time crabs spent in each of these areas over a 24 hour period. The animals (n=13) varied widely but unsystematically in their use of the dry and wet regions. We found significant differences in the proportion of time the crabs spent in the flavored

versus un-flavored area $t(12) = 2.21$, $p=0.047$. However, contrary to our predictions the crabs spent significantly more time on the unflavored side. This suggests that the animals found the flavored side somehow aversive. We conclude that fiddler crabs can sense the difference between these two areas in a way that influences their use of space. This demonstration is a foundation for studies exploring putative spatial memory processes in fiddler crabs.

Bicultural Identity and Social Competence Among Turkish-American Adolescents

Gursoy, Firdevs; Erika Niwa, Brooklyn College

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Identity development, particularly cultural identity, is a crucial developmental task during adolescence (Erikson, 1968). This is especially true for immigrants, who must develop identities across multiple cultures. Specifically, achieving a bi-cultural identity has implications for psychological adjustment (LaFramboise et al 1993), including psychological well being and smooth adaptation (Palet, 2012). however, there is limited knowledge about bi-cultural identity among diverse immigrant adolescents, such as Turkish-Americans. The present study is ongoing and data collection has just started. My research goal is to examine whether a bi-cultural identity fosters social competence among Turkish-American adolescents. This study aims to examine whether adolescents who have successfully achieved a bi-cultural identity will have higher social competence and academic achievement compared to youth who identify strongly with either being Turkish or being American. In previous studies, groups that were more successful seemed to have integrated into the national community (Sam, Vedder, Ward, & Horenczyk, 2012). The relation between identity and social competence will be compared on two key variables: cultural identity and immigrant status. This study is being conducted at a private school located near Sheepshead Bay with high enrollment of Turkish-American youth. The current study will benefit our understanding of identity processes among ethnically diverse adolescents.

Crayfish Procambarus Clarkii Show Shelter Fidelity Under Laboratory Conditions

Anastasia Pluish, BioMimetic & Cognitive Robotics Lab; Stephen G. Volz, BioMimetic & Cognitive Robotics Lab; Frank W. Grasso, BioMimetic & Cognitive Robotics Lab

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Demonstrations of spatial memory in insects abound, but despite a common brain organization, crustaceans have seen limited attention. A natural indicator of spatial memory is burrow fidelity, the persistent re-occupancy of one burrow. We investigated burrow fidelity in the crayfish P.clarkii in the laboratory using controlled environmental conditions and identified individuals. We hypothesized P.clarkii would show shelter fidelity when given a choice. We tested 11 P.clarkii in a three-phase experiment: phase-one had no shelter; phase-two a single shelter; phase-three two shelters. Placements of initial shelters were counter-balanced to control for side preferences. We recorded each animal's location and shelter occupancy 5 times daily. The initial shelter was occupied significantly more frequently than the second shelter during phase–3 ($c2(1)=88.89$ $p<<0.001$). The time spent in the initial shelter quadrant was significantly different across the three phases ($F(2,108)=24.18$ $p<0.0001$, $h2=0.31$). Phase-one showed significantly lower first-shelter quadrant occupancy compared to Phase-two and 3; two and three were not significantly different. We conclude that P.clarkii have strong capacity for distinguishing shelter locations and speculate that they have much stronger capacities for spatial memory than previously asserted. This is consistent with the theory that spatial memory evolved in the common ancestor of insects and crustaceans.

Association of motor function and cognitive performance in a sample of older adults with and without Parkinson's disease

Quinn, Crystal; Magdalena Tolea, Florida Atlantic University; Stella Karantzoulis, NYU Langone Medical Center; Laura Rabin, Brooklyn College; James E. Galvin, Florida Atlantic University

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Objective: Although motor impairment is associated with cognitive decline, it is unclear whether extrapyramidal motor movements or pyramidal motor movements are a better predictor of such decline. The current study assessed

the cross-sectional association of motor function to cognitive performance.

Participants and Methods: Participants were recruited for a study focused on the detection and characterization of memory impairment in older adults (aged 60 and above) with and without Parkinson's disease (PD). Extrapyramidal functioning was assessed using the Unified Parkinson's Disease Rating Scale (UPDRS) and pyramidal motor functioning was assessed using a timed walk of 50 feet. The Repeatable Battery for the Assessment of Neuropsychological Status (RBANS) was used to assess cognition. A general linear model was conducted.

Conclusions: Both extrapyramidal and pyramidal motor impairment are associated with verbal memory decline, with a larger association for extrapyramidal motor movements. This may indicate that involuntary motor impairment associated with basal ganglia function is a stronger indicator of future cognitive impairment than voluntary motor movement associated with corticospinal tract function. Findings may aid researchers to better understand the relationship between subcortical nuclei and cognitive-motor functioning as well as assist clinicians better identify at-risk patients in the early or presymptomatic stage.

Self-regulated learning among Organic Chemistry I students with various academic outcomes

Angie Cuervo, Milushka Elbulok-Charcape, Gail Horowitz, Laura Rabin (Brooklyn College of The City University of New York)

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Introduction: Self-Regulated Learning is an approach guided by metacognition that involves setting goals, deploying strategies, and monitoring their effectiveness on outcomes. Science students who are self-regulated learners tend to outperform their peers. We studied factors that contribute to success in Organic Chemistry I, an essential course for those pursuing premedical and related studies.

Methods: Participants were 20 undergraduates: Group A (students who passed Organic Chemistry I on the first attempt) and Group B (students who had

previously failed/withdrawn but eventually received a passing grade in Organic Chemistry I). We conducted semi-structured interviews that addressed students' personal, behavioral, and environmental factors while enrolled in the course. Interviews were recorded, transcribed, and edited to ensure accuracy.

Results: 92% of Group A students held clear expectations about the course's difficulty. They approached the course with an inquisitive framework and re-assessed study techniques as needed. 50% of Group B students held inaccurate expectations, for example not anticipating a competitive environment. All students in Group A used some type of resource whereas only 50% of Group B students utilized resources.

Conclusions: Students who passed the course on the first attempt demonstrated a greater number of SRL strategies, primarily involving seeking assistance when needed, possibly related to being part of a STEM support program or having support from family members. Findings will be used to design interventions for at risk students.

Power Distance and Transactive Knowledge in Organizations

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Previous research on organizations has typically focused on group rather than cultural variables. The purpose of this research was to test whether power distance, a cultural dimension found across cultures, is a phenomenon which impacts the performance of both peers and superiors in an organization. Variables used to measure and compare the impact of power distance on performance included transactive knowledge, interpersonal trust, hierarchy and interaction frequency. We expected that transactive knowledge, trust, and interaction frequency mediated the relationship between power distance and performance. Data were collected over two studies and analyzed in SPSS. Power distance as well as interaction frequency had no significant effect on performance. Hierarchy mediated the effect that transactive memory had on performance however trust remained the strongest predictor of performance rating for both peers and superiors.