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**A Supplement of the Journal of Cognitive Neuroscience**

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Schedule Overview

Saturday, March 24, 2018
11:00 am- 1:30 pm  Exhibitor Check In, Exhibit Hall C
11:00 am – 6:30 pm  On-site Registration & Pre-Registration Check In, Grand Ballroom Foyer
12:00 – 1:30 pm  Data Blitz Session 1, Back Bay A&B  
Data Blitz Session 2, Back Bay C&D  
Data Blitz Session 3, Grand Ballroom
1:00 pm – 1:30 pm  Poster Session A Set-Up, Exhibit Hall C
1:30 – 3:30 pm  Poster Session A, Exhibit Hall C
1:30 – 5:30 pm  Exhibits Open, Exhibit Hall C
2:45 – 3:15 pm  Coffee Service, Exhibit Hall C
3:30 – 5:30 pm  Big Theory versus Big Data: What Will Solve the Big Problems in Cognitive Neuroscience? David Poeppel, Grand Ballroom
  ▶ 3:30 – 4:00 pm  Talk 1: The Important of the Small for Understanding the Big, Eve Marder
  ▶ 4:00 – 4:30 pm  Talk 2: Which Presents the Biggest Obstacle to Advances in Cognitive Neuroscience Today: Lack of Theory or Lack of Data? Jack Gallant
  ▶ 4:30 – 5:00 pm  Talk 3: Data Driven Everything, Alona Fyshe
  ▶ 5:00 – 5:30 pm  Talk 4: Neuroscience, Deep Learning, and the Urgent Need for an Enriched Set of Computational Primitives, Gary Marcus
5:30 – 6:30 pm  Keynote Address, The Consciousness Instinct, Michael S. Gazzaniga, University of California, Santa Barbara, OPEN TO THE PUBLIC (Q&A to follow), Grand Ballroom
5:15 – 5:30 pm  Poster Session A Take-Down, Exhibit Hall C
5:30 pm  Exhibit Hall Closed for the Day – No Entry
6:30 – 7:30 pm  Welcome Reception, Grand Ballroom Foyer

Sunday, March 25, 2018
7:30 – 8:00 am  Exhibit Hall Access for Exhibitors/Poster Session B Set-up Only, Exhibit Hall C
7:30 am – 5:30 pm  On-site Registration & Pre-Registration Check In, Grand Ballroom Foyer
8:00 – 8:30 am  Continental Breakfast, Exhibit Hall C
8:00 – 10:00 am  Communications Open House, Press Room, Kent
8:00 – 10:00 am  Poster Session B, Exhibit Hall C
8:00 am – 5:00 pm  Exhibits Open, Exhibit Hall C
10:00 am – 12:00 pm  Invited Symposium 1 From Cage to Clinic: Integrative Neuroscience to Understand and Improve Cognition and Emotion Function in Healthy and Clinical Populations, Cindy Lustig, Chair, Back Bay ABCD
  ▶ 10:00 – 10:24 am  Talk 1: From Top-Down to “Bottoms-Up”: Converging Approaches to Understand the Neural Systems Involved in Attention and Cognitive Control, Cindy Lustig
  ▶ 10:24 – 10:48 am  Talk 2: Bridging the Translational Gap Using Touchscreens: Attention and Memory in Neurodegenerative and Neuropsychiatric Disease, Tim Bussey
  ▶ 10:48 – 11:12 am  Talk 3: Graph Theory as a Translational Bridge to Understand Cognitive and Emotional Development, Damien Fair
  ▶ 11:12 – 11:36 am  Talk 4: Building on Animal Models to Understand Mechanisms of Threat Control in Humans, Elizabeth Phelps
  ▶ 11:36 – 12:00 pm  Talk 5: Q&A Period, The Speakers will take Questions from the Audience.
10:00 – 12:00 pm  Invited Symposium 2 – “Human and Machine Cognition – The Deep Learning Challenge”, Nikolaus Kriegeskorte, Chair, Grand Ballroom
  ▶ 10:00 – 10:24 am  Talk 1: Introduction to Deep Learning for Cognitive Neuroscientists, Nikolaus Kriegeskorte

Talk 4: The Transparency of Deep Learning Networks, Aude Oliva

Talk 5: Q&A Period, The Speakers will take Questions from the Audience.

Poster B Take-Down, Exhibit Hall C

Lunch Break (On your own)

Poster C Set-Up, Exhibit Hall C

Poster Session C, Exhibit Hall C

Coffee Service, Exhibit Hall C

Symposium 1 Memory Modulation via Direct Brain Stimulation in Humans, Cory Inman, Chair, Back Bay A&B

Talk 1: Electrical Stimulation of Entorhinal Cortex and Hippocampus Impairs Temporal and Allocentric Representations in Human Episodic Memory, Josh Jacobs

Talk 2: Network-Based Brain Stimulation Selectively Impairs Spatial Retrieval, Nitin Tandon

Talk 3: Advancements in Intracranial Stimulation of the Entorhinal Area for Enhancement of Episodic Memory, Nanthia Suthana

Talk 4: Closed-Loop Stimulation of Temporal Cortex Rescues Functional Networks and Improves Memory, Youseff Ezzyat

Talk 5: Direct Electrical Stimulation of the Amygdala Enhances Event-Specific Declarative Memory in Humans, Cory Inman

Symposium 2 Understanding Human Visual Cognition Through Multivariate and Computational Analysis of MEG and EEG Data, Radoslaw Martin Cichy, Chair, Back Bay C&D

Talk 1: Oscillatory Dynamics of Perceptual to Conceptual Representations in the Ventral Visual Pathway, Alex Clarke


Talk 3: Comparing Dynamics of Processing Streams in Blind and Sighted Readers, Santani Teng

Talk 4: Identifying the Neural Architecture of Perceptual Decision Making with Normative, Shallow and Deep Neural Network Approaches, Jean-Rémi King

Talk 5: Unique Aspects of Human Object Processing Revealed by MEG and EEG, Dimitrios Pantazis

Symposium 3 The Next 25 Years of Cognitive Neuroscience: Opportunities and Challenges, Brad Postle, Chair, Grand Ballroom

Talk 1: Grounding Models of Neural Function in First Principles, Gyorgy Buzsaki

Talk 2: Neural Dynamics, Recurrent Neural Networks and the Problem of Time, Dean Buonomano

Talk 3: Field potentials, fMRI, and the Order of Operations: Why the Two Measures are Blind to Different Parts of the Neuronal Responses, Dora Hermes

Talk 4: Establishing Neural Principles of Dynamic and Interactive Social Behaviors, Steve Chang

Talk 5: Is lesion Analysis still Relevant for Contemporary Cognitive Neuroscience? Nina Dronkers

Poster Session C Take-Down, Exhibit Hall C

25th Annual George A. Miller Prize in Cognitive Neuroscience Lecture, Objects, Agents, and Persons: From Core Cognition to New Systems of Knowledge, Elizabeth Spelke, Grand Ballroom

Exhibit Hall Closed for the Day – No Entry

CNS 25th Anniversary Gala, Tickets Required, Constitution Ballroom

Monday, March 26, 2018

7:30 – 8:00 am Exhibit Hall Access for Exhibitors/Poster Session D Set-Up Only, Exhibit Hall C

8:00 – 8:30 am Continental Breakfast, Exhibit Hall C

8:00 – 10:00 am Communications Open House, Press Room, Kent

8:00 – 10:00 am Poster Session D, Exhibit Hall C

8:00 – 5:30 pm On-site Registration & Pre-Registration Check In, Grand Ballroom Foyer

8:00 – 5:45 pm Exhibits Open, Exhibit Hall C
10:00 – 12:00 pm Symposium 4 Episodic Memory Formation: From Neural Circuits to Behavior, Gabriel Kreiman, Chair, Ueli Rutishauser, Co-Chair, Grand Ballroom
- 10:00 – 10:24 am Talk 1: Introduction + In Memoriam for John Lisman + Episodic Memory Formation in Real Life, Gabriel Kreiman
- 10:24 – 10:48 am Talk 2: Probing the Circuitry of Human Declarative Memory at the Single-Neuron Level, Ueli Rutishauser
- 10:48 – 11:12 am Talk 3: Neural Coding of Space and Time for Episodic Memory, Michael Hasselmo
- 11:12 – 11:36 am Talk 4: Imagination, Creativity, and Episodic Retrieval, Daniel Schacter
- 11:36 – 12:00 pm Talk 5: What is an ‘Episode’ in Episodic Memory? Moving Beyond a Single Moment to Understanding How Temporally Extended Episodic Memories are Constructed from Ongoing Experience, Lila Davachi

10:00 am – 12:00 pm Symposium 5 Are We All Chained to the Rhythm? Periodicity in Human Perception and Behavior, Benedikt Zoefel, Chair, Back Bay A&B
- 10:00 – 10:24 am Talk 1: Temporal Organization of Multiple Objects in Bottom-Up and Top-Down Attention, Huan Luo
- 10:24 – 10:48 am Talk 2: A Dynamic Interplay within the Frontoparietal Network Underlies Rhythmic Spatial Attention, Ian C. Fiebelkorn
- 10:48 – 11:12 am Talk 3: The Rhythms of Sensorimotor Integration: Action Planning and Perceptual Oscillations, Alessandro Benedetto
- 11:12 – 11:36 am Talk 4: Can we Find Auditory Perceptual Cycles?, Benedikt Zoefel
- 11:36 – 12:00 pm Talk 5: Extended Discussion
Tuesday, March 27, 2018

7:30 – 8:00 am Exhibit Hall Access for Exhibitors/Poster Session F Set-Up Only, Exhibit Hall C
8:00 – 8:30 am Continental Breakfast, Exhibit Hall C
8:00 – 10:00 am Poster Session F, Exhibit Hall C
8:00 am – 12:00 pm Exhibits Open, Exhibit Hall C
8:00 am – 3:00 pm On-site Registration & Pre-Registration Check In, Grand Ballroom Foyer
10:00 am – 12:00 pm Invited Symposium 3 Neural Mechanisms of Adaptive Forgetting, Michael Anderson, Chair, Back Bay ABCD
  ▶ 10:00 – 10:24 am Talk 1: A Species-General Retrieval-Specific Mechanism of Adaptive Forgetting, Michael C. Anderson
  ▶ 10:24 – 10:48 am Talk 2: Remembering Causes Adaptive Forgetting of Cortical Memory Traces, Maria Wimber
  ▶ 10:48 – 11:12 am Talk 3: Molecular Neurobiology of Active Forgetting, Ronald L. Davis
  ▶ 11:12 – 11:36 am Talk 4: The Persistence and Transience of Memory, Paul Frankland
  ▶ 11:36 – 12:00 pm Talk 5: Q&A Period, The Speakers will take Questions from the Audience.
10:00 am – 12:00 pm Invited Symposium 4 What Makes Musical Rhythm Special: Cross-Species, Developmental, and Social Perspectives, Jessica Grahn, Chair, Constitution Ballroom
  ▶ 10:00 – 10:24 am Talk 1: Neural Adaptation May Set the Stage for the Perception of Musical Beat, Vani G. Rajendran
  ▶ 10:24 – 10:48 am Talk 2: Predicting “When” in Rhythm: Neural Mechanisms Underlying Beat-Based
  and Memory-Based Expectations, Fleur L. Bouwer
  ▶ 10:48 – 11:12 am Talk 3: Live Music Increases Intersubject Synchronization of Audience Members’ Brain Rhythms, Molly J. Henry
  ▶ 11:12 – 11:36 am Talk 4: Musical Rhythms in Infancy: Social and Emotional Effects, Laura Cirelli
  ▶ 11:36 – 12:00 pm Talk 5: Q&A Period, The Speakers will take Questions from the Audience.
11:45 am – 12:00 pm Poster Session F Take-Down, Exhibit Hall C
12:00 pm Exhibit Hall Closed for the Day – No Entry
12:00 – 1:30 pm Lunch Break (On your own)
1:30 pm – 3:30 pm Symposium 8 Mechanisms of Sleep’s Role in Memory and Emotion Processing, Rebecca Spencer, Chair, Jan Born, Co-Chair, Back Bay A&B
  ▶ 1:30 – 1:54 pm Talk 1: Investigating Autonomic and Central Nervous System Contributions to Memory Consolidation during Sleep, Sara C. Mednick
  ▶ 1:54 – 2:18 pm Talk 2: Interacting Effects of Emotional and Episodic Memory Consolidation During Sleep, Jan Born
  ▶ 2:18 – 2:42 pm Talk 3: Preferential Consolidation of Emotionally Salient Information During a Nap is Preserved in Middle Age, Jessica Payne
  ▶ 2:42 – 3:06 pm Talk 4: Changes in Sleep-dependent Emotional Memory Processing with Aging and Development, Rebecca Spencer
  ▶ 3:06 – 3:30 pm Talk 5: Facilitated Discussion, Rebecca Spencer
1:30 – 3:30 pm Symposium 9 Neural Dedifferentiation and Age-Related Cognitive Decline, Joshua Koen, Chair, Michael Rugg, Co-Chair, Back Bay C&D
  ▶ 1:30 – 1:54 pm Talk 1: Age-Related Neural Dedifferentiation: Scope, Cause, and Consequences, Thad A. Polk
  ▶ 1:54 – 2:18 pm Talk 2: Investigating Dedifferentiation in Visual Cortex Underlying False Memories in Aging, Caitlin Bowman
  ▶ 2:18 – 2:42 pm Talk 3: The Relationship between Age, Neural Dedifferentiation, and MemoryEncoding, Joshua D. Koen
  ▶ 3:06 – 3:30 pm Talk 5: Age-Related Neural Dedifferentiation – Some Points for Discussion, Michael D. Rugg
1:30 – 3:30 pm Symposium 10 Hierarchical Cortical Rhythms and Temporal Predictions in Auditory and Speech Perception, Anne Keitel, Chair, Johanna M. Rimmele, Co-Chair, Constitution Ballroom
  ▶ 1:30 – 1:54 pm Talk 1: Dissociating the Roles of Theta and Delta Neural Entrainment in Speech Processing, Anne Kösem
  ▶ 1:54 – 2:18 pm Talk 2: Motor Origin of Temporal Predictions in Auditory Attention, Benjamin Morillon
  ▶ 2:18 – 2:42 pm Talk 3: Lexical and Sub-Lexical Effects on Speech Segmentation, Johanna M. Rimmele
  ▶ 2:42 – 3:06 pm Talk 4: Isolating Neural Indices of Continuous Speech Processing at the Phoneme-Level, Giovanni M. Di Liberto
  ▶ 3:06 – 3:30 pm Talk 5: Linking Language and Oscillations through Rhythmic Computation, Andrea E. Martin
Statement on Principles of Community and Code of Conduct

An open exchange of ideas, the freedom of thought and expression, and respectful scientific debate are central to the aims and goals of the Cognitive Neuroscience Society (CNS). CNS stands firmly for an environment that recognizes the inherent worth of every person and group, that fosters dignity, understanding, and mutual respect, and that celebrates diversity. The Governing Board and committee members of CNS endorse a safe, respectful and harassment-free experience for members, speakers/presenters and staff of the CNS.

Harassment and hostile behavior are unwelcome at CNS before, during and after organized lectures and poster sessions. We stand against harassment based on race, gender, religion, age, appearance, national origin, ancestry, disability, sexual orientation, and gender identity, or any other category. Harassment includes degrading verbal comments, deliberate intimidation, stalking, harassing photography or recording, inappropriate physical contact, and unwelcome sexual attention. The policy is not intended to inhibit challenging scientific debate, but rather to promote it by ensuring that all are welcome to participate in a shared spirit of scientific inquiry. These principles apply equally to scientific and social events organized by CNS.

Any concerns should be conveyed to a member of our Diversity, Outreach and Training Committee:

Richard Prather, (Chair) prather1@umd.edu
Amy Belfi. amybelfi@mst.edu
Bhismadev Chakrabarti, b.chakrabarti@reading.ac.uk
Audrey Duarte, audrey.duarte@psych.gatech.edu
Christopher Madan, christopher.madan@nottingham.ac.uk
Noa Ofen, noa.ofen@wayne.edu
Aleksandra Sherman, asherman@oxy.edu;
Bradley Voytek, bradley.voytek@gmail.com
Keynote

Michael Gazzaniga,
University of California, Santa Barbara

Keynote Address, OPEN TO THE PUBLIC
Saturday, March 24, 2018, 5:30 – 6:30 pm, Grand Ballroom

The Consciousness Instinct

How do neurons turn into minds? How does physical "stuff"—atoms, molecules, chemicals, and cells—create the vivid and various alive worlds inside our heads? This problem has gnawed at us for millennia. In the last century there have been massive breakthroughs that have rewritten the science of the brain, and yet the puzzles faced by the ancient Greeks are still present. In this lecture I review the the history of human thinking about the mind/brain problem, giving a big-picture view of what science has revealed. Understanding how consciousness could emanate from a confederation of independent brain modules working together will help define the future of brain science and artificial intelligence, and close the gap between brain and mind.
Objects, Agents, and Persons: From Core Cognition to New Systems of Knowledge

Elizabeth Spelke
Harvard University

Young children rapidly develop a basic, commonsense understanding of how the world works. Research on infants suggests that this understanding rests in part on ancient systems, shared by other animals, for representing bodies and their motions, agents and their intended actions, social beings and their experienced states of engagement, places and their distances and directions, geometric forms, and approximate number. These core cognitive systems are innate, abstract, sharply limited, and opaque to intuition: in young infants, they operate automatically and largely independently of one another. Infants’ knowledge grows, however, not only through learning capacities that enrich these systems and are common to all animals, but through a fast and flexible learning process that generates new systems of concepts and likely is unique to our species. The latter process composes new, explicit concepts by combining productively the concepts from distinct core knowledge systems. The compositional process is poorly understood but amenable to study, through coordinated interdisciplinary research. To illustrate, this talk will focus on infants’ knowledge of objects, agents, and social beings, and on two new systems of concepts that emerge quite suddenly at the end of the first year: concepts of objects as kinds whose forms afford specific functions for action, and concepts of people as social agents whose mental states are shareable experiences of the things they act upon.
The Fred Kavli Distinguished Career Contributions Award

Congratulations to Alfonso Caramazza, for being awarded this honor!

Alfonso Caramazza will accept this prestigious award and deliver his lecture on Monday, March 26, 2018 from 4:30 – 5:30 pm, in the Grand Ballroom.

The Representation of Objects in the Brain: Nature or Nurture

Alfonso Caramazza
Harvard University

Different regions of human high-level visual cortex show highly reliable preference for different object domains, and they form part of distinct neural networks. What characterizes these object domains? And, how does this specialization emerge? The balance between nature and nurture has been a long-standing question in neuroscience and cognitive science. One view holds that the observed organization rests on an evolutionarily determine skeletal structure. A strong alternative holds that the putatively domain-specific organization emerges through experience operating over domain-general, low-level, perceptual principles. The role of experience in distinguishing between these two theoretical frameworks is fundamental. I will discuss some of the neuropsychological and neuroimaging evidence, the latter focusing on individuals deprived of sensory or motor experience, which I believe favors the view that the skeletal structure of object domain specialization is genetically determined.

About the Distinguished Career Contributions Award

The Distinguished Career Contributions Award (DCC) was established in 2012 and it has been sponsored by the Fred Kavli Foundation since 2016. This award honors senior cognitive neuroscientists for their sustained and distinguished career, including outstanding scientific contributions, leadership and mentoring in the field of cognitive neuroscience.

An annual call for nominations for the Fred Kavli Distinguished Career Contributions Award will be made to the membership of the society. The recipient of the prize will attend the annual meeting of the Cognitive Neuroscience Society and deliver the Fred Kavli Distinguished Career Contributions lecture.

Previous Winners of the Distinguished Career Contributions Award:

2017  Marcia K. Johnson, Yale University
2016  James Haxby, University of Trento, Dartmouth College
2015  Marta Kutas, Ph.D., University of California, San Diego
2014  Marsel Mesulam, M.D., Northwestern University
2013  Robert T. Knight, M.D., University of California, Berkeley
2012  Morris Moscovitch, Ph.D., University of Toronto
Congratulations to the 2018 Young Investigator Award Winners.

Morgan Barense, University of Toronto
Mike Yassa, University of California, Irvine

YIA special lectures take place on Monday, March 26, 2018, 1:30 – 2:30 pm, in the Constitution Ballroom of the Sheraton Boston Hotel in Boston, MA.

The purpose of the awards is to recognize outstanding contributions by scientists early in their careers. Two awardees, one male and one female, are named by the Awards Committee, and are honored at the CNS annual meeting. Each award includes $500 US to be used by the winners toward travel costs to the meeting, or for any other purpose.

The interface of memory and perception
Monday, March 26, 2018, 1:30 – 2:00 pm, Constitution Ballroom

Morgan Barense
University of Toronto

How does the act of perceiving an object influence how one will subsequently remember it? A central assumption in most modern theories of memory is that memory and perception are functionally and anatomically segregated. For example, amnesia resulting from medial temporal lobe (MTL) lesions is traditionally considered to be a selective deficit in long-term declarative memory with no effect on perceptual processes. This view is consistent with a popular paradigm in cognitive neuroscience, in which the brain is understood in terms of a modular organization of cognitive function. The work I will present offers a new perspective. Guided by computational modeling complemented with neuropsychology and neuroimaging, I will provide support for the notion that memory and perception are inextricably intertwined, relying on shared neural representations and computational mechanisms. I will then describe how this new framework can improve basic understanding of cognitive impairments observed in Alzheimer’s disease, as well as guide development of new diagnostic procedures for those at risk for dementia.

Deconstructing Episodic Memory: An Information Processing Approach
Monday, March 26, 2018, 2:00 – 2:30 pm, Constitution Ballroom

Mike Yassa
University of California, Irvine

Memory is the bridge to our past and future. Without memory, we would be stuck in a constant present, unable to learn from our experiences and unable to plan for the future. Memory loss can have catastrophic impact on life and livelihood. Diseases that rob individuals of their memory capacity, such as Alzheimer’s disease, place a tremendous burden on individuals, families, and global public health. This talk will discuss our approach to understanding the neural mechanisms underlying episodic memory (memory for ‘what’, ‘where’ and ‘when’), and how this approach is informed by animal and computational models. I will highlight recent advances in determining the functional division of labor in the medial temporal lobes using a combination of targeted behavioral paradigms and high-resolution functional MRI. This fundamental understanding is then applied to examining memory in older adults and assessing susceptibility to Alzheimer’s disease, providing potential avenues for clinical intervention.
Special Events

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<td>Monday, March 26</td>
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<td>CNS Trainee Professional Development Panel</td>
<td>Monday, March 26</td>
<td>5:45 - 7:15 pm</td>
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<td>CNS Student Trainee Social Night</td>
<td>Monday, March 26</td>
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**CNS 25th Anniversary Gala**
March 25, 2018, 6:30-11:30 pm, Constitution Ballroom

Join us for a fun filled evening of dining and dancing as we celebrate the 25th anniversary meeting of the Cognitive Neuroscience Society.
*Gala Ticket Required to enter.

6:30 pm – Cocktails & Hors d’oeuvre
7:00 pm – Dinner & Dancing

Cocktails and Hors d’oeuvre will be served in the Ballroom Foyer prior to dinner. Semi Formal Attire Requested, 21 and over.

Thank you to our sponsor THE **KAVLI FOUNDATION**

**Latest Need to Know Re: NIH Funding Plus Training, Career and Research Grant Opportunities**
Monday, March 26, 12:15 - 1:15 pm, Back Bay A&B

NIH Program Directors will present tips and news you need to find your best research fit and be successful in getting a training, career, or research grant at NIH; plus a brief overview of grant application, review, and funding processes. UPDATE! NEED TO KNOW: new application forms, human subjects research and clinical trials. Find us at this special session or look for NIH representatives throughout the meeting.

Speaker: Kathy Mann Koepke, NICHD/NIH

**CNS Trainee Professional Development Panel**
Monday, March 26, 5:45 – 7:15 pm, Constitution Ballroom

**Speakers:** Dr. Michael Yassa (CNS 2018 YIA recipient from UC Irvine), Dr. Ingrid Olson (Temple University), Dr. Joshua Greene, and others

Join the CNS Trainee Association (CNSTA) for the third annual Trainee Professional Development Panel! Hear from some of the foremost experts in the field of cognitive neuroscience as they detail their career trajectories, discuss factors that influenced their development, and reveal what they wish they had known as Trainees. Part of the session time will be reserved for an open Q & A. Appropriate for trainees of all levels!

**CNS Student Trainee Social Night**
Monday, March 26, 7:30 – 10:30 pm, Dillon’s located at 955 Boylston St, Boston, MA 02115

This event is open to all students and post docs of the Cognitive Neuroscience Society.

**CNSTA Social Organizers:** Sarah Kark (Boston College), Holly Bowen (Boston College)

Come and join us for the annual CNS Trainee Association (CNSTA) Student Social Night, Monday, March 26th, after the CNS Trainee Professional Development Panel. We will meet in front of the exit to the Constitution Ballroom immediately following the panel (7:15 or 7:20pm) to go to the 7:30pm start of the Social. There will be no cover charge and one free drink and appetizers will be provided for the first 150 Trainees (cash bar).

More information will be posted on the CNS Trainee Association Facebook page ([https://www.facebook.com/CNSTrainees/](https://www.facebook.com/CNSTrainees/)). We look forward to meeting you!

**HOW TO GET THERE:**
From the Sheraton:
- Head west on Belvidere St toward Dalton St
- Turn Right onto Dalton St
- Turn Left onto Boylston St
- Destination will be on your right at 955 Boylston St, Boston, MA 02115
Big Theory versus Big Data: What Will Solve the Big Problems in Cognitive Neuroscience?

Saturday, March 24, 3:30 – 5:30 pm, Grand Ballroom

Co-sponsored by the Cognitive Neuroscience Institute (CNI) and the Max-Planck-Society

Chair: David Poeppel, Max-Planck Institute & New York University
Speakers: Eve Marder, Gary Marcus, Alona Fyshe, Jack Gallant.

All areas of the sciences are excited about the innovative new ways in which data can be acquired and analyzed. In the neurosciences, there exists a veritable orgy of data – but is that what we need? Will the colossal datasets we now enjoy solve the questions we seek to answer, or do we need more ‘big theory’ to provide the necessary intellectual infrastructure? Four leading researchers, with expertise in neurophysiology, neuroimaging, artificial intelligence, language, and computation will debate these big questions, arguing for what steps are most likely to pay off and yield substantive new explanatory insight.

TALK 1: THE IMPORTANT OF THE SMALL FOR UNDERSTANDING THE BIG.
Eve Marder, Brandeis University
The brain employs highly degenerate systems that allow for resilience and robustness. These can be found in studies of large ensembles of neurons, and are likely to show up in all kinds of large-scale simulations and theoretical studies. Nonetheless, if one ever wishes to account for the behavior of large numbers of neurons, at some point it is necessary to go down to the cellular level for analysis to see which biological mechanisms are consistent with conclusions made and proposed at higher levels of analysis.

TALK 2: WHICH PRESENTS THE BIGGEST OBSTACLE TO ADVANCES IN COGNITIVE NEUROSCIENCE TODAY: LACK OF THEORY OR LACK OF DATA?
Jack Gallant, University of California, Berkeley
Science is a collection of methods and processes for constructing elegant theories that can explain and predict high-dimensional data. It is obvious that both theory and data are required. But at any point in time, progress is likely to be limited relatively more by a lack of theory or a lack of data. It is my contention that at the current time, progress in human cognitive neuroscience — our ability to construct powerful explanatory, predictive models — is more limited by a lack of data than a lack of theory. This is because the human brain data that are available currently offer such a coarse view of brain function that they do not provide sufficient information to develop and test rich cognitive theories. Thus, most current cognitive theories do not predict well either human brain data or complex behavior under naturalistic conditions. Development of new devices, new methods of measurement and new experimental paradigms are required in order to support cognitive models that respect the complexity of brain structure and function.

TALK 3: DATA DRIVEN EVERYTHING
Alona Fyshe, University in Victoria, British Columbia
The structure of every organism, including humans, is the product of adaptation and evolution in the face of data. Clearly data is a powerful force, but in practice we will not have eons of data at our disposal. Does that necessarily mean we will need strong model priors? How far can we get with big-but-finite data?

TALK 4: NEUROSCIENCE, DEEP LEARNING, AND THE URGENT NEED FOR AN ENRICHED SET OF COMPUTATIONAL PRIMITIVES
Gary Marcus, NYU
Large strands of AI and contemporary neuroscience are dominated by a quest to find a single computational primitive (or canonical cortical circuit) to rule them all, typically some version of hierarchical feature detection, first made popular by Hubel and Wiesel, and more recently by deep learning. At first glance, the superficial success of deep learning seems to be argument in favor of a homogenous computational system. I argue, however, that deep learning is far more superficial than widely believed, and that both deep learning and models of neuroscience must be supplemented by a broad range of elementary computational devices.
Data Blitz Sessions

A Data Blitz is a series of 5-minute talks, each covering just a bite-sized bit of research. It will offer a fast-paced overview of some of the most exciting research presented at this year’s poster sessions.

