



# opam32

New York City, NY | November 21, 2024

## FULL PROGRAM

Organized by:

**H**an Zhang

**K**arolina Krzys

**R**yan O'Donnell

**D**ock Duncan

**N**oah Britt

**W**illiam Narhi-Martinez



## FUEL YOUR CAREER & DELIVER INDUSTRY-LEADING SOLUTIONS WORLDWIDE

J.S. Held is seeking PhDs, postdocs, and early-career professionals to join our human factors and user experience research team.

## OUR UX & HUMAN FACTORS CONSULTING SERVICES

We leverage a comprehensive suite of services, state-of-the-art laboratories, and decades of experience to deliver research solutions that address evolving client needs.



**1,800+**  
**Global**  
**Professionals**  
**Across**  
**80+ Offices**



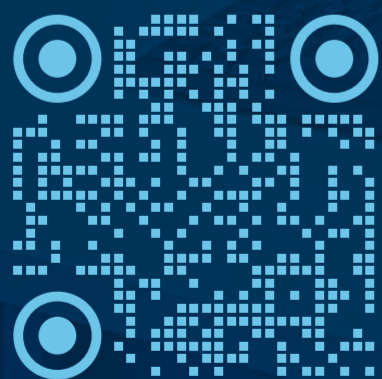
**25+ Years**  
**of UX**  
**Research**  
**Experience**



**50+ Years**  
**of Failure**  
**Analysis &**  
**Litigation**  
**Support**  
**Experience**



**Deployment**  
**of PhD &**  
**Master's Level**  
**Researchers**



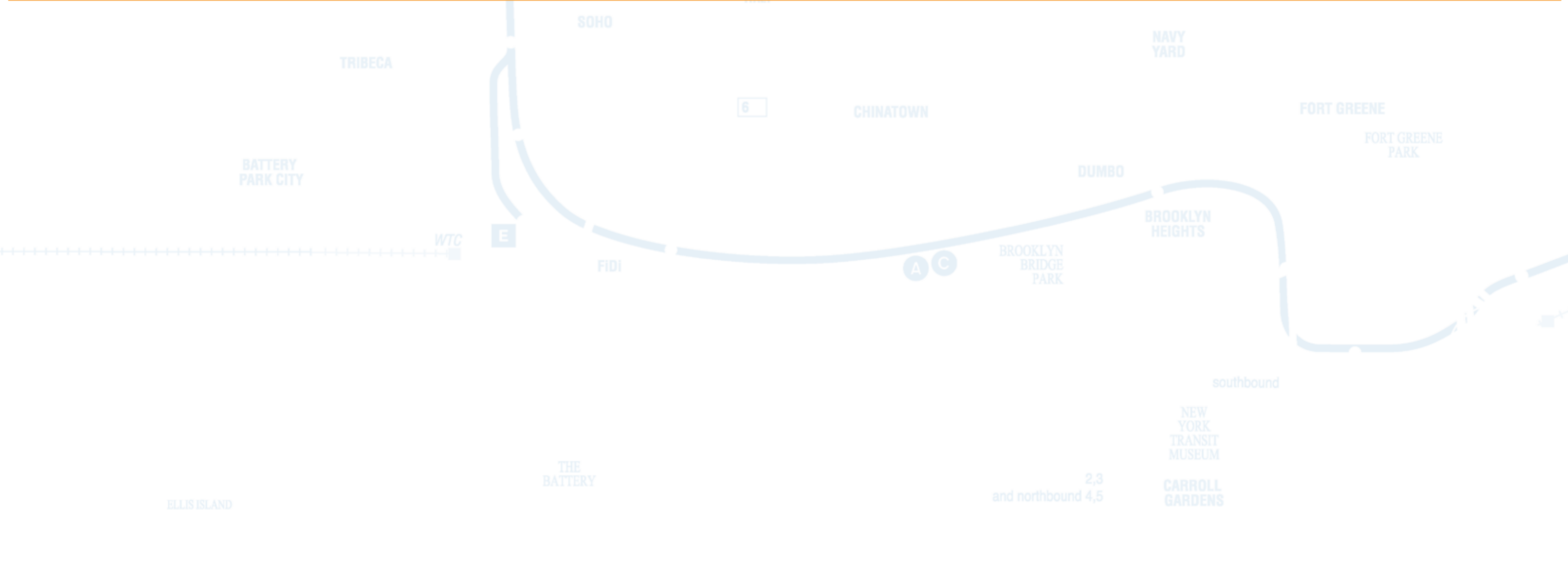
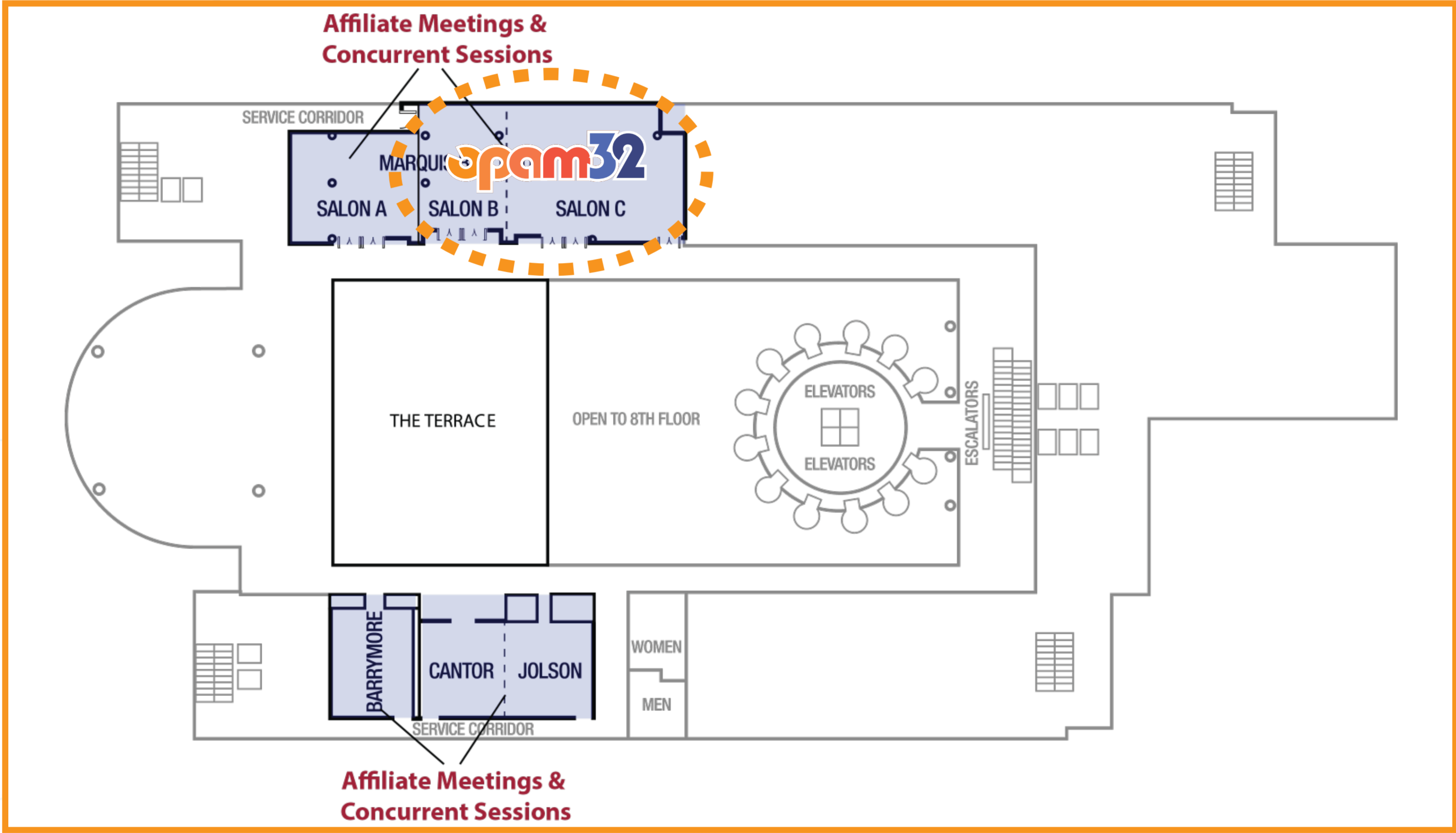
SCAN THE CODE TO VISIT **JSHELD.COM** AND LEARN MORE ABOUT OUR CAREER OPPORTUNITIES.

VISIT OUR BOOTH TO CONNECT WITH OUR TEAM AT **PSYCHONOMICS**.

J.S. Held, its affiliates and subsidiaries are not certified public accounting firm(s) and do not provide audit, attest, or any other public accounting services. J.S. Held is not a law firm and does not provide legal advice. Securities offered through PM Securities, LLC, d/b/a Phoenix IB, a part of J.S. Held, member FINRA/SIPC or Ocean Tomo Investment Group, LLC, a part of J.S. Held, member FINRA/SIPC. All rights reserved.

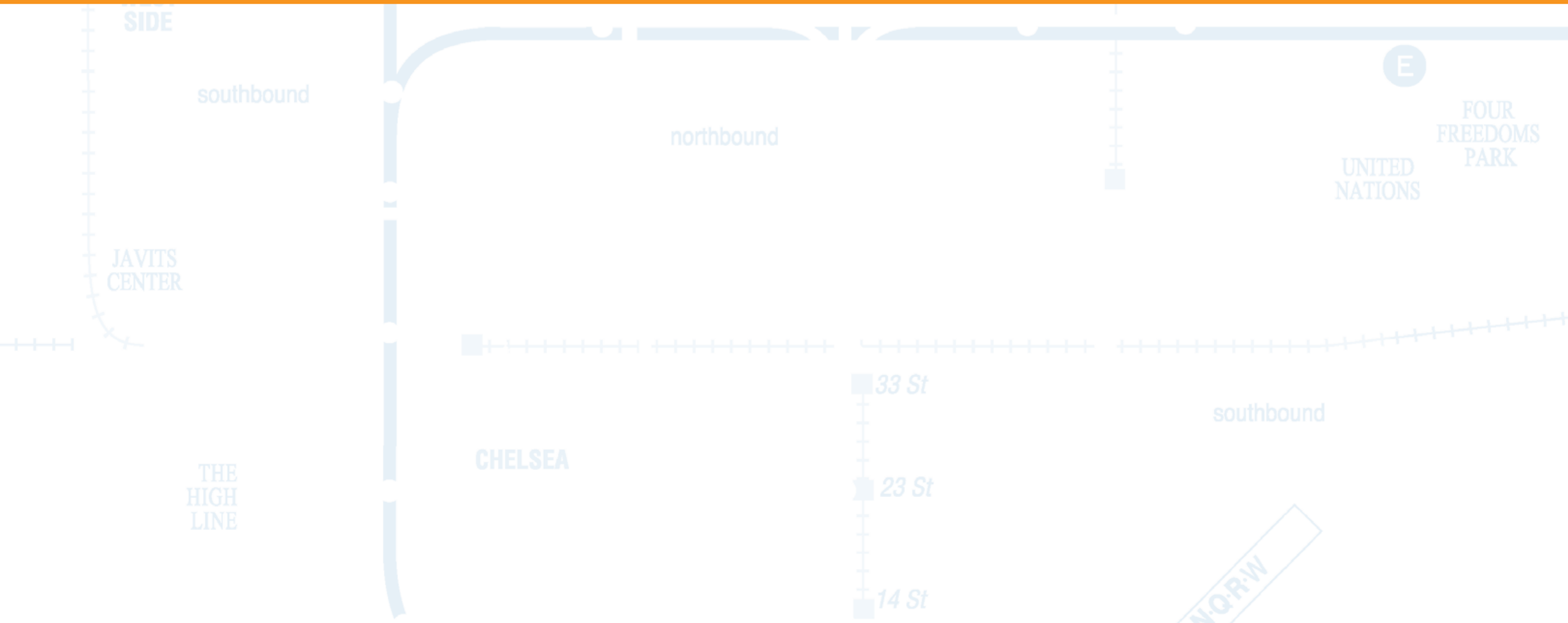
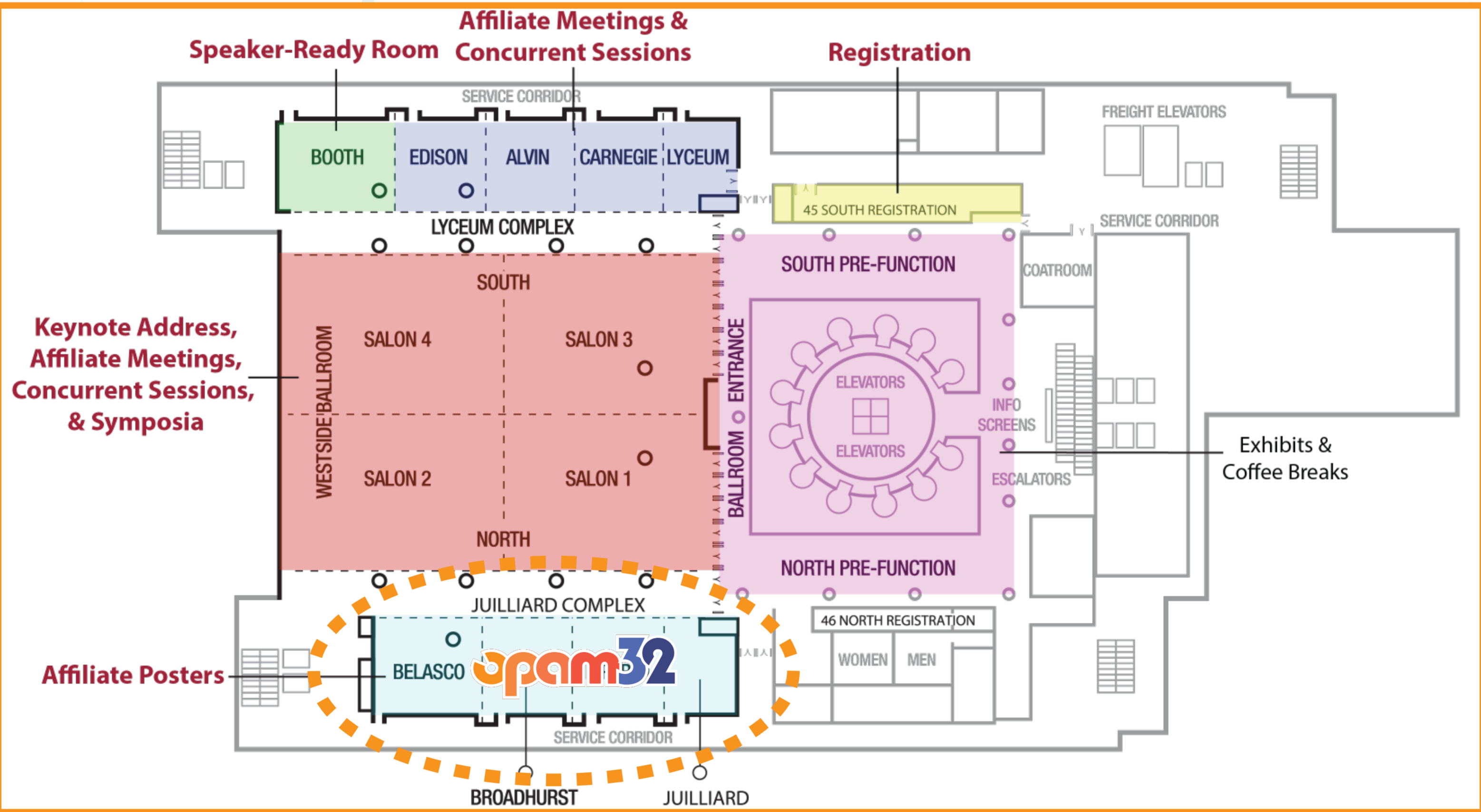
# MAP - TALK SESSIONS

