# In House

Department of Psychology
Brooklyn College of CUNY

MAY 16
2012

## 2012 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 3 talk sessions, 1 poster session, 1 keynote speaker, and breakfast, lunch and dinner!

Each talk will last 12 minutes with 3 minutes for questions, with a few exceptions.

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. And, we hope that you stay around after the final talk for food and drinks.

Brooklyn College
The City University of New York

## Schedule of Events

| | |
|---|---|
| Session 1 | 9:30 - 10:30am |
| Break | |
| Session 2 | 10:45 - 11:45am |
| Lunch/Posters | 11:45 - 1:30pm |
| Keynote | 1:30 - 2:30 pm |
| Break | |
| Session 3 | 2:45 - 4:05pm |
| Food & Drinks! | |

## Session 1

9:15
10:30

| | |
|---|---|
| 9:30 - 9:45 | Kozbelt & Kaufman |
| 9:45 - 10:00 | Pappas, Cohen, Samu, Krasivina, Persuad, Hardin, & Chua |
| 10:00 - 10:15 | Steingrimsson |
| 10:15 - 10:30 | Abramov, Chavarga & Gordon |

## Session 2

10:30
11:45

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|---|---|
| 10:45 - 11:00 | Crump & Logan |
| 11:00 - 11:15 | Nadler & Delamater |
| 11:15 - 11:30 | Serafin |
| 11:30 - 11:45 | Meredith & Kozbelt |

## Lunch & Posters

11:45
1:30

## Keynote

1:30 - 2:30

## Dr. Arthur Reber

## Session 3

2:30
2:45

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|---|---|
| 2:45 - 3:00 | Zukerman & Sclafani |
| 3:00 - 3:15 | Mitchell & Crump |
| 3:15 - 3:30 | Schapiro & Delamater |
| 3:30 - 3:45 | Pergolizzi & Chua |
| 3:45 - 4:05 | Erdelyi |

| Session 1 | | |
|---|---|---|
| 9:15-10:30 | 9:30 - 9:45 | Kozbelt & Kaufman |
| | 9:45 - 10:00 | Pappas, Cohen, Samu, Krasivina, Persuad, Hardin, & Chua |
| | 10:00 - 10:15 | Steingrimsson |
| | 10:15 - 10:30 | Abramov, Chavarga & Gordon |

1. 9:30 - 9:45

## Who thinks Bill Gates is sexy? Predicting creative mate preferences from intelligence, personality, and creative achievement

Aaron Kozbelt and Scott Barry Kaufman

How did uniquely human capacities emerge in evolution? Miller (2000) argued that Darwinian sexual selection led to the origin of creativity, humor, and high intelligence, all of which arguably represent reliable indicators of genetic fitness and should thus be regarded as sexy by prospective mates. In contrast, Feist (2001) suggested that different manifestations of creativity may reflect different selection mechanisms, with sexual selection engendering ornamental forms of creativity and natural selection, applied or technological forms of creativity. To evaluate the claims of Miller versus Feist, here we examined the extent to which 119 male and 696 female participants rated the sexiness of 43 different creative behaviors in prospective mates. Sexiness ratings of creative behaviors showed high internal consistency; a factor analysis of the data yielded three factors: ornamental, applied, and domestic creativity. In analyzing factor scores, females showed a stronger preference for displays of ornamental creativity compared to males, and males showed a stronger preference for displays of domestic creativity compared to females. Participants also completed surveys assessing fluid and crystallized intelligence, cognitive style and personality, creative achievement in several domains, and divergent thinking. Regression analyses using these variables as predictors of factor scores for ornamental, applied, and domestic creativity (for males and females separately) yielded numerous reliable results. Across analyses, the most consistent predictors involved a domain match between each respondent's own creative achievement level and the type of factor score serving as the dependent measure. All told, the results suggest that Miller's hypothesized constellation of sexy fitness indicators is not a unitary set, and that the perceived sexiness of various types of creative behaviors varies along the lines described by Feist.

