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OPAM 2011 Talk Session Metropolitan A Ballroom, Sheraton Seattle Hotel

8:00	Registration	
8:30	Opening Remarks	
8:40	Lead: Tim Vickery	Ecological Factors in Perception and Attention
8:45	Davoli & Brockmole	Holding on and letting go: The allocation of attention to space and objects is constricted and slowed near the hands
9:00	Sugovic & Witt	Perception in obesity: Does physical or perceived body size affect perceived distance?
9:15	Caparos, Ahmed, Bremmer, Fockert, Linnell, & Davidoff	Exposure to an urban environment alters the local bias of a remote culture
9:30	----- BREAK -----	
9:40	Lead: Carly Leonard	Visual Working Memory
9:45	Fougnie, Suchow, & Alvarez	Variable precision among working memory representations
10:00	Fiacconi & Milliken	Interference in visual memory can obscure explicit awareness of contingencies
10:15	Tas, Luck, & Hollingworth	The automatic encoding of distractors into VWM through overt, but not covert attention
10:30	Ester, Anderson, Serences, & Awh	Sustained population responses in human primary visual cortex reveal individual differences in the precision of working memory
10:45	----- BREAK -----	
10:55	Lead: Brian Levinthal	Object Perception and Recognition
11:00	Liverence & Scholl	Selective inhibition of change detection along the axis of motion: A case study of perception compensating for its own limitations
11:15	Tapia, Breitmeyer, & Jacob	Properties of spatial attention during conscious and nonconscious processing of visual features and objects
11:30	Snow & Culham	Is the lateral occipital complex necessary for haptic object recognition? Object shape representation in a visual agnostic with bilateral occipito-temporal lesions
11:45	Van Gulick & Gauthier	Category learning for a (perceptual) purpose
12:00	----- LUNCH BREAK / POSTERS UP BY 12:45 -----	
1:00-2:00	Poster Session - Ballroom 6ABC, Washington State Convention & Trade Center	
2:00	----- BREAK -----	
2:10	Lead: Melissa Vö	Visual attention and conscious perception
2:15	Bredemeier, Berenbaum, & Simons	Individual differences in controlled attention and susceptibility to inattention blindness
2:30	Vatterott & Vecera	Experience with an irrelevant singleton is necessary to prevent capture in feature search mode
2:45	Wang & Most	Dissociating the impact of emotion from the impact of attentional capture on conscious perception
3:00	Hout & Goldinger	Multiple-target search increases workload but enhances incidental learning: A computational modeling approach to a memory paradox.
3:15	----- BREAK -----	
3:30-4:30	Keynote Address: Dr. Brian Scholl	It's Alive! Some Visual Roots of Social Cognition
4:40	Closing Remarks	

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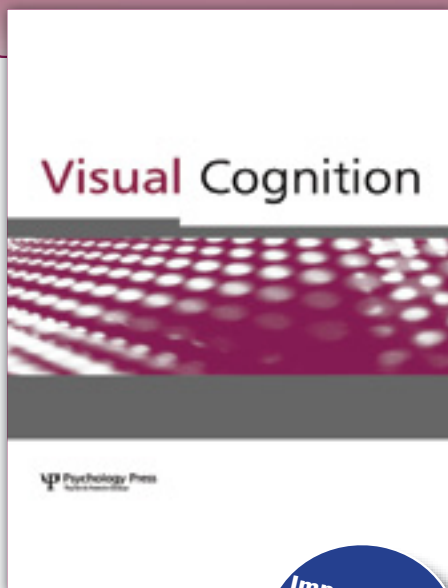
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OPAM 2011 Keynote Address

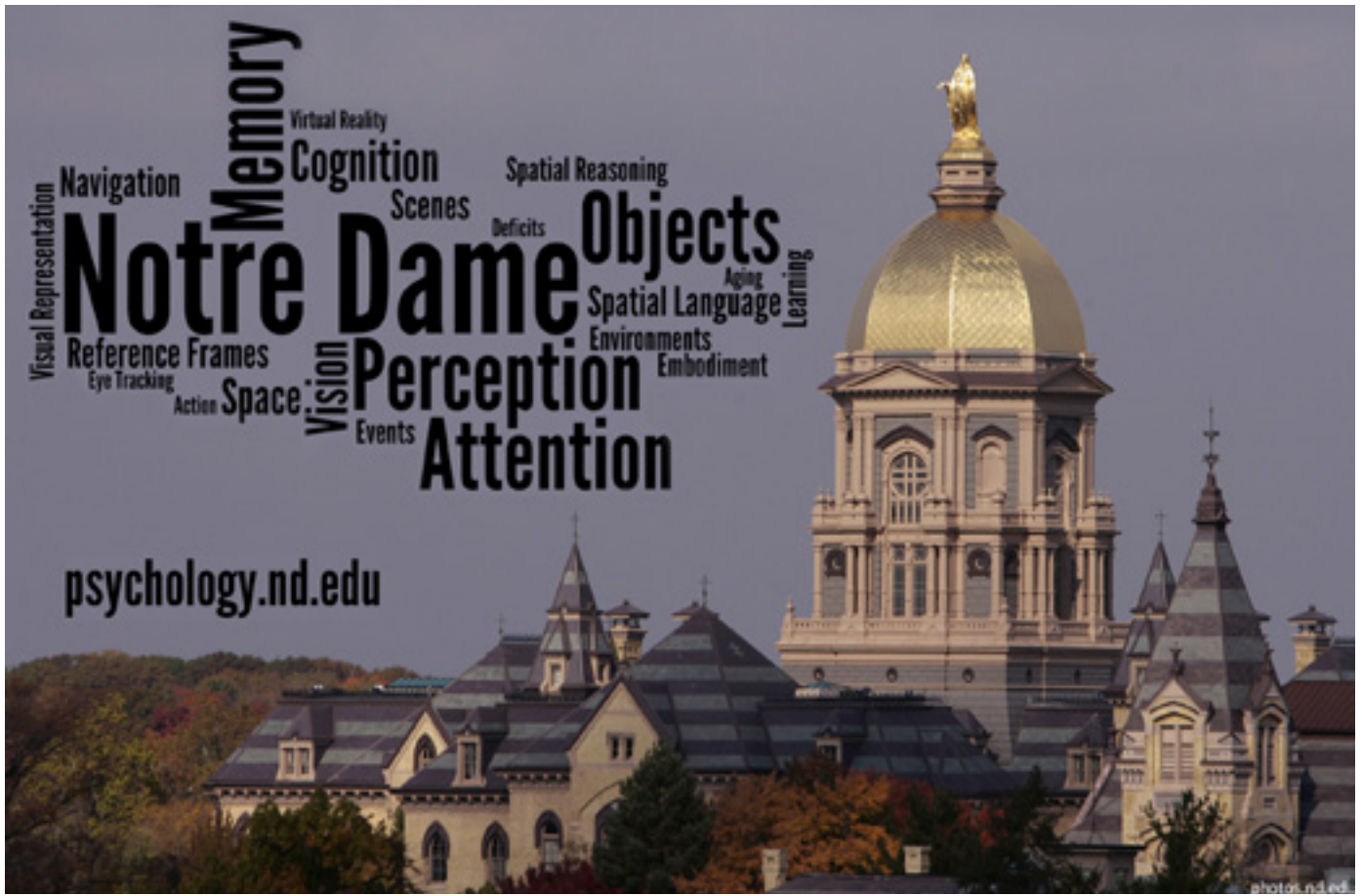
Metropolitan A Ballroom
Seattle Sheraton Hotel
3:30 p.m.



Dr. Brian Scholl
Department of Psychology, Yale University

It's Alive! Some Visual Roots of Social Cognition

Beyond features such as color and shape, visual percepts can also involve properties that we typically associate with higher-level cognition -- such as animacy, intentionality, and goal-directedness. Cognitive scientists have long been captivated by such phenomena, but have faced challenges in studying them with precision, and in distinguishing true perceptual effects from higher-level inferences. I will describe and demonstrate several projects from our group that address these challenges, exploring the perception of animacy from some new perspectives: (1) Demonstrations of several new types of perceived animacy (including the 'psychophysics of chasing', the 'wolfpack effect', and the 'slithering snake' animation; (2) Illustrations of how it is possible to assess the objective accuracy of certain types of perceived animacy; and (3) Explorations of how perceived animacy connects up with the rest of mind, and influences other aspects of perception and attention. Each of these research strands will involve perceptually salient demonstrations of various types. Collectively, these projects show how the perception of animacy and intentionality is wired into our minds in deep and pervasive ways, and how perception involves recovering not only the physical structure of the world, but also its causal and social structure.



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OPAM 2011 POSTER SESSION

1:00-2:00 p.m. - Ballroom 6ABC, Washington State Convention & Trade Center

Temporal Dynamics and Awareness

- (1) **Perceptual biases in reading the analog clock influence the perceived time of action: Free will may not be illusory after all**
Eve Isham, William Banks, & Joy Geng
- (2) **Involvement of dorsal stream pathway in conscious visual perception**
Abbas Khani
- (3) **Perceived simultaneity with static or moving stimuli of different complexity**
Stéphane Buffat & Jean Lorenceau
- (4) **When does backward masking by pattern happen? Temporal dynamics of integration and interruption**
Sven Panis & Johan Wagemans
- (5) **Understanding recovery from object substitution masking**
Stephanie Goodhew, Paul Dux, Ottmar Lipp, & Troy Visser
- (6) **Evaluating a directional tuning account of motion-induced blindness**
Erika Wells & Andrew Leber

Face Perception

- (7) **Face recognition in emotional scenes**
Kaitlin Ryan
- (8) **The effect of perceptual load on the processing of a distracting schematic face**
Ting-Yun Chang, Yi-Cheng Tsai, & Cheng-Ta Yang
- (9) **Memory for facial feature location: The effect of face inversion on the category bias**
Cristina Sampaio, Lawrence A. Symons, & Michael Claiborne
- (10) **The effect of flankers on the perception of a racially ambiguous face**
Hsin-Mei Sun & Benjamin Balas
- (11) **Performance differences in composite-face task reveal asymmetry of holistic processing within faces**
Gary Shyi & George Wang
- (12) **Holistic processing of faces is unaffected by acquired familiarity**
George Wang & Gary Shyi

Emotion-Attention Interaction

- (13) **Learned emotional associations and the attentional blink**
Jessica Collins, Kara Blacker, & Kim Curby
- (14) **The role of arousal in automatic attentional capture triggered by negative distractor words**
Minwoo Kim, Boyoung Kim, & Yang Seok Cho
- (15) **The failure of attentional disengagement from negative facial expression**
Ji Hyun Suh, Sang-A Kim, & Yang Seok Cho
- (16) **Perceptual, not memorial, disruption underlies emotion-induced blindness**
Briana L. Kennedy & Steven B. Most