Data Blitz Session 1
Saturday, March 24, 12:00 - 1:30 pm, Back Bay A&B
Chair: Marian Berryhill, University of Nevada, Reno (Chair)
Speakers: Samantha Cohen, Aaron Kucyi, Karen Campbell, Jonathan Greenberg, Megan Boudewyn, Amy Belfi, Tzipi Horowitz-Kraus, Joe Bathelt, Richard Betzel, Pieter Verbeke, Emily Kubicek, Guannan Shen, Daniela Palombo, Noah C. Yeagley, Ying Cai

TALK 1: AGE AND SEX MODULATE THE VARIABILITY OF NEURAL RESPONSES TO ENGAGING VIDEOS
Samantha Cohen¹,², Agustin Petroni³, Nicolas Langer¹,³, Simon Henin¹, Tamara Vanderwal⁶, Michael P. Milham²,³, Lucas C. Parra¹; ¹The City College of New York, ²The Graduate Center of the City University of New York, ³Child Mind Institute, ⁶University of Zurich, ²Yale Child Study Center, ³Nathan Kline Institute for Psychiatric Research

TALK 2: FREQUENCY-DEPENDENT TEMPORAL FLUCTUATIONS OF FUNCTIONAL CONNECTIVITY WITHIN INTRINSIC NETWORKS IN HUMAN CORTEX
Aaron Kucyi¹, Josef Parvizi¹; ¹Stanford University

TALK 3: I DID IT MY WAY: EXPLAINING AGE-RELATED DECLINES IN INTER-SUBJECT SYNCHRONIZATION DURING NATURALISTIC VIEWING
Karen Campbell¹, Cam-CAN², Linda Geerligs³; ¹Brock University, ²Cambridge Centre for Ageing and Neuroscience, University of Cambridge and MRC Cognition and Brain Sciences Unit, ³Donders Institute for Brain, Cognition and Behaviour, Radboud University

TALK 4: REDUCED INTERFERENCE IN WORKING MEMORY FOLLOWING MINDFULNESS TRAINING IS ASSOCIATED WITH INCREASES IN HIPPOCAMPAL VOLUME
Jonathan Greenberg¹,², Victoria L. Romero³, Seth Elkin-Frankston³, Matthew A. Bezdek³, Eric H Schumacher⁴, Sara W Lazar¹²; ¹Department of Psychiatry, Massachusetts General Hospital, ²Harvard Medical School, ³Charles River Analytics, ²Georgia Institute of Technology

TALK 5: TRACKING ATTENTION TO SPOKEN LANGUAGE USING EEG ALPHA OSCILLATIONS
Megan Boudewyn¹, Cameron Carter¹; ¹University of California, Davis

TALK 6: THE LEFT ANTERIOR TEMPORAL LOBE IS A BIDIRECTIONAL CONVERGENCE REGION MEDIATING THE RELATION BETWEEN NAMES AND SEMANTIC KNOWLEDGE FOR UNIQUE ENTITIES
Amy Belfi¹, Brett Schneider², Jonah Heskje³, Joel Bruss³, Daniel Tranel⁴; ¹Missouri University of Science & Technology, ²University of Wisconsin-Madison, ³University of Iowa

TALK 7: ALTERATIONS IN NEURAL CIRCUITS SUPPORTING EXECUTIVE FUNCTIONS IN CHILDREN WITH READING DIFFICULTIES
Tzipi Horowitz-Kraus¹,², Rola Farah¹; ¹Educational Neuroimaging Center, Faculty of Education in Science and Technology, Technion, Haifa, Israel, ²Reading and Literacy Discovery Center, General Pediatrics, Cincinnati Children's Hospital Medical Center, Ohio, USA

TALK 8: THE CINGULUM AS AN IMPORTANT MEASURE OF INDIVIDUAL DIFFERENCE IN BRAIN DEVELOPMENT
Joe Bathelt¹, Mengya Zhang¹, the CALM team¹, Duncan Astle¹; ¹MRC Cognition & Brain Sciences Unit, University of Cambridge

TALK 9: THE SPECIFICITY AND ROBUSTNESS OF LONG-DISTANCE CONNECTIONS IN WEIGHTED INTER-AREAL STRUCTURAL BRAIN NETWORKS
Richard Betzel¹, Danielle Bassett¹; ¹University of Pennsylvania

TALK 10: FAST SYNCHRONIZATION AND SLOW SYNAPTIC LEARNING AS A SOLUTION TO THE STABILITY-PLASTICITY DILEMMA
Pieter Verbeke¹, Tom Verguts¹; ¹Ghent University

TALK 11: DEAF SIGNERS’ SENSORIMOTOR SYSTEM ACTIVITY DURING PERCEPTION OF ONE AND TWO HANDED SIGNS

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<td>Data Blitz Session 3</td>
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EMILY KUBICEK, LORNA C. QUANDT; GALLAUDET UNIVERSITY

TALK 12: EXPLORING CATEGORICAL AND FUNCTIONAL BOUNDARIES OF TACTILE PERCEPTION USING SOMATOSENSORY MISMATCH RESPONSES
Guannan Shen1, Peter J. Marshall1; 1Department of Psychology, Temple University

TALK 13: HIPPOCAMPAL CONTRIBUTIONS TO REWARD LEARNING
Daniela Palombo1,2, Mieke Verfaellie1,2; 1VA Boston Healthcare System Jamaica Plain, 2Boston University School of Medicine, Department of Psychiatry

TALK 14: EXPERTISE MATTERS IN EVALUATING STUDENTS’ ORGANIZATION OF NEUROSCIENCE CONCEPTS
Noah C. Yeagley1, Jennifer L. Stevenson1, Joel P. Bish1; 1Ursinus College

TALK 15: THE INFLUENCE OF STORAGE CAPACITY VERSUS CONTROL IN VISUAL WORKING MEMORY CAPACITY LIMITATIONS
Ying Cai1,2, Andrew D Sheldon3, Bradley R Postle2,4; 1National Key Laboratory of Cognitive Neuroscience and Learning, Beijing Normal University, 2Department of Psychiatry, University of Wisconsin–Madison, 3Medical Scientist Training Program and Neuroscience Training Program, University of Wisconsin–Madison, 4Department of Psychology, University of Wisconsin–Madison

DATA BLITZ SESSION 2

Saturday, March 24, 12:00 - 1:30 pm, Back Bay C&D
Chair: Evangelia Chrysikou, University of Kansas

TALK 1: COLOR CATEGORIZATION WITHOUT COLOR NAMING: NEUROPSYCHOLOGICAL EVIDENCE
Katarzyna Siuda-Krzywicka1, Christoph Witzel2, Emma Chabani1, Myriam Taga3, Laurent Cohen1,4, Paolo Bartolomeot; 1Inserm U 1127, CNRS UMR 7225, Sorbonne Universités, UPMC Univ Paris 06 UMR S 1127, Institut du Cerveau et de la Moelle épinière, ICM, Hôpital de la Pitié-Salpêtrière, Paris, France, 2Justus-Liebig-Universität Gießen, 3University of East London, 4Hôpital de la Pitié-Salpêtrière Paris, France

TALK 2: PERSERVIVCE OF HIPPOCAMPAL ACTIVATION PATTERNS IN POST-ENCODING REST PREDICTS SUBSEQUENT VOLUNTARY, BUT NOT INVOLUNTARY RECALL OF DISTRESSING FILM CLIPS
Renee M. Visser1, Richard N. Henson1, Emily A. Holmes1,2; 1Medical Research Council Cognition and Brain Sciences Unit, University of Cambridge, UK, 2Karolinska Institutet, Stockholm, Sweden

TALK 3: A LATE SLOW FRONTAL POSITIVITY ERP REFLECTS THE RESOLUTION OF CONTEXTUAL AMBIGUITY DURING NARRATIVE DISCOURSE COMPREHENSION
Patrick Ledwidge1, Adam Ramsey1, Jeremy Foust1; 1Baldwin Wallace University

TALK 4: BIASING MEMORY REPLAY DURING SLEEP: A QUANTITATIVE SYNTHESIS OF TARGETED MEMORY REACTIVATION EFFECTS
Xiaoqing Hu1, Larry Y. Cheng2, Ken A. Paller2; 1The University of Hong Kong, 2Northwestern University

TALK 5: FUNCTIONAL AND STRUCTURAL CONNECTIVITY OF COGNITIVE CONTROL NETWORKS DURING NARRATIVE COMPREHENSION FROM BIRTH TO 9 YEARS
Rola Farah1, Tzipi Horowitz-Kraus1,2; 1Technion- Israel Institute of Technology, 2Cincinnati Childrens Hospital Medical Center

TALK 6: ORBITOFRONTAL CORTEX INTEGRATES AMYGDALA-HIPPOCAMPAL INFORMATION AND GUIDES SCHEMA-BASED EMOTIONAL CATEGORIZATION
Jie Zheng1, Jack J. Lin1,2; 1University of California, Irvine, 2Comprehensive Epilepsy Program, Irvine, CA

TALK 7: EVERYTHING YOU CAN IMAGINE IS REAL: COMPONENT PROCESSES AND BRAIN SYSTEMS OF IMAGINATION.
Darya Zabelina1, Jessica Andrews-Hanna2; 1University of Arkansas, 2University of Arizona

TALK 8: NEUROANATOMICAL DIFFERENCES BETWEEN MONOZYGOTIC TWINS DISCORDANT FOR MUSICAL PRACTICE
Örjan de Manzano1, Fredrik Ullén1; 1Karolinska Institutet

TALK 9: COMBINING EYE-TRACKING AND EEG TO MEASURE ATTENTION TO SALIENT AND EMOTIONAL STIMULI
Louisa Kulke1,2,3, Janette Atkinson3,4, Oliver Braddick4, Annekathrin Schacht1,2; 1University of Göttingen, 2Leibniz-ScienceCampus Primate Cognition, 3University College London, 4University of Oxford
TALK 10: REDUCED PERSISTENCE OF SPONTANEOUS BRAIN ACTIVITY IN SCHIZOPHRENIA
Huang Zheng1,2, Jianbo Gao1,2; 1School of Computer, Electronics and Information, Guangxi University, China, 2Institute of Complexity Science and Big Data Technology, Guangxi University, China

TALK 11: HIERARCHICAL NEURAL REPRESENTATIONS BEHIND NATURALISTIC ‘SOCIAL NORM’ PERCEPTION IN AUTISM AND CONTROLS
Felipe Pegado1, Hans Op de Beeck1; 1KU Leuven

TALK 12: MINDFULNESS-BASED STRESS REDUCTION IMPROVES FEAR EXTINCTION: AN FMRI INVESTIGATION
Gunes Sevinc1,2, Britta Hölzel3, Muhammed Milad1, Sara W. Lazar1,2; 1Massachusetts General Hospital, Division of Psychiatry, 2Harvard Medical School, 3Technical University of Munich, Klinikum rechts der Isar

TALK 13: INTER-SUBJECT REPRESENTATIONAL SIMILARITY ANALYSIS REVEALS INDIVIDUAL VARIATIONS IN AFFECTIVE EXPERIENCE WHEN WATCHING EROTIC MOVIES
Pin-Hao Andy Chen1, Eshin Jolly1, Todd F. Heatherton1, Luke J. Chang1; 1Dartmouth College

TALK 14: CHILDREN ENGAGE SEMANTIC PROCESSES TO VERIFY ARITHMETIC FACTS: EVIDENCE FROM THE N400
Amandine E. Grenier1, Vanessa Cerda1, Danielle S. Dickson1, Bianca O. Obinyan1, Jacob P. Momsen1,3, Nicole Y.Y. Wicha1; 1The University of Texas at San Antonio, 2University of California San Diego, 3San Diego State University

TALK 15: ALPHA OSCILLATORY SYNCHRONY UNDERLYING WORKING MEMORY MAINTENANCE IN CHILDREN
Julie Sato1,2, Sarah Mossad1,2, Simeon Wong2, Benjamin Hunt2, Benjamin Dunkley1,2, Mary Lou Smith1,2, Margot Taylor1,2; 1The Hospital for Sick Children, 2University of Toronto

TALK 1: NEUROPLASTIC AND NEUROVASCULAR CONTRIBUTIONS TO VISUAL RECOVERY IN POST-STROKE CORTICAL BLINDNESS
Colleen Schneider1,2, Emily Prentiss3, Zoe Williams1, Bogachan Sahin1, Bradford Mahon1,2; 1University of Rochester School of Medicine and Dentistry, 2University of Rochester School of Arts Sciences and Engineering

TALK 2: TASK SWITCHING DECOMPOSED: MEG EVIDENCE FROM BIMODAL LANGUAGE SWITCHING
Esti Blanco-Elorrieta1,2, Karen Emmorey1, Liina Pylkkänen1,2; 1New York University, 2NYUAD Institute, 3New York University, 3San Diego State University

TALK 3: HEARING CREATIVELY: DEFAULT NETWORK SELECTIVELY SYNCHRONIZES TO AUDITORY CORTEX IN JAZZ IMPROVISING MUSICIANS
Alexander Belden1, Tima Zeng1, Emily Przysinda1, Psyche Loui1; 1Wesleyan University

TALK 4: NEURAL MECHANISMS OF EPISODIC RETRIEVAL SUPPORT DIVERGENT CREATIVE THINKING
Kevin P. Madore1, Preston P. Thakral2, Roger E. Beaty1, Donna Rose Addis3, Daniel L. Schacter2; 1Stanford University, 2Harvard Medical School, 3University of Auckland

TALK 5: IN SEARCH OF MIND WANDERING: DYNAMIC FUNCTIONAL CONNECTIVITY DURING REST AND TASK
Ekaterina Denkova1, Jason S. Nomi1, Shruti Gopal Vij2, Lucina Q. Uddin1, Amishi P. Jha1; 1University of Miami

TALK 6: VISUAL FIELD REPRESENTATIONS IN HUMAN CEREBELLUM
James A. Brissenden1, Sean M. Tobyne1, David E. Osher2, Emily J. Levin3, Mark A. Halko4, David C. Somers1; 1Boston University, 2Ohio State University, 3Brown University, 4Harvard Medical School and Beth Israel Deaconess Medical Center

TALK 7: MANAGING TWO LANGUAGES RELATES TO MANAGING TWO GOALS: FMRI EVIDENCE FROM TASK-SWITCHING
Kelly A. Vaughn1, Arturo E. Hernandez1; 1University of Houston

TALK 8: THE NEURAL BASIS OF VERB AND NOUN SEMANTIC REPRESENTATIONS IN CONGENITALLY BLIND INDIVIDUALS
Giulia V. Elli1, Rashi Pant1, Rebecca Achtman2, Marina Bedny3; 1Johns Hopkins University, 2DePauw University

TALK 9: WHAT HAPPENS IN THE HUMAN BRAIN WHEN EXPLICIT WARNINGS REDUCE FALSE MEMORIES?
Sara Cadavid1, M. Soledad Beato2; 1Universidad del Rosario, Colombia, 2Univesidad de Salamanca, Spain

Data Blitz Session 3
Saturday, March 24, 12:00 - 1:30 pm, Grand Ballroom
Chair: Lorna Quandt, Gallaudet University
Speakers: Colleen Schneider, Esti Blanco-Elorrieta, Alexander Belden, Kevin P. Madore, Ekaterina Denkova, James A. Brissenden, Kelly A. Vaughn, Giulia V. Elli, Sara Cadavid, Jennifer Zuk, Nora Preuss, Rebecca Cutler, Heather Bruett, Trevor Brothers, Benjamin N. Conrad
TALK 10: RELATIONSHIPS BETWEEN WHITE MATTER IN INFANCY AND SUBSEQUENT LANGUAGE ABILITIES IN PRESCHOOL
Jennifer Zuk1,2, Michael Figuccio1, Xi Yu1, Joseph Sanfilippo1, Jade Dunstan1, Clarisa Carruthers1, Ellen Grant1,2, Nadine Gaab1,2,3; 1Boston Children’s Hospital, 2Harvard Medical School, 3Harvard Graduate School of Education

TALK 11: FULL-BODY OWNERSHIP ILLUSION ELICITED BY VISUO-VESTIBULAR INTEGRATION
Nora Preuss1, Henrik Ehrsson1; 1Karolinska Institutet

TALK 12: SEARCHING FOR SEMANTIC KNOWLEDGE: A VECTOR SPACE SEMANTIC ANALYSIS OF THE FEATURE GENERATION TASK
Rebecca Cutler1, Nate Klooster2, Melissa Duff1, Sean Polyn1; 1Vanderbilt University, 2University of Pennsylvania

TALK 13: THE ROLE OF INTER-REGION INFORMATION SYNCHRONY IN PROCESSING VISUAL STIMULI
Heather Bruett1, Marc Coutanche1; 1University of Pittsburgh

TALK 14: TWO LATE POSITIVITIES DURING SENTENCE COMPREHENSION: THE INFLUENCE OF WRAP-UP AND COGNITIVE CONTROL
Trevor Brothers1,2, Eddie Wlotko3, Simone Riley1, Margarita Zeitlin1, Connie Choi1, Gina Kuperberg1,2; 1Tufts University, 2Massachusetts General Hospital, 3Moss Rehabilitation Research Institute

TALK 15: NETWORK TOPOLOGY OF SYMBOLIC AND NONSYMBOLIC NUMBER PROCESSING: A 7T FMRI STUDY
Benjamin N. Conrad1, Eric D. Wilkey1, Gavin R. Price1; 1Peabody College, Vanderbilt University

PHILOSOPHICAL TRANSACTIONS B

Philosophical Transactions B publishes high quality theme issues on topics of current importance and general interest across the life sciences. Each issue creates an authoritative synthesis, showcasing current developments and providing a foundation for future research.

Visit bit.ly/TBproposals to find out how to submit a proposal for a theme issue
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General Information

Abstracts
Poster abstracts can be found in the printed program and in the PDF version which is downloadable from www.cognneurosociety.org.

ATM
An ATM is located in the hotel for your convenience.

Audiovisual Equipment for Talks
LCD projectors (e.g., for PowerPoint presentations) will be provided in all rooms where spoken sessions are scheduled; however, computers will NOT be provided. Presenters must bring their own computers and set them up BEFORE the start of the session in which they are presenting. Facilities will be provided to allow several computers to be connected to the LCD projector in a room. Presenters are strongly encouraged to arrive in their scheduled symposium room a minimum of 30 minutes before their talks so that they know how to set up their equipment.

Baggage Check
The Bell Desk - Assistance with luggage, packages and other carry-on's, is located with the Concierge, next to the front desk.

Business Center
The Business Center is located on the second floor. The following services are available: Copy Services, Facsimile Services, On-Site Computers, Internet Access, Typing Services, and Shipping Services (UPS and FedEx). After staffed hours, the business center can be accessed with your room key to access computers with internet and printing capabilities.

Catering
Catering will be available during the conference and is included in the registration fee. Please refer to the table below for the catering times.

Certificate of Attendance
To receive a Certificate of Attendance please visit the Registration Counter on the Grand Ballroom Foyer of the Sheraton Boston Hotel at the end of meeting. If you require any changes, we will be happy to email/mail a copy after the meeting. See also Receipts.

Chair People
Please ensure that you are available in your presentation room at least thirty minutes before the start of the session. Persons chairing sessions are asked to keep the talks on time.

Code of Conduct
The Cognitive Neuroscience Society is committed to providing a safe and professional environment during our annual meeting. All CNS members are expected to conduct themselves in a business-like and professional manner. It is unlawful to harass a person or employee because of that person's sex or race. Harassment is defined by hostile or offensive behavior towards another.

Communications Open House
CNS Public Information Officer Lisa Munoz will answer your questions, give advice, and talk about the communication and press services CNS offers. No appointment needed. Just grab some breakfast and drop in.

Sunday March 25, 8am-10am, Kent Room
Monday March 26, 8am-10am, Kent Room

Contact Us
To contact us onsite, visit the Registration Counter in the Grand Ballroom Foyer of the Sheraton Boston Hotel or send an email to meeting@cnsmeeting.org. We will respond to your email at our soonest opportunity.

Disclaimer
The Program Committee reserves the right to change the meeting program at any time without notice. Please note this program is correct at time of print.

Drink Ticket
Each Attendee will receive one drink ticket; it can be redeemed for alcoholic or non-alcoholic beverages at the Welcome Reception on Saturday. Lost drink tickets will not be replaced.

Exhibit Hall
The conference exhibit is located in Exhibit Hall C of the Sheraton Boston Hotel. Located in this room are the posters, exhibit booths,
and catering. The Exhibit Hall is open to all attendees at the following times:

- **Saturday, March 24**: 1:30 pm – 5:30 pm
- **Sunday, March 25**: 8:00 am – 5:00 pm
- **Monday, March 26**: 8:00 am – 5:45 pm
- **Tuesday, March 27**: 8:00 am – 12:00 pm

**Facebook**

Find us on Facebook search for “Cognitive Neuroscience Society” and like us!

**Hotel**

The Sheraton Boston Hotel is our exclusive Hotel for the CNS 2018 Annual Meeting and where all CNS 2018 meeting events will be held. Sheraton Boston Hotel located at 39 Dalton Street, Boston, MA, 02199.

**Hotel Restaurants**

SideBar and Apropos. Whether you are in the mood for quick refreshment or a full meal, the culinary offerings at SideBar and Apropos will satiate you with an unforgettable interpretation of global dining.

**Internet Access**

CNS attendees will receive complimentary wireless internet, ideal for web browsing, social networking, and checking emails only, within the meeting rooms and exhibit hall.

**Lost & Found**

The meeting Lost and Found is located at the Registration Counter on the Grand Ballroom Foyer of the Sheraton Boston Hotel.

**Member Services**

The member services desk is located at the Registration Counter on the Grand Ballroom Foyer of the Sheraton Boston Hotel. The member services desk will be open at the following times:

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<td>Monday, March 26</td>
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<tr>
<td>Tuesday, March 27</td>
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**Message Center**

Messages for meeting registrants can be left and retrieved at the Registration Counter on the Grand Ballroom Foyer of the Sheraton Boston Hotel. A bulletin board will be available for announcements and job postings.

**Mobile Phones**

Attendees are asked to silence their mobile phones when in sessions.

**Name Badges**

The Sheraton Boston Hotel is open to public access. For security purposes, attendees, speakers and exhibitors are asked to wear their name badges to all sessions and social functions.

Entrance into sessions is restricted to registered attendees only. Entrance to the Exhibition will be limited to badge holders only. If you misplace your name badge, please go to the Registration Counter on the Grand Ballroom Foyer of the Sheraton Boston Hotel for a replacement.

**Parking**

The Sheraton Boston Hotel offers secured and covered Valet parking. Parking rates are currently $58/day and self parking at $42/day with in and out privileges for guests and non-guests. (Please note this information was correct at time of print.)

**Phone Charging Station**

There will be a small phone charging station located at the Registration Counter on the Grand Ballroom Foyer of the Boston Sheraton Hotel.

**Photo Disclaimer**

Registration and attendance at, or participation in, the Cognitive Neuroscience Society meetings and other activities constitute an agreement by the registrant/attendee to CNS’s use and distribution (both now and in the future) of the registrant’s or attendee’s image in photographs of such events and activities.

**Poster Sessions**

Poster sessions are scheduled on Saturday, March 24, Sunday, March 25, Monday, March 26, and Tuesday, March 27. The presenting author must be present during the assigned session and other authors may be present to answer questions. The poster sessions are in the Exhibit Hall C of the Sheraton Boston Hotel. Badges are required at all times. Do not leave personal items in the poster room.

**Printed Program Booklet**

One copy of the printed program booklet is available to each attendee. If you would like a second copy please check in at the Registration Counter in the Grand Ballroom Foyer of the Sheraton Boston Hotel on the last day of the event. Every effort has been made to produce an accurate program. If you are presenting at the conference, please confirm your presentation times as listed in this program. Attendees will also have the option to view the program by downloading it from our website after the meeting has concluded.

**Receipts**

You received two receipts via email, one at the time of purchase and a second with your registration confirmation. Please email the
registration desk if you require an additional copy. See also Certificate of Attendance.

Receptions
The Welcome Reception will be held in the Grand Ballroom Foyer, from 6:30-7:30 pm on Saturday, March 24, directly following the Keynote Address.

Registration
The Registration Counter is located in the Grand Ballroom Foyer of the Sheraton Boston Hotel. The Registration Counter will be open at the following times:

- Saturday, March 24: 11:00 am – 6:30 pm
- Sunday, March 25: 7:30 am – 5:30 pm
- Monday, March 26: 8:00 am – 5:30 pm
- Tuesday, March 27: 8:00 am – 3:00 pm

Smoking
Smoking is not permitted in or outside any of the meeting rooms or the exhibition hall.

Speakers
All speakers must register and wear name badge to present. Please ensure that you are available in your presentation room at least thirty minutes before the start of the session. See also Audiovisual equipment for Talks.

Transportation
The T, will take you to multiple different locations throughout Massachusetts. Fare runs between $1.70 - $7.00. It is affordable and reliable.


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Exhibit Hours

The conference exhibits are located in Boston Sheraton Hotel. Located in this room are the posters, exhibit booths, and catering. The Exhibit Hall C is open to all attendees at the following times:

- Saturday, March 24: 1:30 pm – 5:30 pm
- Sunday, March 25: 8:00 am – 5:00 pm
- Monday, March 26: 8:00 am – 5:45 pm
- Tuesday, March 27: 8:00 pm – 12:00 pm

GSA/PFA Awards

Congratulations to the 2018 winners of the Graduate Student Awards and the Post-Doctoral Fellow Awards. Each winner receives a monetary stipend to cover conference travel expenses.

Graduate Student Award Winners

Alyssa J. Kersey, University of Rochester
Andrew Chang, McMaster University
Aneesha Nilakantan, Northwestern University
Matthew Moore, University of Illinois at Urbana-Champaign
Alex Wiesman, University of Nebraska Medical Center
Aditya Jayashankar, National Institute of Mental Health and Neuro Sciences (NIMHANS)
Rachel Romeo, Harvard University, Division of Medical Sciences, Massachusetts Institute of Technology

Post-Doctoral Fellow Award Winners

Julia W. Y. Kam, University of California, Berkeley
Eric C. Fields, Boston College, Brandeis University
Avinash Vaidya, Brown University
Alexandra N. Trelle, Stanford University
Victoria Brunson, University of Kent
Stacey Bedwell, Birmingham City University
Beatriz Martin-Luengo, National Research University- Higher Schc Economics
Elena Barbieri, Northwestern University
Rafal Jonczyk, Adam Mickiewicz University
David Rothlein, VA Boston Healthcare System
Invited Symposium Session 1
FROM CAGE TO CLINIC: INTEGRATIVE NEUROSCIENCE TO UNDERSTAND AND IMPROVE COGNITION AND EMOTIONAL FUNCTION IN HEALTHY AND CLINICAL POPULATIONS
Sunday, March 25, 10:00 am - 12:00 pm, Back Bay ABCD
Chair: Cindy Lustig, University of Michigan
Speakers: Cindy Lustig, Tim Bussey, Damien Fair, Elizabeth Phelps

Most of us conduct research on basic processes of cognition and emotion with the goal of helping to guide the development of interventions that can improve functioning in both healthy people and those with psychotic or neurodegenerative disease - or at least that’s what we say in our grant applications! In many cases, such interventions are first tested on animal models. Conversely, patient studies often serve as “natural experiments” that help elucidate basic cognition (e.g., HM, Phineas Gage). The talks in this session describe research that takes this integrative, translational approach to understand the neural circuitry underlying attention, memory, and emotion, including the critical role of this research in meeting the Research Domain Criteria mandate of understanding cognition across the continuum from normal to disordered function.

TALK 1: FROM TOP-DOWN TO “BOTTOMS-UP”: CONVERGING APPROACHES TO UNDERSTAND THE NEURAL SYSTEMS INVOLVED IN ATTENTION AND COGNITIVE CONTROL
Cindy Lustig1; 1University of Michigan
Cognitive neuroscience uses a plethora of methods, in part because each provides only a limited window into neurocognitive interactions. I will describe how rodent, genetic, and human neuroimaging studies that use converging methods can help disentangle the complex neural systems that support bottom-up, stimulus-driven attention and top-down, goal-driven cognitive control. Neuroimaging studies in patients and genetic populations help illuminate which aspects of the circuitry that activate in studies of healthy young adults may be essential for different aspects of attentional control – and which may merely be correlated. The rodent studies help to examine in more detail how that circuitry is modulated by cholinergic and dopaminergic systems. Finally, combining the results of PET imaging of declines in these different neuromodulator systems with behavioral studies in patients with Parkinson’s disease and rodents with experimental damage to those systems helps us understand how they contribute to both cognitive deficits and the risk for falls.

TALK 2: BRIDGING THE TRANSLATIONAL GAP USING TOUCHSCREENS: ATTENTION AND MEMORY IN NEURODEGENERATIVE AND NEUROPSYCHIATRIC DISEASE
Tim Bussey1; 1Western University, London, ON, Canada.
Animal models are an indispensable tool for the study of normal cognition, and for understanding and discovering treatments for disorders of attention, memory, and other aspects of cognition. A major goal in the use of the animal models of cognition is translation: the ability successfully to transfer our behavioural results in animals to studies in humans (and, indeed, back again). However, the currently most widely used animal behavioural tests are very dissimilar to those used with human subjects, and criticism has been levied at animal research for using methodology that does not translate. The touchscreen method, in which mice and rats interact with an ipad-like touchscreen, provides the ability to test rodents on tasks in many cases identical, in all important respects, to the computerised tests increasingly used in humans. Furthermore some of the touchscreen tests developed in rodents are now being used successfully in human research. By taking such an approach we have a better chance of achieving successful translation from rodent to human in the study of normal cognition, and in discovering treatments for disorders of...
cognition in, e.g., neuropsychiatric and neurodegenerative disease. In my talk I will illustrate this approach by describing experiments in neurodegenerative and neuropsychiatric disease in mice, rats and humans. I’ll also describe our plans for touchscreenscognition.org, an outward-facing, open-access resource for touchscreen users (now about 200 labs) around the world, including facilitating the combination of touchscreens with e.g., optogenetics and miniscopes, searchable databases, and on-site training.

TALK 3: GRAPH THEORY AS A TRANSLATIONAL BRIDGE TO UNDERSTAND COGNITIVE AND EMOTIONAL DEVELOPMENT
Damien Fair1; 1Oregon Health and Science University

Research in psychiatry often relies on the assumption that the diagnostic categories identified in the DSM represent homogeneous syndromes. However, the mechanistic heterogeneity that potentially underlies the existing classification scheme might limit discovery of etiology. In our current work, we expand on previous brain imaging methods and use graph theory, specifically community detection, to clarifying behavioral and functional heterogeneity in children with ADHD and Autism. We follow-up on these findings and highlight the potential for non-invasive functional imaging to serve as a translational bridge between human and animal models to better target the pathology from these discoveries. We argue that illumination of such phenomena will have significant practical importance for understanding typical development and to identifying the etiologic underpinnings of atypical developmental trajectories.

TALK 4: BUILDING ON ANIMAL MODELS TO UNDERSTAND MECHANISMS OF THREAT CONTROL IN HUMANS
Elizabeth Phelps1; 1New York University

Animal models of associative threat learning provide a basis for understanding human fears and anxiety. Building on research from animal models, we explore a range of means maladaptive defensive responses can be diminished in humans. Extinction and emotion regulation, techniques adapted in cognitive behavioral therapy, can be used to control learned defensive responses via inhibitory signals from the ventromedial prefrontal cortex to the amygdala. One drawback of these techniques is that these responses are only inhibited and can return, with one factor being stress. I will review research examining the lasting control of maladaptive defensive responses by targeting memory reconsolidation and present evidence suggesting that the behavioral interference of reconsolidation in humans diminishes involvement of the prefrontal cortex inhibitory circuitry, although there are limitations to its efficacy. I will also describe two novel behavioral techniques that might result in a more lasting fear reduction, the first by providing control over stressor and the second by substituting a novel, neutral cue for the aversive unconditioned stimulus.

TALK 5: Q&A PERIOD
The speakers will take questions from the audience.

Invited Symposium Session 2
HUMAN AND MACHINE COGNITION – THE DEEP LEARNING CHALLENGE
Sunday, March 25, 10:00 am - 12:00 pm, Grand Ballroom
Chair: Nikolaus Kriegeskorte, Zuckerman Institute and Department of Psychology, Columbia University
Speakers: Nikolaus Kriegeskorte, Katherine Storrs, Ilker Yildirim, Aude Oliva

Deep neural networks are brain-inspired models of distributed computation across deep representational hierarchies. With roots in neuroscience and cognitive science, these systems are currently revolutionizing artificial intelligence (AI). What does this mean for Cognitive Neuroscience? In this Symposium we address this question from multiple perspectives. Neural networks provide a modeling framework that is neurobiologically plausible, but abstracts from biological details. In the last five years, engineering has demonstrated the computational power of such models in AI applications. We now have hardware and software that enables us to model cognition at scale. It is time to integrate neural network modeling with cognitive neuroscience. An emerging literature uses deep neural networks to model how the brain implements cognition. Each of the four talks in this Symposium will last 25 min and will be followed by 5 min of questions and answers.