**LOCATION:**  
Marquis Ballroom  
9th Floor  
New York Marriott Marquis, Times Square



# MAP - POSTER HALL

**LOCATION:**  
Juilliard Complex  
5th Floor  
New York Marriott Marquis, Times Square



# 2024 OPAM KEYNOTE ADDRESS

**Ed Awh, Ph.D.**

Professor of Psychology  
University of Chicago



## Working memory storage depends on content-independent pointers

Marquis Ballroom (9th Floor) | 4:50 - 5:45 PM

Working memory theorists have often highlighted the links between voluntary attentional control and the intentional storage of information in working memory (WM). For example, my early work provided initial evidence that covert spatial attention is oriented towards positions held in spatial WM, yielding faster behavioral responses and enhanced visually-evoked neural activity at memorized locations. Twenty-five years later, temporally resolved EEG measures of covert attention provide even clearer evidence for the parallel deployment of covert spatial attention during visual working memory tasks, even when location is irrelevant to the task. Nevertheless, here I will show that while spatial attention is a persistent partner of visual working memory, the deployment of spatial attention can be functionally dissociated from encoding into visual working memory. Specifically, WM storage recruits a content-independent indexing operation that tracks the number of items currently stored in WM, independent of the features contained in those items. Our hypothesis is that this content-independent load signal reflects the deployment of “pointers” that enables the binding of items to the surrounding context. Critically, I’ll present direct evidence that observers can spatially attend and categorize items without encoding those items into working memory. Thus, spatial attention and pointer deployment reflect dissociable aspects of voluntary attentional control, a distinction that may enrich our understanding of a range of major attentional phenomena.

# OPAM 32

## November 21, 2024

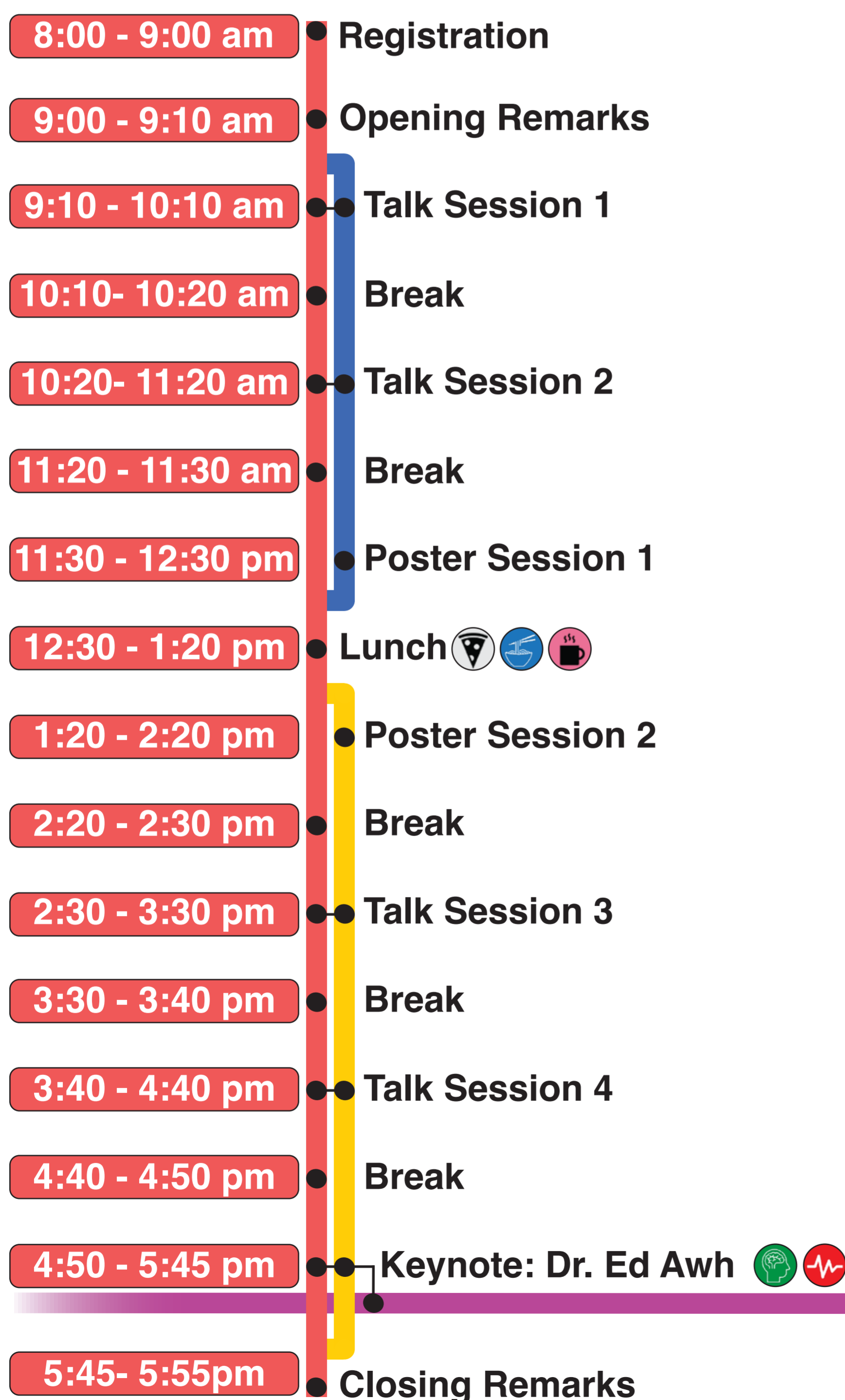
NEW YORK CITY NY

Join the conference organised for and by graduate and postdoctoral researchers where we highlight outstanding early career research on the topics of Object Perception, Attention, and Memory (OPAM)

Visit [www.opam.net](http://www.opam.net) to register

This booklet was designed by **D** Duncan with aesthetics borrowed from the iconic New York transit system

## PLAN YOUR SCHEDULE!



OPAM takes place on the 5th (posters) and 9th (talks) floors of the New York Marriott Marquis Hotel

OPAM 32 is organized by

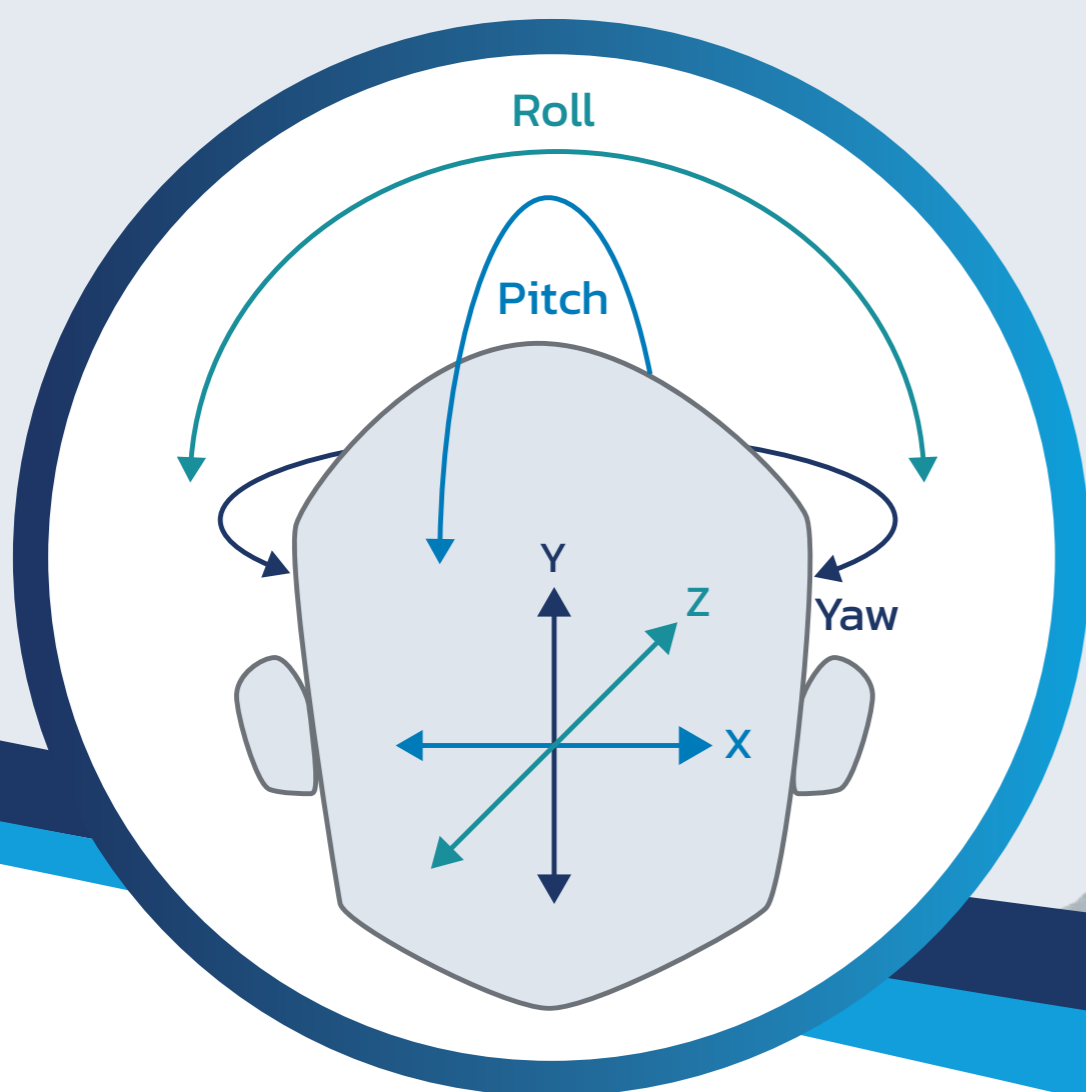
**H** Zhang **K** Krzys

**R** O'Donnell **D** Duncan

**N** Britt

**W** Narhi-Martinez

SR Research Ltd.



Fast, Accurate, Reliable Eye Tracking

# EyeLink<sup>®</sup> 3

*Combined Eye and Head Tracking*

## Features

- Fast, accurate, and reliable eye and head tracking in one device
- Full six-degrees of freedom head tracking data: X, Y, and Z position coordinates and pitch, yaw, and roll rotational angles
- Eye and head data perfectly synchronized up to 1000 Hz
- High frame rate (up to 500 FPS) eye video recordings
- Large trackable area
- Novel pixel-based eye and head data
- Integrates with Experiment Builder and Data Viewer

## Research Applications

- Eye-Head Coordination in:
  - Reading
  - Visual Search
  - Spatial Localization
  - Object Tracking
- Clinical Research
  - Vestibular Dysfunction / VOR
  - Neurological Disorders
  - Nystagmus
- Eye-Tracking Methodology
  - Parsing Algorithms
  - Post Saccadic Oscillations
  - Pupillary Dynamics
  - Torsion
- And Many More

Please contact SR Research for further information about the EyeLink 3.

EyeLink is a registered trademark of SR Research Ltd.