Ecological Perception and Human Factors

- (17) **Time perception and frustration with the peak-end rule in progress bars**
Daniel Hor, Igor Dolgov, William Graves, & Jeremy Schwark
- (18) **Are individual differences in proactive cognitive control and error monitoring linked with difficulties in weight management?**
Amanda Skoranski, Steven Most, Robert Simons, & Sandra Hassink
- (19) **The impact of automated aids on strategy in target search tasks**
Jeremy Schwark, Igor Dolgov, Daniel Hor, & William Graves
- (20) **The impact of drug use on everyday memory and attention**
Larry Jasper, Christopher Koch, & Mary Kate Koch
- (21) **Naturalistic presentation method of written text improves memory retrieval**
Matthew Rambert & Igor Dolgov
- (22) **Relationships between attentional traits and media multitasking behavior**
Matthew Cain & Stephen R. Mitroff
- (23) **Altered attention for stimuli on the body versus near the body: Evidence for a new perceptual boundary**
Eric Taylor & Jessica Witt
- (24) **The Mass-Effect Bias: Lighter objects don't necessarily go further**
Rosaline Brimhall, Thomas Crawford, Michael McBeath, & Chris Zagami
- (25) **A language-independent methodology for testing intergroup differences in color perception**
Alexander O'Brien
- (26) **Inconsistency in the usability of Wiimote accessories when playing Wii sports games**
Igor Dolgov, Timothy Robards, Caroline Zamora, Mieka Wenner, & Matthew Sanchez

Object Perception

- (27) **A study of unit formation under conflicting information from contour vs. surface-based processes for spatiotemporal interpolation**
Tandra Ghose, Gennady Erlikhmann, & Philip Kellman
- (28) **Biases in judging the area of regular polygons**
Eric Cooper & Jonathan Kahl
- (29) **Perception of 2D relative size is largely invariant with everything but shape**
Pamela Glosson & John Hummel
- (30) **Rotation reveals the importance of configural cues in handwritten word perception**
Anthony Barnhart & Stephen Goldinger
- (31) **Motion supports object recognition: Insight into possible interactions between the two primary pathways of the human visual system**
Steven R. Holloway & Michael K. McBeath
- (32) **Differences in the rotation functions for identifying faces, animals and objects**
Jonathan Kahl & Eric Cooper

Perceptual Organization

- (33) **The perception of four-dot configurations**
Mary Portillo, James Pomerantz, Dolapo Sokumbi, & Carl Hammarsten

-
- (34) **Figure-ground decay in primary visual cortex**
Lars Strother, Cheryl Lavell, & Tutis Vilis
 - (35) **Fundamental properties of simple emergent feature processing**
Robert Hawkins, Joseph Houpt, Ami Eidels, James Townsend, & Michael Wenger
 - (36) **Emergent features predict grouping of line segments**
Anna Cragin, Amanda Hahn, & James Pomerantz
 - (37) **Liquid attention: The effect of the contour on the attentional spreading**
Kazuki Ikegame & Chikashi Michimata
 - (38) **Visual attention deployment in Chinese reading**
Xingshan Li & Guojie Ma

Spatial Configuration

- (39) **Snapshot encoding of spatial information: Location memory for visual-short-term- and short-term-memory exposures**
Harry Haladjian & Fabien Mathy
- (40) **False recognition of a pre-change object is position dependent**
Ju-Chi Yu, Cheng-Ta Yang, & Yei-Yu Yeh
- (41) **Semantic similarity does not affect layout learning**
Marie Shoda & Kazuhiko Yokosawa
- (42) **Organizational properties for spatial perception: Perceptual grouping effects on local and global configurations**
Amy Clements-Stephens & Amy Shelton
- (43) **The Roelofs effect is not driven by visuospatial shifts of attention**
Ben Lester & Paul Dassonville

Multiobject Processing

- (44) **Evidence for optimality of simultaneous deployment of attention in multi-RSVP stream paradigms**
Maxwell Bay & Brad Wyble
- (45) **Spatial proximity does not influence tracking performance, but changing target trajectories does**
Justin Ericson & Melissa Beck
- (46) **Inhibition in multiple object tracking does not bushwhack, but follow distractors**
Hauke Meyerhoff, Frank Papenmeier, Georg Jahn, & Markus Huff

Attention: Inhibitory Processing

- (47) **Electrophysiological evidence for feature-based inhibition during early visual processing**
Jeff Moher, Balaji Lakshmanan, Howard Egeth, & Josh Ewen
- (48) **The dark side: Configuring attention to ignore task-irrelevant features**
Jason Arita, Nancy B. Carlisle, & Geoffrey F. Woodman
- (49) **Non-spatial inhibition of return**
Adam Spadaro & Bruce Milliken
- (50) **Psychophysiological evidence for the non-target singleton suppression**
Haein Jung, Young Eun Park, Soo Min Kim, & Yang Seok Cho

Attentional Control

- (51) **Searching for two things at once: Multiple attentional control settings independent of space**
Zachary Roper & Shaun Vecera
- (52) **High spatial validity is insufficient to elicit voluntary shifts of attention**
Gregory Davis & Bradley Gibson
- (53) **Practice produces improved frontal filtering of distracting information**
Todd Kelley & George Mangun
- (54) **Visual search is guided by multiple active templates in visual working memory**
Valerie Beck, Andrew Hollingworth, & Steven Luck
- (55) **Cuing with color: The cost of binding space to color for visual selection**
Kirsten C. S. Adam, Ted A. Bryant, & Bradley S. Gibson
- (56) **Spatial shifts of the covert attention cued by symbols of non-digital nature: Possible SQUARC effect**
Atanas Kirjakovski & Narisuke Utsuki
- (57) **Developmental differences using a nonverbal Stroop task**
Christopher Koch, Jacob Lowen, & Michelle McWilliams
- (58) **Examining the relationships between verbal and nonverbal Stroop tasks**
Jennifer Saleme & Christopher Koch

Preattention and Attention

- (59) **An identity intrusion effect in the absence of attentional capture**
Brandon Ashinoff & Howard Egeth
- (60) **Does covert attention alter perceived contrast? Evidence from gender perception**
Jason Rajsic & Daryl Wilson
- (61) **No attentional blink during arithmetic**
Akihiro Kobayashi & Matia Okubo
- (62) **The fate of unattended stimuli in the color flanker paradigm**
Serap Yigit-Elliott, John Palmer, & Cathleen Moore
- (63) **Mechanisms of pre-saccadic shifts of attention during pauses between successive saccades**
Min Zhao, Barbara Doshier, & Eileen Kowler
- (64) **Perceptual load and distractor position modulate the contralateral negativity of target processing**
Shoa-Ming Lee & Yei-Yu Yeh
- (65) **Motor response repetition modulates priming of popout through target activation**
Yana Kim, Susannah Bruno, & Bryan Burnham

Interaction of Attention and Memory

- (66) **Visual-spatial attention aids the maintenance of object representations in visual working memory**
Melanie Williams, Pierre Pouget, Leanne Boucher, & Geoffrey Woodman
- (67) **Working memory biases attention as a default tendency**
Chun-Yu Kuo, Yei-Yu Yeh, & Hsuan-Fu Chao
- (68) **The breadth of attention affects iconic memory**
Leon Gmeindl, Lisa N. Jefferies, & Steven Yantis

(69) **Resource competition influences the efficiency of selective attention**
Szu-Hung Lin & Yei-Yu Yeh

(70) **Expertise in radiological screening and satisfaction of search**
Kait Clark, Ehsan Samei, Jay Baker, & Stephen R. Mitroff

Visual Working Memory

(71) **Spatial priority for orientation but not color: Evidence for correspondence problems in visual working memory**
Florent Levillain & Jonathan Flombaum

(72) **What determines capacity of visual short-term memory? And when?**
Shriradha Sengupta, Paul Verhaeghen, & Patricia Mary Hearons

(73) **Reaction-time assessment of form and color processing in visual short-term memories**
Jane Jacob & Bruno Breitmeyer

(74) **Isolation of random and non-random factors that contribute to limited working memory capacity**
Joshua Sandry, Stephen Rice, David Trafimow, Gayle Hunt, Lisa Busche, & Edward Rubio

(75) **Enhanced visual short-term memory in action video game players**
Kara Blacker & Kim Curby

Remembering and Forgetting

(76) **Item-method directed forgetting is effortful and impoverishes memory for abstract images**
Jonathan Fawcett, Michael Lawrence, & Tracy Taylor

(77) **The influence of corrective feedback on retrieval-induced forgetting**
Matthew Erdman & Jason Chan

(78) **Incidental memory for scene detail following visual search**
Jennifer Olejarczyk & John Henderson

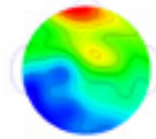
(79) **Contextual distinctiveness and long-lasting priming in singleton search**
David Thomson & Bruce Milliken

(80) **The role of spatial location in human perceptual learning**
Tony Wang & Chris Mitchell



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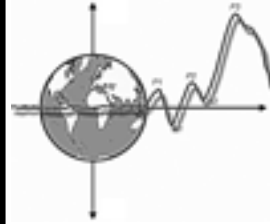
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Ecological Perception

8:40 - 9:30 AM

Session Lead:

Tim Vickery

Yale University

8:45 **Holding on and letting go: The allocation of attention to space and objects is constricted and slowed near the hands**

Christopher Davoli & James Brockmole
University of Notre Dame

Perception, attention, and working memory are enhanced for objects near the hands, however it remains unclear what mechanism underlies these effects. We propose that the priority given to information near the hands arises through a constricted spotlight of space-based attention and relatively inflexible shifts of object-based attention. Consistently, we show that attention is less susceptible to information outside of hand-space (Experiment 1) and that shifts of attention between global and local dimensions of objects within hand-space are slowed (Experiment 2). Such effects may provide the mechanistic basis for altered perception and working memory of held objects.

9:00 **Perception in obesity: Does physical or perceived body size affect perceived distance?**

Mila Sugovic & Jessica Witt
Purdue University

According to the action-specific perception account, spatial perception is influenced by an observer's ability to perform an action. In this experiment, we examine the effect of obesity on distance perception. Obese, overweight, and normal weight subjects estimated target distances. Subjects classified as obese estimated distances as farther than those classified as normal weight. Interestingly, among overweight and obese individuals, those who perceived their body size as slim or normal did not estimate distances to be any different from those who were aware of being overweight. Results suggest that actual body size -not perceived body size- influences perceived distance.

9:15 **Exposure to an urban environment alters the local bias of a remote culture**

Serge Caparos, Lubna Ahmed, Andrew J. Bremner, Jan De Fockert, Karina J. Linnell, & Jules Davidoff
Goldsmiths, University of London

Compared to Japanese and British, traditional Himba (a remote Namibian tribe) exhibit a strong local bias despite their co-operative social organization which should promote global processing (Nisbett et al., 2001). Using the Ebbinghaus illusion (De Fockert et al., 2007) and a similarity-matching task (Davidoff et al., 2008), we showed that exposure to an urban environment reduced the local bias in those traditional Himba who had occasionally visited a local town, and reduced it further in those who had moved there permanently. We propose that exposure to urban environments contributes to the global bias found in Japanese and British.