TALK 1: INTRODUCTION TO DEEP LEARNING FOR COGNITIVE NEUROSCIENTISTS
Nikolaus Kriegeskorte1,2; 1Columbia University, 2Zuckerman Institute

This talk will explain how deep neural networks work and how a given model can be tested with brain activity measurements and behavioral data. The modern developments in engineering will be briefly outlined in their historical context. Results of comparing representational geometries between deep convolutional neural networks for object recognition and the ventral visual pathway show that the models capture the representational stages from early visual retinotopic representations to high-level category-specific representations more accurately than any other class of computational model.

TALK 2: DEEP NET MODELS OF VISION: ARCHITECTURE AND DOMAIN-SPECIFIC TRAINING
Katherine Storrs1; 1University of Giessen

Although loosely inspired by the mammalian visual system, deep convolutional neural networks (DCNNs) are engineering solutions to the task of object recognition, and diverse architectures have proven successful at that task. In earlier studies, using relatively shallow architectures below cutting-edge classification accuracy, greater depth and higher task performance were associated with better prediction of object representations in inferior temporal (IT) cortex (Khaligh-Razavi
Ilker Yildirim

GRAPHICS IN BIOLOGICAL FACE PROCESSING SYSTEMS

The visual system must not only recognize and localize objects, but also perform much richer inferences about the underlying causes in the world that give rise to observed sense data. Analyzing scenes by inverting causal generative models, also known as “analysis-by-synthesis”, has a long history in computational vision, and these models have some behavioral support, but they are typically too slow to support online perception and have no known mapping to actual neural circuits. In this talk, I will present a neurally plausible model for efficiently inverting generative models of images and test it as a precise account of one aspect of high-level vision, the perception of faces. The model is based on a deep neural network that learns to invert a three-dimensional face graphics program in a single fast feedforward pass. It successfully explains both human behavioral data and multiple levels of neural processing in non-human primates, as well as a classic illusion, the “hollow face” effect. The model also fits qualitatively better than state-of-the-art computer vision models, and suggests an interpretable reverse-engineering account of how images are transformed into scene percepts in the primate ventral stream.

TALK 4: THE TRANSPARENCY OF DEEP LEARNING NETWORKS
Aude Oliva; ‘Massachusetts Institute of Technology

With the success of new computational architectures for visual processing, such as convolutional neural networks (CNN) and access to databases with millions of labeled examples (e.g., ImageNet, Places, Moments), the state of the art in computer vision is advancing rapidly. One important factor for continued progress is to understand the representations that are learned by the inner layers of these deep architectures. In this talk, I will illustrate how we can visualize meaningful units from deep networks and use them to provide explicit predictions of what an image represents.

TALK 5: Q&A PERIOD
The speakers will take questions from the audience.

Invited Symposium Session 3

NEURAL MECHANISMS OF ADAPTIVE FORGETTING

Tuesday, March 27, 10:00 am - 12:00 pm, Back Bay ABCD
Chair: Michael Anderson, University of Cambridge
Speakers: Michael C. Anderson, Maria Wimber, Ronald L. Davis, Paul Frankland

Neurobiological research on memory has focused on the mechanisms underlying memory storage, consolidation, and retrieval, with less attention to forgetting. Recently, however, it has become clear that forgetting involves distinct active processes, potentially serving adaptive functions. This symposium will highlight recent work spanning from cognition to molecular biology, demonstrating active mechanisms that promote memory loss. Michael Anderson will present recent work showing the existence of a species-general adaptive forgetting by which retrieval induces forgetting of competing traces that impede behaviour, establishing a causal role of the prefrontal cortex in triggering memory loss. Maria Wimber will present ground-breaking imaging work in humans showing how the retrieval process shapes what we remember. Specifically, using representational similarity analysis, she has tracked the gradual suppression of individual competing memories. Ron Davis will discuss an exciting program of research in Drosophila, including compelling evidence of “forgetting cells” that promote the erosion of behavioral memories and specifying the molecular processes that underlie active forgetting. Paul Frankland will present elegant work on the role of neurogenesis in degrading access to memories, and will discuss a broad computational perspective on why both trace persistence and transience are critical in optimising memory guided decision making. What unifies these talks, despite their remarkably diverse methodologies, species, and levels of analysis, is a converging view on the adaptive nature of forgetting in which the brain ensures that memory is tuned to an organism’s needs. This view fundamentally diverges from the historical emphasis on forgetting as a failure of memory.

TALK 1: A SPECIES-GENERAL RETRIEVAL-SPECIFIC MECHANISM OF ADAPTIVE FORGETTING.
Michael C. Anderson; ‘University of Cambridge

Neurobiological research on memory has focused on the mechanisms underlying memory storage. Yet, the universal occurrence of forgetting throughout the animal kingdom suggests that it serves critical adaptive functions, driven by distinct mechanisms. Here we show the existence of a species-general active forgetting mechanism shared by rodents.
and humans that suppresses distracting past events to facilitate the use of memory in service of adaptive behavior. We found that when rats retrieved their prior experience with an object to guide new exploration, it significantly reduced their later recognition of other objects previously encountered in that environment. As in humans, this retrieval-induced forgetting was competition-dependent, cue-independent, long-lasting, and reliant on inhibitory control processes mediated by the prefrontal cortex: Silencing medial prefrontal cortex with muscimol selectively abolished the forgetting effect. cFOS imaging revealed that prefrontal control demands declined over repeated retrievals as competing memories were forgotten, revealing a key adaptive benefit of forgetting. Occurring in 88% of the 63 rats studied, this finding establishes an unusually robust model of how active forgetting harmonizes the mnemonic ecosystem with behavioral demands, and permits isolation of its circuit, cellular and molecular mechanisms.

TALK 2: REMEMBERING CAUSES ADAPTIVE FORGETTING OF CORTICAL MEMORY TRACES
Maria Wimber¹; ¹University of Birmingham, UK

Remembering can, surprisingly, cause forgetting. Such forgetting arises when several overlapping memories compete for access to conscious remembering. Selecting one memory can then induce forgetting of competitors, a phenomenon known as retrieval-induced forgetting. I this talk I present recent work aimed at shedding light onto the neural mechanisms of competition and adaptive forgetting in the human brain. We use pattern analysis techniques to track memories in human brain activity as they are reactivated during remembering, and to track the adaptive changes in target and competing memories that result from repeated remembering. Our findings show that, while the neural patterns representing target memories become enhanced, competing memory patterns are gradually weakened over time. Our results strongly suggest that the human brain is capable of reducing mnemonic competition via an inhibitory mechanism that suppresses competing memories to make them less interfering in the future. More generally, we demonstrate how active remembering can adaptively change which aspects of our past remain accessible.

TALK 3: MOLECULAR NEUROBIOLOGY OF ACTIVE FORGETTING
Ronald L. Davis¹; ¹Scripps Research Institute, Florida

Experimental psychologists have studied active forgetting for decades, but the molecular and cellular mechanisms for forgetting were unknown until recently. I will summarize our studies across the last 6 years on active forgetting of olfactory memory in Drosophila. Our results indicate that a small number of dopamine neurons in the fly brain function as “forgetting cells,” promoting the erosion of behavioral memory and the cellular memory traces that form at learning in the neurons of the mushroom body circuit. The forgetting cells exhibit slow, chronic activity, although this activity is increased by sensory stimulation to the fly and decreased by sleep, providing a mechanistic explanation for retroactive interference and retroactive facilitation, respectively. Cells in the mushroom body circuit receive this dopaminergic-forgetting signal through a specific dopamine receptor that mobilizes an intracellular biochemical signaling cascade terminating in the activation of the small molecules Rac1 and Cofilin, molecules known to re-model the actin cytoskeleton. We speculate that such re-modeling removes changes in actin cytoskeleton structure instilled at learning. An overriding conclusion from our studies is that the brain is designed with active mechanisms to forget memories along with mechanisms for acquisition and consolidation.

TALK 4: THE PERSISTENCE AND TRANSIENCE OF MEMORY
Paul Frankland¹; ¹Hospital for Sick Children, Toronto

The predominant focus in the neurobiological study of memory has been on remembering (persistence). However, recent studies have considered the neurobiology of forgetting (transience). In my talk I will draw parallels between neurobiological and computational mechanisms underlying transience. I will propose that it is the interaction between persistence and transience that allows for intelligent decision-making in dynamic, noisy environments. Specifically, I will argue that transience (1) enhances flexibility, by reducing the influence of outdated information on memory-guided decision making, and (2) prevents overfitting to specific past events, thereby promoting generalization. According to this view, the goal of memory is not the transmission of information through time, per se. Rather, the goal of memory is to optimize decision-making. As such, transience is as important as persistence in mnemonic systems.
perception arises from acoustic features, relating human behavioral data to spike rates in rodent auditory cortex. Subsequently, Bouwer examines a question of importance to many fields: do events that occur at ‘expected’ times (e.g., on the beat) show enhancement or suppression of associated neural and behavioral responses? Her EEG work manipulates different temporal expectations, dissociating expectations based on stimulus regularity and based on memory for stimulus timing. Henry adds a social perspective, assessing inter-subject synchronization of EEG signals in live versus videoed musical concerts, with and without other audience members being present. Audience members with greater inter-subject synchronization at the beat rate report greater enjoyment and social affiliation. Finally, Cirelli will consider the developmental relevance of beat perception, showing how infants’ emotion and attention is altered by music with rhythmic qualities, with higher beat salience correlating with great attention.

TALK 1: NEURAL ADAPTATION MAY SET THE STAGE FOR THE PERCEPTION OF MUSICAL BEAT.
Vani G. Rajendran1, Jose A. Garcia-Lazaro2, Nicol S. Harper1, Nick A. Lesica2, Jan W. H. Schnupp3; 1University of Oxford, 2University College London, 3City University of Hong Kong

We know that beat perception in humans involves the coordinated engagement of sensory, motor and cognitive processes. However, these processes must somehow be set into motion by sound entering through the ears, so how does low-level auditory processing contribute to the activation of these networks? I will present cross-species work that relates beat tapping data from humans to firing rates recorded from the auditory system of rodent models to show that basic spike frequency adaptation may already be shaping where the beat is ultimately felt in rhythms and in real music. Specifically, on-beat sounds on average are accompanied by higher firing rates cortically and subcortically than off-beat sounds, and this difference may explain why some beat interpretations are vastly more likely to be perceived than others. These findings suggest that adaptation, by encoding the temporal context of sounds, creates points of neural emphasis that may influence the perceptual emergence of a beat.

TALK 2: PREDICTING “WHEN” IN RHYTHM: NEURAL MECHANISMS UNDERLYING BEAT-BASED AND MEMORY-BASED EXPECTATIONS
Fleur L. Bouwer1, Henkjan Honing1, Heleen A. Slagter1; 1University of Amsterdam

In the auditory environment, being able to predict the timing of sounds allows us to focus resources and optimizes the efficiency of the perceptual system. Moreover, it allows us to synchronize our movements to sound, for example, to dance to music. Beat-based timing (relaying on some periodicity, like the beat in music) has been suggested to be distinct from interval- or memory-based timing (relaying on learning of absolute intervals). However, the differentiation between these two mechanisms is currently debated. Here, to disentangle beat-based from memory-based temporal expectations, we created rhythms in which we orthogonally manipulated the periodicity (beat-based expectations) and predictability (memory-based expectations) of the sequences. We compared early auditory responses (ERPs; P1 and N1), and behavioral responses to events in different positions in the rhythms: in phase with the periodicity (on the beat) or out of phase with the periodicity (off the beat). We found that in general, expectations facilitated responses and this was reflected neurally as an attenuation of auditory ERP responses. For memory-based expectations, we found facilitated responses and attenuation of both the P1 and N1 responses, regardless of the position of events in the rhythms. Contrarily, for beat-based expectations, we found large differences between the effects on the beat and off the beat. Whereas on the beat, behavioral responses were facilitated and the N1 response was attenuated, off the beat, behavioral responses were hampered and N1 responses enhanced, suggesting suppression for events out of phase with the periodicity. This effect was less pronounced for predictable sequences, suggesting that memory-based and beat-based expectations do interact. Finally, while the effects of memory-based expectations seemed to depend on the task-relevance of the rhythms (i.e., attention), the effects of beat-based expectations were independent from attention. Our results thus show that memory-based and beat-based temporal expectations can be differentiated both at the behavioral and the neural level, suggesting distinct mechanisms for these two forms of temporal expectations.

TALK 3: LIVE MUSIC INCREASES INTERSUBJECT SYNCHRONIZATION OF AUDIENCE MEMBERS’ BRAIN RHYTHMS
Molly J. Henry1, Daniel J. Cameron2, Dana Swarbrick3, Dan Bosnyak3, Laurel Trainor3, Jessica Grahn1; 1University of Western Ontario, 2Georgetown University, 3McMaster University

Attending concerts is enjoyable for a number of reasons: watching performers make live music affords a qualitatively different experience than listening to a recording. Moreover, an important contributor to the enjoyment of a concert—at least anecdotally—is forming a bond with others who are enjoying the same musical experience. The current study considered the possibility that a live musical experience, i.e., the presence of live performers as well as an audience, might change the way brain rhythms synchronize across audience members, thereby changing audience members’ musical and affiliative experiences. We collected electroencephalography (EEG) data in three different social contexts. First, EEG was measured simultaneously from 20 audience members (in a larger crowd of approximately 80 people) while they observed a live musical performance. Second, EEG was measured simultaneously from 20 audience members (in a larger crowd of approximately 80 people) while they watched the recording of the first concert on a large movie screen and with audio identical to the live concert. Finally, EEG was measured from 20 participants in small groups of 2 participants seated apart (tested in 10 separate sessions) while they observed the recorded musical performance. Thus, we
manipulated the presence of the performers while keeping audience context fixed, and we manipulated the presence of other audience members while keeping the recorded performance fixed. We analyzed the data in terms of intersubject synchronization (ISS), which quantifies the degree to which brain rhythms are synchronized across groups of individuals. ISS was calculated for individual frequencies ranging between 0.1 Hz (“infra-slow” oscillations) to 60 Hz (gamma-band oscillations) for each social context condition. We observed differences in the delta (2–4.5 Hz) band, which corresponds roughly to the range of rates in which a musical beat would be felt, depending on the presence of the performers—that is, audience members’ brain waves were more synchronized with each other when the performers were present. Moreover, network connectivity measures based on delta-band brain rhythms predicted individuals’ experience of the concert—individuals with more connections to other audience members enjoyed the concert more and felt more connected to the performers. Thus, the presence of live performers at a concert leads to increased synchronization of audience members’ brain rhythms selectively at rates that are associated with feeling and moving along with a musical beat. This increased synchronization is related to increased enjoyment and affiliation.

TALK 4: MUSICAL RHYTHMS IN INFANCY: SOCIAL AND EMOTIONAL EFFECTS
Laura K. Cirelli1, Zuzanna B. Jurewicz1, Sandra E. Trehub1;
1University of Toronto Mississauga

The rudiments of rhythm perception and production, which are critical for musical engagement, develop early in life. The newborn brain is sensitive to the predictive nature of musical rhythms. With exposure, this initial sensitivity develops into rhythm perception and production skills that facilitate infants’ engagement in musical interactions, with important social and emotional consequences. For example, infants selectively help strangers who sing familiar songs or move synchronously rather than asynchronously with them. Universally, mothers sing to infants, capturing their attention and fostering interpersonal coordination. The present study assessed the coordination of arousal and attention between mothers and infants during mothers’ playful and soothing renditions of a song. Mothers sang Twinkle Twinkle to infants (n = 20, M = 9.9 months), alternating between soothing and playful renditions. In contrast to the soothing renditions, which were slow, softly sung, temporally regular, and legato in articulation, the playful renditions were faster, louder, higher in beat salience, more expressive in timing, and more staccato in articulation. Attention and arousal levels of mother and infant (skin conductivity) were monitored continuously. During soothing versions, maternal and infant arousal decreased as the song unfolded, resulting in high positive correlations in mother-infant arousal. During playful versions, maternal arousal levels were higher, and infant attention was highly focused on mother. The greater timing variability and faster tempo of playful renditions (closer, perhaps, to infants’ spontaneous tempo) may underlie infants’ enhanced attention. Relations between specific acoustic features of maternal performances and infants’ response patterns will be presented.

TALK 5: Q&A PERIOD
The speakers will take questions from the audience
## Symposium Sessions

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### Symposium Session 1

**MEMORY MODULATION VIA DIRECT BRAIN STIMULATION IN HUMANS**  
Sunday, March 25, 3:00 - 5:00 pm, Back Bay A&B  
**Chair:** Cory Inman, Emory University  
**Speakers:** Josh Jacobs, Nitin Tandon, Nanthia Suthana, Youssef Ezzyat, Cory Inman

Direct electrical stimulation of the human brain holds the potential to further reveal the neural mechanisms underlying essential memory functions and may offer new therapeutic capabilities in the fight against devastating neurological memory disorders. Recent reports show both memory impairment and enhancement when stimulating specific encoding regions or retrieval networks, demonstrating the difficulty and complexity of enhancing memory with direct brain stimulation. We've learned several important factors to enhancing memory through these recent studies, including the benefits of selecting more precise sub-regional stimulation targets that may act as modulators of the downstream hippocampal memory system and the utility of timing stimulation based on real-time encoding state classification. This symposium features emerging research that demonstrates when direct brain stimulation fails and succeeds to enhance memory.

Notably, both forms of evidence are useful in uncovering the causal mechanisms underlying declarative memory function. Josh Jacobs will discuss findings that entorhinal and hippocampal brain stimulation causes a disruption of temporal and allocentric spatial memory. Nitin Tandon will present findings that stimulation selectively impairs spatial retrieval while not affecting temporal retrieval. Nanthia Suthana will present work showing that the precise location of electrical stimulation delivered to the entorhinal area is critical in enhancing performance on a wide-range of hippocampal-dependent memory tasks. Youssef Ezzyat will present work showing how timing of stimulation using multivariate decoding can rescue periods of poor memory function. Cory Inman will present work demonstrating that brief electrical stimulation to the basolateral amygdala reliably enhances memory in humans without eliciting an emotional response.
TALK 1: ELECTRICAL STIMULATION OF ENTORHINAL CORTEX AND HIPPOCAMPUS IMPAIRS TEMPORAL AND ALLOCENTRIC REPRESENTATIONS IN HUMAN EPISODIC MEMORY

Josh Jacobs\(^1\); \(^1\)Columbia University

Developing a method for reliably improving human memory encoding would be transformative for everyday life. We examined the hypothesis that electrical stimulation in the entorhinal cortex and hippocampus provided a viable route to improving the efficiency of human memory encoding. Epilepsy patients with surgically implanted electrodes volunteered to perform our customized spatial and verbal episodic memory tasks. During the memory encoding periods of these tasks, electrical stimulation was applied transiently in the entorhinal and hippocampal regions using clinical macroelectrodes. In contrast to our expectations, stimulation impaired memory performance. This impairment was present in both tasks, and for stimulation in both left and right hippocampus and entorhinal cortices. These results suggest that the hippocampus and entorhinal cortex have a direct causal role in memory encoding. Moreover, by examining the detailed nature of the memory disruptions on stimulation trials in both tasks, we characterized the specific memory processes that were supported by these structures. Hippocampal and entorhinal stimulation disrupted the temporal structure of recall responses in the episodic task and the encoding of spatial stimuli that were likely to have been learned with allocentric strategies in the spatial task. These results suggest that the human hippocampal and entorhinal areas are causally important for temporal and allocentric memory. In addition to describing how stimulation can be used for causal functional brain mapping, we also discuss potential ways to use improved stimulation protocols to bolster memory.

TALK 2: NETWORK-BASED BRAIN STIMULATION SELECTIVELY IMPAIRS SPATIAL RETRIEVAL

Nitin Tandon\(^1\), Kamin Kim\(^1\), Amber Schedlbauer\(^2\), Matthew Rollo\(^1\), Suganya Karunakaran\(^1\), Arne Ekstrom\(^2\); \(^1\)University of Texas Health Science Center at Houston, \(^2\)University of California Davis

Direct brain stimulation via electrodes implanted for intracranial electroencephalography (iEEG) permits the modulation of endogenous electrical signals with significantly greater spatial and temporal specificity than non-invasive approaches. It also allows for the stimulation of deep brain structures important to memory, such as the hippocampus, that are difficult, if not impossible, to target non-invasively. Direct stimulation studies of these deep memory structures, though, have produced mixed results, with some reporting improvement, some impairment, and others, no consistent changes. We hypothesize that to modulate cognitive function using brain stimulation, it is essential to modulate connected nodes comprising a network, rather than just alter local activity. iEEG data collected while patients performed a spatiotemporal memory retrieval task were used to map frequency-specific, coherent oscillatory activity between different brain regions associated with successful memory retrieval. We used these to identify two target nodes that exhibited selectively stronger coupling for spatial vs. temporal retrieval. In a subsequent session, electrical stimulation - theta-bursts with a fixed phase-lag (0° or 180°) – was applied between the two target regions while patients performed spatiotemporal retrieval. Stimulation selectively impaired spatial retrieval while not affecting temporal retrieval, and this selective impairment was associated with theta decoupling of the spatial retrieval network. These findings suggest that stimulating tightly connected nodes in a functional network at the appropriate phase-lag may effectively modulate the network function, and while in this case it impaired memory processes, it sets a foundation for further network-based perturbation studies.

TALK 3: ADVANCEMENTS IN INTRACRANIAL STIMULATION OF THE ENTORHINAL AREA FOR ENHANCEMENT OF EPISODIC MEMORY

Nanthia Suthana\(^1\); \(^1\)University of California, Los Angeles

Studies using direct stimulation of the medial temporal lobe (MTL) to modulate hippocampal-dependent memory have provided conflicting results with studies showing improvement, impairment, or no effect of stimulation on behavioral performance. The current study sought to determine whether the precise location of stimulation within the MTL could explain divergent findings. Micro- and macro-electrode intracranial stimulation was applied in the MTL of twenty-five neurosurgical patients implanted with depth electrodes for clinical evaluation. High-resolution magnetic resonance imaging and automated image segmentation methods were used to precisely localize stimulation sites. Results show that direct stimulation of the entorhinal area successfully improved hippocampal-dependent memory across a wide range of memory tasks (verbal recall, spatial navigation, face-name memory, and person/object recognition) with stimulation site (entorhinal white/gray) as the critical determinant of subsequent memory performance independent of antiepileptic medication (on/off), side (left/right) or type (macro/micro) of stimulation. Stimulation of entorhinal white matter and not nearby gray matter was effective in improving hippocampal-dependent memory, indicating that stimulation of the afferent input to the hippocampus may be therapeutically effective for the modulation of memory encoding in humans. Findings also suggest that focal low-current micro-stimulation of the entorhinal white matter is sufficient to improve hippocampal-dependent memory and provides a novel approach for interrogating medial temporal circuits that support human episodic memory.

TALK 4: CLOSED-LOOP STIMULATION OF TEMPORAL CORTEX RESCUES FUNCTIONAL NETWORKS AND IMPROVES MEMORY

Youssef Ezzyat\(^1\); \(^1\)University of Pennsylvania

Memory lapses are frustrating and often arise from ineffective encoding. Oscillatory brain activity during encoding predicts later memory, suggesting that it can be used to discriminate good and poor memory function, and raising questions about how to modulate neural activity to increase memory success. Past studies that applied direct electrical stimulation for memory modulation in humans showed mixed
results, with some reporting enhancement and many showing disruption. Here, we test the hypothesis that stimulation is most likely to improve performance if it is targeted to rescue periods of poor memory function. We first asked whether we could reliably decode memory states from intracranial EEG recordings from epileptic patients as these patients performed a free recall task. We found that multivariate classifiers trained on oscillatory activity during encoding reliably predicted memory performance across sessions, suggesting the models identified temporally stable patterns of memory-related activity. We then used these models in later sessions to decode the probability of memory success as items were encoded and triggered stimulation in closed-loop if the classifier indicated the word was likely to be forgotten. Stimulation applied to the lateral temporal lobe increased memory performance relative to a matched non-stimulated condition, and also compared to an independent control group. We found that lateral temporal cortex stimulation triggered to rescue periods of poor memory led to increased classifier output, consistent with enhanced neural evidence for successful encoding. The data identify conditions under which stimulation can be used to improve memory, and suggest applications to treating memory dysfunction.

TALK 5: DIRECT ELECTRICAL STIMULATION OF THE AMYGDALA ENHANCES EVENT-SPECIFIC DECLARATIVE MEMORY IN HUMANS
Cory Inman1, Joseph Manns1, Kelly Bijanki1, David Bass1, Stephan Hamann1, Daniel Drane1, Rebecca Fasano1, Robert Gross1, Jon Willie1; Emory University

Emotional events are often better remembered than neutral events, a benefit that many studies have hypothesized to depend on the amygdala’s interactions with memory systems. These studies have indicated that the amygdala can modulate memory consolidation processes in other brain regions such as the hippocampus and perirhinal cortex. Indeed, rodent studies have demonstrated that direct activation of the amygdala can enhance memory consolidation even during non-emotional events. However, the premise that the amygdala causally enhances declarative memory for specific events has not been directly tested in humans. Here we tested whether brief electrical stimulation to the amygdala could enhance declarative memory for specific images of neutral objects without eliciting a subjective emotional response. Epilepsy patients undergoing monitoring of seizures via intracranial depth electrodes viewed a series of neutral object images, many of which were paired with brief, low amplitude electrical stimulation to the amygdala. Amygdala stimulation elicited no subjective emotional response yet led to reliably improved memory compared to control images when patients were given immediate and next-day free recall and recognition memory tests. Neuronal oscillations in the amygdala, hippocampus, and perirhinal cortex during this next-day memory test indicated that a neural correlate of the memory enhancement was increased theta and gamma oscillatory interactions between these regions, consistent with the idea that the amygdala prioritizes consolidation by engaging other memory regions. These results show that the amygdala can initiate endogenous memory prioritization processes in the absence of emotional input, addressing a fundamental question and opening a path to future therapies.

Symposium Session 2
UNDERSTANDING HUMAN VISUAL COGNITION THROUGH MULTIVARIATE AND COMPUTATIONAL ANALYSIS OF MEG AND EEG DATA
Sunday, March 25, 3:00 - 5:00 pm, Back Bay C&D
Chair: Radoslaw Martin Cichy, Free University Berlin
Speakers: Alex Clarke, Leyla Isik, Santani Teng, Jean-Rémi King, Dimitrios Pantazis

At every blink of an eye, the human brain transforms within a few hundred milliseconds the patterns of photons hitting the retina into a meaningful percept of the world that enables ecologically adaptive behavior. Our investigation of the underlying rapid and complex neural dynamics is limited by the power of our methodology, motivating the development of advanced analysis methods. This symposium presents two major emerging analytical approaches for MEG and EEG data that are beginning to transform the field and provide novel insights. First, we will show how time-resolved multivariate analysis approaches are applied to harvest the rich information captured by MEG and EEG data. Specifically, we will show how pattern classification approaches (decoding) and representational similarity analysis are used to reveal the time course of visual information processing. Second, we will show how comparison of MEG and EEG data to computational models of visual cognition such as deep neural networks (DNNs) advance our understanding of the representational formats and transformations in visual processing. We will highlight the novel insights created this way for a diverse set of visual capacities such as object recognition, action recognition, decision making and plasticity. We will discuss how these novel developments open up new horizons in vision research, and critically assess their current limitations.

TALK 1: OSCILLATORY DYNAMICS OF PERCEPTUAL TO CONCEPTUAL REPRESENTATIONS IN THE VENTRAL VISUAL PATHWAY
Alex Clarke1, Barry Devereux2, Lorraine K. Tyler1; 1University of Cambridge, 2Queen’s University Belfast

Object recognition requires dynamic transformations of information from low-level inputs through to complex semantic representations. This process relies on the ventral visual pathway (VVP), where increasingly anterior regions code for increasingly complex object information, with the perirhinal cortex supporting object-specific semantic representations. These complex transformations are also underpinned by both feedforward and recurrent dynamics within the
VVP, where object-specific semantics emerges after around 200 ms. However, two important limitations remain. First, the modelling of visual and semantic properties tends to focus on three aspects — low-level visual properties, superordinate category information (e.g. animals) and object-specific semantics (e.g. tiger). This paints a compartmentalised picture that fails to capture incremental transitions whereby vision activates meaning. Second, while there is increasing knowledge of the oscillatory mechanisms underpinning basic vision, models of how visual inputs activate meaning lack mechanistic detail. Here, we overcome these limitations by combining a computational model of vision with a model of semantics to obtain quantifiable estimates of the incremental representations from low-level visual inputs to complex semantic representations that can be tested against neural activity using Representational Similarity Analysis (RSA). MEG signals, collected while participants viewed single objects, were source-localised and RSA was used to test how object information is represented by dynamically changing patterns of neural oscillations. Our results show that object information from layers of a visual deep neural network (vDNN) are represented by alpha oscillations throughout the VVP, while semantic information from an attractor network (sAN) was represented in theta oscillations. This frequency division was especially prominent in the ATL. Next, to test how object information changed over space and time, Granger Causality was applied to band-limited RSA time-courses. This revealed feedforward connectivity from the occipital lobe to posterior and anterior temporal lobe regions supported the transfer of visual representations from the vDNN. Critically, feedforward connectivity from visual regions to the ATL was associated with a transition of information from visual to semantic, while feedback from the ATL to the posterior temporal lobe was also associated with changes from visual to semantic information coding. Our research highlights the important role of alpha and theta oscillations for vision and semantics in the VVP, and that while feedforward dynamics underpin increasingly complex visual representations, object semantics relies on feedforward and feedback within the VVP with the ATL playing a crucial role.

**TALK 2: FAST, INVARIANT REPRESENTATIONS FOR HUMAN ACTION IN THE VISUAL SYSTEM**

Leyla Isik1,2, Andrea Tacchetti1,3, Tomaso Poggio1; 1MIT, 2Boston Children's Hospital, Harvard Medical School, 3Google Deepmind

The ability to recognize the actions of others from visual input is essential to humans’ daily lives. The neural computations underlying action recognition, however, are still poorly understood. We use magnetoencephalography (MEG) decoding and convolutional neural network (CNN) models to study action recognition from a novel dataset of well-controlled, naturalistic videos of five actions (run, walk, jump, eat drink) performed by five actors at five viewpoints. We show that that actor- and view-invariant representations for action arise in the human brain as early as 200 ms after a video begins. We next test different variants of spatiotemporal CNNs on the same viewpoint-invariant action recognition task, and compare them to the MEG data using representational similarity analysis. We show these models can accurately categorize actions, and that deliberate model modifications that improve performance on the invariant action recognition task lead to data representations that better match human neural recordings. Our results suggest that the brain quickly computes action representations, and that robustness to complex transformations are driving these neural representations.