[www.sr-research.com](http://www.sr-research.com)

[info@sr-research.com](mailto:info@sr-research.com)

# OPAM 32

## November 21, 2024

NEW YORK CITY NY

**Topic Key**  
 Op Object Perception  
 A Attention  
 M Memory

### TALK SESSION 1

9:10 - 10:10 AM

Time Topic Title

Abstract

9:10 AM	<b>A</b>	<b>Parallel Sequential Rejection in Conjunction Search: Insights from Eye-Tracking on Distractor Processing Dynamics</b> <b>Authors:</b> Andrea Yaoyun Cui, Simona Buetti, Pengfei Yu, Alejandro Lleras <b>Affiliation:</b> University of Illinois at Urbana Champaign	Our study expands on previous findings by Cui et al. (2022) and Cui et al. (in prep), which posited that the difficulty in conjunction search arises from a sequential yet parallel processing approach. Using eye-tracking, we examined how participants rejected color-differentiated (D1) and shape-differentiated (D2) distractors in conjunction search tasks. Our results reveal no initial fixation preference, highlighting the task complexity. Subsequent fixations, however, display a significant shift toward D2 areas, suggesting possible early processing and rejection of D1 via peripheral vision. This pattern highlights the efficacy of the parallel sequential rejection strategy in visual processing, influenced by the type of distractor accompanying the target.
9:25 AM	<b>M</b>	<b>The Benefits of Drawing and Describing for Visual Long-Term Memory</b> <b>Authors:</b> Anna C. McCarter, Jeffrey, J, Starns <b>Affiliation:</b> University of Massachusetts Amherst	Research has shown that drawing at encoding is beneficial for learning verbal materials, potentially due to a dual-code advantage. However, little work has explored drawing with visual materials. In this experiment, participants learned object images through either drawing a copy, writing a description, or simply studying. On recognition and source memory tests, we found that both drawing and describing produce a considerable advantage over studying, with a slight benefit of describing over drawing. This suggests that a dual-code advantage may be contributing to the benefit of drawing for verbal materials and of describing for visual materials.
9:40 AM	<b>Op</b>	<b>Incidental learning of task-relevant and task-irrelevant information in visual search reveals nuanced effects of decay and associative processing</b> <b>Authors:</b> Emma M. Siritzky, Audrey Siqi-Liu, Chloe Callahan-Flintoft, Timothy J. Vickery, Stephen R. Mitroff, Dwight J. Kravitz <b>Affiliation:</b> The George Washington University	Visual search can provide insight into the extent to which task-irrelevant information (e.g., search context) is incidentally associated with co-occurring task-relevant information (e.g., targets), contributing to subsequent learning-based performance changes. Further, intertrial learning for task-irrelevant information may be differentially affected by decay based on the nature of the target associations. The current study examined subtle changes in performance following target and context repetitions, both individually and in association, and at varying delay intervals. Results suggest that associative learning occurs for target-context pairs, and the repetition benefits of these associations are more resistance to decay than features repeating alone.
9:55 AM	<b>A</b>	<b>Resilience of non-simultaneity detection to early-onset, prolonged visual deprivation</b> <b>Authors:</b> Lukas Vogelsang, Priti Gupta, Marin Vogelsang, Naviya Lall, Chetan Ralekar, Suma Ganesh, Pawan Sinha <b>Affiliation:</b> Massachusetts Institute of Technology	Whether an observer perceives two visual events as occurring simultaneously or as transpiring sequentially critically influences the inferred relationship between them. Here, we examined the role of early visual experience for acquiring this fundamental visual proficiency. Specifically, in studying children who were born blind and treated for their blindness later in life, we found that, two or more years post-surgery, the late-sighted exhibit performance levels comparable to normally-sighted controls. This points to the availability of significant neural plasticity to hone the temporal processing system's resolution even late in childhood, and to the non-criticality of early experience for acquiring this ability.

### TALK SESSION 2

10:20 - 11:20 AM

Time Topic Title

Abstract




10:20 AM	<b>Op</b>	<b>Ensemble coding abilities are governed by domain general mechanisms</b> <b>Authors:</b> Greer Gillies, Keisuke Fukuda, Jonathan S. Cant <b>Affiliation:</b> University of Toronto	Ensemble coding operates across a range of visual features (e.g., average orientation) and stimuli (e.g., triangles and faces). However, ensemble displays usually contain stimuli from only one category. It is unclear if the visual system can extract summary statistics across different stimulus categories. Across two experiments, we had participants make average orientation judgements where the stimuli were from the same or different categories. We found that observers were able to accurately judge the average orientation of the stimuli regardless of the stimulus type, suggesting that ensemble coding abilities are governed by domain general mechanisms.
10:35 AM	<b>A</b>	<b>Attention Guidance by Meaning Maps through Fined-tuned Large Language Models</b> <b>Authors:</b> Zhan Shi, Zhicheng Lin <b>Affiliation:</b> University of Houston	Semantic richness ("meaning maps") guides human visual attention, but creating meaning maps is labor-intensive and subjective. We leverage large language models (LLMs) to predict the semantic richness of scenes using a pre-trained multi-modal model, LLaVA, fine-tuned using the Low-Rank Adaptation (LoRA) technique with data from laboratory experiments. The fine-tuned LLaVA model produced meaning maps that were highly correlated with human-rated maps and attentional maps, often surpassing human assessments. The model demonstrated high efficiency, generating ratings for entire scenes within seconds. Our method eliminates the need for subjective and time-consuming human evaluations, offering a robust tool for exploring visual attention mechanisms.
10:50 AM	<b>A</b>	<b>Incidental learning of distractor features speeds early attentional selection: Evidence from behavior and electrophysiology</b> <b>Authors:</b> Kevin M. Ortego, Douglas A. Addleman, Viola S. Stoermer <b>Affiliation:</b> Dartmouth College	Incidentally experiencing regularities in the environment, such as the frequent occurrence of a target item in a particular location or specific color, can speed performance in visual search. Learning about probable features of distracting items confers similar behavioral benefits as target learning, but it is unknown whether target and distractor learning rely on distinct or shared neural mechanisms. Here we present evidence that learning about likely target and distractor colors both modulate the latency of the N2pc event-related potential, a neural index of early target-distractor individuation, suggesting a shared mechanism of attentional enhancement for target and distractor learning.
11:05 AM	<b>Op</b>	<b>The psychophysics of style</b> <b>Authors:</b> Tal Boger, Chaz Firestone <b>Affiliation:</b> Johns Hopkins University	Among the most significant modes of human creative expression is "style": the capacity to represent an object, event, or scene in some distinctive "manner". Despite extensive research in aesthetic perception, the mechanisms underlying perceived style remain unknown. How do we see style? Here, 9 experiments introduce a psychophysical approach to this question, revealing several new phenomena of perceived style—including perceptual "tuning" to stylistic information, mental rendering of novel styled objects, and representational constancy over stylistic variation. Thus, while we typically associate style with more qualitative approaches, our work shows how tools from vision research can illuminate its psychological basis.

# OPAM 32

## November 21, 2024

NEW YORK CITY NY

### Topic Key





-  Object Perception
-  Attention
-  Memory

## TALK SESSION 3

2:30 - 3:30 PM

Time Topic Title

Abstract

2:30 PM		<p><b>The Effect of Fixation Location on Face Perception in Younger and Older Adults</b></p> <p><b>Authors:</b> Mo Eric Cui, David Matthew Clark, Yifei Wang, Runzhi Nina Yue, Björn Herrmann, Allison B. Sekuler  <b>Affiliation:</b> Rotman Research Institute, University of Toronto</p>	<p>Age-related differences in facial identity perception were investigated, focusing on fixation patterns and their impact on recognition performance. Previous research indicates that younger adults primarily fixate on the eye region, while older adults tend to focus on the lower half of the face. This study examined whether restricting fixation to specific facial regions could improve face recognition in both age groups. Using free and restricted fixation conditions, 27 younger and 27 older adults were tested. Preliminary results show that restricting fixation reduced age-related differences in performance, with older adults benefiting more from eye and nose fixations. Notably, older adults showed greater improvement than younger adults when fixation was restricted to the nose region.</p>
2:45 PM		<p><b>Orientation and Motion Selectivity in the Far Periphery</b></p> <p><b>Authors:</b> Ema Bidiwala, Abigail Loddeke, Miranda Scolari  <b>Affiliation:</b> Texas Tech University</p>	<p>Orientation selectivity serves as a building block for object recognition in central vision by supporting edge detection. Although several studies demonstrate surprisingly good object recognition in far peripheral space, it is unclear whether the same supportive mechanisms are present. We tested motion detection and orientation discrimination at peripheral distances of 30, 60, and 90°. Participants first reported whether a peripheral square wave grating was moving, followed by its orientation. Performance was above chance on both tasks across all eccentricities, indicating motion detection and orientation discrimination can be successfully performed in the far periphery.</p>
3:00 PM		<p><b>Object Movement, but not Sound, affects inter-item Perceptual Similarity for Object Categorisation</b></p> <p><b>Authors:</b> Martina Andrea Seveso, Alan O'Dowd, Rebecca J. Hirst, Fiona N. Newell  <b>Affiliation:</b> Trinity College Dublin University</p>	<p>The degree of similarity between multiple object features may inform object categorisation. We investigated the effects of object motion (Experiment-1) and sound (Experiment-2) on the perceived shape of novel 3D-objects. Participants rated the shape similarity of object pairs presented in three motion conditions (static-only; same-, different-motion). Perceived similarity was higher for objects accompanied by same-versus different-motion but was not influenced by sound. The results of an adapted Garner Interference Paradigm (Experiment-3) indicated a unidirectional interference between shape and motion, whereby shape interfered with motion only. Therefore, shape and motion are separable dimensions that can influence object categorisation.</p>
3:15 PM		<p><b>The sound of shininess: Crossmodal influence of auditory pitch on the perception of gloss</b></p> <p><b>Authors:</b> Silas Choudhury, Hong B. Nguyen, Benjamin van Buren  <b>Affiliation:</b> The New School</p>	<p>Intuitively, auditory information should not influence our perception of objects' visual properties, such as gloss. However, smooth, glossy surfaces often co-occur with high-pitched sounds, as they 'squeak' when rubbed. Here we show that perceivers automatically integrate auditory pitch into their perception of gloss. In Experiment 1, concurrent high-pitched sounds caused subjects to rate jewelry items as much glossier. Experiment 2 biased subjects' objective discrimination of which of two computer-generated objects was glossier. We conclude that the recovery of surface gloss integrates auditory pitch information—even when task-irrelevant—likely due to an ecological association between glossy surfaces and high-pitched sounds.</p>

## TALK SESSION 4

3:40 - 4:40 PM

Time Topic Title

Abstract

3:40 PM		<p><b>Visual Templates are Modified by Perceived Lighting Changes</b></p> <p><b>Authors:</b> Gabriel W. Conn, Katie R. Jobson, Kayla S. Sansevere, Katherine S. Moore  <b>Affiliation:</b> Arcadia University</p>	<p>Visual search relies on a template to enhance relevant features and guide attention. This template is not always an exact match but is often adapted to distinguish targets from distractors. This study examined whether perceived lighting changes can influence visual search templates. Participants searched for objects among distractors on different colored backgrounds, mimicking lighting changes. Distractors included color-shifted versions of the targets. Participants struggled to reject distractors matching the colored background shift, suggesting an automatic adjustment to visual templates influenced by contextual lighting changes. This finding highlights that adaptive visual search mechanisms are not always under our control.</p>
3:55 PM		<p><b>Improving visual working memory performance through goal-setting</b></p> <p><b>Authors:</b> Olga Kozlova, Kirsten C.S. Adam  <b>Affiliation:</b> Rice University</p>	<p>Because Visual Working Memory (VWM) predicts important outcomes, previous research has aimed to improve VWM with feedback. However, the effects of feedback have been mixed. We propose an "optimal strategy" account to explain when feedback will be effective versus ineffective. Participants (N=100) completed a whole-report VWM task with performance goals (e.g., "remember 3 items"). After each trial, participants received feedback and earned monetary bonuses when goals were met. Our results suggest that feedback is effective when it targets typical capacity limits and reduces lapses, and that feedback is ineffective when it pushes individuals beyond typical capacity limits.</p>
4:10 PM		<p><b>Reconciling Meaningful Object Benefit in Visual Working Memory: The Role of Proactive Interference</b></p> <p><b>Authors:</b> Hyung-Bum Park, Edward Awh  <b>Affiliation:</b> University of Chicago</p>	<p>Visual working memory (VWM) capacity is often reported higher for meaningful objects due to their rich representations. However, previous work has confounded meaningfulness with the strength of proactive interference (PI) between stimulus types. By manipulating stimulus type and repetition in a recognition task, we found the VWM benefit for meaningful objects appeared only in the trial-unique condition due to lower false-alarm rates. Mouse trajectory analysis highlighted robust PI effects during initial movements in trial-repeated conditions. Dual-process modeling indicated the benefit was driven by global familiarity, not recollection. These results highlight the role of long-term memory, through PI, in shaping VWM capacity estimates.</p>
4:25 PM		<p><b>Electrophysiological decoding reveals the spotlight of attention shifting between perceptual inputs and memory representations</b></p> <p><b>Authors:</b> Xinger Yu, Geoffrey F. Woodman  <b>Affiliation:</b> Vanderbilt University</p>	<p>Theories propose that an attended object is compared with memory representations of the targets to identify it. However, we have lacked the neuroscientific tools to study this operation. Here, we show that this process can be tracked using spatial patterns of alpha-band activity recorded during visual search. We observed the initial selection of an attended perceptual input, immediately followed by the reactivation of the target's location in memory. Faster reactivation resulted in quicker behavioral responses, both across trials and subjects. Our results demonstrate a new tool that has the potential to test a host of cognitive models.</p>

x

# Explore Your Future with Exponent

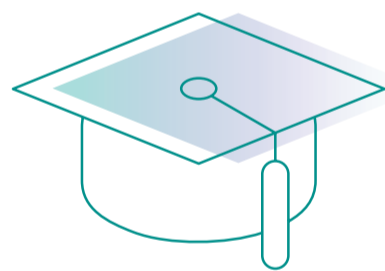
**Attending Psychonomics?**

**Come learn more about Exponent and connect with us in person at Booth #315.**

Exponent is a leading engineering and scientific consulting firm that brings together more than 50 years of experience and 90 different disciplines — including human factors (perceptual, cognitive, and developmental psychology and neuroscience) — to solve the most pressing challenges facing stakeholders today. Our vision is to engage the brightest scientists and engineers to empower clients with solutions for a safer, healthier, more sustainable world.



