# ASIC 2010
## Ninth Annual Summer Interdisciplinary Conference

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**NEW** -- Send in your **registration** and **abstract submission form.**

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*Bend, Oregon, USA*
*Saturday, July 31 - Thursday, August 5, 2010.*

## Announcing ASIC 2010

The Ninth Annual Summer Interdisciplinary Conference (ASIC 2010) will be held at the Phoenix Inn Suites in Bend, Oregon

http://www.phoenixinn.com/bend/

[See also: http://www.trails.com/all-hotels/hotel-info.asp?hotelid=97109]

These venues are in the center of Bend, a few blocks from the town park and the Deschutes River, and close to restaurants and other points of interest in Bend. Bend is the center of a region of Oregon offering many outdoor activities (see the section on this website: ACTIVITIES). See also: http://www.visitbend.com/; http://www.bendchamber.org/visitor/index.asp.

ASIC 2010 occurs just prior to two closely related meetings to be held in Portland OR:

1. The 2010 Annual Meetings of the Society for Mathematical Psychology, Aug 7-10, and
2. The 2010 Annual Meetings of the Cognitive Science Society, Aug 8-11. [Portland is about 2.5-3 hours by car from Bend.]

We are pleased that the Cognitive Science Society is sponsoring an award for the Best Student Paper given at ASIC. The award will consist of a $250 prize and a complimentary membership in the Cognitive Science Society for the following year.

The time slot between ASIC and these meetings allows cyclists to tour from Bend to Portland, and those with cars to visit the Oregon coast or other points of interest between the meetings. Bicycle tour from Bend to Portland.

Richard M. Shiffrin of Indiana University - Bloomington is the organizer: Email correspondence should be directed to                          or mailed to Richard M. Shiffrin at Indiana University (select 'Contact' from the menu for the address).

The subject matter of the ASIC conferences is interdisciplinary, within the broad frame of Cognitive Science. ASIC uses the very successful format of previous ASIC and AIC conferences: Days are free for leisure activities and discussions among participants. The talks/posters are in the later afternoon/early evening, followed by dinner. The date has been chosen to make it convenient for attendees to bring family/friends. The conference is open to all interested parties, and an invitation is NOT needed to attend. However, due to the small number of spots for speakers, the organizer will select the attendees to give talks, and additional attendees will have the opportunity to present posters.

## Previous Years' Websites

Several parts of this year's website are still under construction. For examples of previous years' websites, visit **Previous ASIC Websites**.

## Invitation

The conference is open to all scholars who fit the very general theme of the conference, and their family and friends. An individual invitation is NOT needed. We encourage you to send the conference information to friends and colleagues. If you are interested in organizing a half or whole topic session, contact the organizer.

## Conference Aims



The conference will cover a wide range of subjects in cognitive science, including:

- modeling of cognition
- neuroscience, cognitive neuroscience
- psychology (including perception, psychophysics, attention, information processing, memory and cognition)
- computer science and artificial intelligence
- machine intelligence and learning
- methodology and statistics
- linguistics, psycholinguistics and computational linguistics
- philosophy of mind, cognitive science

We especially invite talks emphasizing theory, mathematical modeling, and computational modeling (including neural networks and artificial intelligence). Nonetheless, we require talks that are comprehensible and interesting to a wide scientific audience. Speakers will provide overviews of current research areas, as well as of their own recent progress.

## Conference Format

The lodging is at the Phoenix Inn, and the meetings and

conference dinners at the Old Stone Church (except for Sunday when a poster session will be held at the Phoenix Inn).

There is a single speaking session each day except Sunday. Information on submitting proposals for presentations (speaking or posters) is on the page of this website labeled 'Talk and Poster Submissions''. Please submit talk/poster information on the website, even if you have already sent (some of) this information to the organizer.

The conference will start with registration and a reception from 15:30-16:15 on Saturday, July 31. On subsequent days (except the poster day) there will be drinks and light snacks from 16:00 - 16:15, followed by a session of seven spoken presentations that include a mid-session drink break.

It will not escape the careful reader that this conference format frees most of the day for various activities with colleagues, family, and friends. We expect all scientific attendees and participants to attend all sessions. The time frame will allow day trips to nearby sites, but arrange to return in time for the sessions. Travel to sites and planned activities from which a return for the session will not be possible by 16:00 should be arranged for days preceding and following the conference.

## Registration

You are not officially on the request list for presenting research (talks or posters) until you send the registration fee, preferably by Paypal. visit the Registration page at this website.

## Lodging

A block of rooms at the Phoenix Inn Suites are presently being held. The Inn does not accept reservations more than six months prior to the start date, so you should reserve as soon as possible after February 1, 2010. The Inn has a 24 hour cancellation policy, so there is no harm in reserving early, and doing so will guarantee a room or rooms at the conference rate. For information visit the Lodging page at this website.

## Dinner

On four nights, Saturday, Monday, Tuesday, and Thursday there will be catered dinners for the group at the Old Stone Church immediately following the talks. The charges for these four dinners are included in the registration fee. On Sunday and Wednesday, participants are free to sample any of the many local restaurants. An extended continental breakfast is available as part of the lodging fee at the Phoenix Inn. Most participants will be away during the daytime, so lunches are not arranged as part of the conference. The Thursday evening dinner will be the conference �banquet� with beer and wine included.

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## Registration Information for ASIC 2010

If you are planning to attend ASIC 2010, please fill out the registration form and submit your registration fee. This fee is slightly larger this year than usual because it includes four conference dinners, including the final day banquet. It also pays for rental of the Old Stone Church, equipment rentals, and snacks and drinks at conference breaks.

This year's fee schedule, in US dollars:

|  | By Check or PayPal in US dollars: |
|---|---|
| Prior to Jan. 1, 2010 | $200 |
| Jan. 1, 2010 - March 1, 2010 | $250 |
| After March 1, 2010 | $300 |

In addition to the registration fee per person, you may purchase additional guest vouchers for other persons attending the opening reception and/or final banquet. All payments are calculated and paid by clicking on the 'register' link just below:

You need to register to calculate total payment for both payments option

1. Online by PayPal (preferred).
2. Send a check for the correct amount to ASIC 2010, c/o Richard M. Shiffrin, Psychology Dept., Indiana University, Bloomington, IN 47405.

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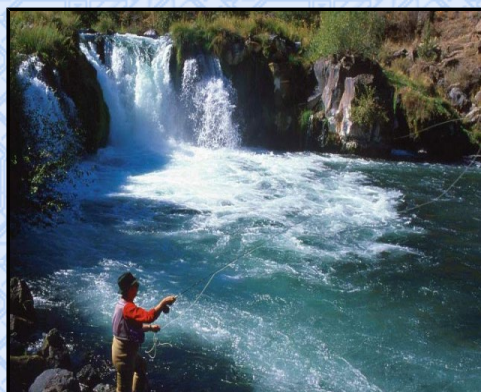
## Submissions of Talks and Posters

Whether you would prefer to give a talk or poster, and whether you have already sent some of this information to the organizer by email, please provide on the link below a list of authors (with the presenter indicated), their affiliations, and emails; a title, and an abstract (limit 250 words). These may be changed later, so do not hesitate to send them as early as possible. The organizer will use these to organize the sessions. Please go to the **submission form** to indicate your preference for talks or posters.

The spoken talks will most likely be limited to 30 minutes, a time that includes interruptions for questions, and final discussion. It would be best to plan for twenty minutes of actual speaking. The talks should be aimed not at specialists, but at a general scientific audience. Poster details will be provided later, should a poster session be required.

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## Travel To and About Bend, Oregon

A variety of maps can be downloaded for free from:
http://www.visitbend.com/Bend_Oregon_Map/Maps/default.aspx

Bend is in central Oregon, 175 miles SE of Portland. It lies just to the east of the Cascades and the Three Sisters Wilderness Area (a series of volcanic mountains, from S to N: Mt. Bachelor, Broken Top, South, Middle and North Sister, Mt. Washington, Three Fingered Jack, Mt. Jefferson). The Deschutes River runs through Bend, and the Newberry Crater and Volcanic Monument are just to the SE). Smith Rock State Park, one of the world�s premier climbing destinations, lies 25 miles to the north.

An area guide to Bend, with a transportation link, is at:
http://www.oregoncitylink.com/bend/index.html

Detailed travel information can be found at:
http://www.visitbend.com/Bend_Oregon_Map/default.aspx

Many attendees will want a car to visit the various nearby attractions. Bend has an airport, but those attendees planning to visit Portland for the two succeeding conferences might prefer to fly to the Portland airport and drive to and from Bend.

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## Lodging

We have placed a hold on rooms sufficient for our conference needs at the Phoenix Inn Suites in downtown Bend, convenient to restaurants, the downtown park, and the Deschutes River. The hotel website is at: http://www.phoenixinn.com/bend/

The Inn offers a complimentary continental breakfast buffet. Lodging reservations should be made as early as possible after February 1, 2010. Bookings can be made by telephone at: Toll-free: (888)          alternative: (541)

Reservations Email:

Toll-free: (888)          alternative: (541)

Lodging prices (per room, not person) are $114 for a King room, and $124 for a double Queen room. The Inn has a 24 hour cancellation policy, so there is no cost to reserving early, and this will guarantee a room or rooms at the conference rate.

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## Food/Dining

The Phoenix Inn Suites offers a complimentary extended continental breakfast buffet. Lunches are up to the discretion of the attendees. Four evening meals will be catered at the Old Stone Church, immediately following the talks, on Saturday, Monday, Tuesday and Thursday (Thursday is the banquet, with beer and wine included). These meals are included in the registration fee. On the registration page please indicate the number of your group (if you are coming with more than one person) who require vegetarian meals. If you have other special dietary requirements, email the organizer directly. On Sunday and Wednesday, participants and guests are free to sample the many local restaurants (see below). Each day the conference will begin with light snacks and liquid refreshments at 4:00-4:15, followed by talks, and a 15 minute break with more drinks about midway through the talks (about 6 PM). However, the first day of the conference (July 31) will have a reception with wine, beer, and more elaborate snacks, from 3:30-4:30.

Restaurants, reviews, maps and descriptions can be found at:
http://bendoregonrestaurant.blogspot.com/
http://www.bendnights.com/bend-oregon-restaurants.shtml
http://www.sourceguides.com/restaurants/Oregon/Bend/Bend.html

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## Climate, Weather, Clothing

Bend has a high desert climate. Humidity is always low. Days tend to be hot (especially in the sun) and mornings and evenings quite cool. Do not forget sun cream, because it will probably be sunny throughout your stay in Bend. For various adventure outings, specialty clothing may of course be needed (see the link on this website to ACTIVITIES.

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## Activities

The general Bend Oregon area has many options for tourism and outdoor adventure, including hiking, mountain climbing, rock climbing, road and mountain biking, rafting and white water kayaking, visits to volcanoes and volcanic monuments, fishing, golfing, ballooning, and much more. This section of the website will gradually give increasing details of these options as the conference date approaches.