2. 9:45 - 10:00

## Capturing the self on the screen: Eye tracking reveals dynamic function of self in conversation

Carrie A. Pappas, Cinder Cohen, Delfina J. Samu, Ekaterina Krasivina, Elizabeth R. Persuad, Curtis D. Hardin, & Elizabeth Chua

The proportion of time spent looking at one's own face (versus one's partner's face) during a real, on-line video conversation—"self-checking"—was measured using eye tracking when participants talked about a time when they felt embarrassed and when they felt proud. We hypothesized that self-checking would

change based on the content of a conversation and that those changes in self-checking would be related to individual differences in self-esteem and self-consciousness. Results revealed that self-checking was not uniformly determined by who was talking (self v. other) or the content of the conversation (embarrassing v. proud) but was instead moderated by individual differences in self-esteem (SE) and public self-consciousness (PSC). The differences in self-checking between embarrassing and proud conversations were negatively correlated with SE, $r(31)=-.32$, $p<.05$ and PSC, $r(31)=-.33$, $p<.05$ during one's own story, but positively correlated with SE, $r(31)=.31$, $p<.05$ and PSC, $r(31)=.30$, $p<.05$ during the other's story. Together, these findings suggest that people with different levels of SE and PSC access the self in different situations: those with high SE and PSC access the self when the self is bolstered (self-proud/other-embarrassed) and those with low SE and PSC access the self when the self is threatened (self-embarrassed/other-proud). Further analysis of self-viewing over the course of live conversations may provide new evidence of the dynamic functions of the self in moment-to-moment interaction.

3. 10:00 - 10:15

## Are ratings scales absolute scales of counting?

Ragnar Steingrimmson

The ratings paradigm is ubiquitous in psychological measurement yet the measurement scales produced by ratings are poorly understood. An important consequence is that most statistical analyzes to which ratings data are subjected do typically involve implicit assumptions that are not clearly justified. Rating scales, such as {1, 2, 3, 4, 5} or {0, 1, 2, ...., 10}, are dimensionless, hence they are not compatible with being viewed as either ratio or ordinal scales. Were these scales ordinal, the scale {1, 2, 3, 4, 5} should yield the same conclusions as its cube {1, 8, 27, 64, 125}, which most people will find improbable; if viewed as ratio scales, then it should be equally satisfactory to use {2.8, 5.6, 8.4, 11.2, 14} instead of {1, 2, 3, 4, 5} however unlikely that may seem. Yet, no one will seriously deny that ratings do produce data with considerable structure to them which leads to the question: if ratings scales are not ordinal or ratio (interval) scaled, then what? Here it is suggested that ratings scales are really based upon counting something and that they are thus absolute scales, leading to a second question: if based upon counting, then what is being counted? Possible answers are proposed along with an empirical program to evaluate them.

4. 10:15 - 10:30

## Sex: visual system's processing of spatial & temporal changes of retinal images. (Males are better, especially if color blind!)

Israel Abramov, Alla Chavarga, & James Gordon

The brain's primary visual area may have the highest density of testosterone receptors in the cortex. Is this associated with a sex-difference in basic visual functions? Spatial and temporal pattern resolution and acuity are the basis for analyzing images on the retina. We measured contrast-sensitivity across the entire spatio-temporal space from large groups of young adults with normal vision. Stimuli were gratings with sinusoidal luminance profiles; their contrast was also sinusoidally modulated in time. Sensitivities were measured with adaptive, forced-choice psychophysics, As temporal rates increased, observers lost

sensitivity at high spatial frequencies and gained sensitivity at low frequencies. Main effect: a significant (ANOVA) sex difference. Across the entire spatio-temporal domain, males were more sensitive, especially at higher spatial frequencies. We also tested male color-blind observers. Across the entire spatio-temporal domain, they had greater sensitivity than color-normal males.