**950+ Consultants**



**650+ Doctoral Level Professionals**



**30+ Offices Across North America, Europe & Asia**

**For more information, contact:**

**[Iiona Scully, Ph.D., CXLT](#)**

Managing Scientist | [iscully@exponent.com](mailto:iscully@exponent.com)

**Learn more about Exponent careers and our current openings:**






# OPAM 32

## November 21, 2024

NEW YORK CITY NY

### Topic Key

-  Object Perception
-  Attention
-  Memory

## POSTER SESSION 1 11:30 - 12:30 PM




Poster#	Topic	Title/Authors	Abstract
01		<b>Similar quality of visual working memory representations between negative and positive attentional templates</b> Mahsa Zafarmand, Matthieu Chidharam, Nancy B. Carlisle	Biased Competition Theory (BC) states representations in working memory (WM) automatically guide visual attention towards memory-matching items. Recent evidence challenges this idea by showing attention can be guided away from memory matching distractors using negative templates. This study compares visual working memory quality for positive and negative templates using a mixture model. BC predicts weaker WM representations for negative templates compared to positive templates. In contrast, if attentional templates and working memory representations are distinct, we predict similar representations for positive and negative template. Positive and negative templates showed similar precision and guess rates, challenging the biased competition theory.
02		<b>Within-subject manipulations of proactive control do not change negative templates benefits: Exploring the effect of reward on negative and positive cues</b> Matt Tong, Matthieu Chidharam, Nancy B. Carlisle	This study investigated how state-based alterations of proactive control mechanisms influence the use of positive and negative attentional templates during visual search. We used reward motivation to induce within-individual shifts of proactive control efficiency. Effective rewards led to faster overall response times for both positive and negative template conditions. However, we found that effective rewards led to larger positive cue benefits while negative cue benefits were not influenced by reward. This suggests that the use of negative templates is not modulated by within-individual shifts of proactive engagement and instead, related to trait-based aspects of an individual's proactive control efficiency.
03		<b>Visual occlusion of faces alters typical neural face processing</b> Sarah Danielle McCrackin, Georges Chatzis, Jelena Ristic	Visual face occlusion (e.g. by face masks) impairs social behaviors like emotion recognition, but the neural correlates of occluded face perception remain unknown. Forty-nine participants identified emotional expressions from masked and unmasked faces while event-related potentials time tracked the neural time-course of face perception. Participants were impaired at recognizing emotions from masked faces. Masked faces elicited a more negative N170 indicating that masks disrupted holistic face perception. Masked faces also elicited a more negative Early Posterior Negativity (ERN), and a more positive Late Positive Potential (LPP), indicating prioritized attentional allocation and cognitive appraisal, potentially to compensate for emotion recognition difficulty.
04		<b>Salient Distraction Disrupts Non-Target Suppression During Category-Tuned Attentional Filtering: Behavioural Evidence for the Filter Disruption Theory</b> Cailey Collins, Blaire Dube	Previous research provides neural evidence that distraction disrupts category-tuned attentional filters. What are the behavioural consequences of such disruption? Participants viewed four hybrid face/house images and performed a 1-back task attending to one category within a target hybrid (indicated by a border). Occasionally, a single-category face or house image appeared in a non-target location. When this singleton was non-salient (semi-transparent), filtering was intact; when it was salient (opaque), the filter broke: response times were slowest when the singleton belonged to the task-irrelevant category. We propose a behavioural paradigm to test filter disruption, and suggest that distraction disrupts non-target suppression.
05		<b>Using drift diffusion modeling to uncover general and condition-specific effects of trial history in visual attention</b> Justin N. Grady, Dwight J Kravitz, Stephen R Mitroff	Given that visual attention does not operate in a vacuum, but rather in complex, messy, and inter-related contexts, the current study examined the impact of trial history, by using drift diffusion models, to determine how evidence accumulation across trials impacts performance. Drift rate, boundary separation, and non-decision time scaled reliably with evidence that matched the current trial condition. However, signal-to-noise ratio, a composite measure of drift and bound, scaled with the strength of evidence accumulation, even if the evidence contradicted the current trial condition. These results suggest that trial history has both specific and more general impacts on visual attention.
06		<b>Sweating the Details: Narrow Attentional Scope Facilitates More Negative Emotion Perception</b> Rebeka Almasi, Myeong-Ho Sohn	The present research investigated whether varying attentional scope affects emotional valence perception using Navon hierarchical stimuli. Participants were instructed to prioritize either configural/global information or local/parts-based information of a Navon prime before categorizing valence of emotional faces. Local attentional scope significantly narrowed the positivity bias for response time, providing evidence for the notion that local focus primes negative emotion more than a global focus and corroborating existing findings that exertion of cognitive control modulates emotion perception, even when prime and target features differ significantly.
07		<b>Emotional consequences of Expending effort</b> Emma Sophie Wiedenmann, Sarah Malykke, Rebeka C. Almasi, Myeong-Ho Sohn	The emotional consequence of processing effort is task-dependent. This study examined whether contextual modulation of emotion through cognitive control can be explained by priming. Using an immediate priming paradigm, participants performed a Stroop task as a prime, followed by identifying the gender of face stimuli as the target. Faces had positive or negative expressions. In Experiment 1, the prime task was passive viewing; in Experiment 2, conflict detection; and in the last, conflict resolution. Congruent primes increased the positivity effect during conflict detection and resolution tasks but not during passive viewing, suggesting contextual modulation is not due to simple priming.
08		<b>Object-based attention is flexible to both low- and high-level changes in real-world objects</b> Kelly McEvoy, Dick Dubbelde, Sarah Shomstein	Attentional selection operates on object-based representations with low- and high-level properties contributing to attentional guidance. However, the relative contributions of these two types of attention to object-based selection remains unclear. Here, we use a modified two-rectangle task to assess the influence of object borders and semantic information on attentional selection using real-world objects. Robust object-based effects were observed when either border or category was maintained but not when both properties were disturbed. Our results suggest that object-based attention persists despite altering object properties in real-world objects, which informs current models of attentional mechanisms and extends them to more naturalistic environments.
09		<b>How does past experience drive attentional strategy? Testing the role of explicit knowledge</b> Mackenzie J. Siesel, Tianyu Zhang, Andrew B. Leber	What factors determine whether people use optimal visual search strategies? Some evidence suggests training manipulations can implicitly "nudge" people to adopt optimal strategies, which durably persist beyond training. Alternatively, these manipulations may instead prompt explicit learning or awareness of the optimal strategy. To disentangle these accounts, we used a training-test manipulation but first informed participants about the optimal strategy. If explicit knowledge drives the effect, then the training manipulation should no longer modulate optimality, since participants already have explicit strategy knowledge before training. Results showed no durable effect of training, supporting the explicit knowledge account.
10		<b>What distinguishes optimal visual searchers? Evidence from a probe procedure</b> Tianyu Zhang, Andrew B. Leber	People vary greatly in their visual search strategies. What drives this variation? One possibility is that individuals vary in the stimulus aspects they attend, which leads to divergent strategies. We investigated this by spontaneously probing participants about various search display features. Results showed some participants focused more on stimulus properties that were necessary for using the optimal strategy – and these participants searched more optimally. Next, we made the probes predictable by manipulating probe type across blocks. Results showed that optimality varied as a function of probe type. These results demonstrate an important impact of display processing on attentional strategy use.

# OPAM 32

## November 21, 2024

NEW YORK CITY NY

### Topic Key

-  Object Perception
-  Attention
-  Memory

## POSTER SESSION 1

11:30 - 12:30 PM




Poster#	Topic	Title/Authors	Abstract
11		<b>How Do Dual Tasks Affect ID Verification? An Eye-Tracking Analysis</b> Nathan Henry Wieters	We investigated how dual-task interference affects ID verification performance and eye movements. Participants wore eye-tracking glasses while making 50 ID verification decisions. Participants compared a physical ID to a facial video and calendar date under one of three sets of instructions: date verification, identity verification, or identity and expiration verification. Although data collection is ongoing, we predict that dual tasks will decrease accuracy and response bias compared to either single task. Fixation counts, fixation durations, and saccades will also be analyzed to infer attention allocation. This research aims to inform real-world ID screening practices, potentially enhancing checkpoint security measures.
12		<b>Information-driven attentional capture</b> Alenka Doyle, Kamilla Volkova, Nick Crotty, Nicole Massa, Michael A. Grubb	Recent work has disrupted the top-down/bottom-up dichotomy of attentional control by showing that task-irrelevant, physically non-salient stimuli reflexively capture attention. Much is known about value-driven attentional capture, but the mechanism underlying experience-driven attention in the absence of monetary reward is not well understood. Here, we show that distractors associated with instrumental information were more likely to capture fixations than were distractors associated with redundant information, although both had equivalent histories as sought targets. These findings suggest that, in the absence of monetary reward, information history modulates the reflexive allocation of experience-driven attention.
13		<b>The predictive pupil: Implicitly signaling the prior probability of an attention-attracting abrupt onset preemptively modulates pupil area</b> Matthew A. Parrella, Michael A. Grubb	Abrupt onsets reflexively shift covert spatial attention. Our lab recently showed that delivering trial-to-trial information about the probability of a peripheral onset modulated the magnitude of the attentional cueing effect (low-probability > high-probability). Despite presenting physically identical onsets, our experimental manipulation may have induced changes in pupil size, with larger constrictions preceding the presentation of high-probability onsets. Here, we tested this possibility in a new group of participants using a luminance-controlled onset-probability signal. As hypothesized, pupil area was significantly smaller when information at fixation signaled that a forthcoming onset had high probability (0.8) relative to low probability (0.2).
14		<b>Extending the Functional Viewing Field framework to include head movements using a virtual reality foraging task</b> Taylor B. Dunn, Emily Beale, Allison Jones, Sam Schuhl, Chloe Callahan-Flintoft, Anna Madison, Anthony J. Ries	The Functional Viewing Field (FVF) framework posits the amount of information processed within one fixation (size of the FVF) can change dynamically, providing an approach for interpreting visual search efficiency using eye movements. The effect of the FVF size on head movements—required in complex real world search tasks—was evaluated using the FVF theoretical framework in a virtual reality foraging task with multiple targets across 180°. We manipulated factors affecting search difficulty to influence the size of the FVF and found that both eye and head movements can track changes in the FVF.
15		<b>Memory's control on attention: examining the dynamics of object-feature reinstatement during search</b> Jessica Kespe, Nasseem Al-Aidroos	Forming a working memory attentional template of an object reinstates previously learned object properties from long-term memory (LTM), even if task irrelevant. We examined how the initial object-learning conditions can impact later reinstatement. To test this, we varied memory strength by associating objects with a dominant and non-dominant colour, and by manipulating how many times the objects were shown during learning. We showed that seeing the object-colour once was sufficient for reinstatement, but only if it was a dominant colour, demonstrating how learning impacts what features are reinstated from LTM to influence attentional capture.
16		<b>Searched but never found: Attentional control settings are pruned based on interactions with the external environment</b> Samantha Joubran, Rebecca McCabe, Nasseem Al-Aidroos	When visually searching for a large set of everyday objects, only those objects capture our attention, indicating we have adopted attentional control settings (ACS) based on long-term memory representations of those objects. Beyond our internal attentional goals, are long-term memory ACSs also influenced by the external environment? Across two experiments we had participants memorize and then search for sets of 16-24 objects. While all objects initially captured attention, over time, any objects that never appeared as search targets were pruned from the ACS and stopped capturing attention, indicating that long-term memory ACSs are shaped through our interactions with the environment.
17		<b>The influence of goal-contingent attentional capture on hazard detection</b> Rachel A. Eng, Nasseem Al-Aidroos, Lana M. Trick	Contingent attentional capture (CAC) predicts that a stimulus will capture attention if it is consistent with the observer's goals (Folk et al., 1992). This study investigated whether CAC occurs in static simulated traffic-intersection displays. Participants searched for a sign with three arrows (left, right, and up) and reported the direction of the single blue arrow among two orange arrows (or vice versa), while concurrently detecting safety hazards (blue or orange cars and pedestrians). There was a small advantage for hazards when their colour matched the target arrow colour, thus providing support for CAC—with qualifications.
18		<b>Attentional prioritization of targets in multiple-object tracking (MOT) and visually guided touch is driven by target selection rather than action plans</b> Mallory E. Terry, Lana M. Trick	Multiple-object tracking involves following several moving targets among identical distractors and is proposed to employ attentional selection processes also necessary for coordinating actions. In support of a shared selection process, visually guided touch interfered with MOT, especially when touching distractors in MOT vs. targets. However, this result would also be expected if action plan targets were attentionally prioritized. Here we investigated both explanations and found that the target-distractor difference was preserved when the planned action did not involve MOT target locations. These results extend our understanding of selective attention, demonstrating a dissociation between the effects of attentional selection and action plans.
19		<b>What Can 160,000 Saccades Tell Us About Suppression of Salient Distractors?</b> Kaitlyn N. Drennan, Nicholas Gaspelin	There has been a longstanding debate regarding whether salient stimuli can automatically capture attention. Recent research has pointed toward a resolution whereby individuals can learn to inhibit salient distractors to prevent capture. However, this learned suppression has been difficult to study because learning occurs within the first few trials. The current study is a meta-analysis that pools across 10 previously published eye-tracking studies (N = 280) to demonstrate the robustness of distractor suppression. In addition, we demonstrate several effects related to implicit learning—such as intertrial location priming and learning effects—using the added statistical power provided by the meta-analysis.
20		<b>Investigating Memory Episodes in Location Probability Learning: Can Altering Response Features Reset Spatial Bias?</b> Gengshi Hu, Xinger Yu, Geoffrey Woodman	Repeated task exposure results in each instance being stored as a distinct memory episode. These accumulated episodes facilitate efficient retrieval, leading to faster and more automatic responses. This process likely underlies the statistical learning effect in tasks like the probability cueing paradigm, where frequent target detection at predictable locations boosts performance through automatic retrieval. This study examines how changes in response features affect memory retrieval and attentional biases. Contrary to expectations, altering motor responses did not eliminate the learned attentional bias, revealing new insights into the role of episodic retrieval in implicit learning and the adaptation of the visual system.