The reader may find it useful to peruse some helpful websites:

http://www.visitbend.com/Bend_Oregon_Activities_Recreation/default.aspx
http://www.visitbend.com/Bend_Oregon_Activities_Recreation/Outdoor-Recreation/Summer-Fun/default.aspx
http://www.gonorthwest.com/Oregon/central/Bend/activities.htm
http://www.gonorthwest.com/oregon/central/Bend/Bend.htm
http://www.visitcentraloregon.com/listing.html?cID=1
http://www.smithrock.com/
http://www.oregonstateparks.org/images/pdf/smith_full.pdf
http://www.summitpost.org/object_list.php?object_type=1&country_1=&state_province_1=Oregon

*[In the websites given below note that Trails.com gives a free trial period, but then requires a paid subscription. However, even without paying, the sites provide maps with pointers to locations and names of activities.]*

### Climbing, Scrambling, and Hiking Nearby Peaks

The last website above gives brief descriptions of mountains throughout Oregon, organized alphabetically by name. There are a range of mountains just west of Bend that are particularly suitable for ASIC attendees, either because they can be climbed in time for a return by 4:15 for the start of the sessions (only a few are in this category) or because they can be climbed in one day before or after ASIC. It should be noted that these are volcanic mountains, often with much loose rock and scree. One also needs to be aware of weather conditions, and the possibility of lightning. The standard routes are nonetheless quite popular and non-technical.

Different peaks can be climbed by trail, by scrambling, or by climbing with ropes. The closest peaks, from S to N are: Mt Thielson, Mt. Bachelor, Broken Top, South Sister, Middle Sister, North Sister, Mt. Washington, Three Fingered Jack, Mt. Jefferson. For the more adventurous and experienced, Mt. Hood (near the north border of Oregon) and Mt. St. Helens (farther north, in SW Washington) offer exceptional climbing, but must be climbed before of after ASIC.

    A.  One day:

       **Mt. Bachelor:**
       http://www.localhikes.com/HikeData.asp?DispType=0&ActiveHike=2&GetHikesStateID=1&ID=6027

       **South Sister (possible but long for a return for the session):**

http://www.localhikes.com/HikeData.asp?
DispType=0&ActiveHike=2&GetHikesStateID=1&ID=5760
**5.5 miles, 4900 ft steep climbing, non technical, but lots of scree.**

B. **Longer:**

**South Sister via Devils Lake:**
http://www.localhikes.com/HikeData.asp?
DispType=0&ActiveHike=2&GetHikesStateID=1&ID=6112

**Broken Top:**
http://www.traditionalmountaineering.org/Photos_BrokenTop_Summit.htm
**Slightly technical—needs rope. 10+ hrs from trailhead**

**Mt. Hood (50 miles E of Portland):**
http://www.summitpost.org/route/155408/south-side-hogsback.html
**From 5800 ft to 11,100, 3 miles at 35 degrees, average round trip 9 hrs. Mostly non-technical, but ice axe, crampons, helmet recommended**

C. **In Washington:**

**Mount Saint Helens:**
http://www.localhikes.com/HikeData.asp?
DispType=0&ActiveHike=2&GetHikesStateID=1&ID=4173
**4500 ft. climb, non technical, 7-10 hrs round trip.**

**Mt. Adams:**
http://www.localhikes.com/HikeData.asp?
DispType=0&ActiveHike=2&GetHikesStateID=1&ID=4552

## Hiking, Walking

**Visitor Center suggestions:**

- http://www.visitbend.com/Bend_Oregon_Activities_Recreation/Outdoor-Recreation/Summer-Fun/Hiking/default.aspx

**Some easy hiking in and near Bend:**

- http://www.traditionalmountaineering.org/News_Bend_Hikes.htm

**Trails near Bend (scroll down to section labeled 'Trails':**

- http://www.hikercentral.com/metros/13460.html

**Various hikes:**

- http://www.trails.com/activity.aspx?area=12918
- http://www.trails.com/activity.aspx?area=13205

**Hiking with kids:**

- http://www.trails.com/activity.aspx?area=13942

**Sisters Wilderness Hiking:**

- http://www.trails.com/activity.aspx?area=13744

**Deschutes Canyon (near Terrebonne):**

- http://www.localhikes.com/HikeData.asp?

DispType=0&ActiveHike=2&GetHikesStateID=1&ID=4128

**Deschutes Wild River:**

- http://www.localhikes.com/HikeData.asp?
DispType=0&ActiveHike=2&GetHikesStateID=1&ID=5820

**View of Three Sisters:**

- http://www.localhikes.com/HikeData.asp?
DispType=0&ActiveHike=2&GetHikesStateID=1&ID=4478

**Lake walk with view of Mt. Washington:**

- http://www.localhikes.com/HikeData.asp?
DispType=0&ActiveHike=2&GetHikesStateID=1&ID=4588

## Rock Climbing

Smith Rock State Park offers one of the world�s greatest climbing destinations, in a relatively compact setting. The park is about 23 miles N of Bend. There are presently over 2000 established routes, at all levels of difficulty, both single and multi-pitch, about half bolted, and half trad. A new guidebook is supposed to be out soon (so should be available by ASIC 2010). The present guidebook is quite incomplete, so if the new guidebook is unavailable, it would be wise to check with the local climbing shops and guide services. As usual, ASIC will arrange for at least one climbing guide to be available for the entire week, and others will be on call at need. Also as usual we will have at least one day for a group outing for everyone from beginners to experts, and beginners (including those who have never tried climbing) will have an opportunity to try this sport.

## Rafting, Kayaking, Paddling

**Visitor Center Suggestions:**

- http://www.visitbend.com/Bend_Oregon_Activities_Recreation/Outdoor-Recreation/Summer-Fun/Whitewater_Rafting/default.aspx
- http://www.visitbend.com/Bend_Oregon_Activities_Recreation/Outdoor-Recreation/Summer-Fun/Rafting-River-Activities/default.aspx

**Other:**

- http://www.trails.com/activity.aspx?area=15336
- http://www.trails.com/activity.aspx?area=15307
- http://www.trails.com/activity.aspx?area=15645
- http://www.trails.com/activity.aspx?area=15336

## Mountain Biking

**Visitor Center Recommendations:**

- http://www.visitbend.com/Bend_Oregon_Activities_Recreation/Outdoor-Recreation/Summer-Fun/Biking/default.aspx

**Other:**

- http://www.trails.com/activity.aspx?area=10171

## Road Biking

- http://www.trails.com/activity.aspx?area=13152

## Fishing

**Visitor Center Recommendations:**

- http://www.visitbend.com/Bend_Oregon_Activities_Recreation/Outdoor-Recreation/Summer-Fun/Fishing/default.aspx

**Other:**

- http://www.trails.com/activity.aspx?area=12204
- http://www.trails.com/activity.aspx?area=11654 (fly fishing)

## Boating:

- http://www.visitbend.com/Bend_Oregon_Activities_Recreation/Outdoor-Recreation/Summer-Fun/Boating/default.aspx

## Golfing

**Visitor Center Suggestions:**

- http://www.visitbend.com/Bend_Oregon_Activities_Recreation/Outdoor-Recreation/Summer-Fun/Golf-Courses/default.aspx

**Other:**

- http://www.oregongolf.com/cent/

## Caving, Spelunking:

- http://www.visitcentraloregon.com/dynamic/files/Caves_in_Central_Oregon.pdf

**Some tours:**

- http://www.visitcentraloregon.com/dynamic/files/Caves_in_Central_Oregon.pdf

## Swimming:

- http://www.visitbend.com/Bend_Oregon_Activities_Recreation/Outdoor-Recreation/Summer-Fun/Swimming/default.aspx

## Scenic Drives

- http://www.trails.com/activity.aspx?area=14842

## Newberry National Monument

- http://www.fs.fed.us/r6/centraloregon/newberrynvm/

## Helicopter Tours:

- www.LeadingEdgeAvn.com

## Museums:

- http://www.visitbend.com/Bend_Oregon_Activities_Recreation/History-Heritage/Museums/default.aspx

## Spas:

- http://www.visitbend.com/Discover-Bend-OR/Services/Spas/default.aspx

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## Schedule

There will be a single speaking session each day except Sunday, starting on Saturday and ending Thursday, each with seven talks. These sessions will be held at the Old Stone Church across the street from the Phoenix Inn. We expect to need a poster session, and this will be held on Sunday at the Phoenix Inn. Information on submitting proposals for presentations (speaking or posters) is on the page of this website labeled �Talk and Poster Submissions''. Please submit talk/poster information on the website, even if you have already sent (some of) this information to the organizer.

The conference will start with registration and a reception at the Old Stone Church from 3:30-4:15 on Saturday July 31. On subsequent days there will be drinks and light snacks from 16:00 - 16:15, followed by a session of seven spoken presentations that include a mid-session drink break.

On Saturday, Monday, Tuesday and Thursday there will be a catered dinner at the Old Stone Church immediately following the talks. Thursday is the conference banquet, with beer and wine included. On Sunday and Wednesday, attendees may take dinner at any of the nearby restaurants.

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## Sessions

**Saturday, July 31: Old Stone Church.**

| 3:30-4:15 | Reception | |
|-----------|-----------|---|
| 4:15 | *Perception*: Chair—Tom Busey | |
| | Busey, Tom | Machine learning and fingerprints |
| | Goldstone, Rob | Education of perception |
| | Ohnesorge, Clark | Cross race effects |
| | Palmer, Steve | Human color preferences |
| | Prinzmetal, Bill | Involuntary attention, contingent capture and IOR |
| | Sperling, George | Plaids and models of motion direction |
| | Zeelenberg, Rene | Emotion and low level vision |
| ~8:15 | Dinner, Old Stone Church | |

**Sunday, August 1: Phoenix Inn.**

| 5:00 – 7:30 | *Poster Session* (see listing below) + Snacks, refreshments. Voting for best student poster. (Dinner not provided). |
|-------------|---------------------------------------------------------------------------------------------------------------------|

**Monday, August 2: Old Stone Church**

| 4:00-4:15 | Refreshments, snacks | |
|-----------|---------------------|---|
| 4:15 | *Groups and Crowds:* Chair—Mark Steyvers | |
| | Mueller, Shane | Belief systems and group opinion |
| | Nelson, Angela | Modeling influence and homophily in social networks |
| | Steyvers, Mark | Bayesian approaches to wisdom of crowds |
| | *Motor Systems* | |
| | Kowler, Eileen | Time management in saccadic decisions |
| | Pecher, Diane | Motor affordance and visual working memory |
| | *Principled Cognitive Science* | |
| | Brown, Gordon | Rank principle in economics and psychology |

| | Lombrozo, Tania | Causal explanatory pluralism |
|---|---|---|
| ~8:15 | Dinner, Old Stone Church | |

**Tuesday, August 3: Old Stone Church**

| 4:00-4:15 | Refreshments, snacks | |
|---|---|---|
| 4:15 | *Memory 1:* Chair—Markus Hofman | |
| | Hofman, Markus | Associative read-out model and recognition memory |
| | Mackay, Don | Visual cognition, memory, and amnesia (HM) |
| | Murdock, Ben | Terrace chaining paradigm |
| | Colunga, Eliana | Understanding word learning in early and late talkers |
| | *Neural Sciences*: Chair—Barbara Dosher | |
| | Cowell, Rosie | Inverse Inference of fMRI voxels |
| | Dosher, Barbara | Attention and judgment precision |
| | Magne, Cyril | Rhythm, silent reading and EEG |
| ~8:15 | Dinner, Old Stone Church | |