Visual Working Memory

9:40 a.m. -10:45 a.m.

Session Lead:

Carly Leonard

University of California, Davis

9:45 Variable precision among working memory representations
Daryl Fougne, Jordan Suchow, & George Alvarez
Harvard University

Attempts to understand variation in working memory have focused on variation across individuals, but not variation within. Here we show that the distribution of report errors on a color working memory task are better fit by a model with variable rather than fixed precision. This variation arises largely during memory, not perception, and can not be explained by uneven allocation of a limited resource. Finally, we show that on any given trial participants know which of their representations are precise, and which are not.

10:00 Interference in visual memory can obscure explicit awareness of contingencies
Christopher Fiacconi & Bruce Milliken
McMaster University

In the current set of experiments we explore the relationship between visual memory and explicit awareness of statistical regularities. Previous work using a spatial priming task has demonstrated that participants are profoundly unaware of very strong prime-probe contingencies when these contingencies involve feature mismatches. We provide evidence that representations in visual memory can be vulnerable to interference from subsequent visual displays that partially match the initial displays. However, this interference appears to depend on binding processes that occur in response to the subsequent display. The results suggest a close link between binding processes, updating of object files, and awareness.

10:15 The automatic encoding of distractors into VWM through overt, but not covert attention
Caglar A. Tas¹, Steven J. Luck², & Andrew Hollingworth¹

¹The University of Iowa, ²University of California, Davis

We tested the roles of overt and covert attention in the encoding of items into VWM. Attention was manipulated during the retention interval of a change-detection task by asking participants to either overtly or covertly attend to a distractor. We found that executing a saccade to the distractor resulted in its automatic encoding in VWM whereas covertly attending to the distractor did not interfere with the contents of VWM. These results challenge the view that spatial attention and VWM reflect the same mechanism while supporting the view that perceptual gaps created by saccades necessitate automatic encoding of the saccade-target item.

10:30 Sustained population responses in human primary visual cortex reveal individual differences in the precision of working memory
Edward Ester¹, David Anderson¹, John Serences², & Edward Awh¹

¹Department of Psychology, University of Oregon, ²Department of Psychology, University of California, San Diego

Sensory-recruitment models of working memory (WM) argue that visual details are stored in WM via sustained activity in cortical regions that encode memoranda. Using fMRI and a forward-encoding model of orientation selectivity, we quantified population-level responses observed in visual cortex during WM retention. The dispersion - but not the amplitude - of these response profiles was a strong predictor of individual differences in mnemonic precision. This link between the fidelity of sustained population-level activity in early sensory areas and the precision of mnemonic representations provides new evidence that sustained sensory activity plays a functional role in visual WM.

Object Perception and Recognition

10:55 a.m.-12:00 p.m.

Session Lead:
Brian Levinthal
Valve Corporation

11:00 **Selective inhibition of change detection along the axis of motion: A case study of perception compensating for its own limitations**
Brandon Liverence & Brian Scholl
Yale University

When faced with noisy input, perception may selectively inhibit unreliable information from reaching awareness. Motion may give rise to such unreliability, due to the special difficulty of spatial localization along the axis of motion. We demonstrated this via a new form of ‘active’ change blindness: momentary distortions to an object’s shape along the axis of motion are perceived far less readily than identical distortions along the orthogonal axis. Similarly, luminance probes on leading/trailing edges are detected far less readily than those on orthogonal edges. These results constitute a case study of how perception compensates for its own limitations.

11:15 **Properties of spatial attention during conscious and nonconscious processing of visual features and objects**
Evelina Tapia¹, Bruno Breitmeyer², & Jane Jacob²
¹University of Illinois at Urbana-Champaign,
²University of Houston

Using a flanker task we assessed effects of spatial attention during conscious and nonconscious processing of form and color features as well as their conjunctions. We found that (1) consciously and nonconsciously processed flankers interfere with processing of the probe; (2) flanker interference decreases with increasing separation between stimuli; (3) this occurs even when flankers are suppressed from awareness; (4) the effects of spatial attention at the nonconscious level are weaker than at the conscious level; (5) however, the spatial gradients of attention at the conscious and nonconscious levels are comparable.

11:30 **Is the lateral occipital complex necessary for haptic object recognition? Object shape representation in a visual agnosic with bilateral occipito-temporal lesions**
Jacqueline Snow & Jody Culham
University of Western Ontario

Previous studies of object perception highlight the critical role of lateral occipital complex (LOC) in visuo-haptic object representations. We used fMRI to examine object-selective neural responses in a patient (MC) with extensive bilateral lesions to visuo-temporal cortex, including LOC. Controls showed robust object-selective responses within a classic network of areas including the LOC, parietal and frontal cortices. MC showed a strikingly similar pattern of object selectivity, despite her LOC lesions. Although LOC may be critical for visual recognition of objects, our data indicate that it is not a necessary substrate for object-selective representations via haptics.

11:45 **Category learning for a (perceptual) purpose**
Ana Van Gulick & Isabel Gauthier
Vanderbilt University

Using methods from category learning and perceptual expertise, we sought to approximate real world object categorization by associating different perceptual goals with different categories in the same space. Participants first learned to categorize a morphspace of novel objects before learning different perceptual tasks, either individuation or local feature judgment, for each category. After categorization, we found the expected increased sensitivity along the category-relevant dimension. In contrast, task associations produced local changes in sensitivity along both dimensions, except surprisingly across the category boundary where there was no additional improvement despite the relevance of categorical information for choosing the correct task.

Visual attention and conscious perception

2:10 p.m.-3:15 p.m.

Session Lead:

Melissa Võ

Harvard Medical School

2:15 Individual differences in controlled attention and susceptibility to inattention blindness
Keith Bredemeier, Howard Berenbaum, & Daniel Simons
University of Illinois at Urbana-Champaign

Many studies have examined how stimulus and task parameters affect noticing of unexpected objects in inattention blindness tasks, but fewer have explored the contribution of individual differences. In two large samples ($n = 134, 196$), we examined whether individual differences in executive functioning (working memory, set-shifting, inhibition) and/or emotional distress (depression, cognitive anxiety, somatic anxiety) predict inattention blindness. Individual differences in executive functioning did not predict noticing. In contrast, in both samples, depression, cognitive anxiety, and somatic anxiety interacted to predict noticing. We discuss the implications of these findings for theories of executive functioning, emotional distress, and inattention blindness.

2:30 Experience with an irrelevant singleton is necessary to prevent capture in feature search mode
Daniel Vatterott & Shaun Vecera
University of Iowa

Irrelevant, but salient, distractors can capture attention. However, this capture can be eliminated when participants search for a specific target shape among heterogeneous distractors (e.g., Bacon & Egeth, 1994). In the current research, we tested whether the lack of capture by an irrelevant singleton during search requires not only a precise target template, but also experience-dependent attentional tuning to distractor properties. Participants completed four blocks of trials, each with a differently-colored irrelevant singleton present on half the trials. Color singletons captured attention early within a block, but not later in the block, suggesting participants learned to suppress the color singleton.

2:45 Dissociating the impact of emotion from the impact of attentional capture on conscious perception
Lingling Wang & Steven Most
University of Delaware

Emotional stimuli can disrupt perception of subsequent targets, and recent findings suggest that this disruption is spatially localized (Most & Wang, 2011). We examined whether such emotion-induced impairments reflect a unique impact of emotion on perception by testing whether non-emotional, but attention-grabbing, stimuli also induce spatially localized perceptual impairments. Results showed that whereas emotional distractors disrupted target perception only at their locations, non-emotional distractors in two separate experiments disrupted target perception equally across space. Thus, the mechanisms by which emotional stimuli disrupt perception might be distinct from mechanisms by which non-emotional, but attention-grabbing, stimuli do.

3:00 Multiple-target search increases workload but enhances incidental learning: A computational modeling approach to a memory paradox
Michael Hout & Stephen Goldinger
Arizona State University

Relative to single-target search, multiple-target search incurs accuracy costs. Paradoxically, despite increasing workload, it creates stronger incidental memory for distracting, non-targets. In new experiments, we replicate this finding using rapid-serial visual presentation, wherein participants passively viewed streams of images, searching for variable number of targets. We present a multiple-trace model, derived from MINERVA2, accounting for our data by postulating that multiple-target search is performed by shifting one's focus from an internal, memory locus (e.g., maintaining the fidelity of potential targets) to an external one (e.g., increasing strength of encoding incoming distractors).

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POSTER SESSION

1:00 - 2:00 PM

Washington State Convention & Trade Center Ballroom 6ABC

Temporal Dynamics and Awareness

- (1) **Perceptual biases in reading the analog clock influence the perceived time of action: Free will may not be illusory after all**

Eve Isham¹, William Banks², & Joy Geng¹

¹Center for Mind and Brain, UC Davis, ²Pomona College

Libet (1983) demonstrated that the moment of intention is experienced later than the onset of the motor related readiness potential (RP). Controversially, this latency has been interpreted as an indicator for determinism. We tested whether this timing difference could originate from a perceptual bias (i.e., representational momentum). Our findings showed the temporal reports varied with clock velocity (Exp1) and age of the observer (Exp2). Additionally, our data showed no latency between the classic RP onset and the perceived time of action. Our findings therefore cast doubt on the validity of this observed latency as an indicator of determinism.

- (2) **Involvement of dorsal stream pathway in conscious visual perception**

Abbas Khani

University of Fribourg

An overwhelming question in neurobiology is the problem of consciousness. A widely held view is that only ventral stream of visual pathway is required to visual conscious perception. However, recent studies showed that parietal cortex is involved in conscious perception of change. Current study was taken to examine the involvement of dorsal stream in conscious visual perception using selective attention and binocular rivalry paradigms. Results showed that there is no difference between ventral and dorsal stream attributes in attentional preference or dominance in binocular rivalry. These results suggest a more active involvement of dorsal stream pathway in conscious visual perception.

- (3) **Perceived simultaneity with static or moving stimuli of different complexity**

Stéphane Buffat¹ & Jean Lorenceau²

¹Institut de Recherche Biomédicale des Armées, Département Action et Cognition en Situation Opération, ²UPMC, Centre de Recherche de L'Institut du Cerveau et de la Moëlle épinière (Cricm), Paris, France

This study evaluates the effect of target complexity and motion in perceived simultaneity for several stimuli. Observers were asked to report whether two targets changes in luminance, orientation, or identity for letters and natural objects, were perceived as simultaneous or not. In the first experiment, both targets were static relative to each other. In the second experiment, one target was static at fixation point, whereas the other rotated around. Both target complexity and motion induced changes in perceived simultaneity. These results are discussed in light of the object file theory and the hierarchical processing of objects.

- (4) **When does backward masking by pattern happen? Temporal dynamics of integration and interruption**

Sven Panis & Johan Wagemans

Laboratory of Experimental Psychology, Leuven, Belgium

In two experiments we investigated the dynamic behavior of observers exposed to common-onset and backward masking. We analysed accuracy and RT data using a competing risks survival analysis. Observers performed an unforced discrimination task on a target amongst distractors. The timing of responses shows that a backward and common-onset four dots mask and a backward, overlapping, ring pattern mask “interrupt” the target at all SOAs when responses are slow. The overlapping ring mask additionally “integrates” with the target at short SOAs when responses are fast. These results constitute behavioral correlates of the dynamic neurophysiological effects of backward masking.