## Session 2

10:45-11:45

| | |
|---|---|
| 10:45 - 11:00 | Crump & Logan |
| 11:00 - 11:15 | Nadler & Delamater |
| 11:15 - 11:30 | Serafin |
| 11:30 - 11:45 | Meredith & Kozbelt |

1. 10:45 - 11:00

### How to run experiments in your sleep: Validating Amazon Mechanical turk as a tool for online attention and performance research

Matthew Crump

Amazon Mechanical Turk is an online crowd sourcing service where anonymous online workers complete web-based tasks for small sums of money (e.g., the mean hourly wage is 1.35/hour). The service provides functionality to have Turkers (Amazon workers) complete tasks hosted on external websites, and thus opens the door for having Turkers complete psychology experiments in the comfort of their own home, using web browser technology. There are many workers willing to perform tasks, and an experiment with n=100 can easily be conducted over night. Running subjects on Amazon Turk has recently become increasingly popular in the decision making literature, thereby partly demonstrating the viability of the service for running psychology experiments. However, the service has not been validated for attention and performance research which involves multi-trial designs and millisecond accuracy for recording reaction times. I conducted several classic reaction time tasks (Stroop, Flanker, Posner cuing) using the service to determine whether classic reaction time effects can be obtained. The results validated the approach. Reaction time experiments, and most likely many other multi-trial experiments, can be conducted in a rapid, cost-effective manner using Amazon Turk.

2. 11:00 - 11:15

### Encoding Sensory and Temporal Components of Expected Outcomes

Natasha Nadler & Andy Delamater

In two computer based reaction time (RT) tasks, exploring whether the sensory and temporal attributes of the unconditioned stimulus are separable, human participants learned the relationships between distinct cues and associated targets to which they were to respond or not. The task results support that these attributes are encoded separately as participants responded more slowly to invalidly cued than validly cued targets, and RT was affected by varying the temporal presentation between the cues and targets, however, there was no interaction between these sensory and temporal components. These data indicate that people learn to associate cues with both the identity and temporal qualities of the target stimulus.

# Session 2 10:45-11:45

3. 11:15 - 11:30

## Expertise in Artistic Photography

Joanna Serafin

Empirical literature on the psychological processes involved in professional and artistic photography is extremely scarce. We studied superior performance in photography as a function of principles of expertise operating in other domains like chess. Photography experts and non-experts were differentially sensitive in detecting four types of photographic flaws, with photographers outperforming non-photographers. The two groups also exhibited differences in aesthetic judgment criteria pertinent to photography: experts valued expressiveness and originality, while non-experts mainly valued technical quality.

4. 11:30 - 11:45

## A multi-level re-analysis of the "swan song" effect in classical music

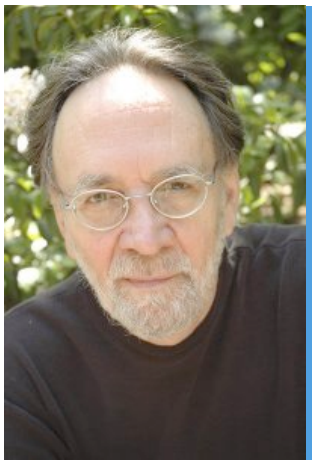
Daniel Meredith and Aaron Kozbelt

In a quantitative analysis of 1,919 works by 172 classical composers, Simonton (1989) found a tendency for composers' last works to be shorter and less melodically original but nonetheless more critically acclaimed, and suggested that composers may show a last burst of creativity – a swan song effect – when approaching death. Our study attempted to refine Simonton's study, examining 2,270 works by 57 eminent composers, re-analyzed by hierarchical linear modeling (HLM), which appropriately handles the nested structure of such data. Five independent variables identified key characteristics of each composition: mean melodic originality, melodic variation, performance duration, aesthetic significance ratings, and recording counts. Two measures of proximity to death served as the dependent variables: a continuous linear measure and an exponential transformation, which varies only in the last few years prior to death. Each dependent measure was analyzed twice: once using untransformed independent variables and one where overall linear, quadratic, and cubic age effects were first removed from each independent variable.