# OPAM 32

## November 21, 2024

NEW YORK CITY NY

### Topic Key

-  Object Perception
-  Attention
-  Memory

## POSTER SESSION 1 11:30 - 12:30 PM




Poster#	Topic	Title/Authors	Abstract
21		<b>Differential Attentional Costs of Encoding Single- vs. Multiple-Feature Objects in Visual Working Memory: An ERP Study</b> Jessica Ip, William C. Heindel, Elena K. Festa	The maintenance of visual features within working memory continues to be debated. In this EEG study, we examined differences between the encoding of single-feature versus multiple-feature objects under different memory loads (set sizes of 2 and 3) in healthy young adults. Using a visual change detection task, we compared the attentional and perceptual costs of encoding shape-only and shape-color stimuli under different perceptual loads. ERP results revealed larger mean amplitudes for the shape-only condition compared to the shape-color condition in the centroparietal late positivity potential (LPP) and the occipital P2 and P1 during encoding, but no set size differences.
22		<b>Can you remember them better because they are familiar or because they look real?: Testing the contribution of “object-ness” in visual working memory using novel objects</b> Yong Hoon Chung, Sam (Seho) Jung, Viola S. Störmer	Visual working memory capacity is enhanced for real-world objects relative to unrecognizable and scrambled objects. Here, using a set of novel objects created with generative adversarial networks, we test whether stimuli that look like real objects, but have never been seen before, also boost working memory performance. Our results show that these novel objects result in performance levels similar to scrambled objects, and that only stimuli that people have knowledge about increase working memory performance. These results demonstrate that meaningfulness and the ability to connect visual inputs to pre-existing conceptual knowledge are key to increasing visual working memory capacity.
23		<b>The Missing Piece of the Puzzle: How do we Use Predictive Templates to Guide Visual Search?</b> Jennifer D. Bartlett, Blaire Dube	Search templates stored in VWM guide attention towards matching targets. We investigated what is represented in VWM when predictive templates, which anticipate target features instead of matching them exactly, are provided before search. Participants viewed a predictive template (puzzle piece and arrow indicating which complementary piece to search for), followed by either (A) a search for the complementary piece or (B) an unrelated search containing the predictive template or Search A target as a distractor. Only target-matching distractors captured attention in Search B, suggesting that predictive templates prompted the generation and storage of target features in VWM to guide search.
24		<b>Assessing individual differences in chunking strategy in visual working memory</b> Yin-ting Lin, Andrew B. Leber	How do individuals cope with limitations in visual working memory? Here we examine what and how individuals choose to encode when they are overloaded with information. Results showed large individual differences in strategy use. Many participants chose to report items sharing greater colour similarity, whereas many others chose to report items at spatially adjacent locations. Nevertheless, we found no relationship between strategy use and memory performance. This suggests that there is no obvious best strategy for maximizing performance. Individual differences in strategy use may instead reflect idiosyncratic preferences, or that individuals are using strategies tailored to their individual abilities.
25		<b>The brain knows more is stored in visual long-term memory than we can report</b> Chong Zhao, Keisuke Fukuda, Geoffrey F. Woodman	When we attempt to recall a representation from visual long-term memory, there is a possibility that we might not succeed in retrieving it even though it exists in our brain. This study reveals that while explicit memory retrieval mechanisms sometimes fail to access these stored memories, executive control mechanisms can swiftly query the memory to confirm the presence of a representation. Our findings suggest that much of the memory typically accessed implicitly is, in fact, directly accessible by the brain's higher-level control processes.
26		<b>Retrieved information from long-term memory does not bypass working memory, even when full</b> Michael Kevin Mugno, Timothy Vickery	Traditional models of working and long-term memory (WM and LTM) suggest that retrieval from LTM is dependent on WM, yet a recent study by Liu et al. (2022) suggested that retrieved items can bypass WM when WM is full. We examined these claims by replicating their study with a more sensitive continuous-report paradigm. We found that, under these conditions, LTM item reports suffered when WM is full (4 items) compared to when it is not (2 items). Additionally, WM item reports suffered with retrieval compared to a WM-only condition. We conclude that LTM retrieval does not bypass WM.
27		<b>Independent Effects of Valence and Memorability on Visual Statistical Learning</b> Meital Friedman-Oskar, Tomer Sahar, Tal Makovski, Hadas Okon-Singer	Past research showed that negative valence benefits memory and visual statistical learning (VSL) tasks. This study investigated the role of image memorability in VSL and whether it can explain the valence effect. Participants viewed streams of images varying in valence (neutral, negative) and memorability (high, low). Experiment 1 revealed that only enhanced memorability improved VSL. However, when memorability was fixed, negative stimuli were learned better than neutral stimuli (Experiment 2). Similarly, high-memorability images enhanced VSL, but only with neutral stimuli (Experiment 3). These findings demonstrate the impact of item memorability on VSL and its independence from the effect of valence.
28		<b>Yellow Bananas &amp; Pink Flamingos: Prior Knowledge about Object-Colors Associations Increased the Retention of Color and Object Details</b> Nuno D. Sobrinho, São Luís Castro, Alessandra S. Souza	Prior research showed that encoding congruent objects (e.g., a yellow banana) allows the retention of detailed information about their color. Here, we tested if this benefit extends to the precision of the object's shape. In Experiment 1, participants memorized 3 objects for a working memory test of their color (360° color-wheel) and shape (six AFC). In Experiment 2, we increased memory load to 4. Congruency always improved color recall compared to neutral and incongruent conditions; yet, it only increased object precision when memory load was 4. Hence, prior knowledge can boost the storage of detailed information about colors and shapes.
29		<b>The influence of target-distractor similarity on the attentional boost effect</b> Yoongeol Yang, Juyeon Joe, Min-Shik Kim	The attentional boost effect appears to be driven by target-induced memory enhancement and distractor-induced memory impairment. Then, what about distractors similar to the target? Do they enhance or impair memory compared to dissimilar distractors? Participants memorized images while detecting colored squares, with distractor colors varying in similarity to the target color. Memory performance was better for target-paired objects than distractor-paired objects, but there was no significant difference between target-similar and target-dissimilar distractor-paired objects. These findings indicate that target-distractor similarity does not influence the attentional boost effect, suggesting the attentional boost effect depends on target detection and distractor categorization.
30		<b>Temporal Interitem Relations in Visual Working Memory</b> Hyeri Yoh, Min-Shik Kim	Temporal information of sequentially presented items is important for memory. We investigated temporal structure's relative properties in visual working memory (VWM). Using a color change-detection task, we manipulated the relative properties of the order (Exp 1), interval (Exp 2), and duration (Exp 3) of memory test items. A high interitem relation improved working memory performance when the interval order was preserved. However, when changed, participants' performance was unaffected by the relative order of items. Also, temporal pairing between an item and its duration enhanced performance. Our findings suggest VWM's sensitivity to interitem relations through temporal interactions.

# OPAM 32

## November 21, 2024








NEW YORK CITY NY

### Topic Key

-  Object Perception
-  Attention
-  Memory

## POSTER SESSION 1

11:30 - 12:30 PM

Poster#	Topic	Title/Authors	Abstract
31		<b>Pushing the ball vs. Pulling the rubber band: Adaptation-Induced Reversal of Causal Agent-Patient Relationships</b> Jimin JU, Sung-Ho Kim	Previously (Ju & Kim, 2024 VSS), we reported a novel bistable causal perception phenomenon where a separation event between a line and a disc is perceived as either “a stick pushed a ball” or “a ball pulled a rubber band until snapped,” depending on their speed profiles. The present study further investigated whether this phenomenon is based on low-level visual processing using a visual adaptation aftereffect paradigm. We found that prolonged viewing of ‘pulling’ events led to ambiguous events being judged more often as ‘pushing,’ and vice versa, suggesting that the causal agent-patient relationship is subject to a visual aftereffect.
32		<b>Furrow illusion reveals contributions of conscious object perception to rapid motor responses</b> Alyssa Costigan, Marjan Persuh	One prominent proposal suggests a separation between the vision for action and vision for perception. The idea that veridical (as opposed to perceptual) information guides motor activity has been independently developed for the phenomenon of response priming. We tested this hypothesis using a Furrow illusion, in which a veridical, vertical dot movement in the periphery is perceived as tilted when presented against a tilted background grating. Across two experiments we demonstrate that our visuo-motor responses use both veridical and consciously perceived information about objects to guide motor responses.
33		<b>Changes in response times before and after making a mistake reveal distinct motor and cognitive mechanisms of error monitoring</b> Sarah B. Malykke, Audrey Siqi-Liu, Emma M. Sirtzky, Justin N. Grady, Kelvin S. Oie, Dwight J. Kravitz, Stephen R. Mitroff	Errors in daily tasks and critical professions can have serious consequences, making it essential to understand their causes and related behavioral adjustments. This study used a novel “touch-and-swipe” response time measure to analyze pre-error speeding and post-error slowing in an object sorting task. Results indicated that touch time, reflecting motor initiation processes, exhibited significant pre-error speeding and substantial post-error slowing, while swipe time, representing cognitive decision-making processes, remained more stable with less pronounced error-related changes. These findings highlight distinct roles of motor and cognitive processes in error-related behavior, offering insights for improving performance monitoring and error management.
34		<b>Exploring Object Properties that Support the Transfer of Information Across Active Echolocation and Touch</b> Ayema Mukhtar, Keith Henderson, Shelby Bourquin, Santani Teng, Amrita Puri	An expert blind echolocator, a blind echolocator-in-training, and sighted echolocation novices completed a crossmodal match-to-sample task in which they examined target objects using echolocation and then used touch to distinguish them from a distractor object. Trials varied based on whether the target and distractor were similar or different in height, frontal surface area, mass, volume, and density. The expert echolocator performed above chance overall, whereas the in-training echolocator and novices were unable to reliably discriminate the objects in this crossmodal task. Discrimination accuracy of the expert echolocator was driven primarily by height and volume differences between the objects.
35		<b>Effects of Target Location and Simultaneous Disappearances in Motion-Induced Blindness.</b> Vishnu Yogesh Soni, Joey Planchet, John E. Sparrow	Motion-Induced Blindness (MIB) is a visual illusion where a salient target cyclically disappears and reappears when surrounded by a moving visual pattern. This study investigates how a target’s position influences its disappearance trends and the nature of simultaneous disappearances when multiple targets are presented in a MIB task. We hypothesized, per past studies, that the duration of target disappearance would be highest in the upper hemifield of a display. We find that disappearance is strongest on the left side of a display in general and at 4-deg of visual eccentricity. Targets disappeared simultaneously more than individually.
36		<b>VariCat: A Scene Image Dataset for Search</b> Carmen Ovalle, Jenna Wurtzbacher, Anatolii Evdokimov, Riley Dunkelberger, Yining Wang, Ariel M. Kershner, Arryn Robbins	Categorical search studies often require stimuli sets of many exemplars to accommodate multiple trials of search, and for search within scenes, require varied locations. Available scene image datasets are limited in size and variation for specific experimental designs. Our dataset provides 12 object categories with associated scenes and exemplars appearing in six different locations. For each location, we offer 36 instances of category members, each from one of six colors, resulting in a total of 1,728 images. Our dataset allows researchers to study the effects of various factors on visual search, including categorical associations and spatial variability.
37		<b>General Recognition Theory Analysis of Cue Detection and Discrimination under Varied Color Filters</b> Erin Silvas, Lauren Kahn, Joseph Houpt, Paul Havig, Barry Goettl	Psychophysical research on perceiving information tends to focus on information lost directly caused by a filter. However, many interactions depend on relationships among information sources. Our current research focuses on narrow band colored filters and how those filters disrupt the perception of visual cues. By adapting multiple facets of stimuli, we can detect which cues and filters aid in identifying the necessary visual information needed to increase and maintain the fastest, most precise decision responses through visual perception processing. We suggest that through the General Recognition Theory, a multidimensional interaction model, we can examine multifaceted stimuli to support visual perception in cognitive decision-making. This study was designed to investigate visual stimuli through filtered overlays that may affect information processing.



## Frontiers in Cognition



### Led by



George Ron Mangun  
University of California, Davis  
United States

VISIT THE JOURNAL  
[fro.ntiers.in/cognition](https://frontiers.in/cognition)

CONTACT US  
[cognition@frontiersin.org](mailto:cognition@frontiersin.org)

FOLLOW US  
[@FrontPsychol](https://twitter.com/FrontPsychol)

## Explores cognitive theories by bridging the gap between neuroscience and psychology

Frontiers in Cognition is a pioneering multidisciplinary journal, that invites research contributions across diverse areas of cognitive science, including cognitive neuroscience, computational cognitive neuroscience, and developmental cognitive neuroscience.

Its mission is to connect empirical research with theoretical advancements on key cognitive functions, fostering both multidisciplinary and interdisciplinary approaches.