**TALK 3: COMPARING DYNAMICS OF PROCESSING STREAMS IN BLIND AND SIGHTED READERS**

Santani Teng1,2, Radoslav M. Cichy3, Dimitrios Pantazis1, Aude Oliva1; 1MIT, 2Smith-Kettlewell Eye Research Institute, 3Free University Berlin

In response to sensory loss, crossmodal plasticity reorganizes functional processing streams so that cortical sensory areas typically devoted to the deprived modality become responsive to the spared modality. For example, neuroimaging work on blind individuals has demonstrated responses in “visual” cortex to stimuli such as tactile braille characters. However, both the spatiotemporal dynamics and the representations underlying these visual cortex responses remain poorly understood. To address this, we presented individual visual and tactile (braille) alphabetic letters to sighted and early-blind participants, respectively, while recording brain activity with magnetoencephalography (MEG). Both groups of participants read letters passively and responded via button press to occasional vigilance targets. We used multivariate pattern analysis to compare brain responses to different letters within each group, across groups, and across different time points in the trial epoch. We found that the classification time course of letter processing in sighted participants was generally faster, briefer, and more consistent than in blind participants. High within-group correlation at ~200 ms (sighted) and ~600 ms (blind) suggests common processing within groups near those respective time points; interestingly, those regions were also significantly correlated across groups, suggesting a common element of processing between groups as well. The results suggest that while blind and sighted letter reading is largely driven by different underlying computations, an element of processing is common across the presented modalities.

**TALK 4: IDENTIFYING THE NEURAL ARCHITECTURE OF PERCEPTUAL DECISION MAKING WITH NORMATIVE, SHALLOW AND DEEP NEURAL NETWORK APPROACHES**

Jean-Rémi King1,2, Laura Gwilliams1; 1NYU, 2Frankfurt Institute for Advanced Studies

Perceptual processes have historically been decomposed in the light of normative, neuromimetic and, more recently, performance-optimized models. In the present study, we compare how well each of these approaches accounts for the spatio-temporal organization of human brain responses elicited by ambiguous visual stimuli. Forty-six healthy human subjects performed perceptual decision tasks on briefly flashed characters constructed from ambiguous characters, designed...
to orthogonolize 7 levels of representations ranging from low-sensory features (e.g., spatial location of the stimulus), conceptual (whether stimulus is a letter or a digit) and task features (i.e., required hand movement). Whole-brain responses were recorded with magnetoencephalography (MEG) and source localized with magnetic resonance images (MRI). Our results reveal that these 7 levels of representations are sequentially encoded by the cortical hierarchy, and actively maintained until subjects’ response. This hierarchy appears poorly correlated to normative, drift-diffusion, and 5-layer convolutional neural networks (CNN) optimized to accurately categorize alpha-numeric characters, but matches the sequence of activations of several state-of-the-art CNNs trained for natural image labeling. Overall, these results strengthen the notion that deep neural networks trained for complex visual categorization can converge towards the computational solution implemented by the human visual system. Furthermore, they suggest that the human brain automatically uses the latent primitives of this generic solution to perform perceptual decisions, even when simpler, optimal, alternatives are available. We finally discuss how the systematic discrepancies between CNNs and brain responses may be critical to the improvement of artificial neural networks.

TALK 5: UNIQUE ASPECTS OF HUMAN OBJECT PROCESSING REVEALED BY MEG AND EEG
Dimitrios Pantazis¹, Radoslaw M. Cichy²; ¹MIT, ²Free University Berlin

A growing number of studies apply multivariate pattern analyses of MEG and EEG data to understand human object processing, but it is still an open question to what extent MEG and EEG capture common or unique aspects of visual representations. Here we evaluated how MEG and EEG compare in resolving experimental conditions in a human visual object experiment. We measured concurrent MEG/EEG data while participants (N=15) viewed images of 92 everyday objects and compared MEG/EEG multivariate results in both time and space. Comparison in time relied on evaluating classification time courses directly, and via representational similarity analysis (RSA). Comparison in space relied on fusion of MEG/EEG data with fMRI data based on RSA. This enabled direct localization of MEG/EEG signals with independent fMRI data, overcoming the inherent ambiguities of inverse solutions. We found that both MEG and EEG revealed the millisecond spatiotemporal dynamics of visual processing, with mostly equivalent categorical information (animate vs. inanimate; faces vs. bodies; and others). Beyond yielding convergent results, we found that MEG and EEG also captured partly unique aspects of visual representations. Those unique components emerged earlier in time for MEG than for EEG. Identifying the sources of those unique components with fMRI, we found the locus for both MEG and EEG in high-level visual cortex (inferior-temporal), and in addition for MEG in early visual cortex (V1). Together, our results offer a novel information-based comparison of MEG and EEG signals, and motivate the wider adoption of multivariate analysis methods in both MEG and EEG.

Symposium Session 3
THE NEXT 25 YEARS OF COGNITIVE NEUROSCIENCE: OPPORTUNITIES AND CHALLENGES
Sunday, March 25, 3:00 - 5:00 pm, Grand Ballroom
Chair: Brad Postle, University of Wisconsin–Madison
Speakers: Gyorgy Buzsaki, Dean Buonomano, Dora Dronkers

As we contemplate 25 years of remarkable advances in cognitive neuroscience, this symposium is intended to offer a (necessarily selective) cross sampling of ideas and approaches that will be important during our society’s next quarter century. It is bookended by talks that, broadly speaking, address how we conceptualize, and carry out, our science. Gyorgy Buzsaki will kick it off by considering how we approach the problem of interpreting neural coding, and Nina Dronkers will conclude by addressing whether our discipline’s oldest method – deficit lesion correlation – remains relevant today. And because (spoiler alert!) the answer is, of course, “yes,” she’ll also cover 21st century techniques that would most certainly have impressed Flourens and Ferrier. The theme of time, introduced in the first talk, will carry into Dean Buonomano’s demonstration of how principles and methods from nonlinear dynamical systems theory can be applied to problems in cognitive neuroscience. Studies of field potentials and of hemodynamic signals have played central roles in cognitive neuroscience research to date, and seem likely to continue to do so for the foreseeable future. Dora Hermes will discuss important advances in our understanding of how both of these classes of neurophysiological measurement relate to the neuronal activity that is ultimately of primary interest to most of us. Note that, although the abstract has emphasized the methodological dimension, the presentations summarized up to this point will also cover a broad range of cognition, including temporal and spatial cognition, visual perception, and language. The penultimate presentation, from Steve Chang, will address principles that are shaping the study in another exciting, and rapidly expanding, research domain, social behavior.

TALK 1: GROUNDING MODELS OF NEURAL FUNCTION IN FIRST PRINCIPLES.
Gyorgy Buzsaki¹; ¹NYU Medical Center

Nothing is more intuitive, yet more complex, than the concepts of space and time. In contrast to spacetime in physics, space and time in neuroscience remain separate coordinates to which we attach our observations. Investigators of navigation and memory relate neuronal activity to position, distance, time point, and duration and compare these parameters to units of measuring instruments. Although spatial-temporal sequences of brain activity often correlate with distance and duration measures, these correlations may not correspond to neuronal representations of space or time. Neither instruments nor brains sense
space or time. Neuronal activity can be described as a succession of events without resorting to the concepts of space or time. Instead of searching for brain representations of our preconceived ideas, we suggest investigating how brain mechanisms give rise to inferential, model-building explanations.

TALK 2: NEURAL DYNAMICS, RECURRENT NEURAL NETWORKS AND THE PROBLEM OF TIME
Dean Buonomano; 1UCLA

Much of the information the brain processes and stores is temporal in nature—a spoken word or a handwritten signature is defined as much by how it unfolds in time as by its spatial structure at any moment. The brain seamlessly assimilates and process temporal information, an ability that is critical to most behaviors: from reward anticipation to sensorimotor processing. We have proposed that timing on the scale of milliseconds to seconds relies on the inherent dynamics of recurrent neural networks (RNNs). And more generally, that the neural dynamics of RNNs represent a fundamental modus operandi for neural computation. Under this view information is stored and generated by dynamic attractors—locally stable neural trajectories. Thus, in contrast to the conventional view that memories are stored in static fixed-point attractors, under this view, many computations emerge from the voyage through neural state space as opposed to the destination.

TALK 3: FIELD POTENTIALS, FMRI, AND THE ORDER OF OPERATIONS: WHY THE TWO MEASURES ARE BLIND TO DIFFERENT PARTS OF THE NEURONAL RESPONSES
Dora Dora Hermes1; 1Stanford

The most widespread measures of human brain activity are the blood oxygen level dependent (BOLD) signal measured with fMRI and surface field potentials (EEG, MEG, ECoG). Prior studies report a variety of relationships between these signals. I will describe our efforts to develop an understanding of how to interpret these signals and the relationship between them. We developed a model of (a) neuronal population responses, and (b) transformations from neuronal responses into the fMRI BOLD signal and electrocorticographic (ECoG) field potential. Rather than seeking a transformation between the two measures directly, this approach interprets each measure with respect to the underlying neuronal population responses. This approach shows that BOLD and field potential measures provide complementary information about human brain activity and we infer that features of the field potential that are uncorrelated with BOLD arise largely from changes in synchrony, rather than level, of neuronal activity.

TALK 4: ESTABLISHING NEURAL PRINCIPLES OF DYNAMIC AND INTERACTIVE SOCIAL BEHAVIORS
Steve Chang1; 1Yale

How do we interact with others, and why? Social interactions are characterized by a dynamic and contingent series of behaviors occurring between at least two individuals. Although various abstractions used to capture snapshots of social interactions have been traditionally employed, recent evidence is beginning to favor experimentation involving well controlled, real-life interactions to better mimic natural social behaviors. In this talk, I will discuss the progress made from two lines of neuroscience research toward this goal involving pairs of nonhuman primates, presented with specific empirical results from the studies of social decision-making and social gaze interaction. First, at the single-neuron level, the encoding of social variables across self and other will be examined in the anterior cingulate cortex, orbitofrontal cortex, basolateral amygdala, and striatum. At the inter-regional level, unique signatures associated with diverse types of social decisions will be examined through the lens of oscillatory dynamics between the gyrus of the anterior cingulate cortex and the basolateral amygdala. Second, after empirically demonstrating the benefits of studying dyadic social gaze interactions in real-time, I will present neuronal correlates of interactive gaze interactions in the gyrus of the anterior cingulate cortex and the basolateral amygdala, from the perspectives of both local encoding and inter-regional oscillatory dynamics related to social gaze events. Finally, I will summarize our understanding as to how the brain utilizes various coding schemas to represent social variables that may be useful in guiding social interactions.

TALK 5: IS LESION ANALYSIS STILL RELEVANT FOR CONTEMPORARY COGNITIVE NEUROSCIENCE?
Nina Dronkers; 1UC Davis

The field of cognitive neuroscience began with observations that behavioral deficits could occur after injury to the brain. One famous case, that of Paul Broca’s patient, Leborgne, is a classic example. Broca attributed the speech deficits in his patient to the lesion in the inferior frontal lobe that he discovered in the brain at autopsy. Over the years, new neuroimaging tools have carried on the tradition of lesion analysis, but with techniques that have far surpassed those available to the early pioneers. This presentation will review some of these new methods, what they have revealed, and how they continue to enhance our field.

Symposium Session 4
EPISODIC MEMORY FORMATION: FROM NEURAL CIRCUITS TO BEHAVIOR
Monday, March 26, 10:00 am - Noon, Grand Ballroom
Chair: Gabriel Kreiman, Children’s Hospital, Harvard Medical School
Co-Chair: Ueli Rutishauser, Cedars Sinai and Caltech
Speakers: Gabriel Kreiman, Ueli Rutishauser, Michael Hasselmo, Daniel Schacter, Lila Davachi

33 Cognitive Neuroscience Society
Episodic memories constitute the basic fabric of who we are. Several different lines of evidence including studies of lesions, functional neuroimaging, and neurophysiology, point to the critical role of medial temporal lobe structures including the hippocampus in the formation of episodic memories. There has been notable progress recently in dissecting the function of hippocampal circuits in animal models and also in characterizing the fundamental computations involved in human memory formation. Yet, animal circuit studies and human cognitive studies have been largely parallel and there is little understanding about the interrelationship between the findings in one domain and the other. The goal of this symposium is to help build bridges between the study of neuronal mechanisms and the behavioral and computational models of memory formation. What is the relationship between the rodent hippocampus navigation studies and human episodic memory formation? Is there something fundamentally different in how the human hippocampus supports memories? How can the studies in animals models constrain and inform models of human memory and vice-versa? How can behavioral studies of human memory encoding and recall relate to and inspire the investigations in animal models? Rather than independent and isolated snapshots of the proverbial elephant from different perspectives, we strive to build a unified computational theoretical framework of episodic memory formation that can encompass the neurophysiological and behavioral levels of analyses in animals and humans.

TALK 1: INTRODUCTION + IN MEMORIAM FOR JOHN LISMAN + EPISODIC MEMORY FORMATION IN REAL LIFE

Gabriel Kreiman1,2; 1Children's Hospital Harvard Medical School, 2Center for Brains Minds and Machines

1.1 Short introduction to the symposium by Ueli Rutishauser and Gabriel Kreiman. 1.2 In Memoriam: John Lisman (he had accepted to be a speaker in the Symposium. He passed away in Oct 2017. We will render homage to his contributions to the field). 1.3 Gabriel Kreiman. Episodic Memory formation in real life. Our brains are continuously bombarded with both external sensory information and internal processing. Part of those external and internal signals end up being consolidated in the form of episodic memories as a result of complex cognitive processes that filter and interpret incoming inputs. Our understanding of encoding processes in memory formation are derived from laboratory conditions typically involving lists of words or pictures devoid of the fundamental emotional, narrative, and temporal aspects of episodic memory. I will describe a series of behavioral experiments accompanied by a computational model that captures the fundamental filtering steps for memory encoding under real life conditions. In one experiment we used movies as a coarse proxy to examine dynamic formation of memories with rich stimuli. In another experiment, we used real life ground truth information by recording video and eye tracking information during one hour in the life of our subjects and subsequently testing for information recall. The systematic quantitative metrics for memory formation show that subjects showed consistent and high memorability for short movie events, even single frames, at temporal scales of minutes up to one year post-encoding and low memorability for real life events. Additionally, we developed a machine learning approach that can make accurate predictions about which events people will and will not remember. The computational predictions were almost as accurate as self-predictions or majority-based human predictions, even for single trials and individual subjects.

TALK 2: PROBING THE CIRCUITY OF HUMAN DECLARATIVE MEMORY AT THE SINGLE-NEURON LEVEL

Ueli Rutishauser1,2; 1Department of Neurosurgery, Cedars-Sinai Medical Center, Los Angeles, CA, 2Division of Biology and Biological Engineering, California Institute of Technology, Pasadena, CA

Much of what we know about how neuronal circuits enable us to form new memories stems from studying the response of individual neurons in animal models. While powerful, this leaves us unable to approach many important questions for lack of similar data in humans. We utilize neurosurgical procedures to record at single-cell resolution in behaving humans. I will describe results on the relationship between neuronal activity, plasticity, and memory derived from single-neuron recordings in the human hippocampus and left posterior parietal cortex (PPC). I will describe a putative circuit memory-circuit composed of three functional cell types: visually-selective (VS), memory-selective (MS), and memory-choice cells. VS neurons are tuned to high-level concepts, are sensitive to attention, and their activity forms attractors through persistent activity over several seconds while stimuli are held in working memory. MS neurons signal whether a stimulus is novel or familiar in a graded manner indicative of memory strength as indicated by subjective confidence. The extent to which novelty-sensitive MS cells phase-lock to ongoing theta oscillations is indicative of the success or failure of memory formation. Lastly, memory-choice cells in PPC signal decisions made about declarative memories, including whether a stimulus is novel or familiar and the confidence in this judgment, a finding that provides the first single-cell evidence for the role of the PPC in episodic retrieval. Together, these results begin to provide a circuit-level understanding of human episodic memory and the mechanisms that allow us to translate such memories into decisions.

TALK 3: NEURAL CODING OF SPACE AND TIME FOR EPISODIC MEMORY

Michael Hasselmo1; 1Center for Systems Neuroscience, Boston University

Episodic memory is defined as memory for events occurring at specific times and places. Neurophysiological recordings in behaving rodents demonstrate neuronal response properties that may contribute to the encoding of space and time for episodic memory. This includes the coding of space by grid cells in entorhinal cortex and place cells in hippocampus, and the coding of temporal intervals by time cells in both regions. Neurophysiological data also demonstrates coding of
additional spatial dimensions such as head direction and the location of environmental barriers. All these responses are relevant to encoding of events within an environment in episodic memory and the use of these representations for memory-guided behavior. Experimental data indicates potential mechanisms for the neural coding of time and space. Inactivation of input from the medial septum impairs the responses of neurons coding space and time. This impairment could arise from the loss of network oscillatory dynamics such as theta rhythm or from loss of modulatory inputs including acetylcholine release. Acetylcholine appears to regulate encoding and consolidation dynamics, consistent with effects of pharmacological manipulations on human episodic memory encoding. Computational modeling addresses the potential functional role in episodic memory of time cells, grid cells, place cells and head direction cells, as well as modulatory regulation of encoding and retrieval dynamics. These computational models demonstrate how neuronal representations of space and time could contribute to the encoding of episodic memory as events associated with spatiotemporal trajectories.

**TALK 4: IMAGINATION, CREATIVITY, AND EPISODIC RETRIEVAL**
Daniel Schacter1; 1Department of Psychology, Harvard University
Numerous recent studies have explored the role of memory in imagining possible future experiences and related kinds of hypothetical events. According to the constructive episodic simulation hypothesis, simulation of future experiences depends importantly on episodic retrieval, which allows individuals to draw on the past in a manner that flexibly extracts and recombines elements of previous experiences. This talk will consider the contributions of episodic retrieval and simulation to a range of cognitive tasks that are not ordinarily considered “episodic memory tasks”, focusing in particular on future imagining and divergent creative thinking.

**TALK 5: WHAT IS AN ‘EPISODE’ IN EPISODIC MEMORY? MOVING BEYOND A SINGLE MOMENT TO UNDERSTANDING HOW TEMPORALLY EXTENDED EPISODIC MEMORIES ARE CONSTRUCTED FROM ONGOING EXPERIENCE**
Lila Davachi1; 1Department of Psychology, Columbia University
The profound deficit in acquiring new episodic memories after hippocampal damage in humans was a turning point in the history of memory research. These findings focused memory scientists on the functions of the hippocampal system. As we learn more from both animal neuroscience and human cognitive neuroscience about quirks of this system, the questions have shifted slightly to ask not what the hippocampus does for memory, per se, but what more global functions or operations does this system support? Our recent work has suggested that hippocampal processes are important for two possibly synergistic operations: temporal integration and separation. It is through the action of these two processes, that distinct episodes can emerge from dynamic, ongoing experiences. Further, our recent work has extended these same mechanisms to explain very short-term temporal duration estimates. I will present recent behavioral and imaging work demonstrating that shifts in event representations along with temporal stability in hippocampal multivariate patterns and distinct hippocampal-PFC connectivity contribute both to short duration temporal estimates as well as longer term temporal memory judgments.

**Symposium Session 5**
ARE WE ALL CHAINED TO THE RHYTHM? PERIODICITY IN HUMAN PERCEPTION AND BEHAVIOR
Monday, March 26, 10:00 am - Noon, Back Bay A&B
Chair: Benedikt Zoefel, MRC Cognition and Brain Sciences Unit, University of Cambridge, UK
Speakers: Huan Luo, Ian C. Fiebelkorn, Alessandro Benedetto, Benedikt Zoefel, Neural oscillations are commonly assumed to reflect rhythmic fluctuations in the excitability of neuronal ensembles and their importance for stimulus processing has been emphasized repeatedly. Nevertheless, an important support for a functional relevance of these brain rhythms would be the observation that we can find similar rhythms in perception and behavior. In this symposium, we will present evidence that perception and behavior might indeed be “chained” to a rhythm – potentially the one imposed by brain oscillations. In the first talk, Huan Luo will use sophisticated analyses of behavioral data to demonstrate that visual object recognition involves a rhythmic component, including complex coupling relationships between different frequencies. In the second talk, Ian C. Fiebelkorn will summarize behavioral data revealing periodicity in visual spatial attention and show that these attentional fluctuations are tightly linked with oscillatory activity in a frontoparietal network. Third, Alessandro Benedetto will show that visual perception fluctuates rhythmically before a voluntary action, indicating that sensorimotor interaction entails oscillatory mechanisms that can be discovered using behavioral paradigms. Finally, Benedikt Zoefel will present an attempt to transfer experimental approaches to the auditory system that have previously revealed perceptual rhythms in the visual modality – and argue that the use of brain rhythms to “gate” perception and behavior might differ fundamentally between the two modalities. Together, our symposium will reveal the importance of rhythm in perception and behavior, and its intimate link with neural oscillations in the brain that might represent a fundamental “tool” developed to optimize stimulus processing.

**TALK 1: TEMPORAL ORGANIZATION OF MULTIPLE OBJECTS IN BOTTOM-UP AND TOP-DOWN ATTENTION**
Huan Luo1; 1School of Psychological and Cognitive Sciences, Peking University, China, 2McGovern Institute for Brain Research, Peking University, China
In a cluttered visual scene consisting of multiple objects, it is important that our brain can efficiently and flexibly allocate and coordinate resources to overcome limited processing capacity. It has been well established that neuronal oscillations in brain signals play an important role in attention by modulating brain contexts at various temporal scales, indicating that attention is intrinsically dynamic and displays “rhythmic” profiles. In a series of studies, we employed time-resolved behavioral measurements to access how attentional behavioral performances (e.g., reaction time, percent correct) change as a function of time. We found that typical attentional effects are revealed as a slow trend in behavioral time courses. Furthermore, and most importantly, our behavioral data disclosed rhythmic fluctuations in several neurophysiologically relevant neuronal rhythms (i.e., behavioral oscillations) such as the theta (3-5 Hz) and alpha band (~8-20 Hz), as well as coupling between the different rhythms. These results not only support the idea that the spectral profile typically observed for neuronal oscillations might be directly revealed at a behavioral level, but also the notion that attention is not stationary but dynamically samples multiple visual objects in a rhythmic or serial-like way. Our work advocates a generally central role of temporal organization in visual attention such that multiple objects are sequentially sorted in time based on their priority, determined by either top-down attentional demands or bottom-up saliency.

**TALK 2: A DYNAMIC INTERPLAY WITHIN THE FRONTOPARIETAL NETWORK UNDERLIES RHYTHMIC SPATIAL ATTENTION**

Ian C. Fiebelkorn¹, Mark A. Pinsk¹, Sabine Kastner¹; ¹Princeton Neuroscience Institute and Department of Psychology, Princeton University

Visual-spatial attention boosts neural processing at behaviorally relevant locations, thereby improving behavioral performance. Whereas classic studies of spatial attention assumed that these neural and behavioral effects were continuous over time, several recent behavioral studies have instead revealed rhythmic fluctuations in attention-related effects. These rhythmic fluctuations lead to alternating periods of either heightened or diminished perceptual sensitivity, determining the moment-to-moment likelihood of detecting a behaviorally relevant stimulus. Yet the neural basis of these fundamental rhythms has remained largely unknown. Here, we used electrophysiological recordings in macaques to demonstrate that rhythmic sampling during spatial attention results from an ongoing, dynamic interplay between two hubs of the frontoparietal attention network: the frontal eye fields (FEF) and the lateral intraparietal area (LIP). Our results show that neural oscillatory activity organizes functional interactions between FEF and LIP through phase-amplitude coupling, with theta (3-8 Hz) phase providing the clocking mechanism that coordinates two alternating states. The first is an FEF-dominated state associated with increased beta activity (15–35 Hz) and relatively better behavioral performance. The second is an LIP-dominated state associated with increased gamma activity (>35 Hz) and relatively worse behavioral performance. Our findings thus show that theta-band rhythms govern alternating attentional states in the frontoparietal network, leading to rhythmic sampling of the visual environment and rhythmic fluctuations in perceptual sensitivity. We propose that rhythmic sampling provides spatial attention with critical flexibility, allowing for windows of opportunity when attention can more easily shift from its present focus to another location.

**TALK 3: THE RHYTHMS OF SENSORIMOTOR INTEGRATION: ACTION PLANNING AND PERCEPTUAL OSCILLATIONS**

Alessandro Benedetto¹, Maria C. Morrone²; ¹Department of Translation Research on New Technologies in Medicine and Surgery, University of Pisa, Italy, ²Institute of Neuroscience, National Research Council (CNR), Pisa, Italy, 3Scientific Institute Stella Maris, Pisa, Italy

Action and perception are tightly coupled systems requiring strong coordination over time. However, how the brain achieves this close synchronization is still a matter of debate. Recently, a growing body of scientific literature has shown that voluntary actions can synchronize the rhythms of vision, suggesting that brain oscillations might be instrumental for visuomotor integration. In a series of experiments, we asked participants to perform a contrast discrimination task before, during, or after executing a hand or saccadic eye movement. We found that, even a second before executing a voluntary action, visual contrast sensitivity oscillates in the delta/theta range, phase-locked with the forthcoming action. These results indicate the presence of an early signal for an intention to move that triggers perceptual fluctuations. Importantly, the oscillatory modulations embedded a motor-related (saccadic or motor-induced) suppression, in agreement with the involvement of a signal representing the intention to move. Moreover, voluntary actions triggered oscillations of visual sensitivity and other perceptual measures at different frequencies, suggesting the presence of several distinct mechanisms modulating perception. Finally, we show that the visually-evoked BOLD response in primary visual cortex (V1) measured with ultra-high (7T) magnetic resonance imaging fluctuates as a function of the timing of stimulus presentation after a button press, demonstrating that the rhythmic sensorimotor interaction operates on very early stages of visual processing.

**TALK 4: CAN WE FIND AUDITORY PERCEPTUAL CYCLES?**

Benedikt Zoefel¹; ¹MRC Cognition and Brain Sciences Unit, Cambridge, UK, ²University of Cambridge, UK

Recent research suggests that the brain cycles between optimal and less favourable moments for stimulus processing, creating periodic fluctuations in perception and behaviour, or “perceptual cycles”. However, most of these findings are restricted to the visual domain whereas results are sparse and inconsistent for the auditory system. Here, we adapted previously successful experimental paradigms to reveal visual rhythms, and transferred them to the auditory domain: For instance, we created an auditory equivalent of the visual “wagon
wheel illusion”, previously used to demonstrate rhythm in visual perception; we tested whether processing of auditory information “reverberates” in the brain, just as for the visual system; and we tested whether the auditory system would be affected by a sub-sampling of its input. Surprisingly, most of our attempts revealed that the auditory system is not able to cope with the consequences of rhythmic stimulus processing if we assume similar mechanisms as recently discovered in the visual domain. These results might show us (1) that auditory perception does not fluctuate rhythmically or (2) that auditory perceptual cycles critically differ from those observed in the visual system. We will develop the second alternative and argue that there is a crucial need of the auditory system to adjust its brain rhythms to stimulus input. Using brain stimulation methods in combination with brain imaging, we will support this notion by showing that an interference with this brain-stimulus adjustment has consequences for the processing of speech sounds.

TALK 5: EXTENDED DISCUSSION

Extended discussion, for example: How can we reconcile the different frequencies in perception and behavior? Most findings are restricted to the visual system - can we transfer findings to other modalities? Is there a supra-modal “driver” of periodic fluctuations in perception and action? The audience will be encouraged to participate in this discussion.

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**Symposium Session 6**

**TOP-DOWN ATTENTION TO TIME: A NEURAL OSCILLATORY PERSPECTIVE**

Monday, March 26, 10:00 am - Noon, Back Bay C&D

Chair: Malte Wöstmann, University of Lübeck

Speakers: Saskia Haegens, Sanne ten Oever, Anne Keitel, Malte Wöstmann, Randolph Helfrich

Neural oscillations are thought to organize the rhythmic sampling of sensory information in time. How top-down attention modulates, but also depends on, ongoing oscillatory dynamics is poorly understood. Our speakers will combine recent behavioral, electrophysiological, and brain stimulation evidence to elucidate on the interplay of top-down attention and behaviorally relevant neural oscillations. The symposium will start out with a focus on entrained neural oscillations during temporal attention. Saskia Haegens will demonstrate that information about the timing of an upcoming target stimulus shapes neural entrainment and its relation to target discrimination. Sanne ten Oever will then show that neural oscillatory phase, but also power, prior to stimulus onset determines how participants make use of temporal information. Next, we will focus on top-down attention to human speech, which is one of the most abundant sensory signals with inherent rhythmic structure in human environments. Anne Keitel will highlight the importance of neural tracking of speech rhythms on different timescales for successful comprehension. Further support for the functional significance of neural oscillations for attention will be presented by Malte Wöstmann, who will show that experimentally induced enhancements of oscillatory power modulate attention to speech in time and space. Finally, Randolph Helfrich will combine (non-)invasive electrophysiological and brain stimulation evidence into an integrative framework, which posits that the prefrontal cortex orchestrates oscillatory dynamics in sensory networks to implement attentional selection. The symposium will be of significance to CNS members interested in the neuroscience of attention and in the neural oscillatory foundations underlying cognitive control.

**TALK 1: RHYTHMIC FACILITATION OF TEMPORAL ATTENTION AS REVEALED BY PSYCHOPHYSICS AND MEG**

Saskia Haegens1; ‘Department of Neurosurgery, Columbia University Medical Center, New York

Here, we studied the oscillatory dynamics involved in temporal attention, specifically, neuronal entrainment to slow frequency rhythms (1–7 Hz). We conducted a series of psychophysics and MEG experiments, testing rhythmic synchronization as a mechanism for focusing attention on relevant input. Subjects performed an auditory/visual discrimination task in which they received a temporal cue, which was either informative (rhythmic condition) or not informative (random condition) about the timing of the upcoming target. We found that when a target is presented in-phase with the cued rhythm (expected), performance is modulated as compared to both the out-of-phase (unexpected) and the random-mode (uninformative) conditions. We found that this holds for a range of rhythms, and that subjects can pick up rhythmic structure both explicitly and implicitly. Critically, reaction times were substantially faster when the task rhythm was increased. We then looked into the neural correlates of these effects and found increased delta band synchronization, as measured by inter-trial phase coherence, in the rhythmic compared to the random condition. This was sustained after the cue, and correlated with task performance: subjects with higher delta synchronization were faster at the task in general, and rhythmic (but not random) trials with higher delta synchronization led to faster responses. Combined, these experiments demonstrate that the brain can pick up on relevant rhythms in sensory input, even in the absence of ongoing rhythmic stimulation, and that this affects behavioral performance.