**Wednesday, August 4: Old Stone Church**

| 4:00-4:15 | Refreshments, snacks | |
|---|---|---|
| 4:15 | *Categorization:* Chair—Vladimir Sloutsky | |
| | Jones, Matt | Phenomenology of dual learning systems |
| | Kalish, Mike | Multiple systems in categorization |
| | Sloutsky, Vlad | Selective attention and development of categorization |
| | *Models*: Chair—Jay Myung | |
| | Donkin, Chris | Modeling visual search |
| | Griffiths, Tom | Inductive biases and communication systems |
| | Myung, Jay | Adaptive design optimization |
| | Jameson, Kim | Tetrachromacy |
| ~8:15 | Dinner not provided | |

**Thursday, August 5: Old Stone Church**

| 4:00-4:15 | Refreshments, snacks | |
|---|---|---|
| 4:15 | *Memory 2:* Chair—Amy Criss | |
| | Criss, Amy | Item repetition and cued recall |
| | Davelaar Eddy | Modeling semantic fluency |

| | | |
|---|---|---|
| | Dennis, Simon | What do cows drink? |
| | Hemmer, Pernille | Modeling individual differences in REM |
| | Hintzman, Doug | Fads and fallacies of memory |
| | Huber, Dave | Remote associates and word frequency |
| | Shiffrin, Rich | Co-evolution of knowledge and event memory |
| ~8:15 | Banquet Dinner, Old Stone Church | |

**Posters**

| | |
|---|---|
| Chapman, Allison | Null LL effect in Sternberg Task |
| Cox, Greg | Associative Knowledge and Episodic Memory |
| Denton, Stephen | Priming across eye-movements |
| Emerson, Samantha | Music aptitude and second language proficiency |
| Gangwani, Tarun | Mutual exclusivity in statistical learning |
| Gibson, Steven | Modeling language production and processing |
| Gordon, Reyna | Rhythm and song perception |
| Halfmann, Kameko | Emotion and perception of space |
| Hotaling, Jared | Integrating information |
| Kachergis, George | Statistical learning |
| Ketels, Shaw | Labels don't always help category learning |
| Kurczek, Jake | Spatial frequencies and gender perception |
| Lee, Soo Young | Attention and recurrence in lip reading |
| Osth, Adam | Developmental changes in recognition memory |
| Rieth, Cory | Adaptation to temporal statistics of spatial cuing |
| Vishnu Sreekumar | Dimensionality of episodic images |
| Yim, Hyungwook | Developing three way binding in episodic memory |
| Zhang, Xiaoyu | Nighttime targeting via video simulation |

# Authors, Titles, Abstracts

(When sufficient titles, and abstracts for talks and posters arrive, I will begin posting them in this section)

**Listing by speaker**

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O
P | Q | R | S | T | U | V | W | X | Y | Z

**B**

| | |
|---|---|
| **Speaker's Name:** | Gordon Brown |
| **First Author's Name:** | Gordon Brown |
| **First Author's Affiliation:** | University of Warwick |
| **Title:** | The Rank Principle in Economics and Psychology |
| **Abstract:** | Several cognitive models of judgement and decision-making suggest that the relative ranked position of an option within a comparison set is an important determinant of judgement and choice. I will summarise evidence for the relative rank principle in a number of different contexts, ranging from actual product choice through to social attitudes including how life satisfaction and propensity to mental illness are related to income; self-perception of alcohol consumption and body-image, and student satisfaction (work carried out in collaboration with Alex Wood). I will also describe some agent-based simulations that show how rank-based social comparison can lead to herd behaviour in interconnected networks of status-conscious agents. |

| | |
|---|---|
| **Speaker's Name:** | Tom Busey |
| **First Author's Name:** | Tom Busey |
| **First Author's Affiliation:** | Indiana University |
| **Title:** | Machine Learning Approaches to the Information Content of Latent Fingerprints |
| **Abstract:** | Latent print examiners have the difficult task of matching noisy, distorted latent prints collected at crime scenes to inked prints taken from suspects. Although practiced for more than 100 years, latent print examinations have few standards for training and reliability. Recent criticism from the National Academies has prompted a reevaluation of the accuracy and methods of these examinations. In this talk I will discuss the nature of expertise as inferred from eye gaze data, and use machine learning approaches to infer the basis or feature set used by experts. This feature set has applications for approaches that seek to quantify the amount of information in latent prints, and therefore their utility for law enforcement and the judicial system. |

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| | |
|---|---|
| **Speaker's Name:** | Allison Chapman |
| **First Author's Name:** | Allison Chapman |
| **First Author's Affiliation:** | The Ohio State University |
| **Second Author's Name:** | Simon Dennis |
| **Second Author's Affiliation:** | The Ohio State University |
| **Title:** | The Null List Length Effect in a Sternberg Paradigm |
| **Abstract:** | |

Debate continues regarding the extent to which contextual and item-related noise contribute to interference in recognition memory. A number of recent studies (Dennis & Humphreys, 2001; Dennis, Lee, & Kinnell, 2008) demonstrate that experimental constraints such as a retention interval nullify the list length effect. These findings suggest that pure-exemplar models must be augmented to account for categorical representation of study items (Dennis & Chapman, under revision). Sternberg (1966) demonstrated a positive linear relationship between number of items at study and reaction time in a recognition test. The aim of the current research is to apply a retention interval to the Sternberg paradigm to explore our list length findings in a short-term task. The results from experiment 1 demonstrate that although there are no strong recency effects, longer list length increases reaction times in both immediate and delayed conditions. Experiment 2 implements feedback during the distractor task to examine the assumption that the filler was ineffective. Preliminary results from experiment 2 demonstrate a null effect of length in the delayed condition. These findings suggest that a retention interval, when filled with an engaging task, is sufficient to induce contextual reinstatement. Final conclusions will be drawn regarding the relative involvement of item and context noise across short and long term memory.

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| **Speaker's Name:** | Eliana Colunga |
| **First Author's Name:** | Eliana Colunga |
| **First Author's Affiliation:** | University of Colorado, Boulder |
| **Title:** | Understanding word learning in early- and late-talkers |
| **Abstract:** | |

In typical development, word learning goes from slow and laborious to seemingly rapid and effortless. Typically developing 3-year-olds are so skilled at learning noun categories that they seem to intuit the whole range of things in the category from hearing a single instance named, for example, consistently extending the name of a novel solid object to others of the same shape regardless of color, material, texture. Unlike typically developing children, late talkers (children below the 15th-20th percentile on productive vocabulary) do not consistently extend new names for objects by shape, and in fact some of them show a consistent preference for texture. In this talk I will discuss the developmental interplay between these two things: vocabulary and novel noun generalizations. I will present data from early-and late-talker toddlers showing different patterns of generalizations for novel words and simulations showing how these different patterns of generalization can emerge from differently structured vocabularies.

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| **Speaker's Name:** | Rosie Cowell |
| **First Author's Name:** | Rosie Cowell |

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| **First Author's Affiliation:** | University of California, San Diego |
| **Second Author's Name:** | David Huber |
| **Second Author's Affiliation:** | University of California, San Diego |
| **Third Author's Name:** | John Serences |
| **Third Author's Affiliation:** | University of California, San Diego |

**Title:** Virtual Multi-Unit Recording: Inferring neural response profiles from fMRI data

**Abstract:** Functional Magnetic Resonance Imaging (fMRI) is the premier non-invasive experimental technique for localizing brain responses in humans, but its spatial resolution is poor relative to in vivo electrophysiological recording of single neuron responses. We propose an analytic tool that may greatly increase the utility of fMRI, by enabling us to 'look inside' the fMRI voxel. Voxels in visual cortex exhibit fMRI responses that are selective for the orientation of a visual stimulus, similar to orientation-selective tuning functions observed for single neurons. We assume that voxel tuning functions (VTFs) arise from some underlying population of neurons that are characterized by a set of neural tuning functions (NTFs). Manipulation of a scanned subject's cognitive state (e.g., viewing a visual stimulus with or without selective attention) can induce a change in the shape of a VTF via modulation of the underlying NTFs. However, there are several plausible mechanisms of changes at the neural level that can produce seemingly equivalent changes in the VTF. This is because the voxel is composed of different subpopulations of neurons, each with their own response function, but the distribution of these subpopulations is unknown. Distinguishing between alternative models of neural modulation by examining only changes in the BOLD signal is thus an inverse problem in which voxel activations must be mapped back to neural activations. We present feasibility studies for a technique to solve this inverse problem, employing model fitting and model recovery to determine the quantity of fMRI data required to distinguish between alternative models of neuromodulation.

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| **Speaker's Name:** | Greg Cox |
| **First Author's Name:** | Greg Cox |
| **First Author's Affiliation:** | Indiana University |
| **Second Author's Name:** | Richard Shiffrin |
| **Second Author's Affiliation:** | Indiana University |

**Title:** On the Formation of Associative Structure in Knowledge

**Abstract:** Extending the thesis research of Angela Nelson (2009), we seek to bring the structure of knowledge under experimental control, with the aim of investigating how associations are formed, represented, and used by memory. Participants with no prior knowledge of Chinese are trained over several weeks to match Chinese characters to themselves, trying to detect slight physical changes. Although it is incidental to the change-detection task, each training trial presents a pair of characters, permitting incidental associations between characters to form. The pairs are drawn from a set of associative structures, including linear chains of varying length (e.g., A-B-C-D-E) and binary trees. The nature of any associations that may have formed between characters as a result of training is probed with a primed pseudo-lexical

decision task, as well as perceptual discrimination and episodic recognition tasks. In primed pseudo-lexical decision (PPLD), a non-diagnostic prime character is presented prior to a target character, requiring a decision whether the target character had appeared during training. Although paired and unpaired characters are equally discriminable, priming is observed in PPLD when the target character was paired with the prime during training (A-B), and inhibition is observed for other trained prime characters, particularly when the prime is one-removed from the target (A-C). These results suggest that although direct associations can form under these highly-constrained conditions, indirect associations do not, or require different tasks to be evident.

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| **Speaker's Name:** | Amy Criss |
| **First Author's Name:** | William Aue |
| **First Author's Affiliation:** | Syracuse University |
| **Second Author's Name:** | Amy Criss |
| **Second Author's Affiliation:** | Syracuse University |
| **Third Author's Name:** | Nicholas Fischetti |
| **Third Author's Affiliation:** | Syracuse University |

**Title:** Item repetition within (but not across) pair type helps and harms cued recall

**Abstract:**

The impact of item and associative information on memory was investigated in four experiments. Employing a list discrimination paradigm, items that were presented in one pair-type in an initial study list were rearranged to create new pairs of either the same or different pair-type in a second study list. Repeating items in the same pair-type across lists lead to a greater number of correct and incorrect responses when participants were tested using cued recall. When items were presented in different pair-types across lists the effect was eliminated. Likewise, when the test did not require associative information (i.e., single item recognition) there was no difference between same/different pair-type conditions. The results of these data suggest that information specific to the pair-type (i.e., associative information) is stored and utilized strategically during memory searches.