HLM results showed scant evidence for the swan song effect, as postulated by Simonton (1989). For linear time until death, only performance duration and aesthetic significant ratings (with no prior age controls) were reliable ($p < .05$) predictors – both positive; for exponential time until death, only performance duration (with no prior age controls) was reliable ($p < .05$) – again positive, that is, in the opposite direction found by Simonton (1989). As a final test, isomorphic follow-up regression analyses were also done for each of the 57 composers individually; interestingly not one case of the swan song effect as described by Simonton was found in these analyses, suggesting the phenomenon is spurious.

Keynote

1:30
2:30



# Dr. Arthur Reber

## Gambling: It's Not What you Think it Is. The EVF Model

There are several senses in which the term gambling is used. All have liabilities, problems that have muddied the waters in scientific research, generated conflicting legal decisions, compromised debates over ethical and moral issues and led to uneven and occasionally hypocritical legislation. Here, a novel framework for the term is offered. It,s based on two continuous variables: a) the Expected Value (EV) of any arbitrary game and, b) the inherent Flexibility (F) of that game. This EVF model produces a novel classification system for all the enterprises that can or have been called gambling. It is one that allows for more measured decisions to be made and provides a more coherent platform on which to deliberate the many significant issues that have been raised over the years. It also permits a sensible answer to the question of the nature of games like the stock market, opening a small business, and especially, poker.

# Session 3

2:45-4:05

| | |
|---|---|
| 2:45 - 3:00 | Zukerman & Sclafani |
| 3:00 - 3:15 | Mitchell & Crump |
| 3:15 - 3:30 | Schapiro & Delamater |
| 3:30 - 3:50 | Erdelyi |

1. 2:45 - 3:00

## The post-ingestive stimulation of intake and preference by sugars

Steven Zukerman and Anthony Sclafani

In addition to sweet taste, sugars also have post-ingestive reinforcing effects. This was revealed in studies showing that intragastric (IG) sugar infusions conditioned flavor preferences in rats and mice. We recently reported that IG glucose infusions also rapidly stimulate flavored solution intake in C57BL/6 mice. The present study determined if this appetite-promoting effect varies as a function of the sugars infused. Mice were fitted with IG catheters and divided into Glucose, Fructose and Galactose groups. When offered a flavored 0.0125% saccharin solution (CS-) paired with the IG water co-infusion in 1-h tests, the three groups consumed similar amounts of saccharin. The mice were then given a different flavored saccharin solution (CS+) paired with IG infusions of 8% sugar. In the first sugar test, the mice in the Glucose, Galactose and Fructose groups increased their intakes by 61%, 33%, and 16%, respectively, relative to water infusion tests. These intake differences persisted in subsequent tests. The mice were then given a choice test with the CS+ vs. CS- solutions without IG infusions. The Glucose groups displayed a 70% CS+ preference while the Galactose group displayed a weak, but significant 56% preference and Fructose group failed to prefer the CS+ (51%). This study shows that sugars presented at concentrations lower than those present in soft drinks can stimulate intake and condition a flavor preference, although the magnitude of the effects depends on the particular sugar studied.

2. 3:00 - 3:15

## Poverty, Attention and the Power of the Default Option

Kevonte Mitchell & Matthew Crump

Researchers have formulated several internal factors implicit in the decision-making of impoverished individuals. Here, we examine the claim that characteristics of the situation of scarcity cause shifts in attentional focus to some aspects of a decision and away from others. If true, we expect to find a significant effect of manipulation of the default setting—a situational factor found to be capable of changing attentional focus. In Study 1 we replicate a key finding by having participants play a version of the Family Feud game show where half were given sufficient time (rich) to complete rounds and half were given insufficient time (poor). Given the option to borrow time with interest from their total time bank, we find that the time poor borrowed more than the time rich, suggesting that scarcity of time led the poor to focus on immediate gains over the downsides of borrowing. Study 2 focuses on this time poor condition, but compares the borrowing rates of participants exposed to a borrowing default that either requires

additional effort to continue borrowing or no effort to borrow at all. We discuss implications for future studies on impoverished decision-making and public policy.