- (5) **Understanding recovery from object substitution masking**
Stephanie Goodhew¹, Paul Dux², Ottmar Lipp², & Troy Visser²
¹University of Toronto, ²University of Queensland

In object-substitution masking (OSM), the delayed offset of a four-dot mask interferes with the perception of a target stimulus, even though the target and mask have different contours and do not spatially overlap (Enns & Di Lollo, 1997). We have previously documented a recovery from OSM at prolonged relative to intermediate mask durations (Goodhew, Visser, Lipp, & Dux, 2011). Here, we investigate the mechanisms underlying this recovery effect. We demonstrate that recovery is not affected by mask offset or duration, isolating the underlying mechanism to the prolonged temporal dynamics of conscious object perception.

- (6) **Evaluating a directional tuning account of motion-induced blindness**
Erika Wells & Andrew Leber
University of New Hampshire, Durham

Motion-induced blindness (MIB) is characterized by disappearance of a peripheral target when surrounded by moving “mask” objects. We previously demonstrated stronger MIB with decreasing mask coherence, suggesting an important role for common fate in this illusion. In this study, we questioned whether the total number of motion trajectories in the mask would influence disappearance. We created a stimulus where mask elements varied in total motion trajectories on each trial. Critically, while complete motion coherence continued to influence MIB, we observed no additional effect for multiple motion directions on disappearance, suggesting that MIB is not contingent upon increasing motion trajectories

in an emotional scene. Results showed that nose shape is less important for recognition in positive scenes, whereas eye-eye distance becomes more important in positive scenes.

- (8) **The effect of perceptual load on the processing of a distracting schematic face**
Ting-Yun Chang, Yi-Cheng Tsai, & Cheng-Ta Yang
Department of Psychology and Institute of Cognitive Science, National Cheng Kung University

Distractor faces are considered automatically processed to influence response selections; however, a recent study showed that a flanker face did not influence the semantic judgment of a target face. This study was to investigate whether a distractor face is processed when participants search for a pre-specified face. Both the congruency between target and distractor faces and perceptual load were manipulated. Results of four experiments showed that the compatibility effect was observed in low-load conditions rather than in high-load conditions. These results did not support the capacity-limit account. Processing of distractor faces is modulated by perceptual load.

- (9) **Memory for facial feature location: The effect of face inversion on the category bias**
Cristina Sampaio, Lawrence A. Symons, & Michael Claiborne
Western Washington University

We investigated memory for a facial feature location, merging the logic behind the categorical bias in spatial recall and the face inversion effect in perception. In each trial, subjects were presented with a schematic face and then recalled the location of one eye on the face with both eyes removed. Half the faces appeared upright and half inverted. We found (a) a more precise prototypical eye location on upright compared to inverted faces, and (b) a larger categorical bias for the upright faces than for the inverted faces, indicating a heavier weight of the prototype in the upright face estimates.

Face Perception

- (7) **Face recognition in emotional scenes**
Kaitlin Ryan
Christopher Newport University

Face recognition is a specialized process, allowing individuals to recognize faces faster and more accurately than ordinary objects. When faces are viewed in emotional scenes, such as crime scenes, the recognition process changes as a function of the emotional state of the observer. The current study used a novel method to quantify these changes on a dimension-specific level by asking participants to recognize faces after viewing a similar but different face embedded

(10) The effect of flankers on the perception of a racially ambiguous face

Hsin-Mei Sun & Benjamin Balas

Department of Psychology, North Dakota State University

In two experiments, we examined how flanker faces affect the perception of a racially ambiguous face. Participants were asked to categorize a central target face as Black or White. We presented a target face either in isolation or surrounded by four flanker faces, focusing our analysis on the effect of flankers on participants' categorization performance of a face with ambiguous race. We found that the perceived race of the ambiguous-race face was affected by the overall race of the flanker faces (Experiment 1) as was independently affected by race-specific shape and pigmentation of the flankers (Experiment 2).

(11) Performance differences in composite-face task reveal asymmetry of holistic processing within faces

Gary Shyi & George Wang

Dept. of Psychology, National Chung Cheng University

Composite-face task has been one of the major means for assessing and demonstrating holistic processing of faces. A majority of composite-face task entails discriminating whether the top halves of two faces were identical, when they were joined by the bottom halves from the same or different faces. Here we showed that observers can better discriminate the bottom halves of composite faces than their top-half counterparts. A follow-up experiment demonstrates that top-halves and bottom-halves of faces were equally discriminable when presented in isolation. Together, these results imply that holistic processing as a perceptual integral may not be distributed uniformly within faces.

(12) Holistic processing of faces is unaffected by acquired familiarity

George Wang & Gary Shyi

National Chung Cheng University

In three experiments we investigated whether acquired familiarity would affect holistic processing in faces. In Experiment 1, we found that multiple exposures embedded with expression variation were sufficient for recognition and generalization of newly learned faces. In Experiment 2, however, we failed to find evidence that acquired familiarity would enhance discriminating recently learned faces differing in configuration. In

Experiment 3, using a complete composite-face task, we again failed to show acquired familiarity would alter holistic processing of faces. Together these findings suggest that acquired familiarity may have its main impact on the retrieval, rather than encoding, of newly learned faces.

Emotion-Attention Interaction

(13) Learned emotional associations and the attentional blink

Jessica Collins, Kara Blacker, & Kim Curby
Temple University

Does learned semantic knowledge about the emotional properties of a stimulus impact perception in a manner similar to emotional meaning derived through perceptual processes? Subjects learned to associate eight neutral face images with negative or neutral personality characteristics. These faces then served as the initial target in an attentional blink paradigm. Consistent with previous research using visually emotional stimuli, faces with learned negative associations induced a larger blink for subsequently presented target images than faces with learned neutral associations.

(14) The role of arousal in automatic attentional capture triggered by negative distractor words

Minwoo Kim, Boyoung Kim, & Yang Seok Cho
Korea University, Department of Psychology

When negative distractors were presented in a stream of rapidly presented random words, target detection was significantly impaired at lag3 in the attentional rubbernecking paradigm. When the arousal of the negative distractor was manipulated while controlling its valence, attentional blink was observed to be more evident with high arousal distractors than low arousal distractors. The result suggests that highly arousing words, even without perceptual or categorical saliency, automatically capture attention. Also, we support the view that the level of arousal determines the magnitude of automatic attentional capture triggered by negative word distractors.

(15) The failure of attentional disengagement from negative facial expression

Ji Hyun Suh, Sang-A Kim, & Yang Seok Cho
Department of Psychology, Korea University

Three experiments were conducted to examine how spatial attention is modulated by emotional facial expressions. In all experiments, an emotional face was flashed at fixation before a Stroop display was presented. Stroop interference was significantly smaller with a negative face than with the other expressions, in which a color-patch was presented at fixation and the color word at periphery, whereas the opposite pattern of results was obtained when the color word was presented at fixation and the color-patch at periphery. When a colored color word was presented at fixation, Stroop interference was not modulated by facial expression.

(16) Perceptual, not memorial, disruption underlies emotion-induced blindness

Briana L. Kennedy & Steven B. Most
University of Delaware

Emotion-induced blindness (EIB) refers to reduced awareness of targets that appear in the temporal wake of an emotionally arousing stimulus (Most, et al., 2005). Participants in previous EIB experiments withheld responses until the end of each trial, a brief interval after each target's offset, leaving open the possibility that EIB reflects a failure to encode or maintain target information in memory rather than a perceptual failure. In the present study, participants responded immediately upon seeing each target but EIB was still robust. This suggests that EIB reflects the disruptive impact of emotional distractors on mechanisms driving conscious perception.

Ecological Perception and Human Factors

(17) Time perception and frustration with the peak-end rule in progress bars

Daniel Hor, Igor Dolgov, William Graves, & Jeremy Schwark
New Mexico State University

The perception of how much time has passed while waiting and the associated frustration are subjective experiences open to unconscious distortion. Studies have found that certain manipulations, such as the peak-end rule, can affect evaluations of experiences and time estimation in many domains. Our experiment investigated the effectiveness of the peak-end rule in affecting time perception and reducing the frustration that they experienced during the loading of a

progress bar. However, despite the robustness of the peak-end rule, we found no evidence of its effects when applied to modified progress bars in a computer graphical user interface.

(18) Are individual differences in proactive cognitive control and error monitoring linked with difficulties in weight management?

Amanda Skoranski¹, Steven Most¹, Robert Simons¹, & Sandra Hassink²

¹University of Delaware, ²Alfred I. duPont Hospital for Children

We applied a cognitive neuroscience approach towards understanding mechanisms of attentional control that might play a role in obesity. We tested both proactive and reactive cognitive control in children and adolescents with obesity enrolled in a weight management intervention and compared them to age-matched control participants. We also measured brain activity related to error monitoring via event-related potentials. Obese participants exhibited difficulties in proactively recruiting cognitive control as well as a reduced neural response to errors. These data suggest that differences in proactive control and error monitoring might contribute to difficulties in maintaining a healthy lifestyle.

(19) The impact of automated aids on strategy in target search tasks

Jeremy Schwark, Igor Dolgov, Daniel Hor, & William Graves

New Mexico State University

Automated diagnostic aids can influence the decisions of a human operator in target search tasks, but the impact on an operator's decision strategy is unknown. The current study found that a non-helpful aid (only 50% accurate) was able to influence the decision strategy of operators, whereby operators would spend longer deciding a target was absent when the aid reported that a target was present, even if the operator knew the aid provided no real benefit. These findings show that the risks of using imperfect aids may not be found in operator decisions, but in decision making strategy changes.

(20) The impact of drug use on everyday memory and attention

Larry Jasper¹, Christopher Koch¹, & Mary Kate Koch²

¹George Fox University, ²Gonzaga University

Measures of everyday memory and attention can serve as indicators of regular and persistent memory and attention errors. The relationship between substance abuse and everyday memory and attention errors was examined in the present study. Volunteers were solicited from Narcotics Anonymous. Participants completed the Everyday Memory Questionnaire, the Mindful Attention Awareness Scale, the Drug Use Questionnaire (DAST-10), and a demographic questionnaire. Results show that respondents who experienced at least one blackout had significantly more memory errors and were more likely to have nonbelieved memories than respondents who had experienced no blackouts.

(21) Naturalistic presentation method of written text improves memory retrieval

Matthew Rambert & Igor Dolgov

New Mexico State University

We investigated whether the method of presentation of written text has an impact on word retention and future recognition in two studies. Naturalistic presentation of text, which involved seeing the word written out, presented a significant advantage in word recognition over artificial presentation of text, which involved either seeing the word presented in its entirety (Exp. 1) or scrolled in from left-to-right (Exp. 2). We observed significant main effects of word presentation in both studies that supported our hypotheses and a contrast analysis revealed a significant advantage in word recognition of words studied using the naturalistic presentation methods.