**D**

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| **Speaker's Name:** | Eddy Davelaar |
| **First Author's Name:** | Eddy Davelaar |
| **First Author's Affiliation:** | Birkbeck, University of London |

**Title:** Modelling semantic fluency

**Abstract:**

Semantic fluency is a test in which participants report as many exemplars of a given category within a fixed time limit (1 or 2 minutes). This simple task has attracted much attention in the neuropsychological literature in the early 1990s for its use in determining the structure of semantic memory. Various concerns about the statistical procedure to achieve this have been voiced. Concerns relate to statistical reliability, sensitivity to other processes impacting on the order in which items are reported, and simply the lack of validation studies. In this talk, I will show how the commonly accepted interpretation of the performance is incorrect by means of computer simulation. A SAM model of semantic

fluency is gradually build up, showing at each step the difficulties with capturing performance in this task. This process is paralleled by a series of experiments and norming studies to obtain the relevant data sets necessary. The main conclusion of this project so far is that in order to simulate semantic fluency, the model needs to have a very rich repertoire of retrieval mechanisms. These results have dramatic implications for models of free recall that assume contextual retrieval. In addition, model suggests a way forward beyond the debates on the valid use of semantic fluency in screening for dementia.

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| Speaker's Name: | Simon Dennis |
| First Author's Name: | Simon Dennis |
| First Author's Affiliation: | Ohio State |
| Title: | What do cows drink? |
| Abstract: | Lower level language tasks like spoken and written word identification are often modeled using relatively simple associative models. As one moves up the scale to sentence processing, however, more complicated representations such as trees and propositional units are often invoked. In this talk, I will make the case that this is unnecessary - that hierarchical phrase structure and propositional knowledge can be captured by the right kind of simple associative model. Furthermore, an associative model can be easily trained from unannotated input and accounts for data in recognition priming and cued recall tasks that are not easily accommodated under other representational schemes. |

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| Speaker's Name: | Stephen Denton |
| First Author's Name: | Stephen Denton |
| First Author's Affiliation: | Indiana University |
| Second Author's Name: | Richard Shiffrin |
| Second Author's Affiliation: | Indiana University |
| Title: | Short-term Word Priming Across Eye Movements |
| Abstract: | The authors conducted short-term priming experiments (using a visual, forced-choice, word identification task) that compared a standard priming condition, where prime and target words appeared in the same spatial location, with an experimental condition in which prime and target words were separated enough to necessitate an eye movement. Prime presentation duration was manipulated and, in both eye movement conditions, short primes produced a preference to choose a prime alternative, whereas, for longer duration primes this preference was absent. Based on modeling results, it is argued that prime and target features from separate fixations are still confusable and that evidence regarding prime features must still be discounted. |

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| Speaker's Name: | Christopher Donkin |
| First Author's Name: | Christopher Donkin |
| First Author's Affiliation: | Indiana University |
| Second Author's Name: | Denis Cousineau |
| Second Author's Affiliation: | University of Montreal |
| Third Author's Name: | Richard Shiffrin |
| Third Author's Affiliation: | Indiana University |

**Title:** Guided Visual Search

**Abstract:** Cousineau and Shiffrin (2004) presented a model for the control conditions of a visual search study. Multiple modes were observed for target present trials and the model posited serial terminating comparisons, partially and probabilistically guided to the target location by a separate parallel automatic process. We expand and extend this model to the experimental conditions in which the visual display objects are presented successively, at speeds fast enough that the displays appear simultaneous. These successive display conditions place strong constraints on models, and allow us to develop a quite precise account for parallel and serial processes operating together in visual search.

**Speaker's Name:** Barbara Anne Dosher

**First Author's Name:** Barbara Anne Dosher

**First Author's Affiliation:** Memory, Attention, Perception Lab (MAP-Lab), Department of Cognitive Sciences, University of California, Irvine, CA

**Second Author's Name:** Wilson Chu

**Second Author's Affiliation:** Memory, Attention, Perception Lab (MAP-Lab), Department of Cognitive Sciences, University of California, Irvine, CA

**Third Author's Name:** Zhong-Lin Lu

**Third Author's Affiliation:** Laboratory of Brain Processes (LOBES), Departments of Psychology, University of Southern California, Los Angeles, CA

**Title:** How attention interacts with precision of judgment.

**Abstract:** Focused attention, whether spatially cued or object attention, improves visual identification, especially in the presence of visual noise in the stimulus. Spatial cues and division of attention over objects both show larger effects on discrimination accuracy for judgments of somewhat higher precision. At the same time, the precision of stimulus representations available for immediate report can be assessed for the same attention paradigms using immediate report methods similar to those recently used to study visual working memory. One example of variation in judgment precision requires distinguishing between patterns differing in orientation by larger or smaller angles. In a related analysis, precision of an immediate report representation may be assessed. There are distinct but inter-related effects on perception and its interaction with attention and representational or test precision across a range of testing conditions. Perceptual models that integrate precision into the perceptual decision reveal important effects in the impact of attention on performance.

**E**

**Speaker's Name:** Samantha Emerson

**First Author's Name:** Samantha Emerson

**First Author's Affiliation:** Middle Tennessee State University

**Second Author's Name:** Cyrille Magne

**Second Author's Affiliation:** N/A

**Title:** Learning New Rhythms: The Relationship between Music Aptitude and Second Language Proficiency

**Abstract:** Research indicates a close link between the neural and cognitive processes involved in both music and language. In

fact, music aptitude has been correlated to language skills and musical expertise has been shown to improve the perception of certain aspects of language such as pitch and rhythm. However, little research has been done on the relationship between music aptitude and the learning of a second language (L2). The purpose of the present study was to extend research on the effect of music aptitude on L2 proficiency by investigating the perception of speech rhythm using both behavioral and Event-Related Potential (ERP) measures. English speaking learners of French with either high music aptitudes (HMA) or low music aptitudes (LMA) listened to spoken French sentences ending with a trisyllabic noun that was either rhythmically congruous or incongruous. ERPs time-locked to the onset of these critical words were recorded and the results were compared between the two groups. In comparison to the LMA group, HMA group exhibited an N400-like component in response to the semantically incongruous words which was interpreted as reflecting the difficulty of integrating the word into the context of the sentence. The HMA group also displayed a late positivity in response to the rhythmically incongruous words reflecting an increased sensitivity to the rhythmic structure of French. The practical implications of these results pertaining to extracurricular music programs and L2 learning are discussed.

## G

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| **Speaker's Name:** | Tarun Gangwani |
| **First Author's Name:** | Tarun Gangwani |
| **First Author's Affiliation:** | Indiana University |
| **Second Author's Name:** | George Kachergis |
| **Second Author's Affiliation:** | Indiana University |
| **Third Author's Name:** | Chen Yu |
| **Third Author's Affiliation:** | Indiana University |

**Title:** Simultaneous Cross-situational Learning of Category and Object Names

**Abstract:** Previous research shows that people can acquire an impressive number of word-referent pairs after viewing a series of ambiguous trials by accumulating co- occurrence statistics (e.g., Yu & Smith, 2007). The present study extends the cross-situational word learning paradigm, which has primarily been used to investigate the acquisition of 1-to-1 word-referent mappings, and shows that humans can concurrently acquire both 1-to-1 and 1-to-many mappings (i.e., a category relation), even when the many referents of a single word have no unifying perceptual features. Thus, humans demonstrate an impressive ability to simultaneously apprehend hierarchical regularities in their environment.

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| **Speaker's Name:** | Steven Gibson |
| **First Author's Name:** | Steven Gibson |
| **First Author's Affiliation:** | California State University - Northridge |

**Title:** Modeling building blocks for language production and processing

**Abstract:** This paper describes the design and implementation of software that models an aspect of language use. This software

postulates that human linguistic activities can be treated as modules that can be assembled and joined together. This model represents activity of modules in the production of language behaviors. The model asserts these modules interpret sensory data and respond with language behaviors. This paper seeks to offer a unified model to explain language production and processing. The software demonstates elements that are added and fulfill language needs. The model also expresses the coexistence of multiple modules that will interact and support each other. While this model does not offer a complete solution to all language use, it presents indications that language processing can be modeled computationally. Future work will be suggested to build on the model.

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| Speaker's Name: | Robert Goldstone |
| First Author's Name: | Robert Goldstone |
| First Author's Affiliation: | Indiana University |
| Second Author's Name: | David Landy |
| Second Author's Affiliation: | University of Richmond |
| Third Author's Name: | Ji Son |
| Third Author's Affiliation: | California State University - Los Angeles |
| Title: | The Education of Perception |

**Abstract:** While the field of perceptual learning has mostly been concerned with low- to middle-level changes to perceptual systems due to experience, we consider high-level perceptual changes that accompany learning in algebraic reasoning. We find that proficiency in mathematics involves executing spatially explicit transformations to notational elements. People learn to attend mathematical operations in the order in which they should be executed, and the extent to which students employ their perceptual attention in this manner is positively correlated with their mathematical experience. Relatively sophisticated performance is achieved not by ignoring perceptual features in favor of deep conceptual features, but rather by adapting perceptual processing so as to conform with and support formally sanctioned responses. These �Rigged Up Perceptual Systems� (RUPS) offer a promising approach to educational reform.

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| Speaker's Name: | Reyna Gordon |
| First Author's Name: | Reyna Gordon |
| First Author's Affiliation: | Center for Complex Systems and Brain Sciences, Florida Atlantic University |
| Second Author's Name: | Cyrille Magne |
| Second Author's Affiliation: | Psychology Department, Middle Tennessee State University |
| Third Author's Name: | Edward Large |
| Third Author's Affiliation: | Center for Complex Systems and Brain Sciences, Florida Atlantic University |
| Title: | The influence of metrical alignment on the perception of song lyrics |

**Abstract:** Language and music each have their own metrical structures, but in song these rhythmic patterns are unified to form one prosodic realization. The present study was designed to explore the idea that well-aligned textsettings, in which the strong syllables occur on strong beats, capture listeners�

attention and help them to better understand song lyrics. EEG was recorded while participants listened to well-aligned and misaligned sung sentences and performed a lexical decision task on subsequently presented visual targets. Results showed that induced beta and evoked gamma synchronization were modulated differently for well-aligned and misaligned syllables, and that task performance was adversely affected when visual targets followed misaligned sentences. These findings suggest that alignment of linguistic stress and musical meter in song enhance beat tracking and linguistic segmentation by entraining periodic neural oscillations to the stimulus.

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| **Speaker's Name:** | Tom Griffiths |
| **First Author's Name:** | Tom Griffiths |
| **First Author's Affiliation:** | University of California, Berkeley |
| **Title:** | Effects of inductive biases on the creation of communication systems |

**Abstract:**

Accounts of language evolution have tended to focus on two kinds of forces that can change the structure of a language: cultural transmission, and the goal of producing a shared communication system. Both of these forces rely on learning, as people need to infer the structure of a language from the utterances of other people in both cases. However, the effects of inductive biases - those factors that make some languages easier to learn than others - have only been explored in the context of cultural transmission. I will present a mathematical analysis of a simple model of the creation of a communication system by Bayesian agents, and describe the results of two experiments testing the predictions of this model in the laboratory with human learners. Both model and data suggest that inductive biases can have a strong influence on the creation of communication systems.