3. 3:15 - 3:30

## Mediated Learning in Humans with Abstract, Neutral Cues

Bella Schapiro Andrew R. Delamater

Traditional models of associative learning have been successfully applied to human causal learning, but also lead to competing predictions. The MSOP model (Dickinson & Burke, 1996) predicts that when two stimuli are paired (A - B), and then a new stimulus is subsequently paired with one of them (A - C), an inhibitory link should be formed between the absent member of the first pair and the new stimulus (B - C). A theory by Holland (1983), however, predicts instead that the link will be excitatory–mediated acquisition. We tested this in humans in a symbolic matching-to-sample task using abstract, neutral cues. Thirty participants were trained to make A-B, and then A-C associations. In the test phase, they were required to learn B-C associations, half of which had been paired with the same A stimulus and half of which had not. The results showed facilitated learning for the consistent pairings, supporting the idea of mediated acquisition as predicted by Holland.

4. 3:30 - 3:45

## Transcranial Direct Current Stimulation of the Parietal Cortex Enhances False Recognition

Denise Pergolizzi & Elizabeth Chua

In this study, we sought to elucidate the role of the parietal cortex in subjective aspects of memory using transcranial direct current stimulation (tDCS). tDCS in a non-invasive form of brain stimulation that has been shown to modulate cortical activity, making it a useful tool to study brain-behavior relationships. We used the Deese-Roediger-McDermott (DRM) paradigm, a well-established method for producing false recognition with high confidence. Participants studied lists of semantically related words that converge on a theme word. Participants show high rates of confident false recognition to the "critical lure," which is a non-studied word that is the theme for each list. Because false recognition is objectively inaccurate, false recognition rates can be used as an indicator of subjective aspects of memory. Subjects received either active (2 mA for 10 min; n=17) or sham (n=21) left anodal tDCS using a CP3/CP4 montage during recognition and retrospective confidence judgments on the DRM task. Preliminary data show that the false-recognition rate for critical lures was higher for active stimulation (65%) than sham stimulation (49%), p=0.0396, 1-tailed. Confidence ratings were higher for active compared to sham, but did not reach significance. These findings suggest that parietal activity drives subjective aspects of memory retrieval.

# Session 3 2:45 - 4:05

5. 3:45 - 4:05

## Aphasia, subliminal perception, and dreams

Matthew Hugh Erdelyi

Freud's neuroscience monograph, On aphasia (1891), describes a variety of aphasic distortions (paraphasias) that turn out to be standard distortions later observed in normal psychological contexts, including subliminal perception, dreams, jokes, and other twilight phenomena. These distortions (e.g., omissions, displacements, condensations, rationalizations, symbolization) are also obtained in defensive distortions and in Bartlettian reconstructions, which are identical except for motive (Erdelyi, 2006). These universal distortions tend to be meaningful and suggest the "sphere of meaning" (Werner, 1956), or the mathematically derivable semantic "neighborhood structure" (Andrews, Vigliocco, & Vinson, 2009) of the original material and, even, with proper probing (e.g., Erdelyi, 2010; 2012), yield the recovery of the target material into consciousness. Contrary to Freud, distortions need not invariably constitute psychological disguises but may reflect the distortions that are ubiquitously observed in cognition, especially in resource-poor cognition.

# Posters 11:45 - 1:30

## 1. Eye tracking reveals the origin of memory errors

Elizabeth F. Chua & Jeanny Kim
Brooklyn College of CUNY

The purpose of this study was to reveal the origins of memory distortions through eye tracking. We tested whether 1) irrelevant binding at encoding, and 2) retrieval monitoring errors influenced memory distortions using a paradigm similar to the board game Memory®. Twenty "cards" were laid out on screen and participants saw 2 cards with different objects turned over at the same time. Each card had a hidden matching card with the same object on it. They were then tested on their memory. Participants saw one card turned over and either had to indicate where the matching card was (Same Card Task), or where the card that was turned over with it was (Same Time Task). Participants (n=22) were more likely to falsely choose the matching card in the Same Time compared to falsely choosing the same time card in the Same Card Task. Because the encoding task focused on the Same Card Task, these results suggest that encoding orientation influences memory distortions. Eye movement measures of binding (i.e., looking at the matching card during encoding) predicted correctly choosing the matching card in the Same Card Task ($p<0.05$), with a trend towards predicting falsely choosing the matching card during the Same Time Task ($p<0.15$). During retrieval, eye movements suggested that recalling a specific spatial location predicted choosing that location during recognition for both true and false recognition across tasks (all p's$<0.05$). These preliminary findings suggest that memory distortion occurs mainly because of retrieval monitoring errors, but that encoding may also contribute.