(22) Relationships between attentional traits and media multitasking behavior

Matthew Cain & Stephen R. Mitroff

Duke University

Media multitasking -- simultaneously consuming multiple forms of media (e.g., watching TV while web surfing) -- is a growing phenomenon that has been linked to visual attention abilities. To better understand the nature of media multitasking and its connections to visual cognition, we examined relationships between media multitasking behavior and clinical, demographic, personality, and pastime factors across a large sample of individuals. Relationships were found with a variety of factors, including ADHD tendencies, age, gender,

and expertise with sports video games. These connections underscore recently established connections between media multitasking and laboratory attentional performance and suggest links to general attentional processes.

(23) Altered attention for stimuli on the body versus near the body: Evidence for a new perceptual boundary

Eric Taylor & Jessica Witt

Purdue University

The space around our hands is perceptually distinct from the area beyond our grasp. Recent studies have shown that attention is enhanced for this space (Abrams et al., 2008; Reed et al., 2006). It is perceptually privileged because of its relevance for action, so we predicted that stimuli on the hands might also be perceptually privileged. We present a study showing how stimuli on the hands are attentionally distinct from stimuli near the hands. Switching attention from near the hand to on hand - or vice versa - is very costly. These results imply the existence of a new attentional boundary.

(24) The Mass-Effect Bias: Lighter objects don't necessarily go further

Rosaline Brimhall, Thomas Crawford, Michael McBeath, & Chris Zagami

Arizona State University

People often believe inaccuracies about the way objects move, collectively known as Naïve Physics. Here we introduce a new phenomenon in the field: the Mass-Effect Bias (MEB). Participants drew the trajectories of balls filled with either air or helium. Participants reliably reported balls filled with helium fly higher and cover a greater area than balls filled with air. This indicates that participants believe objects that are lighter will travel further. We propose participants use a general linear heuristic of object mass and area traveled, with lighter objects covering more area, to save cognitive load based upon ecological experience.

(25) A language-independent methodology for testing intergroup differences in color perception

Alexander O'Brien

University of Wisconsin-La Crosse

Past research has suggested that language exerts an influence on color perception. Two studies used a novel methodology in an attempt to identify an effective method for addressing this possibility. Participants with normal, and color-deficient vision, participated in two color categorization tasks. Results indicate that the new methodology is capable of identifying differences in perceptions of color between individuals already known to perceive colors differently (normal vs. color-deficient individuals), and does so while making no reference to color terms, thus providing a tool for measuring cross-cultural differences in color perception, free of the influence of linguistic categories.

(26) Inconsistency in the usability of Wiimote accessories when playing Wii Sports games

Igor Dolgov, Timothy Robards, Caroline Zamora, Mieka Wenner, & Matthew Sanchez

New Mexico State University

In 2009, accessories for console gaming systems accounted for 5 billion dollars in worldwide sales. Some of the most popular accessories were controller modifiers, like the slew of commercially available attachments for the Nintendo Wiimote and Sony Playstation Move controller. We conducted usability tests of three Wiimote accessories: baseball bat, golf club, and tennis racket attachments. We tested participants' performance and queried their enjoyment of baseball, golf, and tennis games included in the Wii Sports package. Overall, Wiimote accessories failed to consistently positively impact the participants' enjoyment or performance. Moreover, the tennis racket attachment significantly negatively impacted both usability measures.

Object Perception

(27) A study of unit formation under conflicting information from contour vs. surface-based processes for spatiotemporal interpolation
Tandra Ghose¹, Gennady Erlikhmann², & Philip Kellman²

¹University of Kaiserslautern, Germany, ²UCLA, Los Angeles, USA

Contour-based processes interpolate between visible edge fragments and surface-based processes interpolate regions across gaps in visual information based on similar surface properties, such as, color, texture, etc. They are complementary mechanisms that provide information for unit-formation from fragmentary visual information. Here we study the nature of spatio-temporal object formation when contour and surface-based processes are either congruent or incongruent. We used the shape discrimination task of Palmer, Kellman & Shipley (2006) to investigate the degree of unit-formation. Results showed that shape-discrimination performance could be completely predicted by unit-formation due to contour-based processes.

(28) Biases in judging the area of regular polygons

Eric Cooper & Jonathan Kahl

Iowa State University

In the experiment, subjects were presented with two different regular polygons drawn from a set of four (circle, pentagon, square, triangle). Subjects were required to judge which of the two polygons had the greater area. For each polygon, the size of the other polygons that were perceptually equivalent in area was determined. The ordering of the perceived areas of the stimuli was found to be (from greatest to least) circle, square, pentagon, and triangle. The results appear to suggest that the horizontal width at the vertical center of the figures is the best predictor of their perceived area.

- (29) **Perception of 2D relative size is largely invariant with everything but shape**
Pamela Glosson & John Hummel
University of Illinois at Urbana-Champaign

We report an experiment investigating the perception of relative size and preservation of that perception over transformations in viewpoint and in shape. Subjects viewed displays of two polygons that differed in size from 5.0 to 21.6%. The polygons could also differ in orientation (both reflections and rotations in the picture plane) or shape. The task was to indicate which polygon was larger (in area), ignoring these other differences. The data suggest that perception of relative size is largely invariant with everything except shape, except in the most difficult (5%) condition, in which rotations also impaired relative size judgments.

- (30) **Rotation reveals the importance of configural cues in handwritten word perception**
Anthony Barnhart & Stephen Goldinger
Arizona State University

A dramatic perceptual asymmetry occurs when handwritten words are rotated 90° in either direction. Those rotated in a direction consistent with their natural tilt become more difficult to recognize, relative to those rotated in the opposite direction. We verified this phenomenon using right-tilting handwriting: Words rotated clockwise elicited high error rates (≈70%) in a reading task, relative to words rotated counter-clockwise (≈40%). In two experiments, we further examined the effect using left- and right-tilted handwriting and print. We suggest that handwritten word perception requires greater configural processing than computer print, as letter-level processing becomes less reliable.

- (31) **Motion supports object recognition: Insight into possible interactions between the two primary pathways of the human visual system**
Steven R. Holloway & Michael K. McBeath
Arizona State University

Twenty-one participants identified shapes presented in grey, green, and red colors that were defined by dynamic occlusion and then were presented again, identically, but without motion. Results showed an interaction between the motion and static conditions in that as the speed of presentation increased, performance in the motion conditions became significantly less accurate than the static conditions. The grey and green motion conditions crossed static performance at the same point, whereas the red motion condi-

tion crossed at a much slower speed. These data are consistent with a model of neural processing where the main visual systems are sharing information.

- (32) **Differences in the rotation functions for identifying faces, animals and objects**
Jonathan Kahl & Eric Cooper
Iowa State University

Subjects identified human faces, animals, and inanimate objects under 0, 60, 120, 180, 240, 300 degrees of rotation. On each trial in the experiment, subjects would be shown a fixation cue, a rotated picture of a face, animal or object, and then the name of a face, animal or object. The subject decided, as quickly as possible, whether the name and the picture matched. Findings showed that objects were identified reliably faster and more accurately than either animals or faces. Most interestingly, the form of the function was quite different for the objects than for the other stimulus categories.

Perceptual Organization

- (33) **The perception of four-dot configurations**
Mary Portillo¹, James Pomerantz², Dolapo Sokumbi, & Carl Hammarsten
¹University of Houston - Downtown, ²Rice University

What governs pattern formation in random dots? We follow up on cluster analysis performed on 4-dot patterns. In one experiment we had participants identify the prototype pattern for groups established previously. While in some groups the prototype emerged quickly, in other groups the prototype was harder to identify. In another experiment we use the group's prototypes in a connect-the-dot task to search for the features that guided the initial grouping and the selection of the prototypes. This experiment indicated that our visual system uses Gestalt principles such as linearity, symmetry and parallelism to organize random dots.

-
- (34) **Figure-ground decay in primary visual cortex**
Lars Strother, Cheryl Lavell, & Tutis Vilis
The University of Western Ontario

We measured fMRI activity in observers who viewed highly camouflaged figures (annuli) that faded perceptually over time. We observed positive-negative fMRI activity in V1 that represented the figure-ground boundary retinotopically. The spatial resolution of this representation became coarse over time and coincided with observers' perceptual memory of the global form of the figure. Figure-ground decay occurred despite sustained visual attention to the figure and thus demonstrates a spatio-temporal limit of attention on visual perception and the obligatory decay of short-term perceptual memory.

- (35) **Fundamental properties of simple emergent feature processing**
Robert Hawkins¹, Joseph Houpt¹, Ami Eidels², James Townsend¹, & Michael Wenger³
¹Indiana University, Bloomington, ²University of Newcastle, ³University of Oklahoma

Previous work in the field of perceptual organization has demonstrated significant improvements in performance accompanying the presence of "emergent features" like orientation or proximity in stimuli. In this experiment, we use quantitative measures to investigate this phenomenon in the simplest configural stimuli: a pair of dots. By comparing rate time for a single-dot condition (where the decision is based on structural differences like location) against rate time for a double-dot condition (where the decision is instead based on configural differences), we find evidence that emergent features themselves may be the fundamental units of perception.

- (36) **Emergent features predict grouping of line segments**
Anna Cragin, Amanda Hahn, & James Pomerantz
Rice University

Emergent Features (EFs) are features that arise with the configuration of parts and that make objects more salient than their parts. When line segments are perceptually organized: (1) discriminations between them are facilitated by addition of more contextual segments (Configural Superiority Effect, CSE); (2) variations in irrelevant portions of images slowed performance (Garner Interference, GI). Evidence from two tasks indicated that the number of EF differences can successfully account for both of these effects. This shows strong support for EFs serving as a mechanism for grouping.

- (37) **Liquid attention: The effect of the contour on the attentional spreading**
Kazuki Ikegame & Chikashi Michimata
Sophia University

We investigated the role of contour in attentional spreading. As an index of spreading, we applied the same-object effect, where observers respond faster to a target within the cued object than within the uncued object. The stimuli consisted of two rectangular objects, both of which were missing one long side. We showed that this effect decreased when the cued object "opened" to the uncued object. Moreover, this tendency was more obvious when the uncued object also opened to the cued object. These suggest that attention spreads from the opening in the attended object to the unattended object, like a "liquid".

- (38) **Visual attention deployment in Chinese reading**
Xingshan Li & Guojie Ma
Institute of Psychology, Chinese Academy of Sciences

Using a probe detection task, we explored attention deployment during Chinese reading. Chinese readers saw four Chinese characters briefly, and then a probe was presented at one of the character position. The four characters constituted a word in the 1-word condition, but constituted two words in the 2-word condition. Reaction time was shorter when the probe was at the second character position than the third character position in the 2-word condition, but not in the 1-word condition. This suggested that word boundary information affects attention deployment in Chinese reading.