## H

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| **Speaker's Name:** | Kameko Halfmann |
| **First Author's Name:** | Kameko Halfmann |
| **First Author's Affiliation:** | St. Olaf College |
| **Second Author's Name:** | Clark Ohnesorge |
| **Second Author's Affiliation:** | St. Olaf College |
| **Title:** | The effect of the manipulation of emotion on the perceptual representation of space |

**Abstract:**

Emotion plays an adaptive role in mediating our attentional resources by filtering sensory information, providing meaning to situations, and selectively guiding information already available to the system prior to the allocation of focal attention. The relative activation hypothesis states that positive/approach and negative/withdrawal emotions are neuroanatomically dissociable. Positive/approach emotions are associated with relatively greater activity in the left frontal hemisphere than the right frontal hemisphere, whereas negative/withdrawal emotions are associated with relatively greater activity in the right frontal hemisphere than the left frontal hemisphere (Davidson, 1992). Right pseudoneglect is an attentional phenomenon resulting from the dominance of the right hemisphere in visuo-spatial attention. Phenomenologically it yields a pronounced

leftward bias in the traditional line bisection task (McCourt & Olafson, 1997). This experiment employs a mood induction procedure to elicit emotions prior to the completion of a standard pen and paper line bisection task to study the effect of the relative activation of the frontal hemispheres due to emotion condition on visual attention. The results suggest that the manipulation of frontal activation alters the perceptual representation of space.

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**Speaker's Name:** Pernille Hemmer

**First Author's Name:** Pernille Hemmer

**First Author's Affiliation:** University of California, Irvine

**Second Author's Name:** Mark Steyvers

**Second Author's Affiliation:** University of California, Irvine

**Title:** Estimating Individual Differences in a Rational Model of Memory

**Abstract:** In recalling the size of fruits and vegetables, the height of people, objects in scenes and the order of events, people appear to use a strategy of incorporating prior knowledge to improve average recall performance. This behavior can be explained by a rational model of memory that assumes that people seek to optimize recall performance by combining the available episodic and semantic information. It is however, unclear whether people always perform rationally within a given recall task. In the current approach we seek to extend our previous work using a rational model of memory that allows for individual differences. We develop this approach within the framework of an empirical study in which people recall the height of females, males and ambiguous silhouettes. We assume that individuals can have varying levels of internal noise in memory as well as different levels of prior knowledge about the height of men and women. Individual differences are estimated using a Bayesian data analysis applied to the rational model. This approach therefore combines two kinds of Bayesian analysis. The Bayesian inference procedure from the perspective of the participant motivates a simple rational model of memory. The Bayesian inference procedure from the perspective of the experimenter allows individual differences within the rational model to be estimated.

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**Speaker's Name:** Douglas Hintzman

**First Author's Name:** Douglas Hintzman

**First Author's Affiliation:** University of Oregon

**Title:** Fads and Fallacies of Memory

**Abstract:** For the past three decades, research and theory on human memory have been dominated by a focus on the recognition-memory task. I argue that this focus has been bad for the field. It perpetuates misconceptions about how memory works, and ignores many basic functions that memory serves. To achieve a real understanding of memory, theorists will have to cast a much wider net. They need to consider a variety of laboratory tasks, observations from the study of everyday memory, and even the phenomenological perspective on what remembering is like.

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**Speaker's Name:** Markus J. Hofmann

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| **Add. Speaker's Name:** | Lars Kuchinke |
| **First Author's Name:** | Markus J. Hofmann |
| **First Author's Affiliation:** | Free University Berlin |
| **Second Author's Name:** | Lars Kuchinke |
| **Second Author's Affiliation:** | Free University Berlin |
| **Third Author's Name:** | Sascha Tamm |
| **Third Author's Affiliation:** | Free University Berlin |
| **Fourth Author's Name:** | Chris Biemann |
| **Fourth Author's Affiliation:** | University Leipzig |
| **Fifth Author's Name:** | Arthur M. Jacobs |
| **Fifth Author's Affiliation:** | Free University Berlin |

**Title:** The Associative Read-Out Model predicts recognition memory performance

**Abstract:** The present study extended the Multiple Read-Out Model (Grainger & Jacobs, 1996) by an associative layer, and tested the predictions of this Associative Read-Out Model (AROM) during recognition memory. Associative relations between words were implemented in terms of co-occurrence statistics. The AROM predicts not only false memory effects, but also successful learning to profit a great deal from associative relations. Words with many associatively linked items in the stimulus set reveal more OLD responses in NEW and OLD stimuli than words with a lower associative density. Moreover it correctly predicts the standard OLD/NEW effect. These predictions were examined in a study-test task in which 30 participants rated their recognition performance on a 6-point confidence scale from �sure NEW� to �sure OLD�. The AROM was shown to successfully account for item-level variances of OLD-response probabilities as well as Receiver Operation Characteristics.

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| **Speaker's Name:** | Jared Hotaling |
| **First Author's Name:** | Jared Hotaling |
| **First Author's Affiliation:** | Indiana University |
| **Second Author's Name:** | Andrew Cohen |
| **Second Author's Affiliation:** | University of Massachusetts |
| **Third Author's Name:** | Jerome Busemeyer |
| **Third Author's Affiliation:** | Indiana University |
| **Fourth Author's Name:** | Richard Shiffrin |
| **Fourth Author's Affiliation:** | Indiana University |

**Title:** Models of Information Integration in Perceptual Decision Making

**Abstract:** In cognitive science there is a seeming paradox: On the one hand researchers studying judgment and decision making (JDM) have repeatedly shown that people employ simple and often sub-optimal strategies when integrating information from multiple sources. On the other hand another set of researchers has had great success using Bayesian optimal models to explain information integration in fields such as categorization, perception, and memory. One impediment to reconciling this paradox lies in the different experimental methods each group has used. Recently, Hotaling, Cohen, Busemeyer, & Shiffrin (submitted) conducted a perceptual decision making study designed to bridge this methodological divide and test whether the sub-optimal

integration found in verbal problems stated in terms of probabilities may also appear in perceptual tasks. Their results indicate that a classic JDM finding, the dilution effect, does arise in perceptual decision making. Observers were given strong evidence X favoring A over B, and weak evidence Y also favoring A over B. According to Bayesian analysis, the odds in favor of A should be multiplied, resulting in an increased likelihood of A. Instead, Hotaling et al. found that the weak evidence diluted the strong evidence, producing decreased judgments and choice probabilities favoring A, given X & Y, than given X alone. I review these empirical findings and test both rational and cognitive models of the integration process.

**Speaker's Name:** David Huber
**First Author's Name:** Nitin Gupta
**First Author's Affiliation:** University of California, San Diego
**Second Author's Name:** Sara Mednick
**Second Author's Affiliation:** University of California, San Diego
**Third Author's Name:** Yoonhee Jang
**Third Author's Affiliation:** University of California, San Diego
**Fourth Author's Name:** David Huber
**Fourth Author's Affiliation:** University of California, San Diego
**Title:** The road not taken: Performance on the Remote Associates Test is best when word frequency is ignored

**Abstract:** The Remote Associates Test (the RAT) has been used for nearly 40 years as a reliable measure of creativity. Each test question in the RAT consists of three cue words all of which associate to or from a common answer and creativity is measured by the proportion of questions answered correctly. In 1962, Sarnoff Mednick proposed that good performance on the RAT occurs when people use a �flat associative hierarchy� in which remote associations are considered rather than only considering strong associations. However, there are currently no theories that explain why people differ in their associative hierarchy. To provide the data needed to model the RAT, we normed 48 questions across hundreds of participants. We did so with speeded forced response instructions to induce many wrong answers. The model we developed explains both correct and wrong answers as neighbors within a high dimensional semantic space based on the positioning of the three cue words. This computational model performs well on the RAT and it explains individual differences in terms of the degree to which word frequency biases some answers over others. Thus, a flat associate hierarchy is one in which frequency plays no role.

**J**

**Speaker's Name:** Kimberly A. Jameson
**First Author's Name:** Kimberly A. Jameson
**First Author's Affiliation:** Institute for Mathematical Behavioral Sciences, U.C. Irvine
**Title:** Human potential for tetrachromacy?

**Abstract:** Scientific advances over the past twenty years have led to a far better understanding of the relevance and physiological basis of color experience than ever before. Recent research in molecular genetics, color perception and cognitive

psychology is clarifying the underpinnings of human color sensations, how color experience has evolved, and along which perceptual paths we might be headed as a species of color-experiencing individuals. Together, such advances suggest that extensions of color perception theory are needed to account for retinal photopigment diversity unanticipated by accepted models of color vision trichromacy. This paper summarizes relevant empirical and theoretical research on this subject from current human and animal literatures.

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| **Speaker's Name:** | Matt Jones |
| **First Author's Name:** | Matt Jones |
| **First Author's Affiliation:** | University of Colorado |
| **Second Author's Name:** | Darrell Worthy |
| **Second Author's Affiliation:** | University of Texas |
| **Third Author's Name:** | Shaw Ketels |
| **Third Author's Affiliation:** | University of Colorado |
| **Fourth Author's Name:** | Ross Otto |
| **Fourth Author's Affiliation:** | University of Texas |
| **Title:** | The phenomenology of multiple learning systems |

**Abstract:** A primary defining criterion in dual-system theories of learning is whether the representations being learned are verbalizable. Thus a natural prediction is that verbal report should be accurate as to which system is controlling behavior. That is, subjects should be able to correctly report whether they are using explicit, verbalizable hypotheses or implicit, procedural associations. This prediction was tested using categorization tasks and model-based analyses that reliably identify which learning system is operating for each subject. Results show no correlation between self-perceived rule use and actual rule use. However, self-report is correlated with performance, with higher-performing subjects more likely to believe they used rules. Although these findings can be taken as an argument against multiple-system theories, they can also be interpreted in terms of limitations on metacognition, wherein cognitive self-perception operates via "third-person" inference, much as in classical theories of affective self-perception.

**K**

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| **Speaker's Name:** | George Kachergis |
| **First Author's Name:** | George Kachergis |
| **First Author's Affiliation:** | Indiana University |
| **Second Author's Name:** | Chen Yu |
| **Second Author's Affiliation:** | Indiana University |
| **Third Author's Name:** | Richard Shiffrin |
| **Third Author's Affiliation:** | Indiana University |
| **Title:** | Modeling Cross-situational Learning of Word-Referent Mappings |

**Abstract:** Several studies have found that adults can acquire word-referent pairings after experiencing a series of individually-ambiguous trials (i.e., trials containing multiple words and referents). To disambiguate pairings -- which many learners do with great success -- word-referent co-occurrences must be integrated across trials. We discuss a variety of factors that

have empirically been found to affect learning performance, such as pair frequency, pairs per trial, temporal contiguity, and contextual diversity (how many pairs a given pair appears with during training). Using this data, a variety of associative models were constructed, implementing diverse attention, memory, and inference mechanisms. We find that some surprising empirical results (e.g., a null frequency effect when pairs of different frequency co-occur) can be explained by shifting attention and limited memory. Finally, we demonstrate that although learners do assume mutually exclusive pairings in some situations (to their great advantage), they can also relax this assumption and learn more complex mappings.