**TALK 2: EEG POWER AND PHASE INFLUENCE TRIAL-BY-TRIAL BEHAVIORAL RESPONSES IN A TEMPORAL ASSOCIATION TASK**

Sanne ten Oever1; Alexander T. Sack1; ‘Department of Cognitive Neuroscience, Faculty of Psychology and Neuroscience, Maastricht University

Temporal information can guide our attentional resources to specific moments in time. It has been proposed that slow frequency oscillations guide this temporal prediction by aligning ongoing oscillations to
TALK 3: NEURAL TRACKING OF DIFFERENT TEMPORAL SCALES OF SPEECH PREDICTS SUCCESSFUL SPEECH-IN-NOISE COMPREHENSION

Anne Keitel1, Joachim Gross1,2, Christoph Kayser1,3; 1Institute of Neuroscience and Psychology, University of Glasgow, 2Institute for Biomagnetism and Biosignalanalysis, University of Münster, 3Cognitive Neuroscience, Bielefeld University

During speech perception, neural oscillations track slow acoustic fluctuations in the envelope of the speech signal. Speech tracking involves bottom-up processes, based on acoustic properties, and top-down processes, based on predictions of upcoming speech segments. We looked at the contributions of auditory and motor regions to these processes in a magnetoencephalography study using a speech-in-noise paradigm. We implemented two novel aspects to gain specificity about speech-tracking processes. First, we based our analyses on stimulus-specific time-scales, such as the rate of phrases and words. Second, we analyzed single-trial comprehension to focus on the perceptual relevance of speech-tracking processes. Our results yielded two different speech-tracking processes relevant for comprehension: First, the left middle temporal cortex tracks speech at the word time-scale (1.8–3 Hz), which is useful for word segmentation and mapping the sound-to-meaning. And second, the left premotor cortex tracks speech at the phrasal time-scale (0.6–1.3 Hz), likely indicating the use of top-down temporal predictions during speech perception. Previous studies suggest that the motor system is involved in predicting the timing of upcoming stimuli by using its intrinsic beta rhythm. We therefore hypothesized that a cross-frequency coupling between beta-power and delta-phase at the phrasal time-scale would be present in the motor system. Indeed, we demonstrate that the motor system can exploit temporal regularities in speech via a delta-beta coupling mechanism and this is directly relevant for comprehension. To summarize, by using stimulus-specific frequency bands and single-trial comprehension, we show specific functional and perceptually relevant speech-tracking processes along the auditory-motor pathway.

TALK 4: STIMULATING THE NEURAL OSCILLATORY DYNAMICS OF AUDITORY ATTENTION TO TIME AND SPACE

Malte Wöstmann1, Lea-Maria Schmitt1, Jonas Oleser1; 1Department of Psychology, University of Lübeck

When humans focus attention to the auditory modality, the power of alpha oscillations (~10 Hz) in the magneto/electroencephalogram (M/EEG) increases. I will present two studies to demonstrate that experimentally induced enhancements in alpha power have the potency to modulate auditory attention to time and space. In both studies, listeners attended to one of two streams of spoken numbers. First, the two streams were separated in space during dichotic listening, which is known to enhance alpha power in the hemisphere ipsilateral to the attentional focus. While participants (n = 20) performed the task, we applied continuous 10-Hz transcranial alternating current stimulation (tACS) to left-hemispheric temporoparietal cortex regions. Compared to sham, alpha-tACS enhanced recall of target numbers in ‘attend-left’ versus ‘attend-right’ trials. When we stimulated at gamma frequency (47 Hz) in a separate session, this effect was precisely reversed, which suggests that externally amplified oscillations can enhance spatial attention and facilitate attentional selection. Second, when the two speech streams alternated in time, listeners’ (n = 22) occipito-parietal alpha power in the EEG was modulated rhythmically, with peaks and troughs placed at the onsets of attended and ignored numbers, respectively. Listeners were instructed to close their eyes during every other block, which not only enhanced baseline alpha power but also the attention-induced rhythmic modulation thereof. This finding speaks to a stronger neural separation of attended versus ignored sound in a regime of high alpha power with closed eyes. I will argue that alpha oscillations constitute an important top-down signal to implement attentional selection.

TALK 5: OSCILLATORY BRAIN ACTIVITY DETERMINES THE TIMESCALE OF HUMAN COGNITION

Randolph Helfrich1; 1Helen Wills Neuroscience Institute, University of California Berkeley

Electrophysiological recordings in humans reveal rich intrinsic temporal dynamics, which are thought to support sensory and cognitive processing. However, it remains unclear how time-varying neural activity supports our continuous perception of the world. In an alternative account, it has been hypothesized that perception and cognition might not operate in a continuous but in a rhythmic mode, where endogenous oscillatory brain activity could periodically sample the environment, thus, rendering perception discrete. In this talk, I discuss recent advances that collectively suggest that endogenous oscillatory brain activity shapes the timescale of top-down guided
visual perception. In particular, alpha band oscillations (8-12 Hz) support the discrete sampling of the visual environment, while rhythmic activity in the delta and theta range (2-7 Hz) mediates context-guided and rule-guided top-down control. By combining psychophysics with non-invasive (EEG) and invasive (ECoG) electrophysiological recordings as well as non-invasive brain stimulation methods (tACS) in humans, I will provide evidence supporting the notion that perception and cognition exhibit behaviorally-relevant intrinsic temporal profiles that are shaped by neural activity at the population level and are mediated by the prefrontal cortex (PFC). Based on converging evidence I propose a framework in which the PFC serves as a conductor to orchestrate task-relevant networks through the selective modulation of oscillatory dynamics, such as phase resetting, endogenous entrainment and cross-frequency coupling. Taken together, I posit that the functional architecture of cognition is inherently rhythmic and neuronal activity at the population level determines the timescale of top-down guided visual perception.

Symposium Session 7

DEVELOPMENTAL COGNITIVE NEUROSCIENCE: BRAIN CONSTRUCTION FROM THE FETUS THROUGH OLD AGE

Monday, March 26, 10:00 am - Noon, Constitution Ballroom

Chair: Nim Tottenham, Columbia University
Speakers: Moriah E. Thomason, Nim Tottenham, Adriana Galvan, Ting Xu,

Human brain function shows incredible dynamics across the lifespan, requiring up to two decades to reach maturity and then continuing to evidence change into older ages. Those first two decades comprise a highly changeable and plastic state of the human brain, when environmental and genetic actions are among the greatest in one’s lifetime. The current symposium takes a developmental approach to understanding human brain function, focusing on this prolonged construction across the first two decades of life and beyond. Attention is paid to normative developmental trends, and also to developmental pathways that lead towards psychopathology. Talks will consider the fetal, childhood, adolescent, and adult trajectories, with a focus on subcortical and cortical functional connectivity development. Special emphasis will be placed on relevant environmental influences at each stage, facilitating discussions on sensitive periods for human brain development. The first talk describes resting state functional connectivity in the fetus and the influences of maternal stress on prenatal brain development. The second talk transitions to childhood and describes the action of postnatal sensitive periods on the construction of subcortical-cortical connections. The third talk extends development up to adolescence and focuses on the role of puberty on the neurobiology of risky decision making. The fourth talk takes a broader view of large-scale network dynamics across childhood into young adulthood into aging adulthood. The goal across the four talks is to bridge across the very long brain development that gives rise to mature functioning.

TALK 1: STRESS OF A MOTHER IS REFLECTED IN THE DEVELOPING BRAIN OF HER UNBORN CHILD

Moriah E. Thomason1,2, Marion I. van den Heuvel1,2, Rebecca Waller3, Elise Turk4, Martijn P. van den Heuvel4, Janessa H. Manning5, Jasmine Hect5, Edgar Hernandez-Andrade1,2, Sonia Hassan1,2, Roberto Romero2,3; 1Wayne State University, 2Perinatology Research Branch, NICHD/NIH/DHHS, 3University of Michigan, 4University Medical Center, Utrecht, The Netherlands

Increasing evidence supports a strong link between maternal prenatal stress and altered postnatal brain development. However, whether stress is reflected in brain development prior to birth, and specifically, whether maternal prenatal stress alters fetal functional brain systems, remains an open question. The present study evaluates the potential association between maternal prenatal stress and global efficiency of the fetal neural connectome, in utero. Using recent developments in fetal resting-state fMRI we examined neural functional connectivity in 47 human fetuses scanned between the 30-37th week of gestation. Participating mothers were recruited from a low-resource and high stress urban setting, with many reporting high-levels of depression, anxiety, worry, and stress. We discovered that neural efficiency, a measure reflecting how economically neural functional systems are organized, was reduced in fetuses of mothers reporting high prenatal stress. This effect was pronounced in areas of the cerebellum, postcentral gyrus, temporal lobes, and cingulate. It appears that reduced integration of neural systems across gestation may be a consequence of stress programming during pregnancy. This discovery informs what has long been speculated, that the stress of a mother during her pregnancy has an impact on neural connections in the brain of her unborn child.

TALK 2: CORTICO-AMYGDALA CONNECTIVITY DEVELOPMENT: THE IMPORTANCE OF CHILDHOOD

Nim Tottenham1; 1Columbia University

Cortico-amygdala connectivity is fundamental to mature emotional behaviors. While the “top-down” (i.e., cortical-to-amygdala) regulatory role of these connections has been the focus of most studies in adulthood, we propose that amygdala-to-cortical connections in childhood are necessary developmental prerequisites for establishment of mature neural phenotypes. The current talk presents evidence showing that connections between the amygdala and medial prefrontal cortex (mPFC) develop very slowly over childhood and adolescence. Moreover, I present evidence consistent with a more excitatory pattern of connections between amygdala and mPFC in childhood than in adulthood. This pattern, which shows conservation across species, undergoes a dramatic shift towards the end of childhood when the transition to adolescence brings about more adult-like characteristics. I will present cross-sectional and longitudinal developmental functional magnetic resonance imaging data.
describing age-related changes (beginning at 4-years-old) in amygdala-mPFC circuitry throughout childhood and adolescence and how they relate to emerging affective behavior. Additionally, examination of coincident environmental events in childhood suggests that amygdala-mPFC phenotypes of childhood are highly impressionable to external forces, raising the possibility that childhood is a sensitive period for the construction of amygdala-mPFC learning.

TALK 3: THE DEVELOPING ADOLESCENT BRAIN: INSIGHTS FROM COGNITIVE NEUROSCIENCE
Adriana Galvan1; 1University of California, Los Angeles
Research on the adolescent brain has exploded in the past decade, providing insight into characteristic adolescent behavior. The brain undergoes rapid development in the first few years of life. With increasingly sophisticated cognitive neuroscience tools over the past two decades, we have learned that when puberty strikes, there is another burst of activity in the developing brain. As children become teenagers, the brain begins what will be the final stretch of its development, dynamically strengthening and weakening connections among key regions in response to environmental input. This process is crucial to making the developmental leap from relative immaturity to a more mature state. However, similar to other developmental milestones, there are vast individual differences in the rate at which individuals undergo increases in brain communication. In this talk, I will review neural systems that undergo ongoing brain maturation as individuals transition into and out of adolescence, how these developmental changes relate to risky decision making, reward sensitivity, and learning in adolescents, and the implications for legal and social policies relevant to young people.

TALK 4: MAPPING CHANGES IN BRAIN AREAL ORGANIZATION ACROSS DEVELOPMENT AND BEYOND
Ting Xu1,2, Michael Milham1,3; 1Center for the Developing Brain, Child Mind Institute, 2Chinese Academy of Sciences, 3Center for Biomedical Imaging and Neuromodulation, Nathan S. Kline Institute for Psychiatric Research
Models of human brain development have long posited that functional areas become increasing segregated during the first two decades of life. However, a comprehensive mapping of changes in areal organization during brain development has remained elusive. Here we map age-related changes in brain organization during development, and beyond, using recently developed gradient-based methods for full brain cortical parcellation. Specifically, we mapped gradients in intrinsic functional connectivity similarity (Wig et al., 2013; Gordon et al., 2014) at the individual level, 2) employed multivariate distance matrix regression (MDMR; Shehzad et al., 2014) to identify age-related linear- and quadratic-changes in functional transition profile (i.e. spatial gradient of intrinsic function connectivity). By using 323 datasets selected from the Enhanced Nathan Kline Institute-Rockland Sample (NKI-RS) dataset (ages 5-85), we were not only able to test hypotheses regarding age-related increases in areal segregation during development, but that this phenomena reverses later in life, with areal organization becoming more diffuse. Our analyses revealed linear age effects in posterior cortex, particularly in primary visual, sensorimotor, and default mode networks. The quadratic effects were mainly located in the regions of network borders e.g. default mode, ventral attention. Finally, at each vertex, we used MDMR to detect age-related variation (linear, quadratic) in the gradient maps defined across individuals. The linear and quadratic age-related effects were predominantly located in the regions of network borders, e.g. default mode, ventral attention, dorsal attention and frontoparietal network. These findings not only provide insights into the development of the areal organization of the brain, also raise cautions for efforts using atlases and group-level parcellations to guide graph-theoretical examinations.

TALK 5: Q&A PERIOD
The speakers will take questions from the audience.

Symposium Session 8
MECHANISMS OF SLEEP’S ROLE IN MEMORY AND EMOTION PROCESSING
Tuesday, March 27, 1:30 - 3:30 pm, Back Bay A&B
Chair: Rebecca Spencer, University of Massachusetts, Amherst
Co-Chair: Jan Born, 1University of Tübingen
Speakers: Sara C. Mednick, Jan Born, Jessica Payne, Rebecca Spencer, Rebecca Spencer
Memory consolidation, the transformation of recent experiences in to long-term memory, occurs over a period of days, months, and years and depends on sleep. However, how and which new experiences are consolidated into long-term memory is not understood. Furthermore, memory stages (encoding, consolidation, retrieval) are known to change with aging. Understanding the role of sleep in these stages will reveal important fundamental mechanisms of memory. In this symposium, four speakers will discuss recent advances in this field that have provided mechanistic insight into sleep’s role in cognitive processing, using diverse approaches and age groups. Dr. Sara C. Mednick will demonstrate new findings on the role of temporal coupling between the autonomic and central nervous systems during sleep that contribute to memory formation. Dr. Jan Born will present findings on the interaction between emotional and non-emotional aspects of episodic memory consolidation, providing evidence that emotional memories may be preferentially consolidated during sleep, suggesting additional sleep-dependent processing beyond that of neutral memories. Dr. Jessica Payne will discuss selective emotional memory consolidation in middle aged adults demonstrating that, in this understudied age-group, slow wave sleep during a daytime nap supports emotional memory consolidation although this process weakens with age. Finally, Dr. Rebecca Spencer will present evidence...
of slow wave-dependent emotional memory processing in both children and older adults, suggesting that this mechanism is preserved with aging and development, although altered by other processes (e.g., memory biases and sleep distribution).

TALK 1: INVESTIGATING AUTONOMIC AND CENTRAL NERVOUS SYSTEM CONTRIBUTIONS TO MEMORY CONSOLIDATION DURING SLEEP.
Sara C. Mednick¹, Mohsen Naji¹, Lauren Whitehurst²; ¹University of California Irvine, ²University of California Riverside

New memories need to be transformed into more stable representations or they will be forgotten. Just as there are many forms of memory, there are likely many routes whereby these recent memories can be consolidated. It is well established that sleep is one period optimized for consolidation (Mednick, 2015). A different line of research has demonstrated a significant contribution of the autonomic nervous system (ANS) for memory consolidation during waking (McGaugh, 2013). Post-encoding vagotomy impairs memory in rodents (Williams & Jensen, 1993). In humans, vagal nerve stimulation during declarative verbal memory consolidation enhances recognition memory (Clark, Naritoku, Smith, Browning, & Jensen, 1999). In addition, we have recently shown that ANS activity during sleep is associated with memory consolidation of both repeated (declarative) and primed (non-declarative) memories (Whitehurst, Cellini, McDevitt, Duggan, & Mednick, 2016). Together these findings suggest that interactions between the central and autonomic nervous system during sleep may play a role in sleep-dependent memory processes.

In my talk, I will address the question: What is the role of the autonomic nervous system in sleep-dependent memory consolidation? For this question, I will first review findings on the role of the parasympathetic nervous system in sleep-dependent cognitive processes with our recent data on heart rate variability and it’s contribution to memory improvement. Second, I will show new findings using high-temporal resolution analysis of heart/brain signals via electroencephalography (EEG) and autonomic heart beat-to-beat intervals (RR intervals) from electrocardiography (ECG) during wake and daytime sleep. Using this technique we have identified bursts of ECG activity that last 4-5 seconds and predominate in non-rapid-eye-movement sleep (NREM). Using event-based analysis of NREM sleep, we found an increase in memory-related sleep events 5 secs prior to peak of the heart rate burst, as well as a surge in vagal activity. Furthermore, these Autonomic/Central Events (ACE) positively predict post-nap improvement in a declarative memory task above and beyond sleep without ACE activity. These results provide the first evidence that coordinated autonomic and central events play a significant role in declarative memory consolidation. In summary, I will illustrate a dynamic relationship that exists between the autonomic and central nervous system that facilitates the consolidation of recent experiences into long-term memories.

TALK 2: INTERACTING EFFECTS OF EMOTIONAL AND EPISODIC MEMORY CONSOLIDATION DURING SLEEP
Jan Born¹, Elaina Bolinger¹; ¹University of Tübingen

Emotions can be considered as a set of responses (expressed via autonomic nervous system, verbal report, etc) that emerge during experienced episodes, i.e., events (items) occurring in a specific spatio-temporal context (source). Sleep is known to enhance memory for episodes, with this effect conveyed mainly by slow wave sleep (SWS). Also, sleep is thought to particularly enhance emotional memories, with this effect mainly conveyed through rapid eye-movement (REM) sleep. It is thus far unclear how processes of episodic and emotional memory consolidation interact during sleep. Which aspect of episodic memory (item, source) is enhanced by emotional memory consolidation during sleep, and which is the sleep stage (SWS or REM) that produces this enhancement? To shed light on these questions, in my talk I will concentrate on two studies in healthy volunteers (Groch et al. 2015, Bolinger et al. 2017). In the first, we presented aversive and neutral pictures (items) on a screen together with colored frames (source) shortly preceding the presentation of the picture, before early-night SWS-rich or late-night REM sleep-rich retention intervals, and thereafter retrieval was tested. Only after REM-rich sleep, and not after SWS-rich sleep, was there a significant emotional enhancement, i.e., a superior retention of emotional over neutral pictures. After SWS-rich sleep the retention of picture-frame associations was better than after REM-rich sleep. However, this benefit was observed only for neutral pictures; and it was completely absent for the emotional pictures. We concluded that REM sleep favors the emotional enhancement specifically of item memory whereas SWS enhances the item-source binding. But, strong emotional enhancement of item memory might impair SWS-induced strengthening of item-source binding. In the second study, we presented aversive and neutral pictures before and after periods of sleep and wakefulness, and analysed the enhancement in the emotional response using different measures, i.e., heart rate deceleration (HRD), subjective ratings and the late positive EEG potential response (LPP). Sleep increased the emotional response in HRD with this effect being associated with REM sleep theta activity, whereas sleep decreased the emotional response in ratings and the LPP. Overall, we conclude that REM sleep enhances emotional item memory with this effect coupled to an enhancing effect on the automatic emotional (HRD) response. Concurrently, SWS enhances episodic memory aspects (source, item-source coupling), and this effect might favor enhanced cognitive control of emotions as reflected in sleep induced decreases in LPP and subjective ratings.

TALK 3: PREFERENTIAL CONSOLIDATION OF EMOTIONALLY SALIENT INFORMATION DURING A NAP IS PRESERVED IN MIDDLE AGE
Jessica Payne¹, Sara Alger²; ¹University of Notre Dame, ²Walter Reed Army Institute of Research
Sleep preferentially preserves aspects of memory that are most salient and valuable to remember, often at the expense of memory for less relevant details. One example of such a selective memory effect is observed when examining memory for complex emotional experiences. We consistently find that memory for the emotionally salient focus of the episode is preferentially preserved, while memory for neutral, contextual detail is forgotten or even suppressed. Importantly, the magnitude of this ‘emotional memory trade-off effect’ increases over a period of sleep (Payne et al., 2008; Payne & Kensinger, 2011), demonstrating that this phenomenon is not simply the product of attentional factors during encoding, but to active processes unfolding during sleep (Bennion et al., 2015). Both daytime naps (Payne et al., 2015) and nocturnal sleep (Payne et al., 2008, 2012) enhance the emotional memory trade-off effect, with memory for emotional components correlated with slow wave sleep (SWS) during the day and rapid eye movement (REM) sleep overnight. These studies have primarily sampled from young adult populations. However, both sleep and memory are altered by middle age. Thus, the aim of the present study was to examine how increasing age affects sleep-based mechanisms of emotional memory prioritization, using a daytime nap protocol to compare young to middle-aged adults – an understudied age group. In both age groups, a nap soon after encoding scenes that contained a negative or neutral object on a neutral background led to superior retention of memory for emotional objects at the expense of memory for the neutral backgrounds. Properties of SWS were related to memory for salient information, although we demonstrate that these relationships weaken with age.

TALK 4: CHANGES IN SLEEP-DEPENDENT EMOTIONAL MEMORY PROCESSING WITH AGING AND DEVELOPMENT.
Rebecca Spencer¹, Bethany Jones¹, Amanda Cremone¹; ¹University of Massachusetts, Amherst

Sleep is critically involved in emotional regulation and emotional memory in young adults. Although this process has been associated with REM sleep, it is clear from recent studies that slow wave sleep (SWS) also plays a role. However, both sleep and emotion processing evolve across development and with aging. Thus, we will present two studies investigating the role of sleep in emotional memory and reactivity in both children and older adults. In the first study, we will present findings from early childhood (3-5 yrs), an age characterized by daytime naps. Although the architecture of naps mimics that of overnight sleep, REM sleep is largely absent in naps at this age. When children are presented with emotional faces prior to the nap or an equivalent interval awake, memory for the items is similar when subsequently probed. However, when probed again the next day, memory is greater when the children nappted following learning the prior day. Moreover, using a Dot Probe task, we find that the emotional attention bias present prior to the nap/wake interval is reduced following a nap but not when children stay awake during naptime. Importantly, this benefit of sleep on emotional attention regulation is specifically associated with slow wave activity. In a second study, we likewise assessed emotional memory following intervals of sleep (in this case overnight sleep) and wake in young (18-26 yrs) older (50-80 yrs) adults using an emotional picture paradigm. Compared to waking, sleep preserved subjective reactivity and memory for positive but not negative pictures in older adults and negative but not positive pictures in young adults. Memory for positive pictures in older adults was associated specifically with time spent in SWS. Furthermore, SWS was related to the ratio of positive to negative affect in older adults and inversely related to this ratio in young adults. These relationships were strongest for older adults with high memory for positive pictures and young adults with high memory for negative pictures. Collectively, these studies support a role of SWS in emotional memory processing across the lifespan in spite of changes in sleep architecture. Yet, changes in sleep distribution across the day and memory bias nonetheless contribute to developmental and age-related changes in sleep-dependent emotion processing.

TALK 5: FACILITATED DISCUSSION
Rebecca Spencer¹; ¹University of Massachusetts, Amherst

We will use about 2-5 mins to introduce basic concepts and present an overview of the symposium. We will use the remaining time at the end of the symposium for a facilitated discussion - with a summary slide and themes presented for 2-5 mins to help facilitate the Q&A.

Symposium Session 9
NEURAL DEDIFFERENTIATION AND AGE-RELATED COGNITIVE DECLINE

Tuesday, March 27, 1:30 - 3:30 pm, Back Bay C&D
Chair: Joshua Koen, University of Texas at Dallas
Co-Chair: Michael Rugg, University of Texas at Dallas
Speakers: Thad A. Polk, Caitlin Bowman, Joshua D. Koen, Morgan D. Barense, Michael D. Rugg

Aging is associated with a decline in the regional specificity and precision of neural representations and the processes that operate on them. This decline has been referred to as age-related neural dedifferentiation. It has been studied most frequently in extra-striate visual cortex, with several reports that older adults show lower regional specificity in their neural responses to different visual categories than their younger counterparts. This symposium will present research that goes beyond these earlier observations to shed light on possible mechanisms underlying neural dedifferentiation and to link it to age-related performance differences in a variety of cognitive domains. Thad Polk will present findings that link age-related differences in cortical GABA availability to neural dedifferentiation in a number of brain regions, and to differences in ‘fluid’ cognitive functions. Caitlin Bowman will discuss how reductions in the fidelity of neural representations are associated with age-related increases in false memory. Joshua Koen will provide evidence that neural...
dedifferentiation plays a role in the well-known difficulties of older adults in episodic memory encoding. Finally, Morgan Barense will report that the impoverished representations of visual objects that are characteristic of Alzheimer’s disease are associated with abnormal viewing patterns related to volumetric reductions in entorhinal cortex. Together, the presentations and subsequent discussion will highlight the importance of neural dedifferentiation to the understanding of age-related differences in cognitive performance, link the phenomenon to broader notions of dedifferentiation current in the cognitive aging literature, and identify important avenues for future research.

TALK 1: AGE-RELATED NEURAL DEDIFFERENTIATION: SCOPE, CAUSE, AND CONSEQUENCES
Thad A. Polk1; ‘University of Michigan
Previous work has found evidence for age-related neural dedifferentiation in visual cortex: Neural activation patterns in response to different visual stimuli are less distinctive in older compared with younger adults. Furthermore, individual differences in neural distinctiveness predict individual differences in behavior across a range of fluid processing tasks. Animal work suggests that age-related reductions in the inhibitory neurotransmitter GABA might play a role, but GABA has not been extensively studied in human aging. In this talk, I’ll present results from the Michigan Neural Distinctiveness (MiND) project investigating the scope, cause, and consequences of age-related neural dedifferentiation in humans. We are using functional magnetic resonance imaging to measure the distinctiveness of neural activation patterns in response to faces vs. houses in visual cortex, in response to speech vs. music in auditory cortex, in response to left- vs. right-hand button presses in motor cortex, and in response to left- vs. right-hand vibrotactile stimulation in somatosensory cortex. We also use magnetic resonance spectroscopy to measure resting GABA levels in visual, auditory, and sensorimotor cortex in the same individuals. Finally, all participants complete an extensive battery of behavioral tasks. In this talk, I’ll present data showing that (1) neural distinctiveness declines with age in multiple cortical regions, not just visual cortex; (2) GABA levels also decline with age across cortical regions; (3) participants with higher GABA levels exhibit greater neural distinctiveness; and (4) participants with higher GABA levels and greater neural distinctiveness perform better on a range of fluid, but not crystallized, processing tasks.

TALK 2: INVESTIGATING DEDIFFERENTIATION IN VISUAL CORTEX UNDERLYING FALSE MEMORIES IN AGING
Caitlin Bowman1,2, Christina Webb1, Jordan Chamberlain1, Nancy Dennis1; ‘Penn State University, ‘University of Oregon
We propose that age-related increases in false recognition are due, in part, to reductions in the fidelity of item representations in visual cortex that help to detect mismatch between targets and lures. To test for age-related dedifferentiation in neural representations we combined univariate analyses with an encoding-retrieval pattern similarity (ERS) analysis in young and older adults to compare the overlap in neural representations between retrieval lures and their respective targets at encoding. We then aimed to link these similarity patterns to memory performance. Results showed greater ERS for targets and lures compared to completely new items in several regions within the retrieval network. Across age groups, ERS tracked false recognition in inferotemporal cortex and middle temporal gyrus, suggesting that memory representations in these regions lack the specificity necessary to distinguish between targets and related lures. However, age differences were identified in more posterior visual regions, including lateral occipital cortex, where older adults showed similar ERS for both retrieval targets and lures. These representations were linked to both target recollection and lure rejection. Additionally, neural representations in early visual cortex distinguished targets and lures in young, but not older adults. Together, results support the idea that dedifferentiation in aging reflects reduced reactivation of target representations that facilitate lure rejection, contributing to increased false recognition.

TALK 3: THE RELATIONSHIP BETWEEN AGE, NEURAL DEDIFFERENTIATION, AND MEMORY ENCODING
Joshua D. Koen1, Nedra Hauck1, Michael D. Rugg1; ‘University of Texas at Dallas
We describe research examining the hypothesis that age-related neural dedifferentiation results in degraded memory representations that contribute to the well-recognized age-related decline in episodic memory. This hypothesis was tested using trial-level neural (BOLD) responses elicited in the parahippocampal place area (PPA) and lateral occipital cortex (LOC) while young and older adults studied pictures of objects and scenes for a subsequent memory task. There were two key findings relating neural dedifferentiation to memory. First, ‘a differentiation index’ measuring the preferential response of the PPA and LOC to scenes and objects, respectively, predicted across-participant differences in recognition memory. Second, a within category pattern similarity measure (the correlation between across-voxel profiles of BOLD response for a given category member with all other members) was differentially predictive of memory in young and older adults. In young adults, trials that were subsequently recollected were more similar to each other than trials for which subsequent recollection failed. This relationship was not present in older adults. In addition, estimates of within category pattern similarity were lower in older than in young adults. This latter finding suggests that aging is associated with a decline in the stability with which individual events are represented in category-selective cortical regions. Together, the results suggest that age-related neural dedifferentiation is associated with less efficacious encoding processes. They further indicate that neural dedifferentiation is multifaceted, and likely cannot be captured by a single neural index.

TALK 4: IMPOVERISHED REPRESENTATIONS OF OBJECT STIMULI REVEALED BY ABNORMAL EYE MOVEMENT BEHAVIOUR
Morgan D. Barense\textsuperscript{1,2}, Lok-Kin Yeung\textsuperscript{3}, Jennifer Ryan\textsuperscript{1,2}, Rosanna Olsen\textsuperscript{1,2}; \textsuperscript{1}University of Toronto, \textsuperscript{2}Rotman Research Institute, \textsuperscript{3}Columbia University Medical Center

Alzheimer’s disease pathology appears earliest in brain regions that overlap with the anterolateral entorhinal cortex (aERC). However, the representations and the computational properties of the aERC are poorly understood. Previous human studies treat the aERC as an extension of the neighboring perirhinal cortex, supporting object memory. Animal studies suggest that the aERC may support the spatial properties of objects. In a group of older adult humans at the earliest stages of cognitive decline, we used eye movement analyses to show that alterations in aERC volume were related to abnormal visual processing of the spatial attributes of objects. This work suggests that the earliest stages of Alzheimer’s disease are associated with a fundamental attentional or perceptual deficit that leads to less precise stimulus representations, which will in turn have cascading effects on many aspects of cognition.

**TALK 5: AGE-RELATED NEURAL DEDIFFERENTIATION – SOME POINTS FOR DISCUSSION**

Michael D. Rugg\textsuperscript{1}; \textsuperscript{1}University of Texas at Dallas

In this brief discussion, I will give an overview of the different ways in which the concept of dedifferentiation is applied in the cognitive neuroscience of aging, drawing on the prior presentations for examples. I will discuss whether these different conceptualizations, and the accompanying empirical findings, are consistent with the existence of single, age-sensitive neural mechanism. In addition, I will relate these ‘neural’ conceptualizations to earlier notions of dedifferentiation that arose from a quite different perspective – the long-standing, but still disputed, observation that performance measures on tasks tapping into different cognitive domains become more correlated with age. The presentation will set the scene for a general discussion between the symposium presenters and the audience.