(39) Snapshot encoding of spatial information: Location memory for visual-short-term- and short-term-memory exposures

Harry Haladjian & Fabien Mathy

Département de Psychologie, Université de Franche-Comté - UFR SLHS

This study investigates spatial memory accuracy for sets of objects. Observers viewed masked displays containing 1-10 randomly-placed discs for durations of 1-second per disc, and then reported their locations. Compared to a previous study that presented these stimuli briefly (50 to 350-ms), observers were better at reporting the correct number of discs but localization accuracy did not improve. Additionally, responses were spread among different clusters and not focused on individual clusters. These results indicate that spatial information for a set of objects is extracted globally (not sequentially) and quickly, with little benefit from extended encoding durations.

(40) False recognition of a pre-change object is position dependent

Ju-Chi Yu¹, Cheng-Ta Yang¹, & Yei-Yu Yeh²

¹National Cheng Kung University, ²National Taiwan University

Visual memory is organized according to spatial relationships among objects. Previous studies have shown that change detection performance is impaired when spatial configuration changes from study to test. However, it is still unclear how positional changes affect the retrieval process in pre-change recognition. Four experiments examined memory error patterns while manipulating the changes in positions of target and/or contextual objects. Participants showed a memory bias toward a post-change lure only when the position of target and relative positions among objects remained across displays. These results suggest that both levels of positional information are crucial for false recognition.

(41) Semantic similarity does not affect layout learning

Marie Shoda & Kazuhiko Yokosawa

The University of Tokyo

We examined whether semantic similarity affected layout learning during visual search. The contextual cuing effect (Chun & Jiang, 1998) was tested by using Kanji characters to manipulate semantic cohesiveness. When rejecting dissimilar semantic distractors is difficult, participants should process each distractor's location discrete-

ly, which should attenuate learning the layout. Our experimental results showed that semantic similarity affected distractor rejection, and visual search became more difficult when the distractors' semantic cohesiveness was low. However, the contextual cuing effect occurred in all our experimental conditions. Thus semantic similarity and the process of rejecting distractors did not affect layout learning.

(42) Organizational properties for spatial perception: Perceptual grouping effects on local and global configurations

Amy Clements-Stephens & Amy Shelton

Johns Hopkins University

Configural processing, or forming shapes from individual locations, is a natural strategy for organizing spatial information. Here we investigated how different manipulations of perceptual grouping affect the preservation of global and local configurations in spatial arrays. Across experiments, participants reconstructed displays of objects that varied the color and shape within the display. Accuracy of the reconstructions was measured to assess the degree to which participants preserved relative locations overall and in meaningful subsets. Our results provide converging evidence that the global and local perceptual grouping can influence the accuracy of reproducing locations.

(43) The Roelofs effect is not driven by visuospatial shifts of attention

Ben Lester & Paul Dassonville

University of Oregon

In the induced Roelofs effect, a laterally-offset frame distorts an observer's perceived midline, leading to subsequent target mislocalization. Here, we test an attentional account of this distortion, asking whether the effect is driven by a shift of attention toward the offset frame. If so, the perceived location of a target probe should also vary as a function of the location of an accompanying attentional cue. Our results demonstrate that shifts of attention do not lead to distortions of perceived space similar to the Roelofs effect, but they may lead to much smaller distortions in the opposite direction.

(44) Evidence for optimality of simultaneous deployment of attention in multi-RSVP stream paradigms

Maxwell Bay & Brad Wyble
Syracuse University

When two visual targets are presented simultaneously, do we attend to them sequentially or simultaneously? Three experiments were conducted, employing four rapid serial visual presentation (RSVP) streams. In experiment 1, participants were more likely to report simultaneously presented targets than sequentially presented targets. Experiment 2 isolated the cuing stimuli (salient red blocks) from target stimuli, affording us presumed control over the location of attentional deployment before the presentation of targets. This experiment revealed that cueing two locations simultaneously was optimal. We contrast how serial and parallel models of attention explain these data and find that the evidence favors the parallel model.

(45) Spatial proximity does not influence tracking performance, but changing target trajectories does

Justin Ericson & Melissa Beck
Louisiana State University

Trajectory information may be highly influential when performing Multiple Object Tracking (MOT) (Tripathy & Barrett, 2004; St. Claire, Huff, & Seiffert, 2010). Using a paradigm similar to the one implemented by Franconeri et al. (2010) that controls for target-distractor proximity, we manipulated the number of changes in object trajectory during the motion sequence. Results demonstrate that target-target proximity had no effect on tracking performance. Meanwhile, we found that as the number of trajectory changes increase, tracking performance suffers. These results imply that abrupt changes in object trajectories have a greater influence on performance than proximity.

(46) Inhibition in multiple object tracking does not bushwhack, but follow distractors

Hauke Meyerhoff¹, Frank Papenmeier¹, Georg Jahn², & Markus Huff³

¹Knowledge Media Research Center Tuebingen, Germany, ²Department of Psychology, University of Greifswald, Germany, ³Department of Psychology, University of Tuebingen, Germany

Tracking multiple objects (MOT) among distractors involves the inhibition of distractor pro-

cessing. Recent work suggests that distractor inhibition in MOT is either caused by inhibitory surrounds of targets or directed at the locations of distractors. If inhibitory surrounds of targets induce distractor inhibition, tracking performance should depend on target-distractor spacing and be symmetrically distributed around targets. We present three experiments introducing a new paradigm to investigate whether distractor inhibition is driven by inhibitory surrounds of targets. We displaced distractors around associated targets maintaining inter-object spacing. These displacements impair tracking supporting the idea that distractor inhibition is location-sensitive.

Attention: Inhibitory Processing

(47) Electrophysiological evidence for feature-based inhibition during early visual processing

Jeff Moher, Balaji Lakshmanan, Howard Egeth, & Josh Ewen

Johns Hopkins University

By examining ERPs, Zhang and Luck (2009) demonstrated that observers could employ purely feature-based attention mechanisms to modulate incoming visual input within 100 ms of presentation. We found that these modulations can be largely attributed to inhibition of distractor features rather than excitation of target features. Furthermore, top-down inhibitory sets persist over time, slowing selection of previously ignored features in subsequent behavior even after behavioral goals have changed. Thus, inhibition plays an important role in early visual processing, and inhibitory attentional control settings can have a measurable impact on behavioral performance that carries over into unrelated tasks.

(48) The dark side: Configuring attention to ignore task-irrelevant features

Jason Arita¹, Nancy B. Carlisle², & Geoffrey F. Woodman¹

¹Vanderbilt University, ²U.C. Davis

Previous theories of attention and research suggest that we can bias attention to avoid selecting objects with task-irrelevant features; however, this hasn't been demonstrated empirically. Here, we show that informative feature cues can guide attention toward target items and, most critically, away from nontarget items during visual search. Furthermore, by varying the set size of the search array and the timing between cue and visual search array we reveal the limits of the effectiveness of the nontarget-cue. Our results demonstrate that knowing what not to look for can be as informative as knowing what to look for.

(49) Non-spatial inhibition of return

Adam Spadaro & Bruce Milliken
McMaster University

The inhibition of return (IOR) effect is commonly thought to reflect a dedicated spatial orienting mechanism. A small number of studies have pursued the idea that IOR reflects the operation of a general orienting mechanism that acts in both spatial and non-spatial domains. This alternative view must answer to why an IOR-like effect does not occur with non-spatial stimuli in classic 2-afc tasks. We report a series of experiments that demonstrate that an IOR-like effect can occur with non-spatial stimuli, but only when an opposing process that produces repetition priming benefits is eliminated.

(50) Psychophysiological evidence for the non-target singleton suppression

Haein Jung, Young Eun Park, Soo Min Kim, & Yang Seok Cho
Korea University

The contingent capture theory suggests that top-down attentional setting determines whether the stimulus receives attention or not. In the present study, an ERP study was conducted to find out the neural mechanism of how top-down attentional setting influences the processing of task relevant/irrelevant cues. Using Go/No-go task, this study especially tried to verify the selective suppression of non-target singletons. For the target singletons (onset cue), there appeared clear N2pc component which reflects attentional capture. However, the trend to the reversed N2pc component pattern was found for the non-target

singletons (color cue).

Attentional Control

(51) Searching for two things at once: Multiple attentional control settings independent of space

Zachary Roper & Shaun Vecera
University of Iowa

Using the attentional blink paradigm, Experiment 1 had subjects search for red and green targets in a stream of gray non-targets. Spatial distractors matched the target colors, were a unique non-target color, or remained neutral. We found evidence of singleton capture to all colored distractors indicating singleton search mode. Experiment 2 precluded the use of singleton search mode by integrating heterogeneously colored non-targets. We found evidence of capture for target colors only. This suggests that subjects are capable of maintaining multiple control settings when the demands of the task force subjects to search for specific feature values.

(52) High spatial validity is insufficient to elicit voluntary shifts of attention

Gregory Davis & Bradley Gibson
University of Notre Dame

Voluntary shifts of attention are often motivated in experimental contexts by using well-known directional symbols that accurately predict the location of targets. We report five experiments demonstrating predictive spatial information alone does not provide sufficient incentive to elicit voluntary shifts of attention. Instead, our results suggest that observers' choice to use spatial word cues could be biased by providing dedicated time to process the cue before the target display appeared. Although this dedicated processing time is routinely included in spatial cuing experiments, its incentive-inducing role has never been acknowledged. Implications for theories of attentional control are discussed.

(53) Practice produces improved frontal filtering of distracting information.

Todd Kelley & George Mangun

Center for Mind & Brain, University of California, Davis

Though a growing number of studies show that practice leads to improvements in selective attention, the underlying neural mechanisms remain poorly understood. We used EEG/ERP recordings to examine the neural correlates of improved distractor filtering with practice. As in previous studies, RT slowing due to irrelevant distractor images was reduced over time. Critically, we observed changes in distractor-evoked ERPs across time over frontal cortex. However, we did not observe changes in posterior brain components (N2pc, PD) generally associated with spatial attention. These results indicate that improved distractor filtering may be due to changes in cognitive control mechanisms.

(54) Visual search is guided by multiple active templates in visual working memory

Valerie Beck¹, Andrew Hollingworth¹, & Steven Luck²

¹University of Iowa, ²University of California, Davis

Previously, participants were able to guide search based on a known target feature. Presently, when the target was more likely to be one color versus another, participants fixated more cued-color items sequentially than uncued-color items, and there was a cost associated with switching to the uncued color, suggesting a discrete template. When two colors were cued as likely to contain the target, participants exhibited equal length runs within each color and no significant switch cost. The latter results suggest that observers are able to simultaneously use two VWM templates to guide attention and eye movements during visual search.

(55) Cuing with color: The cost of binding space to color for visual selection

Kirsten C. S. Adam¹, Ted A. Bryant², & Bradley S. Gibson¹

¹University of Notre Dame, ²Bethel College

Selection by color is mediated by space when there are multiple items in a display (Vierck and Miller 2008). This study attempted to estimate the cost of this mediation. We garnered evidence for a “binding hypothesis” by comparing color cues and arrow cues in a central cuing paradigm, identifying the additional time required to bind spatial information to color information. Experi-

ment 1 estimated this cost to be approximately 200 ms. Experiments 2-5 eliminated alternate hypotheses and confirmed a minimum cost of 200 ms. Experiment 6 showed that the binding cost cannot be eliminated by consistently pairing color and location.