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| **Speaker's Name:** | Mike Kalish |
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| **First Author's Affiliation:** | University of Louisiana at Lafayette |
| **Second Author's Name:** | Ben Newell |
| **Second Author's Affiliation:** | UNSW |
| **Third Author's Name:** | John Dunn |
| **Third Author's Affiliation:** | University of Adelaide |
| **Title:** | Multiple systems in categorization |
| **Abstract:** | Cognitive science aims to study how people�s cognitive capacities work. Categorization appears to be one such capacity but, like other high-level capacities (memory, perception, etc.), it is not clear if categorization should be considered as one capacity or many. In particular, the issue arises in the context of the analysis of category learning �systems�. I will suggest that there are two distinct questions raised by this analysis, one having to do with the nature of category learning as a capacity, and the other with the nature of the brain structures that provide the mechanism upon which the capacity rests. I have nothing to say about the latter question. The former question needs clarification, and I will restrict my attention to the subset of category learning problems commonly identified as �perceptual�. A series of recent experimental results support the view that perceptual category learning is a single cognitive �system�. |

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| **Speaker's Name:** | Shaw Ketels |
| **First Author's Name:** | Shaw Ketels |
| **First Author's Affiliation:** | University of Colorado at Boulder |
| **Second Author's Name:** | Matt Jones |
| **Second Author's Affiliation:** | University of Colorado at Boulder |
| **Title:** | Language is not always helpful: Labels do not facilitate the learning of information-integration category structures |
| **Abstract:** | Recent research has shown that verbal labels can facilitate learning of new categories (Lupyan, Rakison, & McClelland, 2007). This project investigates whether the advantage of verbal labels is universal, or whether it is specific to certain types of category representations. A growing body of evidence suggests that there are at least two category-learning systems, one that uses a declarative, rule-based approach and another that uses a procedural approach (e.g., Ashby & Maddox, 2005). The rule system tends to drive learning of rule-based (RB) category structures that admit verbal |

description, whereas the procedural system tends to drive learning of nonverbalizable information-integration (II) category structures. Numerous dissociations between the two systems have been reported, which show rule-based learning is symbolically or verbally mediated, whereas procedural learning is more perceptually grounded and directly tied to the specific experimental context (i.e., hand or key of response). This distinction suggests that the procedural system may not be able to take advantage of verbal labels during learning in the same way that the rule system can. We tested this hypothesis in a simple category-learning experiment that crossed two category structures (one RB and one II) with two types of response. Half the subjects responded with verbal labels for the categories (i.e., species of fish), whereas the other half responded with actions to be performed on the stimuli (i.e., ways to cook them). Our results reveal an interaction, such that learning was better with verbal labels for the RB structure but not for the II structure. This finding suggests that the benefit of verbal labels in category learning is limited to the rule-based system.

**Speaker's Name:** Eileen Kowler

**First Author's Name:** Eileen Kowler

**First Author's Affiliation:** Rutgers University

**Title:** The management of time in saccadic decisions

**Abstract:**

There has been a lot of attention paid to studying where people look when scanning pictures, or performing various natural tasks, but almost no attention devoted to understanding the temporal properties of the saccadic eye movement patterns, even though time is crucial for making accurate perceptual decisions. I will describe several results that show a pronounced preference to minimize fixation (inter-saccadic) pause time in favor of a strategy of maintaining a rapid rate of scanning. The examples will be taken from studies of: (1) �center of gravity� saccades; (2) saccades during visual search; (3) saccades during counting; and (4) saccades during reading. The strategy of maintaining a rapid rate of scanning is compatible with two fundamental characteristics of the saccadic system. One allows concurrent (parallel) planning of multiple saccades, thus facilitating rapid generation of secondary �corrective� saccadic eye movements in the event that a hastily planned saccade lands at a useless location. The other is a recently-discovered effect of stimulus context on fixation durations, such that decisions about how long to dwell in a given location are made according to the predicted (rather than actual) difficulty of the visual judgment (Wilder, Aitkin, Schnitzer, Kowler, 2010). Taken together, these findings show that the saccadic system has built-in biases to explore the visual environment, devoting minimal resources to careful planning, and instead preferring the use of corrective saccades and re-visits to previously seen locations when needed.

**Speaker's Name:** Jake Kurczek

**First Author's Name:** Jake Kurczek

**First Author's Affiliation:** University of Iowa

**Second Author's Name:** Clark Ohnesorge

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| **Second Author's Affiliation:** | St. Olaf College |
| **Title:** | Evaluating the Impact of Spatial Frequencies on the Perception of Gender |

**Abstract:** Previous studies have suggested that gender categorization of human faces may take place in high level processing areas. We examined how lower level processing, such as spatial frequency adaptation (which takes place in lower areas of the visual cortex) affects the perception of gender. It has been shown that male and female faces are generally composed of greater levels of lower and higher spatial frequencies respectively. In adaptation aftereffect studies, it is known that a person adapted to a spatial frequency will tend to judge novel frequencies in the direction opposite of that to which they were adapted. Thus, if a person is adapted to a certain spatial frequency and then asked to judge a gender neutral picture, we assumed that their responses would be shifted in the opposite direction (high frequencies producing a shift in the male direction and low frequencies to the female direction). In the present study, subjects were randomly adapted to five different spatial frequencies and asked to judge 10 gender morph series (five Caucasian series and five Asian series) which varied from 100% male to 100% female in 25% steps. Our results showed that perception of gender could be shifted in the masculine direction by high spatial frequencies, but adaptation to low frequencies did not result in a similar shift toward feminine.

**L**

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| **Speaker's Name:** | Soo-Young Lee |
| **First Author's Name:** | Jung-Hui Im |
| **First Author's Affiliation:** | KAIST |
| **Second Author's Name:** | Soo-Young Lee |
| **Second Author's Affiliation:** | KAIST |
| **Title:** | Top-Down Attention for the Integration of Audio-Visual Perception in Lip Reading |

**Abstract:** Speech is inherently bimodal, relying on cues from the acoustic and visual speech modalities for perception. The McGurk effect demonstrates that when humans are presented with conflicting acoustic and visual stimuli, the perceived sound may not exist in either modality. This effect has formed the basis for modeling the complementary nature of acoustic and visual speech by encapsulating them into the relatively new research field of audio-visual speech processing (AVSR). A top-down selective attention model had been proposed for isolated word recognition in noisy environments and sequential recognition of superimposed patterns. In this paper we further extend the top-down attention model to integrate audio and visual information. The model successfully explains the McGurk effects and results in much better performance for noisy speech recognition.

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| **Speaker's Name:** | Tania Lombrozo |
| **First Author's Name:** | Tania Lombrozo |
| **First Author's Affiliation:** | Department of Psychology, UC Berkeley |
| **Title:** | Causal-explanatory pluralism |
| **Abstract:** | Both philosophers and psychologists have argued for the |

existence of distinct kinds of explanations, including teleological explanations that cite functions or goals, and mechanistic explanations that cite causal mechanisms. For example, a tiger�s stripes can be explained mechanistically by appeal to variation in pigments, or teleologically by appeal to camouflage. Theories of causation, in contrast, have generally been unitary, with dominant theories focusing either on counterfactual dependence or on physical connections. This paper argues that both approaches to causation are psychologically real, with different modes of explanation promoting judgments more or less consistent with each approach. Four experiments isolate the contributions of counterfactual dependence and physical connections in causal ascriptions involving events with people, artifacts, or biological traits, and manipulate whether the events are construed teleologically or mechanistically. The findings suggest that when events are construed teleologically, causal ascriptions are sensitive to counterfactual dependence and relatively insensitive to the presence of physical connections, but when events are construed mechanistically, causal ascriptions are sensitive to both counterfactual dependence and physical connections. These findings reinforce the value of characterizing difference kinds of explanations, and provide a new way of thinking about causal reasoning and representation.

## M

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| **Speaker's Name:** | Don MacKay |
| **First Author's Name:** | Don MacKay |
| **First Author's Affiliation:** | UCLA |
| **Title:** | Relations between Visual Cognition and Memory: Evidence from Amnesic H.M. |

**Abstract:** This talk reports a figure detection experiment comparing visual cognition in amnesic H.M. and memory-normal controls matched for age, background, intelligence, and education. On the hidden-figure task, H.M. exhibited deficits relative to the controls when detecting unfamiliar targets but not when detecting familiar targets, e.g., circles, squares and right-angle triangles. H.M.�s visual cognition deficits were not due to his well-known-problems in explicit learning and recall, inability to comprehend or remember the instructions, general slowness, motoric difficulties, low motivation, low IQ relative to the controls, or working memory limitations. Parallels between H.M.�s selective deficits in visual cognition, language, and memory are discussed. These parallels contradict the standard �systems theory� account of H.M.�s condition but are readily explained under binding theory and the hypothesis that H.M. has difficulty representing unfamiliar but not familiar information in visual cognition, language, and memory.

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| **Speaker's Name:** | Cyrille Magne |
| **First Author's Name:** | Cyrille Magne |
| **First Author's Affiliation:** | Psychology Department, Middle Tennessee State University |
| **Title:** | Exploring the role of metrical expectancy during silent word reading using EEG |

**Abstract:** The present study investigates to what extent metrical

structure in English plays a role in silent word reading. The electroencephalogram (EEG) was recorded while participants were visually presented with lists of five bisyllabic words ending with one word that had either the same or different stress pattern as the previous four words. Results revealed that final words that did not match the stress pattern of the previous words elicited specific electrophysiological responses, thus suggesting that speech rhythm is processed automatically even when reading.

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| **Speaker's Name:** | Shane Mueller |
| **First Author's Name:** | Shane Mueller |
| **First Author's Affiliation:** | Applied Research Associates |
| **Title:** | Exploring the role of consistent belief systems in group opinion dynamics |
| **Abstract:** | |

Much recent research on opinion dynamics has focused on modeling knowledge as a simple (one-dimensional rational) value, while simulating large populations of simple agents to demonstrate hypothesized group-level phenomena. One particular focus of this research has relied on the bounded influence conjecture: an agent can only be influenced by agents whose opinions are sufficiently similar to its own. This assumption makes intuitive sense, because it reflects our perception of political debates in which two opposing sides engage in arguments with one another, but never appear to listen to the opposing beliefs. The bounded influence conjecture has been shown to produce commonly-reported social dynamics effects, such as the formation of stable groups of disagreement. However, it has little direct evidence, and is at odds with cognitive research that suggests people have difficulty discounting and ignoring information. Furthermore, the conjecture effectively builds in as an assumption the effect it intends to produce. I will explore another account of these effects: that they stem from the desire to maintain a consistent system of beliefs. In this framework, extreme opinions will be listened to, and will have a chance to impact the beliefs of an individual, but only if it maintains a coherent set of beliefs. I will report analysis and simulation that shows the conditions in which consistent belief systems (represented as a knowledge space graph) can produce the same types of phenomena as the bounded influence conjecture, and show how it supports new previously unexplored hypotheses about opinion dynamics.

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| **Speaker's Name:** | Bennet Murdock |
| **First Author's Name:** | Bennet Murdock |
| **First Author's Affiliation:** | University of Toronto |
| **Title:** | The Terrace Simultaneous Chaining Paradigm |
| **Abstract:** | |

Herb Terrace has developed a method for getting rhesus monkeys to learn short serial lists which seem to be ordered by position associations not item-to-item or chaining cues. I will report my attempts to develop an application of the TODAM working memory model using position cues rather than chaining to explain how the monkeys might be able to perform this serial learning task succesfully.