## 2. The bitter truth about morality: Exploring the effects of mindfulness and moral event types on gustatory perception

Kendall J. Eskine 1, Igor Beytelman 2, Thomas McAusland 2, & Natalie A. Kacinik 2,3
1 Loyola University 2 Brooklyn College & 3 Graduate Center of CUNY

To demonstrate that sensory and emotional states play an important role in moral processing, previous research has induced physical disgust in various sensory modalities (visual, tactile, gustatory, and olfactory modalities, among others) and measured its effects on moral judgment. To further assess the strength of the connection between embodied states and morality, Study 1 investigated whether the directionality of the effect could be reversed by exposing participants to different types of moral events prior to rating the same neutral tasting beverage. As expected, reading about moral transgressions, moral virtues, or control events resulted in inducing gustatory disgust, delight, or neutral taste experiences, respectively. Study 2 demonstrated that neutralizing one's embodied emotional states can similarly neutralize one's moral judgments. These results demonstrate that morality and perception share a bidirectional relationship, providing further support that the processing of abstract concepts like morality is embodied, but that it is possible to moderate the effect with mindfulness.

# Posters 11:45 - 1:30

## 3. Are there cerebral asymmetries in generating literal versus figurative meanings?

Natalie A. Kacinik 1,2, Rita W. El-Haddad 1,2, Isabel Rodriguez 1, & Lolly Starr-Glass 1
1 Brooklyn College & 2 Graduate Center of CUNY

The ratings paradigm is ubiquitous in psychological measurement yet the measurement scales produced by ratings are poorly understood. An important consequence is that most statistical analyzes to which ratings data are subjected do typically involve implicit assumptions that are not clearly justified. Rating scales, such as {1, 2, 3, 4, 5} or {0, 1, 2, ...., 10}, are dimensionless, hence they are not compatible with being viewed as either ratio or ordinal scales. Were these scales ordinal, the scale {1, 2, 3, 4, 5} should yield the same conclusions as its cube {1, 8, 27, 64, 125}, which most people will find improbable; if viewed as ratio scales, then it should be equally satisfactory to use {2.8, 5.6, 8.4, 11.2, 14} instead of {1, 2, 3, 4, 5} however unlikely that may seem. Yet, no one will seriously deny that ratings do produce data with considerable structure to them which leads to the question: if ratings scales are not ordinal or ratio (interval) scaled, then what? Here it is suggested that ratings scales are really based upon counting something and that they are thus absolute scales, leading to a second question: if based upon counting, then what is being counted? Possible answers are proposed along with an empirical program to evaluate them.

## 4. Perceptual grouping of brief-exposure stimuli is facilitated by hysteresis

Daniel D. Kurylo & Beliz Hazan,
Brooklyn College of CUNY

The brain's primary visual area may have the highest density of testosterone receptors in the cortex. Is this associated with a sex-difference in basic visual functions? Spatial and temporal pattern resolution and acuity are the basis for analyzing images on the retina. We measured contrast-sensitivity across the entire spatio-temporal space from large groups of young adults with normal vision. Stimuli were gratings with sinusoidal luminance profiles; their contrast was also sinusoidally modulated in time. Sensitivities were measured with adaptive, forced-choice psychophysics, As temporal rates increased, observers lost sensitivity at high spatial frequencies and gained sensitivity at low frequencies. Main effect: a significant (ANOVA) sex difference. Across the entire spatio-temporal domain, males were more sensitive, especially at higher spatial frequencies. We also tested male color-blind observers. Across the entire spatio-temporal domain, they had greater sensitivity than color-normal males.