(56) Spatial shifts of the covert attention cued by symbols of non-digital nature: Possible SQUARC effect

Atanas Kirjakovski & Narisuke Utsuki

Kobe University

It has already been established that the numbers are represented spatially. For example, in the SNARC effect, the smaller numbers are responded to faster with the left response codes, while the larger numbers with response codes on the right. Also, merely looking at the numbers can cause spatial shifts of the covert attention congruent with the SNARC effect. However, it has been hypothesized that SNARC is an instance of more general SQUARC effect, where other non-digital quantities can be represented spatially too. In this study, the covert attention shifted congruently to SNARC by cues of non-digital nature.

(57) Developmental differences using a nonverbal Stroop task

Christopher Koch¹, Jacob Lowen¹, & Michelle McWilliams²

¹George Fox University, ²Newberg School District

Color-word Stroop interference increases with reading ability until approximately third grade. The present study was conducted to examine developmental trends using a nonverbal Stroop task. Thirty-six first-graders, 24 third-graders, 19 fifth-graders, and 18 college students volunteered for the study. Participants sorted cards by target color. One set of cards had congruent color blocks while the other set had incongruent color blocks. Results indicate that cards with incongruent colors take significantly longer to sort. Interference was also significantly greater for first-graders. These findings are consistent with the developmental findings for the color-word Stroop task.

(58) Examining the relationships between verbal and nonverbal Stroop tasks

Jennifer Saleme & Christopher Koch
George Fox University

The original Stroop task combined colors and words. However, recent research has demonstrated that Stroop-like interference can also be obtained without words. Whether or not the nonverbal tasks measure the same processes as the color-word task was investigated in this study. Participants completed two different nonverbal Stroop tasks as well as a color-word Stroop task. Results show that both nonverbal Stroop tasks are significantly correlated with the color-word Stroop task. This finding suggests that nonverbal Stroop tasks and the color-word Stroop task measure similar underlying processes.

increase perceived contrast.

(61) No attentional blink during arithmetic

Akihiro Kobayashi & Matia Okubo
Senshu University

Attentional blink (AB) occurs when people allocate more attentional resources to the detection of T1 than necessary. In this study, participants (N = 60) performed two types of RSVP tasks: Detection and arithmetic. In the detection task, participants simply recall target digits (e.g., 4, 6) in a RSVP stream while they answer the sum of the target digits in the arithmetic task. The AB was attenuated (Experiment 1) and disappeared when smaller digits were used (Experiment 2). The multiple allocations required in arithmetic may compensate for the overinvestment of attentional resource to T1, ultimately, eliminating AB.

(62) The fate of unattended stimuli in the color flanker paradigm

Serap Yigit-Elliott¹, John Palmer¹, & Cathleen Moore²

¹University of Washington, ²University of Iowa

Flanker congruency effects are often interpreted as evidence for the processing of unattended stimuli. However, flanker experiments do not rule out the possibility that flankers are attended in some fraction of the trials. In this study, we combined the spatial filtering and flanker paradigms and measured accuracy. When stimuli were separated widely, we did not find congruency effects consistent with perfect selection. When stimuli were presented closely, we found congruency effects consistent with failure of selection. Thus far, we have found no evidence for the processing of unattended stimuli.

Preattention and Attention

(59) An identity intrusion effect in the absence of attentional capture

Brandon Ashinoff & Howard Egeth
Johns Hopkins University

The purpose of this experiment was to test the validity of the identity intrusion effect as an index of the spatial capture of attention by a salient singleton. Early studies of the identity intrusion effect (Theeuwes, 1996) found that the identity of a salient distractor affected response time. We found that the identity of any item in the display can affect performance, suggesting that subjects were processing the entire display in parallel. As a shift of attention to the distractor is not required to influence response time, the identity intrusion effect appears not to be a valid measure of capture.

(60) Does covert attention alter perceived contrast? Evidence from gender perception

Jason Rajsic & Daryl Wilson
Queen's University

Shifting attention to a stimulus increases its reported contrast, but this may be due to a perceptual change or decision bias. We used a novel stimulus, gender-ambiguous faces that varied in contrast, to test whether attention increases perceived contrast. Participants reported which of two faces was more female (Experiment 1) or more male (Experiment 2), while exogenous cues controlled which face was attended. In both experiments, increasing the contrast of a face caused it to appear more male. Critically, attention did not produce a consistent effect on perceived gender, meaning that attention did not

- (63) **Mechanisms of pre-saccadic shifts of attention during pauses between successive saccades**
Min Zhao¹, Barbara Doshier², & Eileen Kowler¹
¹Psychology Department, Rutgers University,
²Department of Cognitive Science, University of California, Irvine

This study examined mechanisms of pre-saccadic shifts of attention during sequences of saccades. Subjects made a sequence of 2-4 saccades while perceptual orientation identification or detection was tested at the saccadic goal and elsewhere. The results showed perceptual enhancement at the saccadic goal location at moderate and high target contrasts, regardless of the number of the visual targets, and either with or without superimposed external noise. This suggests that multiple mechanisms are involved in pre-saccadic attention shifts, including perceptual competition between saccadic and perceptual targets, selective visual memory, external noise exclusion and stimulus enhancement.

- (64) **Perceptual load and distractor position modulate the contralateral negativity of target processing**
Shoa-Ming Lee & Yei-Yu Yeh
National Taiwan University

Electrophysiological activities were monitored while participants performed a flanker task whose perceptual load was either low or high. The target and the distractor were positioned in the same visual field or opposite fields. We observed an enhanced N2pc when the target and the distractor were in the same visual field compared with N2pc when the distractor was positioned opposite to the target. There is a trend that the distractor position effect was larger under low perceptual load than under high perceptual load. Both perceptual load and distractor position influence neural competition for target selection.

- (65) **Motor response repetition modulates priming of popout through target activation**
Yana Kim, Susannah Bruno, & Bryan Burnham
University of Scranton

We examined a dual-stage account of priming of popout (PoP), which states that PoP reflects both early perceptual processes, and late response-retrieval processes (Lamy, Yashar & Ruderman, 2010). Subjects completed a visual search task, in which the colors of a singleton target and distractors repeated or changed between trials. The motor response and the response attribute also repeated or changed between trials. We

found that only motor response repetition modulated PoP, and did so through target activation. Significant facilitation and inhibition effects also occurred without response repetition, suggesting that PoP does reflect early and later stages of visual processing.

Interaction of Attention and Memory

- (66) **Visual-spatial attention aids the maintenance of object representations in visual working memory**
Melanie Williams¹, Pierre Pouget², Leanne Boucher³, & Geoffrey Woodman¹
¹Vanderbilt University, ²INSERM, Université Pierre et Marie Curie, ³Nova Southeastern University

Theories propose that visual working memory (VWM) object representations are maintained by a spatial rehearsal mechanism. We tested the hypothesis that overt and covert visual-spatial attention contribute to object maintenance in VWM. In two experiments, we tracked observers' eye movements while they remembered objects during change-detection tasks. We found that participants shifted gaze to prior object locations resulting in an increased likelihood that changes would be detected. Finally, we drew attention away from object locations during retention reducing change-detection accuracy. These findings support VWM models in which visual-spatial selection contributes to the maintenance of objects.

- (67) **Working memory biases attention as a default tendency**
Chun-Yu Kuo, Yei-Yu Yeh, & Hsuan-Fu Chao
Department of Psychology, National Taiwan University

Recent studies have demonstrated that the content of working memory captures attention. However, whether working memory-driven attentional capture operates in a purely automatic manner remains unresolved. The finding of strategic control might result from strategic perceptual resampling (Woodman & Luck, 2007) when a recognition task was used to ensure the memorized item held in working memory. The present study investigated the impact of prime validity on working memory-driven attentional capture without the potential contamination from strategic perceptual resampling. The results suggested that working memory biases attention as a default tendency, and this tendency can be modulated by strategic control.

- (68) **The breadth of attention affects iconic memory**
Leon Gmeindl, Lisa N. Jefferies, & Steven Yantis
Johns Hopkins University

Half a century ago George Sperling showed that people encode and temporarily store much more information from a brief visual display than they can retrieve later. In other research, evidence indicates an inverse relationship between the breadth of attention and the efficiency of visual processing. Here, we hypothesized that the breadth of attention at the onset of a visual display influences the amount of stimulus information stored in iconic memory. The results are consistent with this hypothesis. This study reveals for the first time, to our knowledge, a direct influence of the breadth of attention on iconic memory.

- (69) **Resource competition influences the efficiency of selective attention**
Szu-Hung Lin & Yei-Yu Yeh
National Taiwan University

Higher cognitive load disrupts the maintenance of task priority and, hence, reduces the efficiency of selective attention (Lavie, Hirst, de Fockert, & Viding, 2004). The finding that distractor interference in a flanker task increases when the number of digits maintained in working memory increases may reflect resource competition in the phonological loop of working memory. Results from two experiments showed that high digit load increased distractor interference in a letter but not in an object flanker task. It is the resource competition between the working memory task and the selective attention tasks that influences the efficiency of selective attention.

- (70) **Expertise in radiological screening and satisfaction of search**
Kait Clark¹, Ehsan Samei², Jay Baker², & Stephen R. Mitroff¹
¹Duke University, Center for Cognitive Neuroscience, Department of Psychology & Neuroscience, ²Duke University Medical Center, Department of Radiology

Cognitive psychology studies of visual search typically use novice searchers (often undergraduate students). Such studies have provided valuable insight into visual search performance, but how might expert searchers differ in their performance? Radiologists typically have years of experience searching medical radiographs for abnormalities, but research in radiology shows they still fall victim to many of the same types of errors as novice searchers. We explore how

radiologists perform on a basic multiple-target visual search task and compare their performance to novice searchers to determine how search expertise affects performance and strategy.

Visual Working Memory

- (71) **Spatial priority for orientation but not color: Evidence for correspondence problems in visual working memory**
Florent Levillain & Jonathan Flombaum
Johns Hopkins University

Visual working memory limits are typically characterized as architectural storage limits. But inferences over the contents of working memory must be error prone, independent of storage limits. To demonstrate that a critical inference involves assigning correspondences between items in memory and perceived items, we tested working memory for items presented in new locations, impairing performance. To demonstrate that these costs are not specific to working memory, we also asked participants to directly compare sample and test displays. A severe reaction time cost emerged for displaced items, demonstrating that working memory limits may often reflect inference limits associated with item correspondences

- (72) **What determines capacity of visual short-term memory? And when?**
Shriradha Sengupta, Paul Verhaeghen, & Patricia Mary Hearons
Georgia Institute of Technology

We set out to understand whether VSTM stores information in terms of features or objects. We tested whether whole or single object probe displays, and mismatch probes with intra and extra-list lures determine the format of representation in VSTM. We also varied the number of objects as well as number of features/ objects in study displays within experiments. Our main finding was that VSTM stores objects in terms of loose features, unless intra-list lures require these features to be bound into objects. Once bound, these bindings are susceptible to interference from irrelevant objects in whole probe displays.