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| **Speaker's Name:** | Jay Myung |

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| **First Author's Name:** | Jay Myung |
| **First Author's Affiliation:** | Ohio State University |
| **Second Author's Name:** | Daniel Cavagnaro |
| **Second Author's Affiliation:** | Ohio State University |
| **Third Author's Name:** | Mark Pitt |
| **Third Author's Affiliation:** | Ohio State University |
| **Title:** | Squeezing every ounce of information from an experiment: Adaptive design optimization |
| **Abstract:** | Experimentation is fundamental to the advancement of science, whether one is interested in studying the neuronal basis of a sensory process in cognitive neuroscience or assessing the efficacy of a new drug in clinical trials. Adaptive design optimization, in which the information learned from each experiment is used to inform subsequent experiments, is a particularly attractive methodology because it can potentially reduce the time required for data collection while simultaneously increasing the informativeness of the knowledge learned in the experiment. More concretely, the problem to be solved in adaptive sequential design optimization for model discrimination is to identify an experimental design under which one can infer the underlying model, among a set of candidate models of interest, in the fewest possible steps. In this presentation, addressing the design optimization problem in discrimination of formal models of forgetting, we demonstrate the success of a Bayesian adaptive method in improving design decisions by implementing the method in an experiment with human participants. |

**N**

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| **Speaker's Name:** | Angela Nelson |
| **First Author's Name:** | Angela Nelson |
| **First Author's Affiliation:** | UCSD |
| **Second Author's Name:** | James Fowler |
| **Second Author's Affiliation:** | UCSD |
| **Third Author's Name:** | Derek Ruths |
| **Third Author's Affiliation:** | McGill University |
| **Title:** | Modeling the Contributions of Influence and Homophily in Social Network Dynamics |
| **Abstract:** | Previous research has shown that health behaviors (like obesity) tend to spread through social connections within networks. Traditional analyses of network properties do not distinguish between several possible reasons for this phenomenon. The current project uses a model of network dynamics to study the relative contribution of two possible causal factors in the spread of behaviors through social networks: homophily and influence. We used a modified social space model to simulate networks at varying levels of homophily and influence, and found the proportion of motif types in a network is indeed dependent on these two properties to varying degrees. Further research will use this finding to apply our modeling techniques to an analysis of real world data (for example, the Add Health dataset). |

**O**

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| **Speaker's Name:** | Clark Ohnesorge |

**First Author's Name:** Clark Ohnesorge
**First Author's Affiliation:** St Olaf College
**Second Author's Name:** Seth Greenberg
**Second Author's Affiliation:** Carleton College
**Third Author's Name:** Doug Sylvester
**Third Author's Affiliation:** Carleton College
**Title:** The Cross-Race effect

**Abstract:** The Cross-Race effect refers to the finding that caucasian subjects routinely are faster to identify the skin color of african americans at the same time that they are less able to recognize individual members of that racial group. This finding has been replicated frequently. Theoretical accounts typically rely on an asymmetry between the impact of the presence or absence of definitional features for out-group membership. Interestingly, prior studies have not included a manipulation of familiarity. In two studies we asked caucasian subjects to identify skin color for famous and non-famous african-american and caucasian faces. We find that the speed with which they made the judgment varied with familiarity and far more strongly for african american faces than caucasian. Additionally, the effect was mediated by such parameters as blocked vs random presentation. In a third study we trained subjects to recognize previously unfamiliar images in order to test our proposal that the effect can be understood within the framework of a Stroop-like response competition. The results of these studies converge on an explanation in which both response competition and percepetual fluency play a role.

**Speaker's Name:** Adam Osth
**First Author's Name:** Adam Osth
**First Author's Affiliation:** The Ohio-State University
**Second Author's Name:** Simon Dennis
**Second Author's Affiliation:** The Ohio-State University
**Third Author's Name:** Vladimir Sloutsky
**Third Author's Affiliation:** The Ohio-State University
**Title:** Developmental Changes in Recognition Memory: The Effects of Categorization on Eye Movements

**Abstract:** Dennis and Chapman (under revision) demonstrated in a yes/no recognition memory experiment that increasing the number of exemplars on a list while keeping the number of categories constant led to a decrease in unrelated false alarms and argued that category information may be used to reject non-category probes at test. Additionally, Sloutsky and Fisher (2004) found that when both adults and children categorized at study, only adults exhibited an increase in related false alarms. We argue that if children are less sensitive in using category information at test, they should not experience an advantage in discriminating between study items and unrelated distracters in long lists. While adults did not show an effect in their memory performance in our experiment, they exhibited a significant decrease in their reaction times to unrelated distracters in the long list without decrementing their accuracy. Converging evidence came from an eyetracking experiment, which demonstrated that during unrelated distracter trials adults looked longer at the relevant category feature in the long list while the difference was not

significant for the children. This evidence suggests that adults may be more strategic than children in how they use category information in their judgments during the test phase.

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| **Speaker's Name:** | Stephen Palmer |
| **First Author's Name:** | Stephen Palmer |
| **First Author's Affiliation:** | Psychology Department, UC Berkeley |
| **Second Author's Name:** | Karen Schloss |
| **Second Author's Affiliation:** | Psychology Department, UC Berkeley |
| **Title:** | Human Color Preferences: An Ecological Valence Theory |
| **Abstract:** | |

Color preference is an important aspect of human behavior, but little is known about why people generally like some colors more than others (e.g., blues more than browns). Recent results from the Berkeley Color Project provide detailed measurements of preferences among 32 chromatic colors and enable us to fit several models of color preference, including ones based on cone contrasts, color-emotion associations, color appearance, and Palmer & Schloss's ecological valence theory (EVT). The EVT postulates that color serves an adaptive "steering' function, analogous to taste preferences, that biases organisms toward approaching advantageous objects (e.g., blue sky and water) and avoiding disadvantageous ones (e.g., brown feces and rotting food). It predicts that people will tend to like colors to the extent that they like the objects that are characteristically that color, averaged over all such objects. We tested this prediction by having four different groups of participants (1) rate their preferences for 32 colors, (2) give verbal descriptions of objects of each color, (3) rate their preferences for those object descriptions, and (4) rate the similarity of the objects to the colors. 80% of the variance in average color preference ratings was predicted by the Weighted Affective Valence Estimate (WAVE) derived from measurements 2, 3, and 4, much more variance than any of the other models. If time permits, we will also describe how hue preferences for single colors differ as a function of object-type, gender, expertise, culture, social institutions, and perceptual experience.

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| **Speaker's Name:** | Diane Pecher |
| **First Author's Name:** | Diane Pecher |
| **First Author's Affiliation:** | Erasmus University Rotterdam, The Netherlands |
| **Title:** | Motor affordance and visual working memory |
| **Abstract:** | |

Neuro-imaging studies (e.g., Mecklinger, Gruenewald, Weiskopf, & Doeller, 2004) have indicated that motor affordances play a role in visual working memory for objects. Mecklinger et al. found greater premotor cortex activation when participants remembered manipulable objects (e.g., a picture of a hammer) than when they remembered non-manipulable objects (e.g., a picture of a polar bear), suggesting that motor affordances form an additional component of working memory. If such motor memory indeed is a component of working memory for visual information, one should expect interference from concurrent motor tasks. In particular, motor interference should be found for pictures of manipulable objects but not, or to a lesser degree, for non-manipulable objects. I will present a series of

experiments in which participants held object pictures in working memory while performing concurrent tasks such as articulation of nonsense syllables and hand movements. While concurrent tasks did interfere with working memory performance, in none of the experiments did I find any evidence that concurrent motor tasks affected memory for manipulable objects differently than for non-manipulable objects. I conclude that motor affordance is not used for visual working memory.

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| **Speaker's Name:** | Bill Prinzmetal |
| **First Author's Name:** | Bill Prinzmetal |
| **First Author's Affiliation:** | University of California Berkeley |
| **Second Author's Name:** | Jordan Taylor |
| **Second Author's Affiliation:** | University of California Berkeley |
| **Title:** | What Causes Involuntary Attention, Contingent Capture and Inhibition of Return? |

**Abstract:** We studied involuntary attention with the spatial cueing paradigm. In this paradigm, a noninformative spatial cue, preceding a visual target, is said to �capture� attention such that RTs are faster if the target appears at the cued location than an uncued location. We hypothesized two mechanisms for this cueing effect. The first is a (serial) search mechanism that predicts the cueing effect will be larger the more display locations. The second is a decision mechanism, described by a competitive accumulator model, that predicts the more display locations, the smaller the cueing effect. We found that when there were distractors in the display, the search model predicted performance. However, when there were no distractors in the display, the decision mechanism accounted for performance. We further investigated two effects associated with involuntary attention: contingent capture and inhibition of return (IOR). Contingent capture is the finding that the more similar the cue and target, the greater the cueing effect. IOR is the finding that as the time between the onset of the cue and target increase, the cueing effect reverses so that RT is faster at an uncued location. We found that contingent capture was caused by the search mechanism whereas IOR was caused by the decision mechanism. Furthermore, model fits confirm that IOR can be described in an increase in threshold for targets in the cued location.

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| **Speaker's Name:** | Cory Rieth |
| **First Author's Name:** | Cory Rieth |
| **First Author's Affiliation:** | UCSD |
| **Second Author's Name:** | David Huber |
| **Second Author's Affiliation:** | UCSD |
| **Title:** | Adaptation to the temporal statistics of spatial cueing |

**Abstract:** Spatial cueing experiments find facilitated cueing at short delays (< 150 ms) but deficits at long delays (> 300 ms). These deficits have been termed �Inhibition of Return' (IOR). This is thought to be an automatic process within the attention or oculomotor systems. We consider the hypothesis that this reflects environmental regularity for the appearance of

sought objects: It is likely that the appearance of an object (the cue) signals interesting nearby objects (the target), but if none are found, then it is unlikely another interesting object will appear at that location. To test this hypothesis, we trained participants in a particular environment where the time of target appearance determined its location and then we tested them in environments where all conditions were equally likely. After training that targets would appear on the cued side after a delay, the IOR effect was reversed. In contrast, IOR was enhanced after training that cues would appear on the opposite side after a delay. However, no training effects were observed for cueing at the short SOAs. A subsequent experiment used probabilistic training with only short SOA trials so that cue-based expectations about target location occurred reliably at just one cue-target delay. With this adjustment, we found that training changed the nature of spatial cueing even at short SOAs. These results are compatible with the claim that spatial cueing is a learned behavior that incorporates not only expectation of location but also expectations of time.

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| **Speaker's Name:** | Richard Shiffrin |
| **First Author's Name:** | Angela Nelson |
| **First Author's Affiliation:** | UCSD |
| **Second Author's Name:** | Richard Shiffrin |
| **Second Author's Affiliation:** | Indiana University |
| **Third Author's Name:** | Amy Criss |
| **Third Author's Affiliation:** | Syracuse |
| **Fourth Author's Name:** | Ken Malmberg |
| **Fourth Author's Affiliation:** | University of South Florida |
| **Title:** | Effects of Event Traces and their Frequency in Recognition Memory. |
| **Abstract:** | |

The strong and reliable effect of normative word frequency upon recognition performance does not lead to clear interpretations because word frequency is confounded with every other measure definable for words. Angela Nelson therefore trained novel Chinese characters for two weeks (in two studies), with characters trained to different degrees in the ratios: 1:3:9:27. In study 1 training was in the context of visual search. Because higher frequency characters occurred more often with other higher frequency characters, and because our modeling says a knowledge trace for one character accumulates features from co-occurring characters, we infer that higher frequency characters became more similar to each other. Our initial modeling was able to explain recognition frequency effects on this basis. However study 2 eliminated this effect of character context by training with a task requiring a character to be matched to itself. Similar recognition frequency results were obtained, suggesting another effect of training frequency: The greater number of training session event traces for the higher frequency characters, equivalent to what Dennis and Humphreys called �context noise�. If activation of training session traces produced noise that lowered performance particularly for HF characters, then a six week delay until the recognition study/test should reduce such activation and reduce frequency

effects. This is what we found. D&H proposed that the only traces activated by a word recognition test are traces of the test word, both from the list and past history. (It is unclear whether they would make such a claim for Chinese characters). Criss, Malmberg and I report results from word recognition studies showing large decreases in performance as testing after the list continues. If testing leaves event traces, and if these are activated by a subsequent test of some other word, then we would predict the observed decrease over testing. The studies strongly argue that recognition probes activate many types of event traces, not just those matching the test item.