Specialty sections within the journal include:

- Attention, led by Juan Lupiáñez (University of Granada, Spain)
- Cognition and Movement, led by Petra Jansen (University of Regensburg, Germany)
- Learning and Cognitive Development, led by Takeo Watanabe (Brown University, United States)
- Perception, led by Alice Mado Proverbio (University Milano-Bicocca, Italy)
- Memory, led by Marian Berryhill (University of Nevada, United States)
- Neural Network and Cognition, led by Eric Schumacher (Georgia Institute of Technology, United States)
- Reason and Decision-Making, led by René Marois (Vanderbilt University, United States)

90 days

from submission  
to decision

294

editors  
on board

130k+

article  
views

24k+




article  
downloads

# OPAM 32

## November 21, 2024








NEW YORK CITY NY

### Topic Key

-  Object Perception
-  Attention
-  Memory

## POSTER SESSION 2

1:20 - 2:20 PM




Poster#	Topic	Title/Authors	Abstract
38		<b>How 'optimal' is mixed hybrid foraging?</b> Injae Hong, Jeremy M. Wolfe	In visual foraging, multiple targets are collected from patches. At some point, a forager decides to leave the current patch and begin collecting in the next one. Charnov's Marginal Value Theorem (MVT) states that optimal patch-leaving occurs when the instantaneous rate of collection falls below the average rate. Foragers might collect specific items (Pick collect acorns in this forest) or items from broader categories (collect interesting plants) or both. We compared patch leaving behavior in specific, categorical, and combined foraging. In each case, foraging was close to MVT-optimal, underlining the generality of the MVT approach.
39		<b>Delineating the Effects of Memory-Guided and Imagery-Guided Attentional Capture in a Visual Search</b> Alyssa M.L. Thibeault, Maha Ali, Stephen M. Emrich	It remains unclear if visual working memory-guided (VWM) versus imagery-guided attentional capture reflect the same mechanism, or how imagery strength influences these effects. Subjects completed VWM and imagery tasks interleaved with a visual search, and the Vividness of Visual Imagery Questionnaire/VVIQ. Trials were valid (cue-matching target), neutral (cue colour absent) or invalid (cue-matching distractor). Imagery RTs were slower than VWM RTs, and cueing effects (invalid>neutral>valid) emerged across tasks. VVIQ correlated with imagery costs (invalid - neutral). Results suggest a dissociation between imagery-guided and VWM-guided attention, as the relationship between imagery strength and attentional costs was absent in the VWM task.
40		<b>Reach Distance as a Motivator for Thorough Visual Search</b> Alexis A. Henry, Dasha A Zdvizhkova, Macey K. Roberts, Jeff Moher	We investigated the link between motor output and visual search accuracy for targets. Participants searched for targets and indicated presence or absence of the target by reaching with their hand to either a closer or farther button. Initial data shows that the rate of missed targets is lower when participants had to reach farther to indicate that the target was absent. This indicates that greater motor output to declare the absence of a target encourages more thorough visual search. These findings have real world implications in improving the accuracy of visual search professionals, such as radiologists and x-ray baggage screeners.
41		<b>Salient Distractors Reduce Total Fixations and Reflect Early Quitting in a Visual Search</b> Fabio Solorzano Quesada, Anjum Shaikh, Skylar Rice, Trafton Drew, Brennan Payne, Jeff Moher	Participants completed a visual search task where we examined eye movements to determine how distractors produce early quitting. When distractors were present, fewer eye movements occurred before target-absent responses, and less of the display area was searched. Fewer eye movements were directed towards the distractor suggesting it was ignored. Salient distractors increased both search errors, where the target was never fixated, and decision errors, where the target was fixated but not detected. Our results demonstrate that salient distractors cause early quitting by reducing the amount of information that observers extract from the search image.
42		<b>The Impact of User-Controlled Cues on Visual Search Performance and Quitting Behavior</b> Melisa Sierra, Idah Mbithi, Jeff Moher, Brennan Payne	We explored how user-controlled cues impact distractor-induced quitting in visual search. Participants completed visual searches in four conditions: addition cue, removal cue, automatic, and baseline. In some trials, the cues highlighted the target, while in others, they highlighted a non-target. In the addition cue condition, participants pressed a key to trigger a salient cue before responding. Conversely, the removal cue condition required participants to remove the cue with a keypress before responding. The automatic condition presented cues with the display, whereas the baseline condition included no cues. We replicated past findings showing evidence for early quitting behavior. Contrary to our expectations, user-controlled cues did not reduce early quitting behavior and might have worsened it.
43		<b>Effect of Motivation on Attentional Breadth</b> Nora J. Will, Deborah Cronin	Recently, a series of studies has demonstrated high levels of motivation can narrow the spread of attention. While some have replicated the findings, others argue inaccurate measures of attentional breadth or poor manipulations of motivation may have caused these results. We investigated this idea by implementing task-relevant motivation manipulations and the Eriksen flanker task as a measure of attentional breadth to test the impact of high and low motivation conditions. Here, we found no significant effect of motivation on the scope of attention, supporting the idea that well-established models of attention more accurately explain changes in attentional breadth.
44		<b>The congruency sequence effect in auditory and visual Stroop tasks.</b> Jin Ho Kim, Yang Seok Cho	The goal of the present study was to examine whether the cross-modal CSE can be observed between two Stroop tasks with different sensory modalities. Participants were asked to respond to either the face or voice of celebrities while ignoring the name displayed at the center of the face or the name spoken by the voice. There was no CSE observed between two visual facial Stroop tasks, but it was evident between visual and auditory Stroop tasks. The results suggest that conflict resolution in the Stroop task occurs within the task set.
45		<b>Attention Modulated by Levels of Value and Uncertainty According to Search Mode</b> Jaemin Lee, Yang Seok Cho	Task-irrelevant color stimuli associated with value in the training phase can capture the attention in a visual search task. Furthermore, even when two colors have the same expected value, attentional capture is significantly greater under high uncertainty. As expected, value- and uncertainty-based attentional capture was observed when participants were trained with multicolor stimulus sets. However, when a singleton search mode was used in training, color stimuli were inhibited in the visual search task according to the level of uncertainty. These differences demonstrate that value- and uncertainty-related stimuli constantly affect attention, but their influence varies depending on search mode.
46		<b>Diametrical Response Layout in Mouse-Tracking Method for Spatiotemporal Divergence of the Simon Effects</b> Nahyun Lee, Minwoo J.B. Kim, Yang Seok Cho	The present study is a methodological investigation into the use of diametrical response layouts in mouse-tracking studies. Conventional two-choice mouse-tracking studies typically locate the mouse starting point on the bottom-middle of the screen and response buttons on the upper left and right corners, leading to limited divergence in mouse trajectories with fixed 'up' movements along the y-axis. The present study aimed to reduce dilution in trajectories across response choices by placing the response buttons on diametrical positions from the center starting point. By inducing opposite directional movements from the starting point, the approach resulted in fine-grained data of the spatiotemporal dynamics on x-axis coordinates.
47		<b>Examining Contextual Cues in Prospective Memory using Pupillometry</b> Giovanna C. Del Sordo, Megan H. Papesh	How do you remember to take medications at night? Accomplishing prospective memory (PM) tasks can involve both overt reminders (an alarm) and awareness of contextual cues (noticing your medication box). This study examined attentional engagement using pupillometry while participants completed a color-matching task with a secondary PM component. Results showed increased pupil dilation during the prime period (initial detection of relevant contextual cues) but no significant change during the probe period (when potential conflicts between expectations and actual cues appeared). These findings highlight the dynamic role of early contextual cues in guiding attention during PM.

# OPAM 32

## November 21, 2024

NEW YORK CITY NY

### Topic Key

-  Object Perception
-  Attention
-  Memory

## POSTER SESSION 2 1:20 - 2:20 PM




Poster#	Topic	Title/Authors	Abstract
48		<b>Investigating the Role of Peripheral Information Processing in Mental Maze Solving using a Gaze-Contingent Paradigm</b> Kian Motahari, Yelda Semizer, Ben Balas, Ruth Rosenholtz	How much do we use peripheral vision when solving a maze? The current study investigated the role of peripheral vision in maze solving by using a gaze-contingent paradigm. Participants completed a maze solving task where only the central region of the maze was clearly rendered while the peripheral region was masked. The amount and usefulness of the peripheral information, as well as the size of the region, were manipulated using different types of masks and varying sizes of the central region. Participants' eye movements and search times suggest peripheral information significantly contributes to mental maze solving.
49		<b>Going Gray too Early? Effects of Color on Facial Identification</b> Roman M. Pardo, Dawn R. Weatherford, Nathan Wieters, Arleth Morquecho	Identification card (ID) screening is common to access goods and services. Unfortunately, contextual factors can bias face-matching (e.g., low prevalence effect, document bias, and size disparity). We explored another bias, color incongruity, by investigating a realistic ID task using eye-tracking technology. Participants wore eye-tracking glasses while comparing 70 physical IDs (printed in color [congruent] or grayscale [incongruent]) to a color facial video. We predict differences ID screening errors in discriminability, response bias, and eye movements between the two conditions. This preventable incongruity has implications of fraud and overall criminality that can affect security, law enforcement and private citizens.
50		<b>Active Generation of Search Templates Using Deep Neural Networks</b> Seoyoung Ahn, Hossein Adeli, Gregory Zelinsky	We re-conceptualize search templates as the active generation of potential target appearances in degraded peripheral vision. Using deep neural networks for image synthesis, we show that a model reconstructing peripheral objects to resemble typical targets can explain human search guidance and eye movements. This model uses pixel differences between generated and actual object appearances for search guidance. Despite not being explicitly trained for target detection, our model achieved ~90% accuracy in locating targets and aligned strongly with human eye-movement data. This suggests template matching may involve active visual generation, not just memory retrieval, explaining how human search can be both efficient and adaptive.
51		<b>Probing the domain-generalty/specificity of conflict adaptation</b> Sarah Mia Liberatore, Dezhi Luo, Jacob Sellers, John Jonides	Cognitive control allows one to respond to goals in working memory while overcoming distractions. Is there a unitary process that mediates this ability across tasks? Others have addressed this issue by measuring the congruency sequence effect (CSE) between conflict tasks as well as within a single task, but previous research has been infected with validity and reliability hazards from stimulus contingencies and free-response paradigms. We combat these hazards by applying a Forced-Response method, which varies processing time across trials, to Simon and letter Flanker tasks. Preliminary results suggest that there may be CSE effects both within and across tasks.
52		<b>Does endogenous visual cueing influence audiovisual integration?</b> Abigail Daley, Natasha Taylor, Jonathan Wilbiks	The current work examines the effect of endogenous visual cues on audiovisual integration. Participants completed an audiovisual integration task with eight visual stimuli arranged in a circle and stimulus polarity changes occurring rapidly. Some trials included endogenous visual cues pointing towards the stimulus set to change on the critical trial, a cue that pointed to an invalid location, or no cue. There were no significant differences between cueing conditions ( $p = .180$ , $\eta^2 = .102$ ), suggesting that endogenous cueing has no effect on audiovisual integration; future studies should examine the effect of validity rate of the cue being presented.
53		<b>Using virtual reality to simulate wilderness search and rescue 'clue-finding' tasks</b> Paean Luby, Ashley Mathis, Bryan White, Rebecca Penn, Arryn Robbins, Michael C. Hout	To complement two-dimensional laboratory search tasks, some researchers have begun to explore three-dimensional environments that simulate realistic scenarios. Our prior work simulated an open-terrain outdoor search and rescue task. Unfortunately, this type of task imposes a heavy burden on the research team, requiring a large investment of equipment, personnel, space, training, and coordination. Such tasks are also limited by the terrain available to researchers. The current investigation seeks to establish virtual reality as a feasible alternative, allowing for tighter experimental control/manipulation, three-dimensional interactive environments, and varied real-world target categories that better capture wilderness search and rescue scenarios.
54		<b>Learning Alters Saliency</b> Dock H. Duncan, Dirk van Moorselaar, Jan Theeuwes	What is the mechanism by which predictable distractors interfere less with search? Across a pair of experiments, we approached this question by asking how learned suppression changes the appearance of things in space. Using a psychophysical approach, our results revealed that items presented at suppressed locations are perceived as darker than other areas, suggesting that the suppression benefit is driven by changes in the perception of the distractors themselves. We follow this up by modelling reaction time distributions to determine how saliency changes affect search and found that learning reduced the number of capture episodes. Together, these results indicate that statistically learned suppression proactively alters perceived saliency, resulting in less capture by items present in the suppressed area.
55		<b>Unfolding the hidden impact of suppressed distractors on reaching movements</b> Shinhae Ahn, Richard A. Abrams	The present study examined how reaching movements reveal attentional processing in the presence of salient distractors. Participants made mouse movements to either a unique target shape among homogeneous distractors (singleton-detection mode), or to a specific shape among heterogeneous distractors (feature-search mode) sometimes with a salient color singleton distractor. The movements showed greater curvature toward the salient distractor caused by attentional capture in singleton-detection mode, while feature-search mode exhibited marginal curvature of trajectories, indicating effective distractor suppression. Probe trials separately assessed the influence of target enhancement and distractor suppression on the movements.
56		<b>Impact of Current Emotional State on the Overgeneralization of Autobiographical Memory</b> Qi Zhang, Eriko Sugimori, Yayoi Kawasaki	This study investigates the relationship between emotional states during recollection and the degree of overgeneral autobiographical memory (OGM) in university students with depressive tendencies. Participants were recruited into depressive and control groups (healthy) using the Beck Depression Inventory and the Self-Rating Depression Scale and then underwent three autobiographical memory texts, each utilizing different film clips to elicit various emotions. Results indicate that (a) OGM is significantly higher in individuals with depressive tendencies compared to the control group. (b) Emotional arousal states have a significant impact on OGM compared to calm states. (c) For healthy students, positive emotion significantly impacted their OGM, while for the depressive group, both types of emotions affected.
57		<b>Angry Faces Seem More Prevalent in Summary Frequency Judgments</b> Makenna P. Tardif, Karen M. Arnell	Previous research shows that how readily items come to mind influences frequency judgments where available items seem more frequent. Here, participants passively viewed emotional faces (Exp. 1 & 2) or attempted to ignore them during a digit-parity task (Exp. 3). They then indicated the frequency of each gender that covaried with emotion (Exp. 1) or the frequency of the emotions themselves (Exp. 2 & 3). Overall, summary judgments showed participants perceived angry faces as being more frequent than happy or neutral faces. However, participants did not show better memory for individual angry faces suggesting an availability bias not better encoding.