(73) Reaction-time assessment of form and color processing in visual short-term memories

Jane Jacob & Bruno Breitmeyer
University of Houston

A choice RT task was used to estimate the time course of iconic and post-iconic memory stores for form or else color features. A prime preceded a probe at varying stimulus onset asynchronies (SOAs) while observers reported whether or not the probe differed from the prime. Results reveal 2 visual processing phases: an initial fast processing and a separate slower processing of stimuli, which can be identified as iconic memory and visual working memory stores, respectively. Furthermore, representation of color was found to be stronger than representation of form in visual memories for this task.

(74) Isolation of random and non-random factors that contribute to limited working memory capacity

Joshua Sandry, Stephen Rice, David Trafimow, Gayle Hunt, Lisa Busche, & Edward Rubio
New Mexico State University

We used Potential Performance Theory to separate and identify the role that randomness plays in working memory capacity. Over 2 experiments, participants were presented with a 2-alternative forced choice recognition memory task using number/letter strings between four and nine digits/characters long. Findings indicated that as the number of items to be memorized increased, observed performance decreased. PPT analyses showed that this effect was almost entirely due to a decrease in consistency (randomness) whereas participants' potential performance remained nearly perfect. The present findings provide some interesting new information about the role consistency plays in human memory capacity.

(75) Enhanced visual short-term memory in action video game players

Kara Blacker & Kim Curby
Temple University

Visual short-term memory is a capacity-limited system that allows for the retention of visual information. Efficient visual selective attention contributes to individual variability in the capacity of VSTM. Previous findings suggest that action video game playing bolsters visual selective attention in a number of ways. The current study illustrates that action video game players demonstrate enhanced VSTM compared to non-video game players and that this advantage likely results from their greater efficiency filtering

task-irrelevant distractors. These results suggest that the enhanced attentional abilities of action video game players may afford a domain-general benefit to VSTM.

Remembering and Forgetting

(76) Item-method directed forgetting is effortful and impoverishes memory for abstract images

Jonathan Fawcett, Michael Lawrence, & Tracy Taylor

Dalhousie University

Abstract images were presented monochromatically followed by an R or F instruction and then a visual target requiring a speeded detection response. Participants were tested for these items using a yes-no recognition and color selection task. Recognition performance was better for R than F items. Participants were also slower to detect targets presented following study phase F than R instructions. Importantly, color judgments were more accurate for successfully recognized R than F items. Our findings suggest that intentional forgetting is an effortful process resulting in an impoverished memory trace even when the to-be-forgotten information is successfully retrieved.

(77) The influence of corrective feedback on retrieval-induced forgetting

Matthew Erdman & Jason Chan

Iowa State University of Science and Technology

Retrieval practice can impair subsequent recall of nontested materials: a finding termed retrieval-induced forgetting. In three experiments, we examined the influence of providing corrective feedback during retrieval practice on the magnitude of retrieval-induced forgetting. Final test format (recall vs. recognition) and retention interval (30 min vs. 48 hr) was also varied across experiments. We found that retrieval-induced forgetting was not affected by corrective feedback in a cued recall final test. However, retrieval-induced forgetting was eliminated by corrective feedback in a recognition final test. These findings are consistent with the inhibition account of retrieval-induced forgetting.

(78) Incidental memory for scene detail following visual search

Jennifer Olejarczyk & John Henderson
University of South Carolina

The present study investigated the role of eye movements in incidental memory for details of scenes. Subjects searched for letters in scenes, then recognized details from the scenes using a fixation-contingent memory paradigm. In Experiment 1, memory was significantly greater for scene regions with maximum dwell time and patches that contained targets versus minimally fixated sections. In Experiment 2 memory was significantly better for maximally fixated regions than areas fixated once or non-fixated regions. The results support the existence of incidental scene memory in search and show that this memory is tied to eye fixations.

(79) Contextual distinctiveness and long-lasting priming in singleton search

David Thomson & Bruce Milliken
McMaster University

Priming in pop-out search has been argued to reflect the transient activation of feature gains for previously attended stimuli, primarily because PoP has been shown to persist for only 5-8 trials, and is therefore subject to decay. Others have argued that PoP reflects the operation of episodic memory, in which retrieval interference is responsible for the short-lived nature of PoP. Our data show that when search arrays are displayed within unique contexts, PoP can be observed from trial $n-16$ to trial n . We argue that when pop-out search is performed, an episodic representation is created.

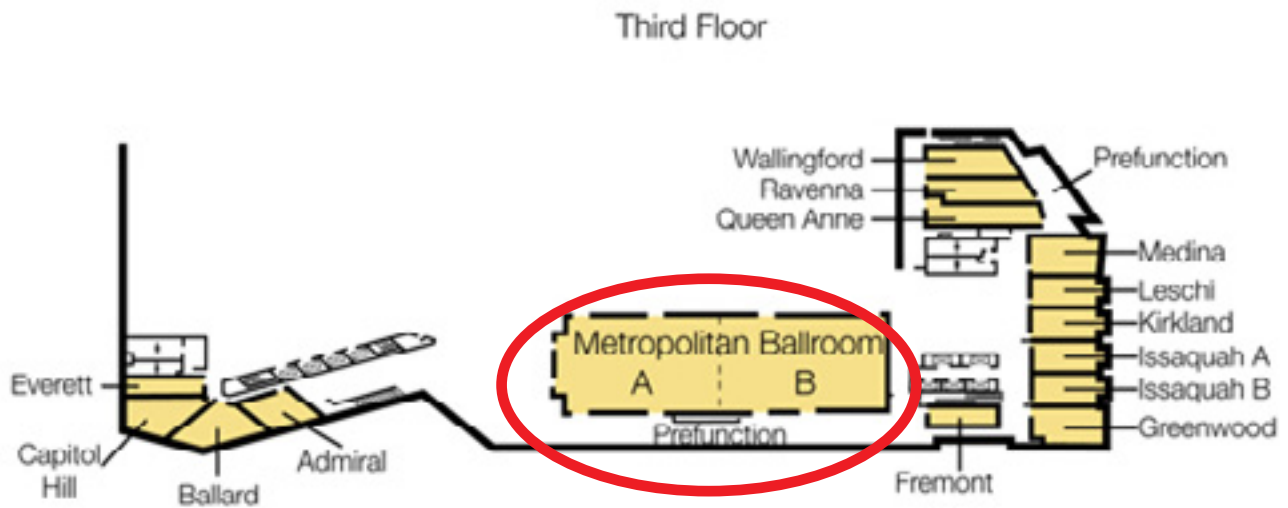
(80) The role of spatial location in human perceptual learning

Tony Wang & Chris Mitchell
Institute of Psychology, Chinese Academy of Sciences

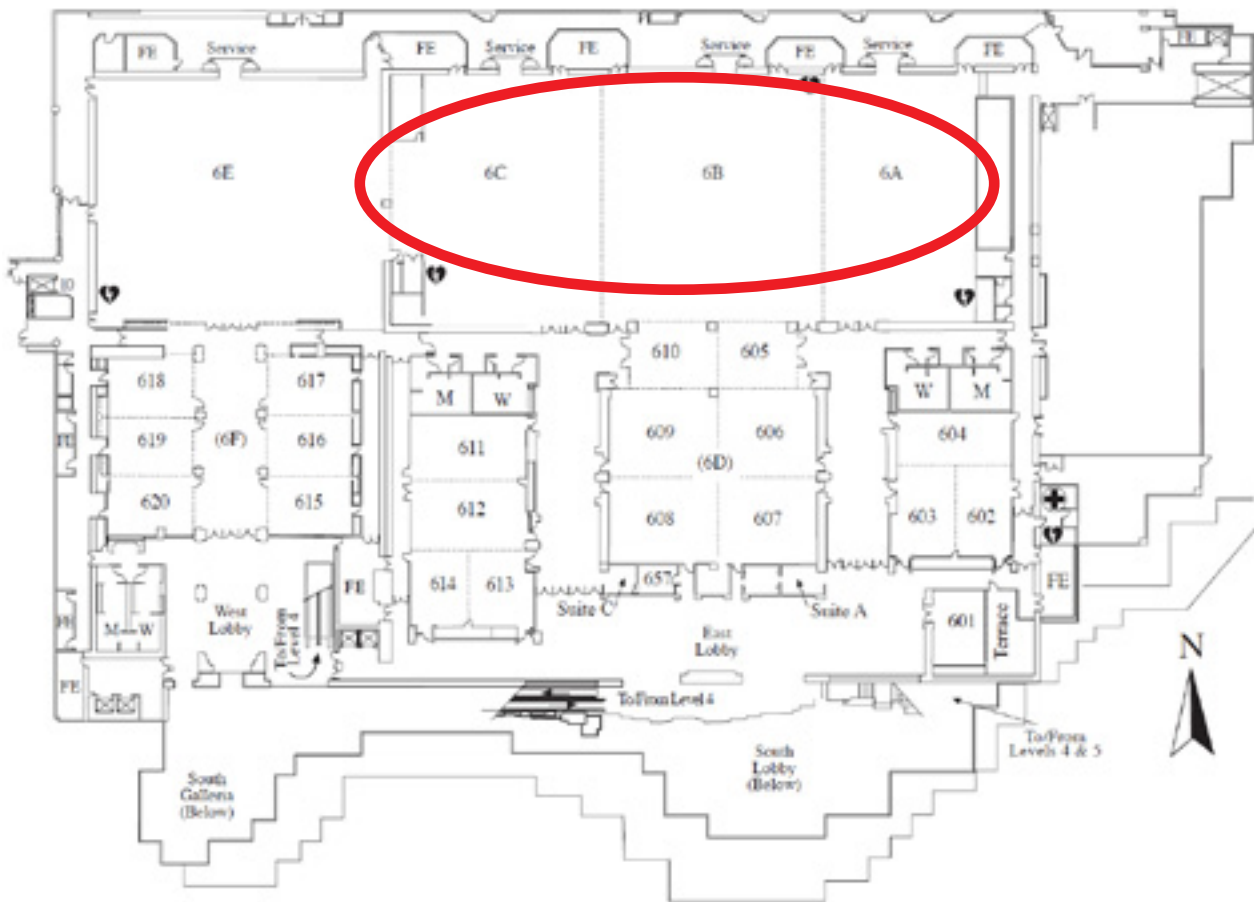
Using a probe detection task, we explored attention deployment during Chinese reading. Chinese readers saw four Chinese characters briefly, and then a probe was presented at one of the character position. The four characters constituted a word in the 1-word condition, but constituted two words in the 2-word condition. Reaction time was shorter when the probe was at the second character position than the third character position in the 2-word condition, but not in the 1-word condition. This suggested that word boundary information affects attention deployment in Chinese reading.

NOTES:

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