**Symposium Session 10**

**HIERARCHICAL CORTICAL RHYTHMS AND TEMPORAL PREDICTIONS IN AUDITORY AND SPEECH PERCEPTION**

Tuesday, March 27, 1:30 - 3:30 pm, Constitution Ballroom

Chair: Anne Keitel, University of Glasgow
Co-Chair: Johanna M. Rimmele, Max Planck Institute for Empirical Aesthetics
Speakers: Anne Kösem, Benjamin Morillon, Johanna M. Rimmele, Giovanni M. Di Liberto, Andrea E. Martin

Auditory perception, in particular speech comprehension, involves hierarchical rhythmic processes at distinct acoustic and neural time scales. These processes include the tracking of acoustic fluctuations and linguistic features, as well as temporal predictions about those units. In this symposium, we will present new empirical data and evidence from computational modelling that highlights specific roles for rhythmic brain activity during auditory and speech processing. The symposium will start with Anne Kösem, who will provide evidence that speech entrainment in the delta and theta bands reflects separate processes that affect intelligibility, and that temporal prediction is a crucial part of entrainment. Benjamin Morillon will further specify the contentious role of motor cortex in generating temporal predictions during auditory perception. Based on this auditory infrastructure, we turn to the representation of different linguistic features in rhythmic brain activity. Johanna M. Rimmele will disentangle lexical and sub-lexical effects on speech segmentation and highlight the role of hierarchical speech networks. Giovanni M. Di Liberto will then present analyses that disentangle the hierarchical contributions of phonetic-level features and speech acoustics to low-frequency entrainment in auditory cortex. Finally, Andrea E. Martin will discuss how hierarchy and rhythm may be organising principles of neural systems for speech and language processing and how they might emerge in different computational architectures (including deep learning and symbolic-connectionist systems). In summary, this symposium features recent empirical findings and theoretical insights that highlight the importance of rhythmic structure, temporal predictions, and hierarchy in auditory, speech, and linguistic processing.

**TALK 1: DISSOCIATING THE ROLES OF THETA AND DELTA NEURAL ENTRAINMENT IN SPEECH PROCESSING**

Anne Kösem\textsuperscript{1,2}, Bohan Dai\textsuperscript{1,2}; \textsuperscript{1}Max Planck Institute for Psycholinguistics, \textsuperscript{2}Donders Institute for Brain, Cognition and Behaviour

While neural oscillations entrain to the dynamics of speech at distinct time scales, it is yet unclear whether neural entrainment observed across studies and frequency ranges reflect the same underlying mechanism. Here, we contrast data from two studies to highlight dissociable roles of neural entrainment in speech perception. The first study provides evidence that neural entrainment reflects temporal predictions, as it is shown to sustain after stimulation and hence to contain information on past speech dynamics. Crucially, sustained entrainment influences speech perception. In addition to temporal predictions based on rhythmic acoustic information, neural entrainment can also be a marker of speech-specific processes. In a second study, we show in a multi-talker environment that the intelligibility of distracting speech influences the comprehension and neural entrainment of attended spoken sentences. In this task, the distracting signals are noise-vocoded speech that are initially unintelligible but become intelligible via training. Noise vouched distractors impair more strongly the understanding of target speech after training (i.e. when they are intelligible) than before training.
Neural entrainment to target speech also diminishes in the presence of an intelligible distractor, suggesting that entrainment here reflects disrupted linguistic processing of attended speech due to competition. Importantly, temporal predictability effects are observed at frequency ranges associated with strong rhythmicity of the speech envelope in the theta range (3-8 Hz), while linguistic modulations of entrainment are only reported for delta oscillations (1-3 Hz). Hence, delta and theta neural entrainment may relate to separate mechanisms occurring at distinct stages of speech analysis.

**TALK 2: MOTOR ORIGIN OF TEMPORAL PREDICTIONS IN AUDITORY ATTENTION**

Benjamin Morillon¹; ¹Aix Marseille University, INSERM

Temporal predictions are fundamental instruments for facilitating sensory selection, allowing humans to exploit regularities in the world. It is proposed that the motor system instantiates predictive timing mechanisms, helping to synchronize temporal fluctuations of attention with the timing of events in a task-relevant stream. I will present a neurophysiological account for this theory in a paradigm where participants track a slow reference beat while extracting auditory target tones delivered on-beat and interleaved with distractors. At the behavioral level I will show that overt rhythmic movements sharpen the temporal selection of auditory stimuli, thereby improving performance.

Capitalizing on magnetoencephalography recordings I will provide evidence that temporal predictions are reflected in Beta-band (~20Hz) energy fluctuations in sensorimotor cortex and modulate the encoding of auditory information in bilateral auditory and fronto-parietal regions. Together, these findings are compatible with Active Sensing theories, which emphasize the prominent role of motor activity in sensory processing.

**TALK 3: LEXICAL AND SUB-LEXICAL EFFECTS ON SPEECH SEGMENTATION**

Johanna M. Rimmele¹, Yue Sun¹, Georgios Michalareas¹, Oded Ghitza¹², David Poeppel¹³; ¹Max Planck Institute for Empirical Aesthetics, ²Boston University, ³New York University

Linguistic processing may affect the phase-locking of cortical theta oscillations to the speech acoustics, possibly due to a top-down modulation. Specific temporal dynamics might underlie this hierarchical processing, involving connectivity between frontal, motor areas and auditory cortex in the delta- and theta-band. It is unclear, however, at which linguistic level top-down effects occur and which mechanisms underlie this reinforcement. Here, we recorded Magnetoencephalography during a frequency-tagging paradigm to investigate effects of lexical access and sub-lexical contingencies on the temporal segmentation at the syllabic scale. Two experiments were conducted: Experiment 1, with sequences of German (native) and Turkish (foreign) words, and Experiment 2, with sequences of German and Non-Turkish words (without sub-lexical contingencies). Syllable rate was 4 syllables/sec and word rate was 2 words/sec. Acoustic cues and sub-lexical contingencies for word grouping were removed and controlled between languages. In Experiment 1, we hypothesized brain-wave spectral peaks at 2 Hz due to lexical access, for German stimuli but not for Turkish stimuli. In Experiment 2, the effect of sub-lexical statistics was measured. In both experiments we expected top-down effects to increase connectivity between higher order processing areas and the auditory cortex. Our findings provide evidence for lexical segmentation at 2 Hz in frontal and temporal brain areas. Interestingly, participants were sensitive to sub-lexical contingencies even when listening to a non-native language. Sub-lexical contingencies resulted in broad activation increases in frontal, temporal and motor areas at 2 Hz. The findings provide new insights into the temporal dynamics and localization of hierarchical lexical-related processes.

**TALK 4: ISOLATING NEURAL INDICES OF CONTINUOUS SPEECH PROCESSING AT THE PHONEME-LEVEL**

Giovanni M. Di Liberto¹², Michael J. Crosse⁴, Alain de Cheveigné⁵¹²³⁵, Edmund C. Lalor⁴; ¹ENS Paris, ²CNRS, ³Trinity College Dublin, ⁴Albert Einstein College of Medicine, ⁵UCL, ⁶University of Rochester

In recent years it has been firmly established that auditory cortical activity tracks the temporal amplitude-envelope of speech. However, the specific hierarchical levels from which this phenomenon stems remain unclear. Our aim was to clarify whether low-frequency cortical activity tracks phoneme-level features of speech as well as acoustic-level features. To this end, participants were presented with natural speech from an audio-book while non-invasive electroencephalographic (EEG) signals were recorded. Parts of the EEG signal that differentially reflect responses to either phonemic units or acoustic attributes were identified by means of a regularised ridge regression analysis. This demonstrated that low-frequency cortical tracking of speech entails more than responses to acoustic-level attributes and, concurrently, this provides us with a novel framework to isolate cortical tracking of different speech attributes. A second study was conducted to further assess this framework and, specifically, its ability to isolate and quantify cortical tracking to phonetic features from the responses to speech acoustics. This involved implementing a perceptual pop-out paradigm that, by providing or not providing prior predictive knowledge on the upcoming stimuli, allowed for the comparison between two conditions consisting of the same stimulus but different perceived clarity. Our findings show an impact of prior information on phoneme-level cortical tracking in the delta-band (1-4 Hz). Overall, these experiments suggest that a dependent measure of speech processing at the phonemic-level can be derived using non-invasive, low frequency EEG.

**TALK 5: LINKING LANGUAGE AND OSCILLATIONS THROUGH RHYTHMIC COMPUTATION**

Andrea E. Martin¹; ¹Max Planck Institute for Psycholinguistics

One way to reconcile formal linguistic representations with the physicality of speech given the computational constraints of neural
systems may be to capitalize on time and rhythm in computation. Time naturally encodes relationships between stimuli in the environment, and, in a neural network that is appropriately sensitive, rhythmic activation patterns or oscillations can be incurred by such temporal structure. I will discuss how different neural network architectures, (including deep learning systems and a time-sensitive symbolic-connectionist model) might capitalize on time and rhythm to process sentence structures. I argue that rhythmic computation offers an explicit mechanism for how the brain could process and combine representations across multiple timescales, providing a linking hypothesis between the computation of linguistic representations and oscillations that has nascent but broad implications for discovering the first principles of computation in the human brain.
Poster Schedule

Poster sessions are scheduled for Saturday-Tuesday in Exhibition Hall C of the Sheraton Boston Hotel. All attendees must present their CNS 2018 name badge to enter the exhibit hall. Do not leave personal items in the poster room. The presenting author must be present during the assigned session. You may post your materials on the board assigned to you at any time after the “Set-up Begins” time (listed below), but before the beginning of the assigned poster session. You must remove your poster promptly no later than the time listed above in “Take-down Complete.” Any posters left up after the “Take-down Complete” time may be discarded. Note that presenters are asked to set up in advance of their session and to leave their poster up for a period following their session (see your specific session for hours). This is to allow attendees to view posters outside the formal session times. Only registered poster presenters, wearing a CNS 2018 meeting badge, for the current session and exhibitors will be allowed in the exhibit hall during set up and take-down hours. All other attendees will be turned away at the door. No attendee or exhibitor will be allowed to enter the exhibit hall after the Closed for the Day- No Entry hours.

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*Note 1: Only scheduled registered poster presenters may enter the exhibit hall during the half hour set-up time. Note 2: Remove your poster promptly at take down complete time, so that the next presenter may set up their poster.

Poster Session A

Saturday, March 24, 1:30-3:30pm

Poster A1  Behavioural and electrophysiological measurements of lapses in sustained auditory attention
Alice E Milne1, Daniel I R Bates1, Maria Chait1; 1UCL, London
Topic Area: ATTENTION: Auditory

Poster A2  Anticipatory EEG Activity during Somatosensory Selective Attention relates with Executive Function
Staci Meredith Weiss1, Rebecca Laconi1, Peter Marshall1; 1Temple University
Topic Area: ATTENTION: Multisensory

Poster A3  Default-Executive coupling in attention control after traumatic brain injury with task functional magnetic resonance imaging in longitudinal study.
Shun-Chin Wu1,2, Lei Wang1, Fan-pei Gloria Yang3, Furen Xiao4; 1Northwestern University, Chicago, IL 60611, USA, 2National Defense Medical Center, School of Medicine, Taipei, Taiwan, 3National Tsing Hua University, Hsinchu, Taiwan, 4National Taiwan University Hospital, Taipei, Taiwan
Topic Area: ATTENTION: Nonspatial

Poster A4  Estimation of Mind-Wandering - For the Respondent Conditioning Enhancing the Meta-Awareness Ability to Mind-Wandering
Issaku Kawashima1,2, Hiroaki Kumano1, Keiko Momose1; 1Faculty of Human Sciences, Waseda University, 2Graduate School of Human Sciences, Waseda University
Topic Area: ATTENTION: Other

Poster A5  Characterizing the influence of attentional state on the fidelity and connectivity of stimulus representations across large-scale brain networks
David Rothlein1, Joseph DeGutis1,2, Michael Esterman1,2,3; 1VA Boston Healthcare System, 2Harvard Medical School, 3Boston University School of Medicine
Topic Area: ATTENTION: Other

Poster A6  Visual search alpha: A novel window into lateralized visual attention processes
Matthew D. Bachman1, Berry van den Berg2, Lingling Wang3, Marissa L. Gamble3, Kait Clark3, Marty G. Woldorff4; 1Duke University, 2University of Groningen, 3GE China, 4Boston University, 5University of the West of England
Topic Area: ATTENTION: Spatial
Poster A7  Little to no effects of action video games on visuospatial cognition: evidence from intervention and individual differences studies
Joseph Arizpe1,2, Anika Guha1,4, Amye Jereen1,5, Jeremy Wilmer1, Joe DeGutis1,2, 1Harvard Medical School, 2Boston Veterans Affairs Medical Center, 3Wellesley College, 4University of California Los Angeles, 5University of South Florida
Topic Area: ATTENTION: Spatial

Poster A8  An ERP study examining false-belief understanding in adolescents
Elisabeth E.F. Bradford1, Victoria E.A. Brunson1, Heather Ferguson1;
1University of Kent, U.K.
Topic Area: EMOTION & SOCIAL: Development & aging

Poster A9  Patterns of neural response during emotional face processing in 3-year-old children: a functional near-infrared spectroscopy study
Julia Cataldo1, Katherine Perdue1,2, Ruby Almanza1, Hannah Behrendt1,4, Charles Nelson1,2,3, 1Boston Children’s Hospital, 2Harvard Medical School, 3Harvard Graduate School of Education, 4University Hospital RWTH Aachen
Topic Area: EMOTION & SOCIAL: Development & aging

Poster A10  Mindfulness-Based Stress Reduction Improves Fear Extinction: An fMRI Investigation
Gunes Sevinc1,2, Britta Hözel1, Muhammed Milad1, Sara W. Lazar1,2, 1Massachusetts General Hospital, Division of Psychiatry, 2Harvard Medical School, 3Technical University of Munich, Klinikum rechts der Isar
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster A11  Impulsivity and Apathy Predict Involvement of Inhibitory Control Regions During Cognitive Interference
Emily Hahn1, Julia Felicione1, Ashwarya Gosai1, Matthew Boggess1, Alex Rockhill1, Amy Peters2, Alik Widge1, Darin Dougherty1, Thilo Debek1,2, 1Massachusetts General Hospital/Harvard Medical School, 2University of Illinois at Chicago
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster A12  Sexually Dimorphic Pupillary Responses During Facial Trustworthiness Evaluation: A Study With Intranasal Oxytocin Administration
Fatma Gülhan Saraçaydın1, Didem Gökçay1, 1Middle East Technical University
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster A13  Keep calm and carry on: ERP evidence for reduced negative anticipation stress in bilingualism
Rafal Jonczyk1,2, Guillaume Thierry2, 1Adam Mickiewicz University, 2Pennsylvania State University, 3Bangor University
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster A14  Resting State Functional Connectivity Neural Correlates of Emotional Regulation Strategies
Yushukreja2, Lauren Goode1, Jeffrey Rouse2, Jeremy Cohen1, 1Xavier University of Louisiana, New Orleans, LA, USA, 2Tulane University, New Orleans, LA, USA
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster A15  The Effects of Age and Emotion on Cognitive Control of Memory and Metacognitive Monitoring
Sara Gallant1, Lixia Yang2, 1University of Southern California, 2Ryerson University
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster A16  Brain States Encode both Perceived Emotion and the Physiological Response Induced by Visual Stimuli
Keith A. Bush1, Anthony A. Privratsky1, Jonathan B. Gardner1, Melissa J. Zielinski1, Clinton D. Kilts1, 1Brain Imaging Research Center, University of Arkansas for Medical Sciences, Little Rock, AR
Topic Area: EMOTION & SOCIAL: Emotional responding

Poster A17  The Brain Activity in Processing Natural Dynamic Happy Facial Expressions
Yen-Ju Lu1, Shih-Iseung T. Huang1, 1Division of Psychology, National Chung-Cheng University, 2Center for research in Cognitive Science, National Chung-Cheng University, Taiwan
Topic Area: EMOTION & SOCIAL: Other

Poster A18  A Cross-Correlation Analysis of the Relationship Between Central and Autonomic Nervous System Activity at Rest
Derek Spangler1, Jean Vetel1, Matthew Cieslak1, Barry Giesbrecht1, Scott Grafton1, Gold Okao2, Viktoriya Babenko1, Javier Garcia1, Justin Brooks1, 1U.S. Army Research Laboratory, 2University of California, Santa Barbara
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster A19  Comparing human and monkey neural circuits for processing social scenes
Julia Sliwa1, Sadie RMarvel2, Geena Ianni1, Winrich A Freiwald1, 1The Rockefeller University, New York, 2Bard College, Annandale-on-Hudson, New York
Topic Area: EMOTION & SOCIAL: Person perception

Poster A20  Neural Mechanisms Underlying Shifts in Imitative Fidelity
Kevin Jenson1, Gedeon Deak1, 1UC San Diego
Topic Area: EMOTION & SOCIAL: Person perception

Poster A21  Behavioral and Brain-Imaging Predictors of Working Memory Plasticity in Younger and Older Adults
Alexandru D. Iordan1, Katherine A. Cooke1, Kyle D. Moor2, Benjamin Katz2, Sneha Rajen1, Martin Buschkuehl1, Susanne M. Jaeggi1, John Jonides1, Scott J. Peltier1, Thad A. Polk1, Patricia A. Reuter-Lorenz1, 1University of Michigan, 2Johns Hopkins University, 3Virginia Polytechnic Institute and State University, 4MIND Research Institute, 5University of California, Irvine
Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster A22  C957T Polymorphism in dopamine D2 receptor gene predicts sequence learning in younger adults
Beth Westphal1, Mark A. Gluck1, Jessica R. Petok1, 1St. Olaf College, Northfield, MN, 2Rutgers University, Newark, NJ
Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster A23  The Associations between Obesity and Visceral Adipose Tissue with Cognitive Function and Achievement in Children
Lauren Raine1, Eric Drollette2, Shih-Chun Kao1, Daniel Westfall1, Laura Chaddock-Heyman2, Arthur Kramer2,3, Naiman Khan2, Charles Hillman2; 1Northeastern University, 2University of Illinois at Urbana-Champaign Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster A24  Resting-State EEG Coherence in Young Children with ADHD: A Potential Neural Marker of ADHD
Sarah Furlong1, Jessica Cohen1, Joseph Hopfinger1, Jenna Snyder1, Margaret Sheridan1; 1University of North Carolina, Chapel Hill Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster A25  Differential effects of prefrontal inhibitory tDCS on voluntary task selection
Joseph Orr1, Michael Imburgio1, Jesus Lopez1; 1Texas A&M University Topic Area: EXECUTIVE PROCESSES: Goal maintenance & switching

Poster A26  Sticky Rules: Conjunctions between Rules and Stimulus-Response Codes Drive Action Selection
Atsushi Kikumoto1, Tesufuai Sameshima1, Ulrich Mayr1; 1University of Oregon Topic Area: EXECUTIVE PROCESSES: Goal maintenance & switching

Poster A27  Attention from inside out: P1 effects for shifts between internally and externally oriented attention
Sam Verschooren1, Sebastian Schindler1,2, Rudi De Raedt1, Gilles Pourtois1; 1Ghent University, 2Bielefeld University Topic Area: EXECUTIVE PROCESSES: Goal maintenance & switching

Poster A28  The role of action, choice, and predictive cues in human reinforcement learning
Cameron D. Hassall1, Greg Hajcak2, Olave E. Krigolson1; 1University of Victoria, 2Florida State University Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster A29  Increasing cognitive control abilities inhibits creative responses, but only if they are not too “far” away: A tDCS study
Yoad N. Kenett1, David S. Rosen2, Emilio R. Tamez1, Sharon L. Thompson-Schill1; 1University of Pennsylvania, 2Drexel University Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster A30  Dynamic Reconfiguration of Inhibition Control Network in Different Bilingual Contexts
Jianqiao Ye1, Jing Yang1, Ruiming Wang2, Ke Zhou2, Yan Jing Wu2; 1Bilingual Cognition and Development Lab, Center for Linguistics and Applied Linguistics, Guangdong University of Foreign Studies, Guangzhou, 510420, China, 2Guangdong Provincial Key Laboratory of Mental Health and Cognitive Science, Center for Studies of Psychological Application, School of Psychology, South China Normal University, Guangzhou 510631, China, 3College of Psychology and Sociology, Shenzhen University, Shenzhen 518060, China Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster A31  Temporal metacognition as the decoding of internally generated brain dynamics
Tadeusz Kononowicz1, Clemence Roger2, Virginie van Wassenhove1; 1CEA/DRF NeuroSpin - INSERM Cognitive Neuroimaging Unit, 2University of Lille Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster A32  Frontal-midline Theta Neurofeedback Training Increases Flow Experience
Kathrin C. J. Eschmann1, Lisa Riedel1, Axel Mecklinger1; 1Saarland University, Saarbrücken, Germany Topic Area: EXECUTIVE PROCESSES: Other

Poster A33  Context-dependent inhibition impairments for executing familiar action task found in patients with frontal glioma
Chiharu Niki1, Takatsune Kumada2, Takashi Maruyama1, Manabu Tamura1, Yoshihiro Muragaki1; 1Tokyo Women’s Medical University, 2Kyoto University Topic Area: EXECUTIVE PROCESSES: Other

Poster A34  Frontoparietal neurostimulation alters the theta-gamma neural code for working memory
Marian Berryhill1, Elizabeth Johnson2, Adelle Cerreta3, Dwight Peterson2; 1University of Nevada, Reno, 2University of California, Berkeley, 3Concordia College, 4Colorado State University Topic Area: EXECUTIVE PROCESSES: Working memory

Poster A35  Relations Between Hypothalamic-Pituitary-Adrenal Axis and Autonomic Nervous System Activity and Children’s Executive Functions in Environments of Early-life Stress
Stephen Braren1, Annie Brandes-Aitken1, Clancy Blair1; 1New York University Topic Area: EXECUTIVE PROCESSES: Working memory

Poster A36  Smoothing over the differences in working memory performance by tACS
Yuri G. Pavlov1,2, Nadezhda Pavlova1,2; 1University of Tuebingen, 2Ural Federal University Topic Area: EXECUTIVE PROCESSES: Working memory

Poster A37  Default mode network deactivation as a potential biomarker for working memory deficits in brain tumor patients
Irena Schouwenaars1, Miek de Deur1, Geert-Jan Rutten, Nick Ramsey, Johan Jansma1,2; 1ETZ Elisabeth Hospital, Department of Neurosurgery, Tilburg, the Netherlands Topic Area: EXECUTIVE PROCESSES: Working memory

Poster A38  Predicting task performance with multivariate pattern decoding using EEG oscillatory activity
Elaine Astrand1; 1Mälardalen University, Västerås, Sweden Topic Area: EXECUTIVE PROCESSES: Working memory

Poster A39  IMAGING STRESS EFFECTS ON WORKING MEMORY CAPACITY IN ADOLESCENTS AT-RISK
Ashley Williams1,2, Jessica Graham1,2, Candace Killian-Farrell1, Josh Bizzell1, Hannah Waltz1, Erin King2, Alana Campbell1, Ayseen Belger1,2; 1University of North Carolina at Chapel Hill, Department of Psychiatry, 2Duke University-UNC Brain and Imaging Analysis Center, 3Emory University Topic Area: EXECUTIVE PROCESSES: Working memory

Poster A40  Neural Correlates of the “30 Million Word Gap”: Children’s language exposure is related to white matter structure
Poster A41  Phase synchronization in the brain’s functional reading network during letter processing supports the development of word reading in elementary school children

Erin White1,2, Candace Naymani1, Benjamin Dunkley1,4, Zahra Eman1, Anne Keller1,2, Taufik Vallant2,5, Elizabeth Pang1,3,4; 1Sick Kids Research Institute, Peter Gilgan Centre for Research and Learning, The Hospital for Sick Children, 686 Bay Street, Toronto, Ontario, Canada, MSG 0A4, 2Epileps Research Program of the Ontario Brain Institute, 438 University Ave., #1618, Toronto, Ontario, Canada, MSG 2K8; 3The Hospital for Sick Children, 555 University Ave., Toronto, Ontario, Canada, MSG 1X8, 4University of Toronto, Toronto, Ontario, Canada, M5T 1W7, 5Krembil Research Institute, University Health Network and Toronto Western Hospital, 399 Bathurst St., Toronto, Ontario, Canada, M5T 2S8

Topic Area: LANGUAGE: Development & aging

Poster A42  Tracking Attention to Spoken Language using EEG Alpha Oscillations

Megan Boudewyn1, Cameron Carter7; 1University of California, Davis

Topic Area: LANGUAGE: Other

Poster A43  Neural responses during procedural memory tasks are related to foreign language learning outcomes

Tyler Perrachione1,2, Stuart Babcock1, Michelle Han2, John Salvatore2, Jennifer Minas3, Amy Finn1,3, John Gabrieli2, Zhenghan Qi2,4; 1Boston University, 2Massachusetts Institute of Technology, 3University of Toronto, 4University of Delaware

Topic Area: LANGUAGE: Other

Poster A44  Multi-modal and task-modulated inter-hemispheric connectivity changes after left arcuate resection

Benjamin Chernoff1, Alexander Teghio2, Frank Garcea1, Max Sims1, Susan Smith1, Webster Pitche3, Bradford Mahon1,2,3; 1Department of Brain & Cognitive Sciences, University of Rochester, USA, 2Center for Visual Science, University of Rochester, USA, 3Department of Neurosurgery, University of Rochester Medical Center, USA

Topic Area: LANGUAGE: Other

Poster A45  Comprehending events on the fly: inhibition and selection during language processing

Yanina Prystauka1,2, Zachary Evkes1,2, Gerry Altmann1,2; 1University of Connecticut, 2The Connecticut Institute for the Brain and Cognitive Sciences

Topic Area: LANGUAGE: Other

Poster A46  Left temporal lesions affect inner speech monitoring in language production: an electroencephalography and neuropsychological study

Stephanie Ries1,2, Alexa Cavalea1, Chase Tengberg1, Kathleen Y. Haaland3, Robert T. Knight4, Nina F. Dronkers1,6,7; 1School of Speech, Language, and Hearing Sciences, San Diego State University, 2Center for Clinical and Cognitive Neuroscience, San Diego State University, 3Department of Psychiatry and Behavioral Sciences, and Department of Neurology, 4Harvard University, Division of Medical Sciences, 5Massachusetts Institute of Technology, 6University of Pennsylvania, 7Harvard Graduate School of Education

Topic Area: LANGUAGE: Other

Poster A47  Violations of ASL Sentence Processing: Observed Changes in Neural Oscillations

Tristan Schaefer1, Kristina Backer1, Michael Grosvald2, David P. Corina1; 1Center for Mind and Brain, University of California, Davis, 2Qatar University

Topic Area: LANGUAGE: Other

Poster A48  The left anterior temporal lobe is a bidirectional convergence region mediating the relation between names and semantic knowledge for unique entities

Amy Belfi1, Brett Schneider1, Jonath Heskje1, Joel Bruss1, Daniel Tranel1, 1Missouri University of Science & Technology, 2University of Wisconsin-Madison, 3University of Iowa

Topic Area: LANGUAGE: Semantic

Poster A49  From action to abstraction: The sensorimotor grounding of metaphor comprehension in Parkinson’s disease

Stacey Humphries1, Nate Kloostr1, Eileen Cardillo1, Anjan Chatterje1; 1University of Pennsylvania

Topic Area: LANGUAGE: Semantic

Poster A50  A Late Slow Frontal Positivity ERP reflects the resolution of contextual ambiguity during narrative discourse comprehension

Patrick Ledwidge1, Adam Ramsey1, Jeremy Foulest1; 1Baldwin Wallace University

Topic Area: LANGUAGE: Semantic

Poster A51  Do faces affect foreign-accented speech comprehension in children? An ERP investigation

Abigail Cosgrove1, Carla B. Fernandez1, Sarah Gre2, Janet G. van Hell1; 1Pennsylvania State University, 2Fordham University

Topic Area: LANGUAGE: Semantic

Poster A52  What’s, uhh, coming next? Effects of speech disfluency on event-related potentials during sentence processing

Meredith Brown1,2, Nathaniel Delaney-Busch2, Barbara Storch1, Edward Woot2, Gina Kuperberg1,2; 1Massachusetts General Hospital, 2Tufts University, 3Moss Rehabilitation Research Institute

Topic Area: LANGUAGE: Semantic

Poster A53  The involvement of left inferior frontal and posterior superior temporal gyrin processing Chinese relative clauses

Kun-Yu Xu1, Cheng-Ren Du2, Denise Wu1; 1National Central University

Topic Area: LANGUAGE: Syntax

Poster A54  Effects of age on across-participant variability of cortical reinstatement effects

Rachel Romeo1,2, Joshua Segaran2, Julia Leonard2, Sydney Robinson2,3, Merideth Rowe4, Allyson Mackey3, John Gabrieli2,4; 1Harvard University, Division of Medical Sciences, 2Massachusetts Institute of Technology, 3University of Pennsylvania, 4Harvard Graduate School of Education
Poster A55  Memory and processing speed predict functional independence differentially in non-Hispanic and Hispanic White middle aged and older adults
Ariana Stickel¹, Andrew McKinnon¹, John Ruiz¹, Lee Ryan¹; ¹University of Arizona
Topic Area: LONG-TERM MEMORY: Development & aging

Poster A56  Decreased hippocampal-frontal functional connectivity predicts episodic memory in Alzheimer’s disease
Eun Hyun Seo¹, Jinsick Park², Mina Heo³, IL Han Choo⁴; ¹Premedical science, College of Medicine, Chosun University, Gwangju, Korea, ²Hanyang University, Seoul, Republic of Korea, ³Center for Development of BioMedical Technology, Chosun University Hospital, Gwangju, Korea, ⁴School of Medicine, Chosun University Hospital, Gwangju, Korea
Topic Area: LONG-TERM MEMORY: Development & aging

Poster A57  Multiple brain markers predict risk of progression on the Clinical Dementia Rating Scale in clinically normal older adults
Taylor E. Neal¹, Jenny S. Rabin¹,², Aaron P. Schultz¹,², Keith A. Johnson¹,²,³, Reisa A. Sperling¹,²,³, Trey Hedden¹,²,³; ¹Massachusetts General Hospital, ²Harvard Medical School, ³Brigham and Women’s Hospital
Topic Area: LONG-TERM MEMORY: Development & aging

Poster A58  The neurocognitive effects of digital memory augmentation
Chris B. Martin¹, Bryan Hong¹, Andrew Xia¹, Christopher J. Honey², Morgan D. Barense¹,²,³; ¹University of Toronto, ²Johns Hopkins University, ³Rotman Research Institute
Topic Area: LONG-TERM MEMORY: Episodic

Poster A59  Strategically orienting retrieval toward remote and recent memories: An episodic specificity account
Emily Leiker¹,², Mason Price¹, Jeffrey Johnson¹; ¹Boys Town National Research Hospital, ²University of Missouri
Topic Area: LONG-TERM MEMORY: Episodic

Poster A60  Memory Reactivation with Neurostimulation during Sleep Elicits Electrophysiological Responses that Predict Behavioral Changes
Ryan J. Hubbard¹, Nicholas A. Ketzi¹, Aaron P. Jones², Bradley Robert³, Natalie B. Bryant⁴, Steven W. Skorheim¹, Shane Roach¹, Vincent P. Clark², Praveen K. Pilly¹; ¹Information and Systems Sciences Laboratory, HRL Laboratories, LLC, Malibu, CA, ²The University of New Mexico, Albuquerque, NM
Topic Area: LONG-TERM MEMORY: Episodic

Poster A61  Theta oscillations during active and passive decision making for navigation
Elizabeth Chastitii¹,², Mathias Goncalves¹, Kylie Moore³, Chantal Stern¹, Erika Nyhus¹; ¹Boston University, ²University of California, Santa Barbara, ³Bowdoin College
Topic Area: LONG-TERM MEMORY: Episodic