# OPAM 32











## November 21, 2024

NEW YORK CITY NY

### Topic Key

-  Object Perception
-  Attention
-  Memory

## POSTER SESSION 2 1:20 - 2:20 PM




Poster#	Topic	Title/Authors	Abstract
58		<b>Do Eye Movements Disrupt Visual Memory?</b> Erin E. Carlson, Odessa, L. White, Deborah, A. Cronin	Eye movement desensitization and reprocessing (EMDR) is a popular treatment for traumatic memory disorders though its mechanism is largely unknown. One possibility is that eye movements disrupt visual working memory during recall, reducing the vividness and intensity of traumatic memories. Participants in our study rated personal memories on vividness and emotional impact. They then recalled and visualized each of the previous memories while performing one of three eye movement tasks. After each trial, participants re-rated their memories. Our results provide insight into how eye movements impact memory and suggest a potential mechanism of EMDR therapy.
59		<b>Thematic relations outperform taxonomic relations in memory retrieval</b> Weijia Cao, Omri Raccach, Phoebe Chen, Alexa Tompany, David Poeppel	Semantic associations across items are known to facilitate subsequent retrieval. The processing of taxonomic versus thematic relations has been a topic of extensive interest. In a cued recall task, we show that thematic relations lead to shorter reaction time and better memory performance for word pairs, followed by taxonomic relations, and finally unrelated pairs. In Experiment 2, the same pattern emerges in a forced-choice memory test given options sharing the three different relations to the cue. We provide evidence that semantic relations facilitate memory performance to different extents, suggesting that factors like accessibility may modulate their interaction with episodic memory.
60		<b>fMRI exploration of Mind Wandering and Memory Consolidation</b> Devayani Joshi, Alexa Tompany, Aaron Kucyi	Mind-wandering is often linked to poor memory outcomes. However, its potential benefits post-learning still need to be understood. Quiet rest after learning aids memory consolidation and provides an ideal environment for mind-wandering. This study investigates the relationship between mind-wandering and memory consolidation during post-learning rest. Participants (N = 16) learned object-scene associations and underwent 40 minutes of rest in an fMRI scanner, reporting their degree of mind-wandering. Immediate and 24-hour delay memory tests showed a positive correlation between mind-wandering and memory performance. Further fMRI analysis will explore the neural dynamics of this interaction.
61		<b>The effect of aesthetic quality and spatial layout on the metacognitive processing of naturalistic scenes.</b> Sebastian Nikolas Tustanowski, Helen Williams, Susan Sherman, Joseph L Brooks	The cue-utilization framework (Koriat, 1997) suggests people use intrinsic cues (i.e., internal characteristics of to-be-remembered items) to gauge phenomenal experience of memory. Our research assessed how two intrinsic cues (aesthetic quality: high, low/spatial layout: open, closed) affect metamemory (JOLs at study/RK-DU judgements at test) in scenes. Results showed both cues affected JOLs with 35-56% integrating both cues into their judgements suggesting people use multiple cues to inform JOLs in scenes rather than relying on a unified feeling of ease by combining cues into a single cue. RK-DU judgements were also affected suggesting intrinsic cues can alter recognition experience in scenes.
62		<b>Simulating Compositional Imagery Operations with Disentangled Features Stored in Working Memory</b> Ian Deal, Valerie Esquivel, Vijay Subedi, Brad Wyble	Traditionally, research on the cognitive process of visual imagery has been focus on the nature of mental representations, with recent findings suggesting that imagery utilizes both semantic and visual processes. However, there is very little research into how these neural mechanisms interact to perform these functions. We propose an initial mechanistic explanation of how the visual system and working memory interact to perform visual imagery operations that have been studied behaviorally.
63		<b>Dark Triad Correlates of Recognition Memory</b> Stephanie A. Gooding, William B. Erickson, Dawn R. Weatherford, Edith Escamilla, Adriana Rodriguez	Little research has examined the relationship between Dark Triad traits (D3: Machiavellianism, psychopathy, narcissism) and face recognition memory. We sought to fill this gap across three experiments. In E1, participants completed the Short D3 assessment followed by a recognition memory task for faces and scenes. Of the personality traits, only narcissism produced a significant relationship such that it negatively predicted face memory. So far, E2 replicates these results with more different facial stimuli and house images as the comparison stimuli. E3, currently collecting data, compares inverted to upright face recognition to explore processing differences among those high in D3 traits.
64		<b>Evaluating Encoding and Retrieval Advantages of Action Pairs in a Newly Developed Stimulus Set</b> Moussa Kousa, Brad P. Wyble	This research examines the impact of semantic relatedness on visual working memory (VWM) through memory and attentional blink experiments using novel related and unrelated object pairs. The findings show that related pairs significantly enhance memory performance, supporting chunking theories that suggest semantic relatedness boosts VWM capacity. Further experiments using the attentional blink (AB) paradigm reveal that while related pairs improve T1 accuracy, they do not affect the AB for T2 which indicates no impact on T1 encoding speed, indicating that semantic relatedness primarily enhances retention rather than processing speed.
65		<b>Assessing ADHD effects on Working Memory Manipulation: Evidence from Drift Diffusion Modeling</b> Wei-Jie Zhou, Kane York, Han Zhang, John Jonides	Successful memory functioning involves both preventing the encoding of new irrelevant information and removing irrelevant information from memory. We tested whether ADHD (N = 39) and non-ADHD (N = 41) individuals differed in these capacities. Both groups completed an "Ignore" task and a "Forget" task, which required participants to selectively encode or forget words in a specific color, respectively. In both tasks, ADHD individuals showed greater interference from irrelevant information compared to non-ADHD controls. Drift diffusion modeling shows that these effects were driven by slower lower drift rates among ADHD individuals. These results suggest deficits in memory selection processes in ADHD.
66		<b>Examining the impact of pediatric concussion and impulsivity on adolescent executive functioning using the ABCD Study</b> Jenna N. Pablo, Philip T. Veliz, Marian E. Berryhill	Mild traumatic brain injury (mTBI) is a significant public health issue due to wide prevalence. It is important to know whether a priori impulsivity contributes to mTBI incidence, even in early childhood. Here, we tapped the Adolescent Brain Cognitive Development study to assess executive functioning in adolescents with and without a history of pediatric (<9 years old) mTBI (hmTBI). We examined whether high impulsivity interacted with cognitive performance. These results showed that high impulsivity significantly predicts worse executive function, regardless of hmTBI status. The roll-out of the ABCD Study data will permit longitudinal testing of more recent mTBI.
67		<b>The Impact of Computer-Aided Detection on Visual Search: Investigating Early Quitting and Error Patterns</b> Eunseo Han, Maiko Okamura, Brennan Payne, Trafton Drew, Jeff Moher	We are studying how salient cues impact visual search by recording eye movements during searches. Participants encountered four cueing conditions: a condition where a cue highlighted a target, a cue highlighted a non-target but the target was somewhere else, a cue highlighted a non-target with no actual target, and one with neither cue nor target. The results showed that cues highlighting non-targets led to shorter response times, higher error rates, and fewer fixations. Notably, participants were more likely to fail to fixate the target. These findings shed light on how task-relevant salient cues can drive early quitting in visual search.

# OPAM 32

## November 21, 2024









NEW YORK CITY NY

### Topic Key

-  Object Perception
-  Attention
-  Memory

## POSTER SESSION 2

1:20 - 2:20 PM

Poster#	Topic	Title/Authors	Abstract
68		<b>On the emergence of the parvo- and magnocellular division: Potential role of early visual experience</b> Marin Vogelsang, Lukas Vogelsang, Gordon Pipa, Sidney Diamond, Pawan Sinha	While the division of the mammalian visual pathway into parvo- and magnocellular systems with distinct response properties has long been established, its emergence remains unclear. We here propose that the temporal confluence in the progression of spatial frequency and chromatic sensitivities during early development significantly shapes neuronal response properties characteristic of this division. Receptive field analyses of deep networks trained on developmentally-inspired 'biomimetic' protocols provide strong support for this hypothesis. Further, biomimetic training induces a more human-like object recognition bias towards global shape. These results have implications for understanding visual pathway organization and applied relevance for improving
69		<b>Computational Methods of Visual Clutter and its Impact on Predicting Visual Search Performance</b> Sathvik Gopu, Yelda Semizer	Previous research suggests that visual clutter impairs performance in visual search tasks. However, the specific aspects of clutter responsible for these effects are not well understood. In this project, we investigate how factors such as the number of items in a scene, their organization, and surface complexity of the visual surface contribute to clutter and affect performance in a visual search task. Using a semi-realistic image data set, we asked observers to complete a search task while we recorded their search time and their eye movements. Our results show significant interactions among these factors, suggesting that clutter is a multifaceted concept.
70		<b>Peripheral Object Detection in Expert Basketball Players Compared to Novices</b> Gala Krsmanović, Yelda Semizer	Peripheral object detection and localization are valuable perceptual skills for basketball players. In this study, we measured expert basketball players' ability to detect peripheral targets and compared their performance to that of novices. In an eye-tracking study, we asked participants to detect peripheral targets presented at various eccentricities while maintaining fixation. We used an adaptive procedure to estimate detection thresholds for each participant by fitting psychometric curves to the participant data. Our findings contribute to existing literature on the role of expertise in visual perception, particularly peripheral vision.
71		<b>A Closer Look at Perceptual Training During an Anomaly Search Task: Target Recognition and Error Distributions</b> Ashley Paige Mathis, Giovanna C. del Sordo, Michael C. Hout, Megan H. Papesh, Bryan L. White, Rebecca A. Penn	Abnormalities appear in medical images as ill-defined malformations of existing tissue, flattened into 2D representations, presenting unique perceptual challenges for screeners. Using search scenes analogous to medical images, we tested whether perceptual training methods can improve anomaly detection skills and/or refine eye movement efficiency. Three training sessions preceded a two-week break, retention test, and transfer task. Preliminary findings suggest that anomaly detection improves with experience, such that accuracy increases and target processing times and recognition failures decrease. These effects are heightened when participants have perceptual training.
72		<b>Does children's ability to categorise objects benefit from additional cues of motion and sound</b> Eimear M. McKenna, Doaa Karam, Alan O'Dowd, Rebecca Hirst, Fiona N. Newell	Children's ability to categorise objects emerges early, but the impact of additional cues is unclear. We examined the influence of movement and sound on categorisation in 108 children aged 5-13 years. Children learned to categorise novel moving objects with correlated sounds to 75% accuracy. Categorisation was tested with a 3x3x2 design involving age, object movement (learned, novel, or static), and sound (correlated or uncorrelated). Older children learned to categorise objects fastest. No main effects of motion or sound were found, but younger children (5-7 years) benefited from learned object motion, suggesting they combine visual cues when forming categories.
73		<b>Generating objects in peripheral vision using attention-guided diffusion models</b> Ritik Raina, Seoyoung Ahn, Gregory J. Zelinsky	Humans perceive a stable visual word despite our peripheral vision being profoundly degraded. We hypothesize this is due to an active generation of objects in our blurred periphery, guided by visual and language information. Using latent diffusion models, we generated objects in pixels blurred to reflect peripheral viewing in an object referral task that required participants to fixate a target based on a referring expression that they were hearing. We found that words in the referring expression had a big effect on generated objects, with the visual information accumulated over fixations and distance from fixation having smaller but significant effects.
74		<b>Aesthetic preferences for objects are viewpoint dependent</b> Jiangxue Ning, Tianxiang Li, Kexuan Zhang, Benjamin van Buren	Vision scientists have long debated whether 3D object perception is viewpoint-invariant, viewpoint-dependent, or both. We show that observers' aesthetic preferences for 3D shapes depend strongly on viewpoint, and in particular on the angle of elevation. Each observer viewed a cube, cone, cylinder, or regular prism at 84 different viewpoints, and rated the aesthetic pleasingness of each view. They greatly preferred looking down at the object from an elevation angle of 30 to 60°. We conclude that preferences for 3D objects are viewpoint-dependent, perhaps because elevated viewpoints are more familiar, or because these views support our natural tendency to attend to objects' tops.
75		<b>Good intentions: Observers prefer viewing moving shapes which look self-propelled and goal-directed</b> Hong Binh Minh Nguyen, Benjamin van Buren	While watching your pet goldfish, you notice that it is not facing in the direction it is moving, but rather slightly to the left of its heading. This might be unpleasant to watch, because it indicates a possible health problem. More selfishly, your visual system might have trouble explaining why the fish is moving in one direction, but facing in another, and this disfluent processing might cause a feeling of displeasure. In four experiments, we show that observers prefer seeing moving shapes whose movements look self-propelled and goal-directed, by aligning their long-axis with their heading, or with another moving shape.