## 5. Time-scale of perceived binding as revealed by backward pattern masks

Daniel D. Kurylo
Brooklyn College of CUNY

Stimuli composed of spatially isolated elements may be perceived as unified forms, based upon Gestalt principles. From the perspective of neural processing in visual cortical areas, the initial representation of stimulus components undergoes a process of integration, in which changes in neural connection strength or modification of receptive fields produce binding among stimulus elements. The construction of unified patterns occurs across time and is coincident with a cascade of neural activity across cortical areas. In order to examine the time-scale of binding in the context of these neural representations, observers viewed arrays of dots (test-stimuli) that could be perceptually grouped into unified forms. A backward pattern

mask followed test-stimuli presentation, which served to disrupt processing of the masked regions. The stimulus onset asynchrony (SOA) between test-stimulus and mask varied, as did the duration of masks. Test-stimuli durations were fixed at 12 ms. The integrity of perceptual grouping was based upon percent correct responding collected across 150 trials at each set of durations. Using an element mask, which interfered with processing of elements, but not binding regions, performance remained intact for as brief an SOA as12 ms. Using a binding mask, which occluded not only element positions, but possible binding routes among elements, grouping thresholds occurred at 59 ms. In addition, short-duration binding masks that did not interfere with grouping when presented alone served to increase disruptive effects of earlier mask presentation. These results indicate that the initial afferent flow requires as little as 12 ms activation in order to initiate binding mechanisms, whereas construction of integrative patterns extends to several times this duration. Furthermore, discrete masking pulses that do not disrupt grouping once binding has formed can serve to disrupt binding formation earlier in the time course, suggesting the disruption of feedback connections to early cortical areas.

## 6. Visual Contrast Sensitivity in the Presence of Adjacent Stimulus Elements in Rats.

Daniel D. Kurylo, Sowmya Yeturo, Farhan Bukhari, & Joseph Lanza
Brooklyn College of CUNY

In humans, visual contrast sensitivity can be modified by contextual factors. Such effects may in part reflect lateral cortical connections that preferentially bind groups of neurons sharing orientation preference. In order to explore this effect in a rat model, contrast sensitivity was measured for a central Gabor patch (test-element) flanked vertically by two clearly visible patches. Test- and flanker-elements were presented well within the range of sensitivity for Long-Evans rats, at either 0.20 or 0.44 cycles/deg. Comparisons were made (1) between colinear, coaxial flankers vs. orthogonal flankers, as well as (2) across colinear flankers centered at 5.2, 8.4, and 11.8 cycles from test-element centers. Using a free-operant procedure, rats viewed stimuli from an IR-monitored guide funnel, thereby maintaining specificity of stimulus parameters relative to the corneal surface. Stimulus onset latencies were randomized across trials, and perceptual indices were based upon reaction time clustering. Psychometric functions were derived across six levels of contrast, with approximately 175 trials per level, collected across multiple sessions. In either set of conditions, flanker influence on contrast sensitivity was not observed. The lack of a flanker effect may reflect limitations in psychophysical measures in a rat model. Alternatively, absence of flanker effects at a perceptual level may reflect reported non-systematic topography of orientation tuning across the cortical surface in rats.

## 7. Anxiety Symptoms in Children and Adolescents with Inflammatory Bowel Disease (IBD): Differences by Gender, IBD type and Age

Laura Reigada, Claire Hoogendoorn & H. Cynthia Lin
Brooklyn College of CUNY

Inflammatory Bowel Disease (IBD) is a chronic illness with pediatric onset, which includes two types Crohn's disease (CD) and ulcerative colitis (UC). Although youth with IBD seem to be at greater risk for anxiety disorders, these symptoms are rarely assessed and demographic and IBD type differences have been virtually ignored. This study examines anxiety symptoms among youth with IBD, with particular foci on differences between IBD type, gender, and age. A total of 162 patients with IBD, ages 8-17 (M=14.01;