Poster A62  Noninvasive stimulation increases fMRI connectivity during autobiographical memory retrieval more so than during rest
Kristen Warren¹, Molly S Hermiller¹, Steven VanHaerents¹, Joel L Voss¹; ¹Northwestern University
Topic Area: LONG-TERM MEMORY: Episodic

Poster A63  Differential effects of negative emotion on item-specific and contextual memory precision
Rose Cooper¹, Maureen Ritchey¹; ¹Boston College
Topic Area: LONG-TERM MEMORY: Episodic

Poster A64  Visual free recall of real-world scenes reveals high capacity and exquisite detail in memory
Wilma Bainbridge¹, Elizabeth Hall¹, Chris Baker¹; ¹National Institute of Mental Health
Topic Area: LONG-TERM MEMORY: Episodic

Poster A65  Temporal Contiguity Deficits in Medial Temporal Lobe Amnesia
Joseph Di Lascio¹, Daniela Palombo¹, Per Sederberg², Marc Howard¹, Mieke Verfaellie¹; ¹Boston University, ²Ohio State University
Topic Area: LONG-TERM MEMORY: Episodic

Poster A66  A Synergistic Ephyphory Account of Pupillary Old/New Effects During Episodic Memory Retrieval
Mingjian He¹, Elena Festa¹, William Heindel¹; ¹Brown University
Topic Area: LONG-TERM MEMORY: Episodic

Poster A67  Reinstatement of spatial information in a hybrid spatial-episodic memory task
Nora A Herweg¹, Ashwini D Sharan¹, Michael R Sperling², Armin Brandt³, Andreas Schulze-Bonhage³, Michael J Kahana¹; ¹University of Pennsylvania, ²Thomas Jefferson University Hospital, ³University Medical Center Freiburg
Topic Area: LONG-TERM MEMORY: Episodic

Poster A68  Resting-state hippocampal functional connectivity depends on handedness
John Scofield¹, Jeffrey Johnson¹; ¹University of Missouri
Topic Area: LONG-TERM MEMORY: Episodic

Poster A69  Caudate Activation in Adolescents during Goal-Directed Memory Performance is Associated with Mood, Anxiety, and Sensation Seeking
Emily Oot¹,², Jennifer Sneider¹,², Julia Cohen-Gilbert¹,², Derek Hamilton³, Anna Seraikas¹, Maya Rieselbach¹, Carolyn Caine¹, Arkady Maksimovskiy¹,², Lisa Nickerson¹,², Sion Harris¹,², Manisa Silveri¹,²; ¹McLean Hospital, ²Harvard Medical School, ³Boston University School of Medicine, ⁴University of New Mexico, ⁵Boston Children’s Hospital
Topic Area: LONG-TERM MEMORY: Episodic

Poster A70  Improving Memory with Real-Time Phase-Locked Reactivation during Sleep
Laura Batterink¹, Florczak Susan¹, Santostasi Giovanni¹, Zee Phyllis¹, Sanchez Daniel², Paller Ken¹; ¹Northwestern University, ²SRI International
Topic Area: LONG-TERM MEMORY: Other

Poster A71  Impoverished Semantic Memory in Mild Cognitive Impairment
Nora A Herweg¹, Daniela Palombo¹, Per Sederberg², Marc Howard¹, Mieke Verfaellie¹; ¹Boston University, ²Ohio State University
Topic Area: LONG-TERM MEMORY: Episodic
Poster A72  Generalization in an object category learning paradigm is better in the morning than the evening
Anna Schapiro1, Mollie Bayda1, Eileen Cho1, Roy Cox1, Robert Stickgold1;
1Harvard Medical School / Beth Israel Deaconess Medical Center
Topic Area: LONG-TERM MEMORY: Semantic

Poster A73  Mechanisms Underlying Memory Distortion for Emotional Orthographic Associates with EEG
Nicholas Griffin1, David Schnyer1; 1The University of Texas at Austin
Topic Area: LONG-TERM MEMORY: Semantic

Poster A74  Explicit probabilistic sequence learning in Tourette syndrome
Eszter Tóth-Fáber1, Zsannet Támkó2, Andrea Köbő3, Karolina Janacsek1,4, Alexandra Rádosi1, Eszter Dóra Szabó1, Dóra Merkő2, Szabina Oláh2, Orsolya Hegedűs2, Péter Nagy2, Réka Vidomuzs2, Dezső Nemeth1,4; 1Eötvös Loránd University, Budapest, Hungary, 2Vadakos Child Psychiatry Hospital, Budapest, Hungary, 3Brain Imaging Centre, Research Centre for Natural Sciences, Hungarian Academy of Sciences, Budapest, Hungary, 4Institute of Cognitive Neuroscience and Psychology, Research Centre for Natural Sciences, Hungarian Academy of Sciences, Budapest, Hungary
Topic Area: LONG-TERM MEMORY: Skill learning

Poster A75  Having your cake and eating it too: Flexibility and power with mass univariate statistics for ERP data
Eric C. Fields1,2, Gina R. Kuperberg1,3,4; 1Boston College, 2Brandeis University, 3Tufts University, 4Massachusetts General Hospital
Topic Area: METHODS: Electrophysiology

Poster A76  Dissociating Alzheimer’s Disease from Amnestic Mild Cognitive Impairment Using Time-frequency-based EEG Measures
Wendel Friedl1, Paul Kieflaber1; 1College of William and Mary
Topic Area: METHODS: Electrophysiology

Poster A77  The Role of Inter-region Information Synchrony in Processing Visual Stimuli
Heather Bruett1, Marc Coutanche1; 1University of Pittsburgh
Topic Area: METHODS: Neuroimaging

Poster A78  Objective Measure of Imagined Hand Manipulations: An EEG Study
Christopher Donoff1, Christopher Madan1,2, Sarah Elke1, Anthony Singhal1;
1University of Alberta, 2University of Nottingham
Topic Area: METHODS: Neuroimaging

Poster A79  EEG-Based Source Imaging Revealed Lower Beta-Band Top-Down Modulation of Early Visual Areas
Hua Zhong1, Guang Ouyang1, Yunqing Hua1, Akaysha Tang1; 1The Laboratory of Neuroscience for Education, Faculty of Education, The University of Hong Kong
Topic Area: METHODS: Neuroimaging

Poster A80  P300 and theta-band oscillation: two expressions of a single novelty response
Xueyan Niu1, Guang Ouyang1, Yunqing Hua1, Akaysha Tang1; 1The Laboratory of Neuroscience for Education, Faculty of Education, The University of Hong Kong
Topic Area: METHODS: Neuroimaging

Poster A81  Novelty enhances the reliability and timing consistency of neuronal source response
Guang Ouyang1, Yunqing Hua1, Changsong Zhou2, Akaysha Tang1; 1Laboratory of Neuroscience for Education, Faculty of Education, The University of Hong Kong, 2Department of Physics, Institute of Computational and Theoretical Studies, Hong Kong Baptist University
Topic Area: METHODS: Neuroimaging

Poster A82  Measuring Prefrontal Functional Connectivity Development in Preschool-aged Children Using fNIRS
Jaeh Kim1, Alexander Rüschi1, Jana M. Kainerstorfer1, Erik D. Thiessen1, Anna V. Fisher1; 1Carnegie Mellon University
Topic Area: METHODS: Other

Poster A83  Characterizing inter-individual differences in brain morphology
Christopher R. Madan1,2; 1University of Nottingham, 2Boston College
Topic Area: NEUROANATOMY

Poster A84  Organized patterns of cortical thinning observed across the healthy adult lifespan.
Phillip Agres1, Micaela Chan1, Liang Han1, Neil Savalia1, Gagan Wig1,2; 1Center for Vital Longevity and School of Behavioral and Brain Sciences, University of Texas at Dallas, Dallas, TX, 75235, USA, 2Department of Psychiatry, University of Texas Southwestern Medical Center, Dallas, TX, 75390, USA
Topic Area: NEUROANATOMY

Poster A85  Insular Functionally Connected Sub-regions of Healthy Developing Youth
Aliyah Jones1, Yu-Ping Wang1,2, Jeremy D. Cohen1; 1Xavier University of Louisiana, 2Tulane University
Topic Area: NEUROANATOMY

Poster A86  Collective listening: Effects of groove, tempo, and visual coupling among audience members on physical engagement with the music
Laurel Trainor1,2, Dobromir Dotov1, Daniel Bosnyak1; 1McMaster University, 2Rotman Research Institute
Topic Area: PERCEPTION & ACTION: Audition

Poster A87  Stochastic resonance like cross-modal enhancement as a universal neural computation and cognitive processing principle
Patrick Krauss1, Achim Schilling1, Konstantin Tziridis1, Holger Schulze1; 1University of Erlangen-Nuremberg
Topic Area: PERCEPTION & ACTION: Audition

Poster A88  FOXP2 Variation Modulates Auditory Feedback Control of Speech Production
Siyun Zhang1, Hanjun Liu1; 1The First Affiliated Hospital, Sun Yat-sen University
Topic Area: PERCEPTION & ACTION: Audition
Poster A89  Age effects on ventral visual pathway representations: Evidence for dedifferentiation and hyperdifferentiation
Zachary Monge1, Erik Wing1, Benjamin Geib1, Lifu Deng1, Simon Davis1, Ziwei Zhang1, Roberto Cabeza1; 1Duke University
Topic Area: PERCEPTION & ACTION: Development & aging

Poster A90  Short Form of the California Odor Learning Test
Conner Frank1, Jingwen Liu1, Claire Murphy1,2; 1San Diego State University, 2University of California San Diego
Topic Area: PERCEPTION & ACTION: Multisensory

Poster A91  Intentionality modulates the impact of reward and punishment on performance during sequence learning
Adam Steel1,2, Chris Baker1, Charlotte Slagg3; 1Laboratory of Brain and Cognition, National Institute of Mental Health, National Institute of Health, Bethesda, MD 20016, 2Wellcome Centre for Integrative Neuroimaging, FMRIB Centre, John Radcliffe Hospital, University of Oxford, Oxford, OX3 9DU, United Kingdom
Topic Area: PERCEPTION & ACTION: Motor control

Poster A92  Effects of sharing goals with others on sense of agency and motor performance
Kazuki Hayashida1, Yuki Nishi1, Michihiro Osumi1, Shu Morioka1; 1Kio university
Topic Area: PERCEPTION & ACTION: Motor control

Poster A93  Sense of agency and motor performance are stronger when an individual is capable of motor prediction
Shu Morioka1, Kazuki Hayashida1, Akhiro Masuika1, Yuki Nishi1, Michihiro Osumi1, Satoshi Nobusako1; 1Kio University
Topic Area: PERCEPTION & ACTION: Motor control

Poster A94  Role of Facial Expression Conflict in Motor Inhibition
Cheng-I Lam1, Trung Nguyen1, Che-Yi Hsu1, Chi-Hung Juan1; 1Institute of Cognitive Neuroscience, National Central University, No.300, Jhongda Road., Jhongli county, Taoyuan City - 32001, Taiwan
Topic Area: PERCEPTION & ACTION: Motor control

Poster A95  Neuroanatomical differences between monozygotic twins discordant for musical practice
Örjan de Manzano1, Fredrik Ullén1; 1Karolinska Institutet
Topic Area: PERCEPTION & ACTION: Multisensory

Poster A96  Where’s my foot? The disappearing ‘foot’ trick in healthy individuals and individuals with Body Integrity Identity Disorder
Kayla D. Stone1, Femke Bullock2, Anouk Keizer1, Rianne Blom2, Manja Engel1, H. Chris Dijkerman1; 1Utrecht University, 2University of Amsterdam
Topic Area: PERCEPTION & ACTION: Multisensory

Poster A97  Reading and neuropsychological performance: Relationships in patients with mild-to-moderate TBI
Keith Main1, Salil Soman2, Emma Gregory1, Maxwell Rappoport3, Micaela Thordarson2, Jennifer Kong3, J. Wesson Ashford4, Stephanie Kolakowsky-Hayner5, Maheen Adamson1; 1Defense and Veterans Brain Injury Center, 2Harvard Medical School, 3War Related Illness and Injury Study Center, 4Stanford School of Medicine, 5Santa Clara Valley Medical Center
Topic Area: PERCEPTION & ACTION: Other

Poster A98  The effect of writing style on mu rhythm while appreciating Chinese calligraphy
Shwu-Lih Huang1, Wei-Li Tu1, Guang-Yi Lai1; 1National Chengchi University
Topic Area: PERCEPTION & ACTION: Other

Poster A99  Neural correlates of the emergence, stabilization and evaluation of conscious visual percepts
Marine Vernet1, Shruti Japee1, Valentinos Zachariou1, Sara Ahmed1, Savannah Lokey1, Leslie Ungerleider1; 1Section on Neurocircuitry, Laboratory of Brain and Cognition, NIMH/NIH, Bethesda, MD, USA
Topic Area: PERCEPTION & ACTION: Vision

Poster A100  Neural correlates of consciousness in the medial temporal lobe: an intracranial EEG study of attentional blink.
Saturday, March 24, 1:30–3:30 pm, Exhibit Hall C
Jim Herring1,2, Thomas Reber3, Florian Mormann3, Heleen Slagter1,2; 1Department of Psychology, University of Amsterdam, The Netherlands, 2Amsterdam Brain and Cognition, University of Amsterdam, The Netherlands, 3Department of Epileptology, University of Bonn Medical Center, Bonn, Germany
Topic Area: PERCEPTION & ACTION: Vision

Poster A101  Parieto-frontal regions and alpha power involved in postdiction
Laetitia Grabot1, Virginie van Wassenhove1; 1CEA, NeuroSpin, Cognitive Neuroimaging Unit
Topic Area: PERCEPTION & ACTION: Vision

Poster A102  Psychological dimensions and their neural correlates in response to architectural interiors
Alex Cobum1, Oshin Vartanian2, Marcos Nadal2, Yoed Kenett1, Anjan Chatterjee1; 1University of Pennsylvania, 2University of Toronto, 3University of Vienna
Topic Area: PERCEPTION & ACTION: Vision

Poster A103  To trust, or not to trust? Individual differences in psychophysiological reactivity predict trust under acute stress
Stephanie Potts1,2, William T. McCuddy1, Devi Jayan1, Anthony J. Porcelli1,3; 1Marquette University, 2Veterans Administration, St. Louis Health Care System, 3Clinical & Translational Science Institute of Southeast Wisconsin
Topic Area: THINKING: Decision making

Poster A104  Anterior insula-nucleus accumbens connectivity in PTSD: clinical and decision-making correlates
Elizabeth Olson1,2, Gwenievere Birster1, Scott Rauch1, Isabelle Rossou1; 1McLean Hospital, 2Harvard Medical School
Topic Area: THINKING: Decision making

Poster A105  Information integration and endogenous control during exploration and exploitation
Nathan Tardiff1, Sharon L Thompson-Schill1; 1University of Pennsylvania
Topic Area: THINKING: Decision making

Poster A106  Dissecting the neural correlates of ambidextrous decision making
Poster A107  Effects of video games on reward-processing; an fMRI study
David Raymond1, Kelsey Prena1, Josh Brown1, Sharlene D. Newman1; 1Indiana University Bloomington
Topic Area: THINKING: Decision making

Poster A108  Age-related differences in frontoparietal activity underlying creativity for convergent and divergent thinking
Helena H. Lee1, Ko-Jou Liu1, Ya-Wen Fang1,2, De-Jung Tseng1, Ching-Po Lin2, Ovid J.L. Tzeng1,2,4,5,6, Hsu-Wen Huang2,6, Chih-Mao Huang1,2, 1National Chiao Tung University, 2Academia Sinica, 3National Yang Ming University, 4Taipei Medical University, 5National Taiwan Normal University, 6City University of Hong Kong
Topic Area: THINKING: Development & aging

Poster A109  The role of sleep in memory and problem solving
Kristin Grunewald1, Ken A. Paller1, Mark Beeman1; 1Northwestern University
Topic Area: THINKING: Problem solving

Poster A110  Brain processes supporting the generation of new and original ideas
Mathias Benedek1, Emanuel Jak1, Roger Beaty2; 1University of Graz, 2Harvard University
Topic Area: LONG-TERM MEMORY: Semantic

Poster A111  The Effect of Degree of Handedness and Gender Differences on White Matter
Jordan Begay1, Hu Cheng Ph. D.1, Sharlene Newman Ph.D.1; 1Indiana University Bloomington
Topic Area: NEUROANATOMY

Poster A112  Auditory scene analysis in adolescents with and without language disorders: Neural indicators of maturation and auditory memory
Elyse Sussman1; 1Albert Einstein College of Medicine
Topic Area: ATTENTION: Auditory

Poster A113  Interactions between Age and Sex in Rhythmic Attention Networks
Alex Wiesman1, Tony W Wilson1; 1University of Nebraska Medical Center
Topic Area: THINKING: Development & aging

Poster A115  Seen and heard emotions of a crowd alter perception and state affect
Sarah C. Izen1, Xenia Leviyah1, Vivian M. Ciaramitaro; 1University of Massachusetts Boston
Topic Area: ATTENTION: Multisensory

Poster A116  Investigating the relation between cognitive performance and brain activity associated with concentration in patients with a brain tumor
Miek de Dreu1, Irena Schouwenaar1, Geert-Jan Rutten1, Nick Ramsey2, Martijn Jansma1; 1Clinical Imaging Tilburg, Department of Neurosurgery, Elisabeth-TweeStedenHospital, Tilburg, The Netherlands, 2Brain Center

RudolfMagnus, Department of Neurology and Neurosurgery, UMC Utrecht, Utrecht, The Netherlands
Topic Area: ATTENTION: Nonspatial

Poster A117  Systematic non-stationarity of alpha rhythms in the human brain: Long term frequency sliding and power changes
Christian Keitel1, Christopher SY Benwell1, Joachim Gross1, Gregor Thut1; 1University of Glasgow
Topic Area: ATTENTION: Other

Poster A118  Impaired sustained attention ability is associated with metabolic syndrome
Thomas Wooten1,2, Michael Esterman2,3, Joe DeGutis1,2, Victoria Poole1,2, Elizabeth Lertz1,2; 1Harvard Medical School, 2VA Boston Healthcare System, 3Boston University School of Medicine
Topic Area: ATTENTION: Other

Poster A119  Visual Field Representations in Human Cerebellum
James A. Brissenden1,2, Sean M. Tobyn1, David E. Osher2, Emily J. Levin1, Mark A. Halko2, David C. Somers1; 1Boston University, 2Ohio State University, 3Brown University, 4Harvard Medical School and Beth Israel Deaconess Medical Center
Topic Area: ATTENTION: Spatial

Poster A120  Separate Components of Attentional Bias to Reward Relate to Individual Differences in Impulsivity
Kristin Meyer1, Nelly Topa1, Cheyenne Bricken1, Margaret Sheridan1, Joe Hopfinger1; 1University of North Carolina at Chapel Hill
Topic Area: ATTENTION: Spatial

Poster A121  Socioeconomic status moderates age-related differences in brain anatomy and functional network organization across the adult lifespan
Micaela Chan1, Jinkyung Na2, Phillip Agres1, Neil Savaila1, Denise Park1,2, Gagan Wgi3; 1University of Texas at Dallas, 2Sogang University, 3University of Texas Southwestern Medical Center
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster A122  Age-related Differences in Selective Attention to Emotional Material: Does Task Relevance Matter?
Didem Pehlivanoglu1, Paul Verhaeghen1; 1Georgia Institute of Technology
Topic Area: EMOTION & SOCIAL: Development & aging

Poster A123  Upregulating Empathy: An EEG Study in Undergraduates with Psychopathic Traits
Danielle diFilipo1,2, Alexandra Bueno2, Lissette Gimenez-Arce2, Kayla Talbot2, Taylor Valentini2, Denice Vidals2, Jill Gross-Fifer1,2; 1The Graduate Center - CUNY, 2John Jay College of Criminal Justice - CUNY
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster A124  Orbitofrontal cortex integrates amygdala-hippocampal information and guides schema-based emotional categorization
Jie Zheng1, Jack J. Lin1; 1University of California, Irvine, 2Comprehensive Epilepsy Program, Irvine, CA
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions
Poster A125  Genetic Contributions to Implicit Racial Bias: Does Race Matter?
Brianna Pankey1, Bethany C. Reeb-Sutherland1, Melanie Stollstorff1; 1Florida International University
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster A126  Accessing General World Knowledge in Language Comprehension: The Case of Emotion
Dorothee J. Chwilla1; 1Donders Institute for Brain, Cognition, and Behaviour, Radboud University
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster A127  Montessori Education Fosters Less Focal but Unwavering Attention After Errors: Hasty Slowly To Think Creatively.
Solange Denervaud1, Edouard Gentaz1,2; 1The Swiss Center for Affective Sciences (CISA), University of Geneva, Switzerland, 2Faculty of Psychology and Educational Sciences (FAPSE), University of Geneva, Switzerland
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster A128  Translating cognitive neuroscience findings to benefits outside the lab: Promoting resilience in student veterans through a novel cognitive-emotional intervention
Yifan Hu1, Christian Williams1, Howard Berenbaum1, Florin Dolcos1, Sandra Dolcos1; 1University of Illinois at Urbana-Champaign
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster A129  Gender Differences in Engaging with Negative Stimuli during Emotion Regulation and Processing Tasks related to Personality/Affective Style
Teodora Stoica1, Lindsay Knight1, Naaz Farah1, Depue Brendan1; 1University of Louisville
Topic Area: EMOTION & SOCIAL: Emotional responding

Poster Session B

Sunday, March 25, 8:00-10:00 am

Poster B1  Impact of talker adaptation on speech processing and working memory
Sung-Joo Lim1, Jessica T1, Barbara Shinn-Cunningham1, Tyler Perrachione1; 1Boston University
Topic Area: ATTENTION: Spatial

Poster B2  Age and sex modulate the variability of neural responses to engaging videos
Samantha Cohen1,2, Agustin Petroni1, Nicolas Langer1,3, Simon Henin1, Tamara Vanderwaaa, Michael P. Milham1,2, Lucas C. Parra1; 1The City College of New York, 2The Graduate Center of the City University of New York, 3Child Mind Institute, 4University of Zurich, 5Yale Child Study Center, 6Nathan Kline Institute for Psychiatric Research
Topic Area: ATTENTION: Auditory

Poster B3  Cross-modal activation of visual cortices depends on auditory selective attention
Chrysa Retsa1, Pawel J. Matusz1, Jan Schnupp1,2, Micah Murray1,3,5; 1The Laboratory for Investigative Neurophysiology (The LINE), University Hospital Center and University of Lausanne, Lausanne, Switzerland, 2Biomedical Sciences, City University of Hong Kong, Kowloon, Hong Kong SAR, 3EEG Brain Mapping Core, Center for Biomedical Imaging (CIBM) of Lausanne and Geneva, Switzerland, 4Vanderbilt University, Nashville, TN, USA, 5University of Lausanne, Jules-Gonin Eye Hospital, Lausanne, Switzerland
Topic Area: ATTENTION: Multisensory

Poster B4  To what extent do spatial attention and expectation rely on ‘amodal’ or modality-specific mechanisms?
Arianna Zuanazzi1, Uta Noppeney1; 1Computational Neuroscience and Cognitive Robotics Centre, University of Birmingham, UK
Topic Area: ATTENTION: Multisensory

Poster B5  Attention and self-reported ADHD tendency modulate very early electrophysiological responses for visual words
Tetsuko Kasai1, Aiko Tanaka2, Yasuko Okumura1, Tomoki Uno2; 2Faculty of Education, Hokkaido University, 2Graduate School of Education, Hokkaido University, 3National Center of Neurology and Psychiatry
Topic Area: ATTENTION: Nonspatial

Poster B6  In Search of Mind Wandering: Dynamic Functional Connectivity during Rest and Task
Ekaterina Denkova1, Jason S. Nomi1, Shruti Gopal Vij1, Lucina Q. Uddin1, Amishi P. Jha1; 1University of Miami
Topic Area: ATTENTION: Other

Poster B7  Dynamic Fluctuations in Sustained Attention: Relating Neural Fluctuations to Individual Performance
Francesca Fortenbaugh1,2, David Rothlein1,3, Joseph DeGutis1,2, Regina McGlinchey1,2, Michael Esterman1,2; 1Department of Veterans Affairs, Boston Healthcare System, 2Harvard Medical School, 3Boston University School of Medicine
Topic Area: ATTENTION: Other

Poster B8  Dissociations Between Explicit Number Forms and Implicit SNARC Effects in Number-Form Synesthetes
Elizabeth Y. Toomarian1, Radhika S. Gosavi1, Edward M. Hubbard1; 1University of Wisconsin-Madison
Topic Area: ATTENTION: Spatial

Poster B9  The functional architecture of endogenous and exogenous attention: a dynamic causal modeling study
Jake Bowling1, Kristin N. Meyer1, Joseph B. Hopfinger1; 1University of North Carolina at Chapel Hill
Topic Area: ATTENTION: Spatial

Poster B10  Aging Impairs Disengagement from Negative Words in a Dot Probe Task
Christine E. Talbot1, John C. Ksander1, Angela Gutchess1; 1Brandeis University
Topic Area: EMOTION & SOCIAL: Development & aging

Poster B11  Developmental Trajectories of Functional Connectivity in Autism from Childhood to Adolescents during Face Processing
Fahimeh Mamashli1,2, Sheraz Khan1,2,3, Hari Bharadwaj1,2,3, Ainsley Losh1, Matti Hamalainen1,2,4, Tal Kenet1,2; 1Department of Neurology, MGH, Harvard
Motoyuki Sanada
synchronized during emotional experience when people show facial
Poster B19 Frontal alpha asymmetry and heart rate
synchronized during emotional experience when people show facial
expression
Mototyuki Sanada1, Masanori Kobayashi1, Keiko Otake1, Jun’ichi Katayama1;
1Kwansei Gakuin University
Topic Area: EMOTION & SOCIAL: Other

Poster B20 Increased response to facial attractiveness in
visual areas reflects saliency, not reward

Franziska Hartung1, Anja Jamrozik, Geoffrey Aguerri1, Miriam Esther
Rosen1, David B. Sarwer2, Anjan Chatterjee1; 1University of Pennsylvania,
2Temple University
Topic Area: EMOTION & SOCIAL: Person perception

Poster B21 EEG Responses to Unexpected Outcomes of Own
or Partner’s Actions in a Turn-Taking Game
Gedeon Deák1, Kevin Jensen1, Alvin Li1, Scott Makeig1; 1University of
California, San Diego
Topic Area: EMOTION & SOCIAL: Person perception

Poster B22 Exploring the effects of speed of processing
training on brain activity and connectivity
Christina Webb1, Christine Whitaker2, Jarrod Hicks3, Erica Schmidt2,
Shaadee Sammy4, Nancy Dennis4, Kristina Visscher3, Lesley Ross1; 1The
Pennsylvania State University, 2The University of Alabama at Birmingham
Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster B23 Functional segregation loss over time is
moderated by APOE genotype in healthy elderly
Eric Kwun Kei Ng1, Yingwei Qiu1,2, June C Lo1, Evelyn SC Koay1,2, Woon-
Puay Koh1,2, Michael WL Chee1, Juan Zhou1,2; 1Duke-NUS Medical School
Singapore, 2Third Affiliated Hospital of Guangzhou Medical University,
China, 3Yong Loo Lin School of Medicine, National University of Singapore,
4National University Hospital Singapore, 5Saw Swee Hock School of Public
Health, National University of Singapore, 6Clinical Imaging Research Centre,
A*Star-NUS
Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster B24 Aging effects on the neural connectivity
underlying the arithmetic confusion effects.
Thomas Hinauti1, Kevin Larcher2, Louis Bherer1, Alain Dagher1, Susan
Courtney1; 1Johns Hopkins University, 2McGill University, 3Montreal Geriatric
Institute, 4McGill University, 5Johns Hopkins University
Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster B25 The impact of deprivation and threatening
experiences on behavior in early childhood
Laura Machlin1, Adam B. Miller2, Jenna Snyder2, Katie A. McLaughlin3, 
Margaret A. Sheridan1; 1University of North Carolina at Chapel Hill, 2Cooper
Medical School, 3University of Washington
Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster B26 Dissociating Proactive and Reactive Control in
Adolescents and Young Adults with Autism Spectrum Disorder
Marie K. Krug1,2, Jeremy Hogeveen1, Cory C. Coleman1, Matthew V. Elliott1, 
Seoyoung Garm1, Cameron S. Carter1, Marjorie Solomon1; 1University of
California, Davis
Topic Area: EXECUTIVE PROCESSES: Goal maintenance & switching

Poster B27 Creating Structured Task-sets from Categorical
Stimuli
Christina Bejjani1, Tobias Egner1; 1Duke University
Topic Area: EXECUTIVE PROCESSES: Goal maintenance & switching

Poster B28 Understanding the Effect of Media Multitasking on
the Mind
Jesus J. Lopez1, Madison M. Liggett1, Joseph M. Orr1; 1Texas A&M
University

Medical School, Boston, MA, USA, 2Athinoula A. Martinos Center for
Biomedical Imaging, MGH/HST, Charlestown, MA, USA, 3Department of
Radiology, MGH, Harvard Medical School, Boston, MA, USA, 4Department of
Neuroscience and Biomedical Engineering, Aalto University School of
Science, Espoo, Finland
Topic Area: EMOTION & SOCIAL: Development & aging

Poster B12 Brain mechanisms by which emotional learning
selectively and retroactively enhances memory for related information
David Clewett1, Darren Yi1, Joseph Dunsmoor2, Elizabeth Phelps1, Lila
Davachi1; 1New York University, 2The University of Texas at Austin
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster B13 Integration of spatio-temporal dynamics in
emotion-cognition interactions: A simultaneous fMRI-ERP investigation
using the emotional odd-ball task
Matthew Moore1, Andrea Shafer2, Reyhanek Bakhtiani3, Florin Dolcos1,
Anthony Singhal3; 1University of Illinois at Urbana-Champaign, 2National
Institute on Aging, 3University of Alberta
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster B14 Measuring Empathic Influences on Perceptual and
Motor Processing with ERPs, EEG Oscillations, and Response Force
Sarah Fabi1, Hartmut Leuthold1; 1University of Tübingen, Germany
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster B15 Rewarded extinction diminishes enhancement of
episodic fear memory
Nicole Keller1, Joseph Dunsmoor1; 1University of Texas at Austin
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster B16 Temporal dissociation in how stress enhances
subjective valuation in the presence versus absence of explicit
temptation
Nidhi Banavar1, Candace Raio1, Anna Konova1, Paul Glirimcher1; 1New York
University
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster B17 Generalization of Conditioned Appetitive
Responses in Humans
Marta Andreatt1, Paul Pauli1; 1Department of Psychology, University of
Wuerzburg
Topic Area: EMOTION & SOCIAL: Emotional responding

Poster B18 ERP probe technique without probe stimulus:
Heartbeat-evoked potentials reflect physical attractiveness
KyoeiFusea1, Jun’ichi Katayama1; 1Department of Psychological Science,
Kwansei Gakuin University
Topic Area: EMOTION & SOCIAL: Emotional responding