THE GEORGE  
WASHINGTON  
UNIVERSITY  
WASHINGTON, DC

Department of Psychological &  
Brain Sciences  
Cognitive Neuroscience Program  
<https://psychology.columbian.gwu.edu>

**Research-Intensive PhD in  
*Applied Psychology and  
Prevention Science***

**Applications due: Jan 15**

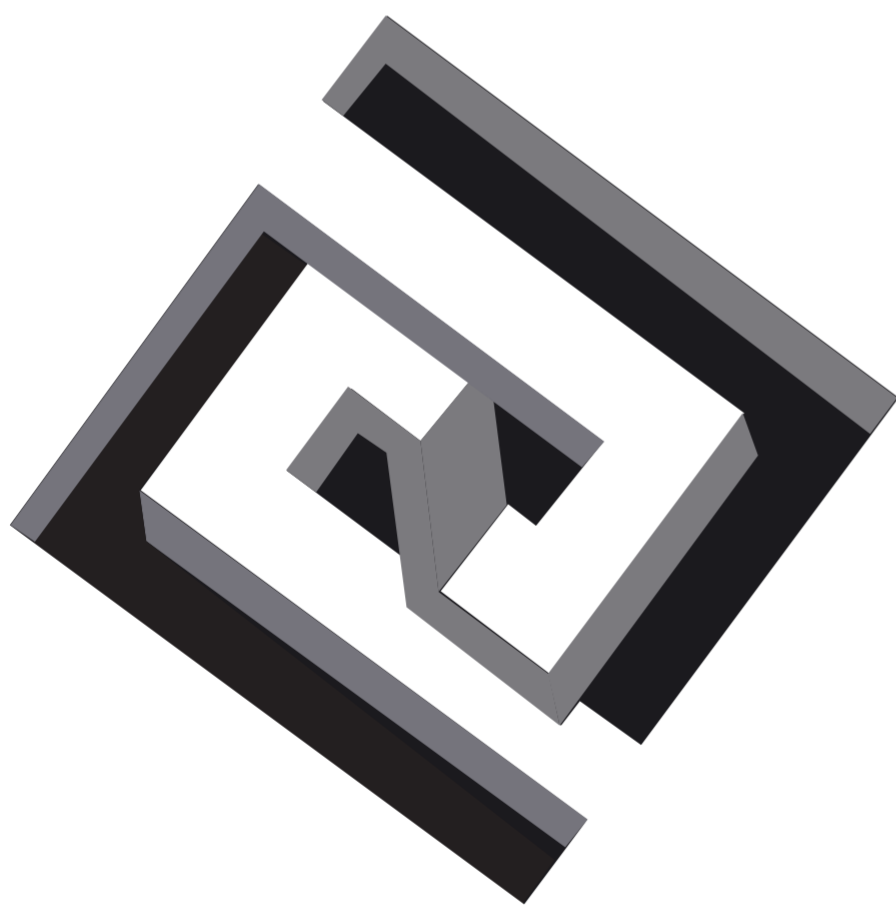
Steve Dopkins  
Dwight Kravitz  
Steve Mitroff  
John Philbeck  
Gabriela Rosenblau  
Sarah Shomstein  
Myeong-Ho Sohn

Spatial Cognition, Memory  
Perception, Memory, Imagery  
Applied Visual Cognition, Attention  
Space Perception & Navigation  
Social Neuroscience, Autism  
Perception, Attention, Cog. Control  
Executive Control, Memory

<https://www.uml.edu/fahss/psychology/programs/graduate/phd-apps/>

*The GW Cog Neuro community is growing &  
looking for Ph.D. students!*

*Also see the Department's new Applied Psychology M.S. Program*



# THE NSSR PERCEPTION LABORATORY

**THE NEW SCHOOL  
FOR SOCIAL RESEARCH**

<https://nssrperception.com/>

# What is Gorilla?

*Everything you need to run a study*



**Design, deploy & share**  
online behavioural  
experiments



**Collect validated behavioural**  
**data** (reaction times, text, audio,  
video, mouse-tracking, eye-  
tracking)



**Powerful, easy-to-use**  
**graphical interface**  
which can be extended with  
custom code



**Open Access**  
Build for free, pay for data  
collection

Anwyl-Irvine, A.L., Massonié J., Flitton, A., Kirkham, N.Z., Evershed, J.K. (2019).  
Gorilla in our midst: an online behavioural experiment builder.  
Behavior Research Methods. <https://doi.org/10.3758/s13428-019-01237-x>

Anwyl-Irvine, A., Dalmaijer, E., Hodges, N., & Evershed, J. (2020).  
Realistic precision and accuracy of online experiment platforms, web browsers, and devices  
Behavior Research Methods. <https://doi.org/10.3758/s13428-020-01501-5>

## Follow Us

 gorillapsych.bsky.social

 gorillapsyc

 gorillapsyc

 gorilla.sc

**GORILLA™**



**QVCL**  
Queen's Visual Cognition  
Laboratory

### Looking for a Graduate Program in Cognitive Neuroscience?

- Study cognitive processing using cutting-edge technology
- Work and collaborate with world-renowned experts
- Develop valuable skills for both academia and industry

visit <http://qvcl.ca>

# Take your research to the **next level**

Our comprehensive scientific display solution offers:

- Full HD performance @ 120 Hz refresh
- >95% display luminance uniformity
- Innovative scanning backlight technology for crisp frame transitions
- 3D support up to 60 Hz/eye
- High bit depth video modes (up to 10 bpc)
- Onboard I/O and video synchronization system
- Automated visual event triggers with  $\mu$ s precision
- MATLAB/Python APIs & LabMaestro Software Suite



**VIEWPixx /3D**  
by VPixx Technologies

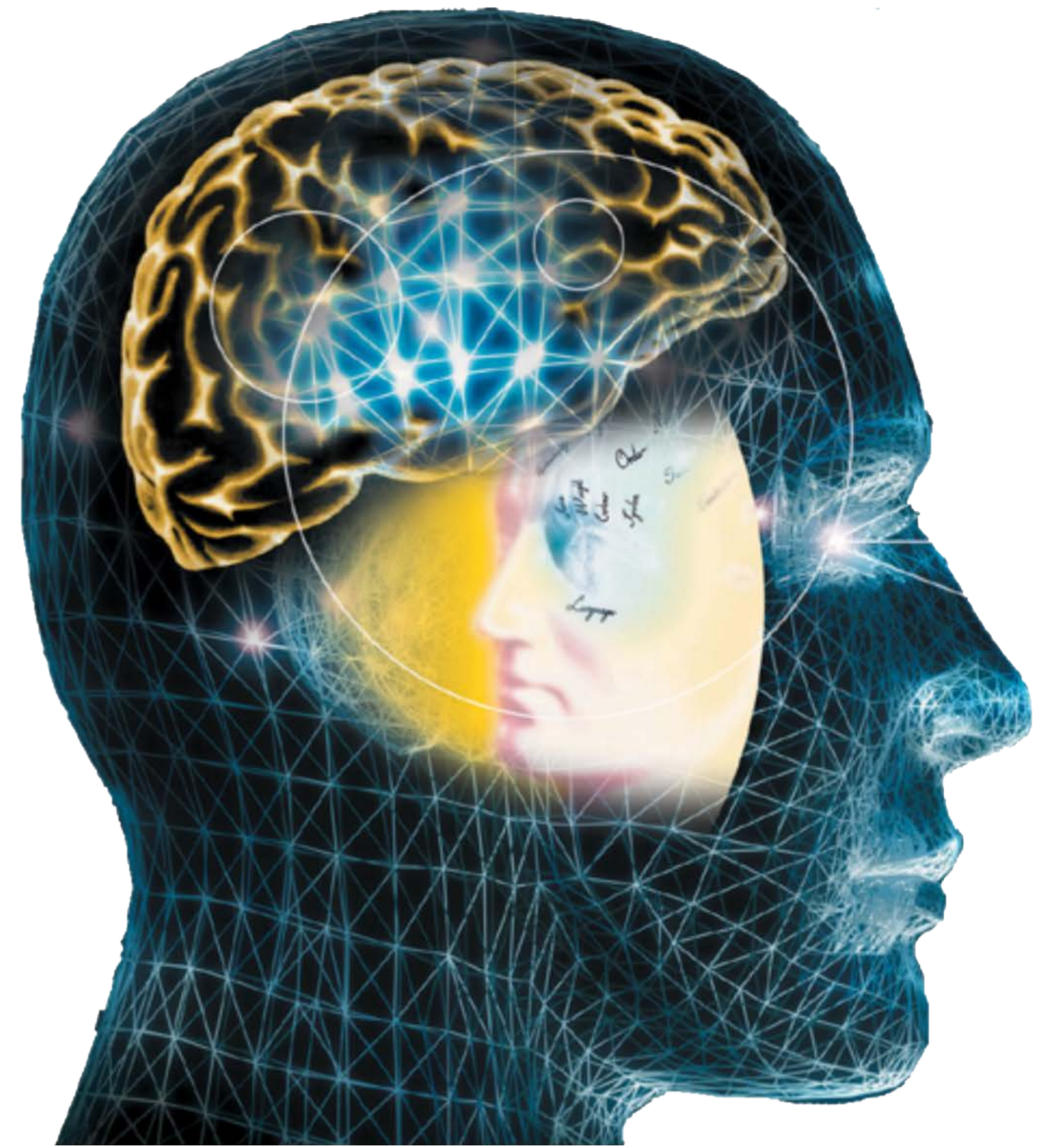
Learn more at [www.vpixx.com](http://www.vpixx.com)



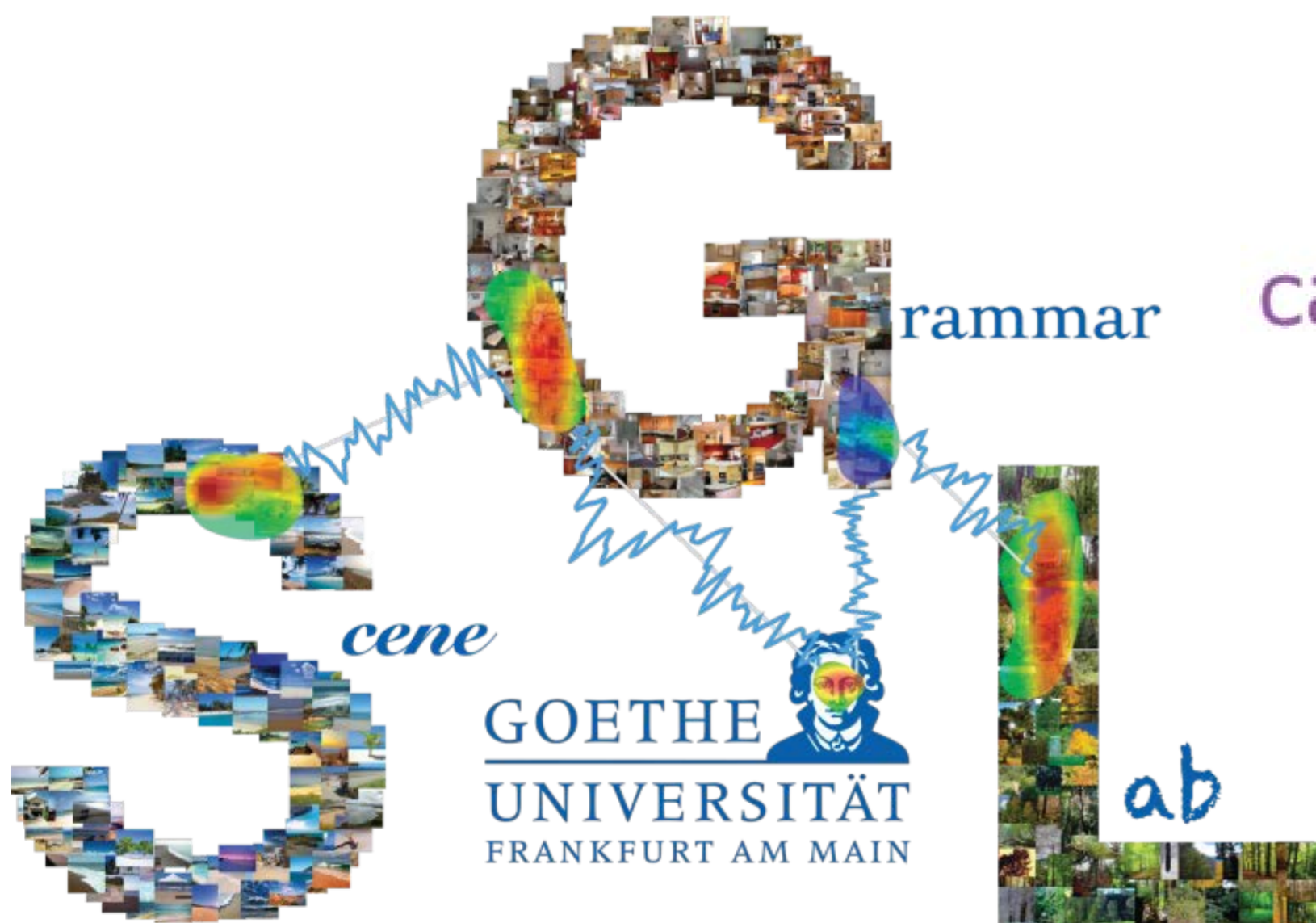
THE OHIO STATE  
UNIVERSITY



<https://u.osu.edu/golomlab/>



**UC DAVIS**  
**Center for Mind and Brain**



**C A M**  
carlisle attention + memory



**lab**

@lehighuniversity



# OpenSesame 4.0

Modern, high-quality, free software for creating experiments in psychology and cognitive neuroscience. Sponsored by SR Research / EyeLink. Download from [osdoc.cogsci.nl](http://osdoc.cogsci.nl)

**A user-friendly interface** – a modern, professional, and easy-to-use graphical interface

**Online experiments** – run your experiment in a browser with OSWeb

**Python** – add the power of Python to your experiment

**JavaScript** – add the power of JavaScript to your experiment

**Use your devices** – use your eye tracker, button box, EEG equipment, and more.

**Free** – released under the GPL3

**Crossplatform** – Windows, Mac OS, and Linux



# MindProbe.eu

A free server running JATOS for managing online experiments. Sponsored by ESCOP and Journal of Cognition.

SEE YOU NEXT YEAR FOR OPAM 33 IN...

DENVER

opam33