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| **Speaker's Name:** | Vladimir Sloutsky |
| **Add. Speaker's Name:** | Xin Yao |
| **First Author's Name:** | Vladimir Sloutsky |
| **First Author's Affiliation:** | Ohio State University |
| **Second Author's Name:** | Xin Yao |
| **Second Author's Affiliation:** | Ohio State University |
| **Title:** | Selective Attention and the Development of Categorization |
| **Abstract:** | Although the role of selective attention in categorization tasks is widely acknowledged, the developmental immaturity of selective attention has been often ignored by theories of development of categorization. The current study examined the role of developing visual attention in the development of categorization. In Experiment 1, young children and adults were presented with a match-to-sample task in which perceptual features were in conflict with the matching rule. Eye-tracking data suggested that 3- and 4-year-olds had difficulty inhibiting visual attention to distracters, whereas adults exhibited near-optimal performance. These findings were then used to predict and explain developmental differences in performance on a variety of categorization tasks (Experiments 2-4). |

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| **Speaker's Name:** | George Sperling |
| **First Author's Name:** | George Sperling |
| **First Author's Affiliation:** | Department of Cognitive Sciences University of California, Irvine |
| **Title:** | Towards a theory of the perception of motion direction. Plaids. |
| **Abstract:** | As with most biological processes, the more the visual computation of the perceived direction of a moving visual stimulus has been studied, the more complex it has turned out to be. Studies of the motion of simple sinewave gratings revealed three concurrent motion-analysis sytems (first-, second- and third-order motion systems). Combinations of two moving sinewaves (called plaids) have led to hundreds of publications but not to any defensible theory of plaid motion perception. The three-systems theory of motion-direction percption will be reviewed (with demonstrations). It is shown that, when plaid stimuli are directed exclusively to the first-order motion system (by using only stimuli with very high temporal frequencies), the plaid combination rule is remarkably simple and robust. Parameter-free, a priori predictions of the perceived direction of new plaid stimuli account for 97% of the variance of the data once the |

experiments are actually performed. The perceived motion direction of slower (lower temporal frequency plaids) is shown to consist of two components, first-order plus third-order, with zero contribution from the second-order system. The methods described herein ultimately can yield complete descriptions of the first- and third-order motion systems. *The plaid experiments were carried out by Dantian T. Liu as part of her Ph.D. thesis; the data were recovered and analyzed by Ling Lin. I'm looking for a student or postdoc to continue this line of research.

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| **Speaker's Name:** | Vishnu Sreekumar |
| **First Author's Name:** | Vishnu Sreekumar |
| **First Author's Affiliation:** | Department of Psychology, Ohio State University |
| **Second Author's Name:** | Yuwen Zhuang |
| **Second Author's Affiliation:** | Department of Computer Science and Engineering, Ohio State University |
| **Third Author's Name:** | Simon Dennis |
| **Third Author's Affiliation:** | Department of Psychology, Ohio State University |
| **Fourth Author's Name:** | Mikhail Belkin |
| **Fourth Author's Affiliation:** | Department of Computer Science and Engineering, Ohio State University |

**Title:** The dimensionality of episodic images

**Abstract:** A correlation dimension analysis is done on images that can be thought of as representative of the visual input that goes into forming an individual's episodic memory. A two-scale structure is observed uniformly across sets of images provided by different individuals. The dimension at small length scales is less than the dimension at larger length scales. This two-scale behavior has also been observed in another study on natural language discourse structures. The same two scale structure observed in the raw input of visual information seems to suggest that this constraint is more basic than one that could be posited to be imposed by the cognitive system. We propose that the way we navigate through events by itself imposes certain constraints on the data that the cognitive system then takes as input.

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| **Speaker's Name:** | Mark Steyvers |
| **First Author's Name:** | Mark Steyvers |
| **First Author's Affiliation:** | University of California, Irvine |
| **Second Author's Name:** | Brent Miller |
| **Second Author's Affiliation:** | University of California, Irvine |
| **Third Author's Name:** | Rob Goldstone |
| **Third Author's Affiliation:** | Indiana University |

**Title:** Bayesian approaches to aggregate knowledge across individuals; exploring the effect of information sharing

**Abstract:** We analyze the collective performance of individuals in a series of general knowledge tasks involving the judgment of percentages and rankings of events and items. We compare situations in which a group of individuals independently answer these questions with two information-sharing situations: an iterated learning environment in which individuals pass their solution to the next person in a chain and a Delphi-like method in which individuals can revise their answers after sharing the solutions with all members of

the group. We introduce Bayesian models for these group-decision making environments and treat the collective group knowledge as a latent variable that can be estimated from the observed judgments across individuals. Importantly, the models allow for individual differences in expertise and confidence in other individuals' judgments. Our initial results seem to suggest that information-sharing environments lead to better collective performance (a stronger "wisdom of crowds" effect) despite the fact that information-sharing increase correlations between judgments.

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## Y

**Speaker's Name:** Hyungwook Yim

**First Author's Name:** Hyungwook Yim

**First Author's Affiliation:** The Ohio State University

**Second Author's Name:** Simon Dennis

**Second Author's Affiliation:** The Ohio State University

**Third Author's Name:** Vladimir Sloutsky

**Third Author's Affiliation:** The Ohio State University

**Title:** The Development of Three-way Binding in Episodic Memory

**Abstract:** Episodic memory refers to the ability of people to determine when and where they have seen particular stimuli and must involve the binding of items and contexts. However, two-way bindings between items and contexts are not sufficient. In the ABABr task, subjects study two lists of paired items, where the two lists have identical items but differ in their pairing patterns. To recall which item was paired with which in a given list, a three-way binding between the context and the two items must be formed (Humphreys, Bain & Pike, 1989). The current study shows that children (age 4 to 5 year-olds) are not able to conduct a three-way binding reliably. Both adults and children showed high accuracy in the control task, which resembles the procedure of the ABABr task but has different items between the two lists. However, in the ABABr task decrement of the accuracy in adults were much more smaller. The results suggest that the ability to either form or store a three-way bindings matures.

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## Z

**Speaker's Name:** Rene Zeelenberg

**First Author's Name:** Rene Zeelenberg

**First Author's Affiliation:** Erasmus University Rotterdam

**Second Author's Name:** Bruno Bocanegra

**Second Author's Affiliation:** Erasmus University Rotterdam

**Title:** Effects of Emotion on Low-Level Vision

**Abstract:** It is generally assumed that emotion facilitates human vision in order to promote adaptive responses to a potential threat in the environment. Surprisingly, we recently found that emotion in some cases impairs the perception of elementary visual features (Bocanegra & Zeelenberg, 2009). Here, we demonstrate that emotion improves fast temporal vision at the expense of fine-grained spatial vision. We tested participants� threshold resolution with Landolt circles containing a small spatial or brief temporal discontinuity. The prior presentation of a fearful face cue, compared to a neutral face cue, impaired spatial resolution but improved temporal

resolution. In addition, we show that these benefits and deficits were triggered selectively by the global configural properties of the faces, which were transmitted only through low spatial-frequencies. Critically, the common locus of these opposite effects suggests a trade-off between magno- and parvocellular type visual channels, which contradicts the common assumption that emotion invariably improves vision. Rather than a general �boost� for all visual features, we show that our affective neural circuits sacrifice the slower processing of small details for a coarser but faster visual signal.

**Speaker's Name:** Xiaoyu Zhang

**Add. Speaker's Name:** Alfred Owens

**First Author's Name:** Alfred Owens

**First Author's Affiliation:** Franklin and Marshall College

**Second Author's Name:** Megan Hunter

**Second Author's Affiliation:** Franklin and Marshall College

**Third Author's Name:** Xiaoyu Zhang

**Third Author's Affiliation:** Franklin and Marshall College

**Title:** Assessment of Nighttime Visibility of Realistic Targets Using a Video-based Simulation

**Abstract:** A dynamic driving simulation investigated the visibility of realistic targets with variable levels of artificial illumination. 20 video clips were recorded on the Virginia Smart Road using a high resolution digital camera. Test clips contained roadway targets such as deer, tires, and pedestrians who entered the road from either the left or right sides. Road illumination levels varied from clip to clip: some included overhead luminaires, others were illuminated only by the vehicle's low-beam headlights. 16 licensed drivers watched the video clips and responded when they recognized a target. Participants� response times were recorded, and their verbal identifications of target type and location were documented by the experimenter. The results showed that target size and motion significantly affected recognition time in dark conditions (no luminaires): walking pedestrians were recognized at the greatest distance followed by stationary pedestrians, deer, and the tire. Recognition was also affected by the side of the road from which pedestrians entered: pedestrians entering from the right were recognized from significantly longer distances than those entering from the left. Furthermore, recognition times for pedestrians under overhead lighting were significantly longer than for pedestrians illuminated only by headlights. These findings provide an assessment of the effects of target structure, motion, and lighting on drivers� recognition of realistic objects. These results will be compared with performance of drivers currently being tested while driving on the Smart Road to clarify the validity of video-based night driving simulators.

**Speaker's Name:** Yuwen Zhuang

**First Author's Name:** Yuwen Zhuang

**First Author's Affiliation:** Department of Computer Science and Engineering, Ohio State University

**Second Author's Name:** Vishnu Sreekumar

**Second Author's Affiliation:** Department of Psychology, Ohio State University

**Third Author's Name:** Mikhail Belkin

**Third Author's Affiliation:** Department of Computer Science and Engineering, Ohio State University

**Fourth Author's Name:** Simon J.Dennis

**Fourth Author's Affiliation:** Department of Psychology, Ohio State University

**Title:** The network properties of episodic graphs

**Abstract:** We present statistical analyses of the small world properties for two particular types of episodic graphs. One is from the paragraph space of the Internet Movie Database (IMDb) and the other is from images collected as subjects engaged in their activities of daily living. We show that they have a small-world structure which is characterized by sparse connectivity, short average path lengths between nodes, and high global clustering coefficient. However, the degree distribution analyses show that they are not scale-free graphs. For the analyses, we selected edges from different proportions to construct the networks, hence, a series of analyses reveal the growth style of these two episodic graphs.

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## Bicycle tour from Bend to Portland

Matt Jones at Colorado is arranging a bicycle tour from Bend to Portland following the ASIC conference. This tour could be especially attractive to those attending the Cognitive Science and/or Mathematical Psychology Conferences in Portland in the period Aug 7-11, but is open to anyone interested. The current plan is for participants to leave on August 6th and ride for two or three days, covering a total of 160-200 miles, primarily through national forest. Details of the route, timing, and pace will be determined by the preferences and ambition of the group. Arrangements will be made for renting roadbikes in Portland and transporting them to Bend. Interested participants should contact Matt Jones