SD=2.19), completed a validated self-report measure, the Screen for Child Anxiety and Related Emotional Disorders (SCARED), during their medical visit. The SCARED contains five subscales: somatic/pain, general anxiety, separation anxiety, social phobia, and school phobia. A 2 (gender: male/female) X 2 (IBD type: CD/UC) X 2 (Age: 8-12 pre-adolescent/13-17 adolescent) factorial multivariate analysis of variance was performed to examine group differences in reports of anxiety symptoms. Main effects were found for IBD type and age. In particular, patients with CD endorsed more symptoms of general anxiety ($p<.05$), separation anxiety ($p<.01$), and social phobia ($p<.05$) than patients with UC, as well as, pre-adolescents reported more separation anxiety than adolescents ($p<.05$). Results also revealed three interactions a) IBD type by gender, b) IBD type by age, and c) gender by age. Specifically, females diagnosed with CD reported more separation anxiety than those with UC ($p<.05$), and pre-adolescents with CD report marginally greater GAD symptoms than those with UC ($p=.05$). Lastly, in pre-adolescents, males endorsed more somatic ($p<.05$) and general anxiety ($p<.05$) symptoms than females, while in adolescents, females reported more somatic ($p<.05$) and general anxiety ($p<.05$) symptoms than males. Study findings support that youth with IBD may experience anxiety symptoms differently depending on their IBD type and demographics, which should be taken into consideration when measuring associations between psychological function and disease outcomes.

## 8. Dynamics of chromatophore response to visual stimulation

Stavros P. Hadjisolomou, David Brown, Frank W. Grasso
Brooklyn College of CUNY

Coleoid cephalopods (octopus, squid, and cuttlefish) are able to change their external appearance in milliseconds for visual crypsis and communication. Color changing is the result of the

combined action of intradermal chromatophores, iridophores, and leucophores. This behavior is driven by a sensorimotor system consisting of visual input from the eyes and large, sophisticated

central nervous system for information processing and a muscular skin for display. Coleoids have well-developed eyes and acute vision, which provide the central nervous system (CNS) with input on spatial patterning, contrast, and luminance of the environment. Networks of the optic lobes, basal lobe, and chromatophore lobes "select" and modulate the most efficient body pattern for camouflage. While the anatomical arrangement of the neuro-muscular components and the sensory contributions of the visual system have been documented, the underlying computation of this sensorimotor control system is still unknown. We captured the spatial and temporal variations of chromatophore activity on a patch of cuttlefish skin in response to a transient input (brief, intense white light flash). This stimulus was adequate to trigger chromatophore responses. We observed consistent, variable spatial gradients of contrast across the mantle which were not present in pre-flash chromatophore activity. Some responses included a brief expansion of chromatophores with a short latency (130 milliseconds) after the flash, followed by immediate retraction lasting up to 4 seconds. The long duration of these responses may reflect the contributions of several central processes. This is consistent with a system that adapts to ambient light level and the interactions of the central state of the cuttlefish (e.g., fight or flight) with the chromatophore system. System identification techniques will allow us to explore the (first order) dynamics of brain function that control the chromatophore system response to light input.

# Posters 11:45 - 1:30

## 9. 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
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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 this experiment, I 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 non-lesion surgeries. After recovery, the subjects underwent training in a Pavlovian learning task in which the offset of a 10-sec auditory conditional stimulus (e.g., a tone) was reinforced with two food pellets when it followed a 16-min intertrial interval (ITI), but was not reinforced when it followed a 4-min ITI. There was no evidence that DH lesions impaired learning in this task. If anything, lesioned rats may have performed slightly better than control subjects.

## 10. Conditioning Deficit, Callous-Unemotional Traits, and Children Disruptive Behaviors

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Disruptive Behavior Disorders are the most common clinical disorders in children, and are found to be associated with persistent and severe antisocial behavior in adulthood. Increasing evidence has shown that aggression is biologically determined. For example, Proactive Aggression is instrumental and accompanied by low emotional arousability, such as low heart rate, and low stress cortical level. Using noninvasive psychophysiological measures including electroencephalography, electrodermal and cardiovascular activity, we are interested in finding children with conduct disorders are characterized by conditioning deficits and reduced autonomic activities; and this effect shall be stronger in the population who's high on callous-unemotional traits.