Poster B19 Frontal alpha asymmetry and heart rate
synchronized during emotional experience when people show facial
expression
MototyukiSanada1, MasanoriKobayashi1, KeikoOtake1, Jun’ichiKatayama1;
1Kwansei Gakuin University
Topic Area: EMOTION & SOCIAL: Other

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**Topic Area: EXECUTIVE PROCESSES: Goal maintenance & switching**

**Poster B29**  
Enhancement of action inhibition by accidental rewards preceding the stop signals  
Hsin-Ju Lee1, Fa-Hsuan Lin2, Wen-Jui Kuo1; 1National Yang-Ming University, 2National Taiwan University

**Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control**

**Poster B30**  
Cycling as an effective modality for improving inhibitory control and maintaining brain function and academic performance in 9- to 10-year-old children  
Caroline C. Meadows1, Charles H. Hillman2, Eric S. Drollette1; 1University of North Carolina at Greensboro, 2Northeastern University

**Poster B31**  
Body Mass Correlates Inversely with Inhibitory Control in Go/NoGo Task: an ERP Study  
Siqi Chen1, Yajun Jia1, Steven Woltering1, Diana Guerra1, Johanna Song1; 1Texas A&M University

**Topic Area: EXECUTIVE PROCESSES: Working memory**

**Poster B32**  
Computational modeling as a tool for detecting medication response in ADHD  
Mads Pedersen1,2, Michael J. Frank1, Sigurd Ziegler2, Mats Fredriksen3, Guido Biele4; 1Brown University, 2University of Oslo, 3Westfold Hospital Trust, 4Norwegian Institute of Public Health

**Poster B33**  
Feedback-related ERPs during value-learning foreshadow how participants later handle reversal learning  
Sucheta Chakravarty1, Isha Ober1, Christopher R. Madan2, Yvonne Y. Chen3, Jeremy B. Caplan1; 1University of Alberta, 2University of Nottingham, 3Baylor College of Medicine

**Poster B34**  
ERP Components Related to Proactive Interference in Visual Working Memory  
Li Zhou1, Thomas Farnbacher2, Robin Thomas3; 1Bemidji State University, 2Miami University

**Poster B35**  
Vascular Risk Factors for Diabetes in Late Adolescents and Young Adults, an Assessment of Working Memory  
Alexandra Roach1, Heather Nall1, Juliette Seremak1; 1University of South Carolina Aiken

**Poster B36**  
Neural mechanisms of precision in visual working memory  
Elizabeth Lorenc1, Mark D’Esposito1; 1University of California, Berkeley

**Poster B37**  
Reduced interference in working memory following mindfulness training is associated with increases in hippocampal volume  
Jonathan Greenberg1,2, Victoria L Romero3, Seth Elkin-Frankston2, Matthew A Bezdek4, Eric H Schumacher4, Sara W Lazar1,2; 1Department of Psychiatry, Massachusetts General Hospital, 2Harvard Medical School, 3Charles River Analytics, 4Georgia Institute of Technology

**Topic Area: EXECUTIVE PROCESSES: Working memory**

**Poster B38**  
Distinct influence of value-driven attentional capture when maintaining locations and spatial relations in working memory: An EEG study  
Myranda Gormley1, Thomas Hinault1, Kara J. Blacker2, Brian A. Anderson1, Susan M. Courtney1; 1Johns Hopkins University, 2The Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc., 3Texas A&M University

**Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control**

**Poster B39**  
Examination of phase-amplitude coupling during working memory updating and interactions with goal-directed attention ability  
Timothy K. Gray1, Araya Lacy1, Robert S. Ross1; 1University of New Hampshire

**Poster B40**  
Neural oscillations in the prefrontal and superior temporal cortices predict spatial working memory performance  
Amy L Proskovec1,2, Alex I Wiesman2, Elizabeth Heinrichs-Graham2, Tony W Wilson1,2; 1University of Nebraska Omaha, 2University of Nebraska Medical Center

**Topic Area: LANGUAGE: Development & aging**

**Poster B41**  
Relationships between white matter in infancy and subsequent language abilities in preschool  
Jennifer Zuk1,2, Michael Figuccio1, Xi Yu1, Joseph Sanfilippo1, Jade Dunstan1, Clarisa Carruthers1, Ellen Grant1,2, Nadine Gaab1,2,3; 1Boston Children’s Hospital, 2Harvard Medical School, 3Harvard Graduate School of Education

**Poster B42**  
Right lateralization of white matter tracts in infants with a genetic risk of developmental dyslexia  
Clarisa Carruthers1, Xi Yu1, Jennifer Zuk1,2, Jade Dunstan1, Joseph Sanfilippo1, P. Ellen Grant1,2, Nadine Gaab1,2,3; 1Boston Children’s Hospital, 2Harvard Medical School, 3Harvard Graduate School of Education

**Topic Area: LANGUAGE: Other**

**Poster B43**  
Brain Activity During Executive Tasks Predicts Individual Differences in Reading Ability  
Kai Wang1, Marie Banich1, Daniel Leopold1, Andrew Reineberg1, Laurie Cutting2, Lee Thompson3, Erik Willcutt1, Stephen Pettil4; 1University of Colorado Boulder, 2Vanderbilt University, 3Case Western Reserve University, 4Ohio State University

**Poster B44**  
A functional magnetic resonance imaging investigation of the overlap between voluntary and reflexive spatial attention and lexical and sublexical reading  
Chelsea Ekstrand1, Josh Neudorf1, Maria Mickleborough1, Layla Gould1, Ron Borowsky1; 1University of Saskatchewan

**Topic Area: LANGUAGE: Development & aging**

**Poster B45**  
Effects of polyglotism on functioning of the language, MD, and DMN networks

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Olessia Jouravel1,2, Zachary Minoreño1, Evelina Fedorenko1,2,3,4; 1Massachusetts Institute of Technology, 2Carleton University, 3Harvard Medical School, 4Massachusetts General Hospital

**Poster B46**  Modulatory Effects of Emotional Prosody on Neural Sensitivity to Speech Discrimination in Second Language Learners
Chieh Kao1, Yang Zhang1; 1University of Minnesota

**Poster B47**  Phoneme learning in a musical context
Mihye Choi1, Ertugrul Uysal1, Mohinshuk Shukla1; 1University of Massachusetts Boston

**Poster B48**  Predicting Reading Comprehension from Eye Movement Features using Deep Neural Networks
Xiaochuan Lindsey Ma1, Jinlong Hu2, Xiaowei Zhao2, Ping Li1; 1Pennsylvania State University, 2South China University of Technology, 3Emmanuel College

**Poster B49**  Two late positivities during sentence comprehension: The influence of wrap-up and cognitive control
Trevor Brothers1,2, Eddie Wlotko2, Simone Riley1, Margarita Zeitlin1, Connie Choi1, Gina Kuperberg1,2; 1Tufts University, 2Massachusetts General Hospital, 3Moss Rehabilitation Research Institute

**Poster B50**  Effective Connectivity of Aphasic Bilingual Semantic Processing
Robert Buckshaw II1, Erin Meier1, Swathi Kiran1; 1Boston University

**Poster B51**  Semantic processing of self-adaptors, emblems, and iconic gestures: An ERP study
Kawai Chui1, Chia-Ying Lee2,3, Kanyu Yeh1, Pei-Chun Chao1; 1National Chengchi University, Taiwan, 2Academia Sinica, Taiwan, 3National Yang-Ming University, Taiwan

**Poster B52**  University students with a history of reading difficulty show reduced neural effects of word expectancy
Suzanne Welcome1; 1University of Missouri - St Louis

**Poster B53**  A noisy channel account of ERP differences in sentence comprehension
Veena D. Dwivedi1, Janahan Selvanayagam1, Victoria Witte2, Harmonie Chan1, Ted Gibson1; 1Brook University, 2Heidelberg University, 3MIT

**Poster B54**  Mechanisms of neural plasticity during recovery from sentence processing deficits in chronic stroke-induced aphasia: an fMRI study
Elena Barbieri1, Jennifer E. Mack1, Brianne M. Dougherty1, Eduardo Europa1, Cynthia K. Thompson1; 1Northwestern University, Evanston, IL

**Poster B55**  Testing associations between peri-adolescent differences in declarative memory abilities, intrinsic brain networks, and regional cortical thickness in a cross-sectional sample
David Warren1, Nicholas Christopher-Hayes1, Anthony Rangel1, Julia Stephen2, Vince Calhoun2, Yu-Ping Wang3, Tony Wilson1; 1University of Nebraska Medical Center, 2Mind Research Network, 3Tulane University

**Poster B56**  Age-related Differences in the Effects of Lying on Cognitive Control and Memory
Laura Paige1, Angela Gutchess1; 1Brandeis University

**Poster B57**  Age Differences in Emotional Integrative Memory
Shaina L. Garrison1, Kelly S. Giovanellio1; 1University of North Carolina at Chapel Hill

**Poster B58**  A trade-off in category- and item-level learning: implications for development
Erika Wharton-Shukster1, Amy S. Finn1; 1University of Toronto

**Poster B59**  Modeling the dynamic content, encoding, and retrieval of naturalistic stimuli
Andrew Heusser1, Jeremy Manning1; 1Dartmouth College

**Poster B60**  Map-like coding of personal preferences facilitates social learning.
Raphael Kaplan1, Karl Friston1; 1University College London

**Poster B61**  The role of the prefrontal cortex in accuracy of judgments of learning
Alexandra M. Gaynor1, Elizabeth F. Chua1,2; 1The Graduate Center, The City University of New York, 2Brooklyn College, The City University of New York

**Poster B62**  Familiarity and Retrieval Monitoring Effects on Dorsal Striatum Connectivity across the Adult Lifespan
Paul F Hill1,2, Marianne de Chastelaine1,2; 1University of Texas at Dallas, 2Center for Vital Longevity

**Poster B63**  Representational similarity patterns predict subsequent source memory but are disrupted by task switching in temporoparietal regions
Caroline Siervogel, Fraser W. Smith1,2, Kanyu Yeh1, Pei-Chun Chao1; 1University of Texas at Dallas, 2University of Missouri - St Louis

**Poster B64**  Pattern separation and integration in hippocampus are the result of memory reactivation during learning
Robert Molitor1, Katherine Sherrill1, Neal Morton1, Alison Preston1; 1University of Texas at Austin
Poster B66  What happens in the human brain when explicit warnings reduce false memories?
Sara Cadavid1, M. Soledad Beato2, Mar Suarez2; 1Universidad del Rosario, Colombia; 2Universidad de Salamanca, Spain
Topic Area: LONG-TERM MEMORY: Episodic

Poster B67  Ultra-high resolution functional magnetic resonance imaging of hippocampal subfield networks during pattern separation
Stephanie Langella1, Shaina Garrison1, Wei-Tang Chang1, Weili Lin1, Kelly Giovanelli1; 1University of North Carolina at Chapel Hill
Topic Area: LONG-TERM MEMORY: Episodic

Poster B68  Does aging influence the use of episodic memory in decision making?
Hannah Tarder-Stoll1, Azara Lalla1, Lynn Hasher1, Katherine Duncan1; 1University of Toronto
Topic Area: LONG-TERM MEMORY: Episodic

Poster B69  Prestimulus subsequent memory effects differ as a result of informative or uninformative cues
Eleanor Liu1,2, Paul F Hill1,2, Marianne de Chastelaine1,2, Michael D Rugg1; 1University of Texas at Dallas, 2Center for Vital Longevity
Topic Area: LONG-TERM MEMORY: Episodic

Poster B70  Hippocampal-Thalamic Contributions to Associative Memory
Kirk T. Geier1, Rosanna K. Olsen1; 1Rotman Research Institute, 2University of Toronto
Topic Area: LONG-TERM MEMORY: Episodic

Poster B71  The Effect of Incentives on Pupil Dilation During Recognition Memory
Lisa Solinger1, Ian Dobbins1; 1Washington University in St. Louis
Topic Area: LONG-TERM MEMORY: Other

Poster B72  Neural interactions between memory and language: The role of language profile on semantic processing leading to true and false memories
Eugenia Marin-Garcia1, Pedro M. Paz-Alonso2; 1University of the Basque Country, 2BCBL
Topic Area: LONG-TERM MEMORY: Semantic

Poster B73  Probing the transition of novel information towards familiarity
Amnon Yacoby1, Anat Maril1; 1Hebrew University of Jerusalem
Topic Area: LONG-TERM MEMORY: Semantic

Poster B74  Encoding of episodic context in abstract and concrete concepts
Charles P. Davis1,2, Pedro M. Paz-Alonso3, Gerry T. M. Altmann1,2, Eling Yee1,2; 1University of Connecticut, 2Connecticut Institute for the Brain and Cognitive Sciences, 3Basque Center on Cognition, Brain, and Language
Topic Area: LONG-TERM MEMORY: Semantic

Poster B75  Investigating the efficacy of digital simulations for procedural learning.
Wen Qian Zhang1, Victoria A Roach2, Rebecca M Todd1, James H Kryklywyy1; 1University of British Columbia, 2Oakland University
Topic Area: METHODS: Neuroimaging

Poster B76  Frequency-dependent temporal fluctuations of functional connectivity within intrinsic networks in human cortex
Aaron Kucyi1, Josep Parvizi1; 1Stanford University
Topic Area: METHODS: Electrophysiology

Poster B77  The effects of obesity on olfactory and visual event-related potentials
Andrew J. Fiscella1, Claire Murphy1; 1San Diego State University
Topic Area: METHODS: Electrophysiology

Poster B78  NIH Funded NITRC’s Triad of Services: Software, Data, Compute
Christian Haselgrove1,2, Robert Buccigrossi3, Albert Crowley3, David Kennedy2, Abby Paulson1, Nina Preuss3, Matt Travers1; 1Neuromorphometrics, Inc, 2University of Massachusetts Medical School, 3TCG, Inc
Topic Area: METHODS: Immunology

Poster B79  The specificity and robustness of long-distance connections in weighted inter-areal structural brain networks
Richard Beitel1, Danielle Bassett1; 1University of Pennsylvania
Topic Area: METHODS: Neuroimaging

Poster B80  Increased Default Mode Network Functional Connectivity in Individuals with Greater Meditative Experience
Lauren Goodes1, Yush Kukreja1, Jeffrey Rouse M.D.2, Jeremy D. Cohen Ph.D.1; 1Xavier University of Louisiana, New Orleans, LA, USA, 2Tulane University, New Orleans, LA, USA
Topic Area: METHODS: Neuroimaging

Poster B81  Local Heterogeneity Regression Analysis: A Novel Measure of Representational Sparseness in Reading
Christian Haselgrove1,2, Robert Buccigrossi3, Albert Crowley3, David Kennedy2, Abby Paulson1, Nina Preuss3, Matt Travers1; 1Neuromorphometrics, Inc, 2University of Massachusetts Medical School, 3TCG, Inc
Topic Area: METHODS: Neuroimaging

Poster B82  Evidence of Non-reciprocal Topological Connections between Frontal Association Cortex and Temporal Cortex in the Rat
Stacey Bedwell1, Chris Tinsley2; 1Birmingham City University, 2Nottingham Trent University
Topic Area: NEUROANATOMY

Poster B83  Effects of Prefrontal tDCS on Executive Function: Methodological Considerations Revealed by Meta-Analysis
Michael Imburgio1, Madison Parks1, Lane Bannwart1, Joseph Orr1; 1Texas A&M University
Topic Area: METHODS: Other

Poster B84  Frontal Cortex and Executive Functions in Healthy and Neuropsychiatric Samples: A Meta-Analysis of Structural Neuroimaging Studies
Valeria Vilomar1, Abigail B. Waters1, Lance P. Swenson1, David A. Gansler1; 1Suffolk University, 2University of Puerto Rico
Topic Area: NEUROANATOMY
Poster B86  
In vivo manganese tract tracing of macaque saccadic eye movement circuitry: a comparison with diffusion tensor imaging  
David J Schaeffer1, Kevin Johnston1, Joseph S Gatil2, Ravi S Menon1, Stefan Everling1; 1Robarts Research Institute, University of Western Ontario, London, Ontario, Canada  
Topic Area: NEUROANATOMY

Poster B87  
The subtle impact of oscillatory phase on auditory detection  
Yue Sun1, Oded Ghizta1,2, David Poeppel1,3; 1Max Planck Institute for Empirical Aesthetics, Frankfurt am Main, Germany, 2Boston University, Boston, USA, 3New York University, New York, USA  
Topic Area: PERCEPTION & ACTION: Audition

Poster B88  
Neural Responses to Narrative Speech Differentiate Patients with Disordered Consciousness  
Ivan Iotzov1, Brian C Fidali2, Agustin Petroni1, Mary M Conte2, Nicholas D Schiff, Lucas C Parra; 1City College of New York, 2Laboratory of Cognitive Neuromodulation, The Feil Family Brain and Mind Research Institute, Weill Cornell Medicine  
Topic Area: PERCEPTION & ACTION: Audition

Poster B89  
Low-Frequency Oscillations Mediate Cortical-Subcortical Communication During Auditory Novelty Processing  
Marc Recasens1, Joachim Gross1, Peter Uhlhaas; 1University of Glasgow  
Topic Area: PERCEPTION & ACTION: Audition

Poster B90  
Group Drumming Communication Program, Effects on Cognitive and Motor Functions in Older Adults with Dementia at a Special Elderly Nursing Home  
Atsuko Miyazaki1, Rui Nouchi2, Takashi Okuyama3, Hayato Mori1, Kazuhisa Sato1, Naoyuki Miyajima3, Masahiko Ichiki3, Shinichiro Nakamura; 1RIKEN, Saitama, Japan., 2Tohoku University, Sendai, Japan., 3Kobe University School of Medicine, Kobe, Japan (part-time lecturer), 4Care 21 Co., Ltd., Tokyo, Japan., 5Social Welfare Corporation Tenyu, Saitama, Japan., 6Tokyo Medical University, Tokyo, Japan.  
Topic Area: PERCEPTION & ACTION: Development & aging

Poster B91  
Kids don’t see what we see: Young children are less likely to experience an illusion that requires perceptual integration  
Kay Otsu1, Danielle Lim1, Asaf Gilboa2, Morgan Barense1, Amy Finn; 1University of Toronto, 2Rotman Research Institute at Baycrest  
Topic Area: PERCEPTION & ACTION: Development & aging

Poster B92  
White matter microstructure in sensorimotor cortices and tracts predicts motor imagery ability in young adults  
Christian Hyde1, Ian Fuelscher1, Peter Enticott1, Jarrad Lum1, Karen Caeyenberghs1,2; 1Cognitive Neuroscience Unit, School of Psychology, Deakin University, Geelong, Australia., 2School of Psychology, Faculty of Health Sciences, Australian Catholic University, Melbourne, Australia.  
Topic Area: PERCEPTION & ACTION: Motor control

Poster B93  
No-movement awareness induces ERP modulations after long-term limb immobilization in a Go/Nogo task  
Valentina Bruno1, Irene Ronga1, Carlotta Fossataro1, Francesca Garbarini1; 1SAMBA – SpAital, Motor & Bodily Awareness – Research Group, Psychology Department, University of Turin, Turin, Italy

Poster B94  
Cognitive tuning of the defensive peripersonal space is influenced by postural adjustment ability  
Marco Bove1, Monica Biggio1, Ambra Bisio1, Piero Ruggeri; 1University of Genoa, Italy  
Topic Area: PERCEPTION & ACTION: Motor control

Poster B95  
Exercise impacts information processing and neural activity under varying cognitive demands in children treated for brain tumours  
Elizabeth Cox1,2, Sonya Bells1, Janine Piscione1, Brian W. Timmons1,4, Ute Bartels1,2, Cynthia de Medeiros, Jovanka Skocic1, Kiran Beera1, Suzanne Laughlin1,2, Donald J. Mabbott1,2; 1Hospital for Sick Children, Toronto, Ontario, Canada, 2University of Toronto, Toronto, Ontario, Canada, 3McMaster University, Hamilton, Ontario, Canada, 4McMaster Children’s Hospital, Hamilton, Ontario, Canada  
Topic Area: PERCEPTION & ACTION: Motor control

Poster B96  
Deficient posterior-to-frontal alpha-frequency connectivity and re-experiencing symptoms in combat-exposed veterans: a sensory model for PTSD  
Kevin Clancy1, Alejandro Albizu1, Mingzhou Ding2, Wen Li1; 1Florida State University, 2University of Florida - Gainesville  
Topic Area: PERCEPTION & ACTION: Multisensory

Poster B97  
Combining kinesthetic illusion and action observation to evoke cortical plasticity in the primary motor cortex  
Ambra Bisio1, Monica Biggio1, Piero Ruggeri, Laura Avanzino1, Marco Bove1; 1University of Genoa, Italy  
Topic Area: PERCEPTION & ACTION: Multisensory

Poster B98  
Exploring Categorical and Functional Boundaries of Tactile Perception Using Somatosensory Mismatch Responses  
Guannan Shen1, Peter J. Marshall; 1Department of Psychology, Temple University  
Topic Area: PERCEPTION & ACTION: Other

Poster B99  
Degree of responsibility influences outcome evaluation in joint action  
Janeen Loehr1, Sarah Ardell1, Dimitrios Kourtis2; 1University of Saskatchewan, Canada, 2University of Stirling, United Kingdom  
Topic Area: PERCEPTION & ACTION: Other

Poster B101  
Impaired inter-hemispheric connectivity is a predictor of the failure to retrieve meaning from shape in visual agnosia  
Radek Ptak1,2, François Lazeyras3; 1Division of Neurorehabilitation, Department of Clinical Neurosciences, Geneva University Hospitals, Geneva, Switzerland, 2Faculty of Psychology and Educational Sciences, University of Geneva, Geneva, Switzerland, 3Department of Radiology and Medical Informatics, University of Geneva, Geneva, Switzerland  
Topic Area: PERCEPTION & ACTION: Vision
Poster B102  The effects of tDCS on orientation discrimination task performance
Abdullah Bin Dawood1, Abigail Dickinson2, Ali Aytemur1, Clare Howarth1, Elizabeth Milne1, Myles Jones1; 1The University of Sheffield, Sheffield, UK, 2University of California, Los Angeles, CA, USA
Topic Area: PERCEPTION & ACTION: Vision

Poster B103  Local field potential recordings reveal enhanced feedback in the primate visual system for familiar compared to novel objects
Ryan E.B. Mruczek1, Amalia K. Davis1, David L. Sheinberg2; 1Worcester State University, 2Brown University
Topic Area: PERCEPTION & ACTION: Vision

Poster B104  Mechanisms for sampling distinct memory stores during decision-making
Avinash Vaidya1, David Badre2; 1Brown University, Department of Cognitive, Linguistic and Psychological Sciences
Topic Area: THINKING: Decision making

Poster B105  The Neural Underpinnings of Projection Bias
Roni Setton1, Geoffrey Fisher2, R. Nathan Spreng1; 1McGill University, 2Cornell University
Topic Area: THINKING: Decision making

Poster B106  Teens care more about their friends: An ERP study of social reward learning in adolescents and adults
Xingjie Chen1, Youngbin Kwak1; 1University of Massachusetts Amherst
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Poster B107  The Unfolding Action Model of initiation times, movement times, and movement paths
Cristian Buc Calderon1, Wim Gevers2, Tom Verguts1; 1Ghent University, Department of Experimental Psychology, 2Université Libre de Bruxelles, Center for Cognition and Neurosciences
Topic Area: THINKING: Decision making

Poster B108  Family History of Substance Abuse Affects Adolescents’ Choices
Yael M. Cywczick1,2, Diana Rodriguez Moreno1, Lawrence V. Amsel1,2, Chase A. Hill1, Zhishun Wang1,2, Xiaofu He1,2, Christina Hoven1,2; 1New York State Psychiatric Institute, 2Columbia University
Topic Area: THINKING: Decision making

Poster B109  Reliability of the Correlative Triad among Aging, Dopamine, and Cognition
Eric J. Juarez1, Jaime J. Castrellon1, Mikella A. Green1, Galen A. McAllister1, Kendra L. Seaman1, Christopher T. Smith2, Linh C. Dang2, David H. Zald2, Gregory R. Samanez-Larkin1; 1Duke University, 2Vanderbilt University
Topic Area: THINKING: Development & aging

Poster B110  Insight is facilitated by high definition tDCS to the right temporal lobe
Carola Salvi1,2, Ryan Conrardy2, Richard McGinley3, Mark Beeman1, Jordan Grafman1,2,4,5; 1Department of Psychology, Northwestern University, Chicago, Illinois, USA, 2Shirley Ryan Ability Lab, Chicago, Illinois, USA, 3Air Force Research Laboratory, Wright-Patterson AFB, Ohio, USA, 4Department of Neurology, Feinberg School of Medicine, Northwestern University, Chicago, Illinois, USA, 5Department of Physical Medicine and Rehabilitation, Feinberg School of Medicine, Northwestern University, Chicago, Illinois, USA
Topic Area: THINKING: Problem solving

Poster B111  Investigating verbal creative problem solving - the role of search as a function of task difficulty
Maxi Becker1, Simone Kühn1; 1University Medical Center Hamburg-Eppendorf
Topic Area: THINKING: Problem solving

Poster B112  On the Influence of Regulated Emotions on Pain Processing
Philipp Reicherts1, Christiane Hoessle1, Matthias J. Wieser2, Paul Pauli1; 1University of Wuerzburg, 2Erasmus University Rotterdam
Topic Area: EMOTION & SOCIAL: Emotional responding

Poster B113  The relationship between moral reasoning and theory of mind effective connectivity
Araya Lacy1, Timothy K. Gray1, Robert S. Ross1,2; 1University of New Hampshire Neuroscience and Behavior Program, 2University of New Hampshire Psychology Department
Topic Area: EMOTION & SOCIAL: Other

Poster B114  White Matter and Social Cognition
Athanasia Metoki1, Yin Wang1, Kyie H. Alm1, Ingrid R. Olson1; 1Temple University, Department of Psychology
Topic Area: EMOTION & SOCIAL: Person perception

Poster B115  The Perception and Cognition of Racialized Voices
Tedra James1, Maxime Bouvagnet1, Psyche Loui1; 1Wesleyan University
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Poster B116  Sex Differences in Brain Network Connectivity Subserving Theory of Mind in Individuals with Alcohol Use Disorder
Sergey V. Chernyak1, Marisa M. Silver1,2, Amy Janes1, Jennifer T. Snieder1, Shelly Greenfield1, Lisa Nickerson1; 1McLean Hospital, Harvard Medical School, Belmont, MA, 2Boston University School of Medicine, Boston, MA
Topic Area: EMOTION & SOCIAL: Self perception

Poster B117  Efficacy of EEG Neurofeedback in Individuals with Traumatic Brain Injury: Does Age Matter?
Marielle L. Darwin1, Savannah Regensburger1; 1Colorado State University
Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster B118  Susceptibility to boredom predicted by cortical grey matter volume in adolescents with familial risk for alcoholism
Arkadiy L. Maksimovskiy1,4, Anna Seraikas1, Emily Oot1,5, Maya Rieselbach1, Carolyn Caine1, Julia Cohen-Gilbert1,4, Jennifer T. Snieder1,4, Sion K. Harris1,2, Lisa Nickerson1,2, Marisa M. Silver1,4,5,1; 1Neurodevelopmental Laboratory on Addictions and Mental Health, McLean Imaging Center, McLean Hospital, Belmont, MA, 2Applied Neuroimaging Statistics Lab, McLean Imaging Center, McLean Hospital, Belmont, MA, 3Boston Children’s Hospital, Harvard Medical School, Boston, MA, 4Harvard Medical School, Boston, MA, 5Boston University School of Medicine, Boston, MA
Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster B119  Effects of Multicomponent Training of Cognitive Control (MTCC) on Cognitive and Brain Structural Changes in Adolescents
Carol A. Caine1,4, Anna Seraikas1, Emily Oot1,5, Maya Rieselbach1, Carolyn Caine1, Julia Cohen-Gilbert1,4, Jennifer T. Snieder1,4, Sion K. Harris1,2, Lisa Nickerson1,2, Marisa M. Silver1,4,5,1; 1Neurodevelopmental Laboratory on Addictions and Mental Health, McLean Imaging Center, McLean Hospital, Belmont, MA, 2Applied Neuroimaging Statistics Lab, McLean Imaging Center, McLean Hospital, Belmont, MA, 3Boston Children’s Hospital, Harvard Medical School, Boston, MA, 4Harvard Medical School, Boston, MA, 5Boston University School of Medicine, Boston, MA
Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster B120  The effects of tDCS on orientation discrimination task performance
Abdullah Bin Dawood1, Abigail Dickinson2, Ali Aytemur1, Clare Howarth1, Elizabeth Milne1, Myles Jones1; 1The University of Sheffield, Sheffield, UK, 2University of California, Los Angeles, CA, USA
Topic Area: PERCEPTION & ACTION: Vision
Dasom Lee1, Seyul Kwak1, Jeanyung Chey2; 1Seoul National University Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster B120 Age-Related Declines in Cerebellar-Basal Ganglia Functional Circuits: Implications for Motor Function in Older Adulthood
Hanna K. Hausman1, T. Bryan Jackson1, Jessica A. Bernard1; 1Texas A&M University Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster B121 Investigating individual differences in context dependent rule learning performance
Allen Chang1, Yiren Ren1, Andrew White1, Chantal Stern1; 1Boston University, 2University of Michigan-Ann Arbor Topic Area: EXECUTIVE PROCESSES: Goal maintenance & switching

Poster B122 Reduced Feedback-Based Performance Monitoring at the FRN level When Goal Impact is Transiently Increased
Mario Carlo Severo1, Wioleta Walentowska1,2, Agnes Moors3,1, Gilles Pourtois1; 1Ghent University, 2Jagiellonian University in Krakow, 3KU Leuven Topic Area: EXECUTIVE PROCESSES: Goal maintenance & switching

Poster B123 Dissociating Components of Multitasking Using HD-IDCS
Francesca Raileanu1, Thomas McWilliams1, Geoffrey Genova1, Scott Mongold1, Morgan Taylor1, Jasper Park1, Anisha Jain1, Isabella Montoya1, Joseph Pajka1, Erika Hussey1,2, Nathan Ward1; 1Tufts University, 2Natick Soldier Research, Development, and Engineering Center Topic Area: EXECUTIVE PROCESSES: Goal maintenance & switching

Poster B124 Motor conflict and error saliency: The ERN predicts post-error reductions in P1 at short response-stimulus intervals
Paul Beatty1, George Buzzell1,2, Daniel Roberts1, Craig McDonald1; 1George Mason University, 2University of Maryland Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster B125 Separating Inhibitory and Attentional Neural Signals in the Stop-Signal Paradigm
Darcy Waller1, Jan Wessel1; 1University of Iowa Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster B126 Individual differences in executive control as a function of combination of trait mindfulness, trait anxiety and associated neural correlates
Satish Jaiswal1, Shao-Yang Tsai1, Neil G. Muggleton1,2,3, Chi-Hung Juan1, Wei-Kuang Liang1; 1National Central University, 2University College London, 3Goldsmiths, University of London Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster B127 Differential activation of rostral prefrontal cortex (BA 10) in autism spectrum disorder: An fNIRS study of time-based, prosocial prospective memory
James Crum1; 1University College London Topic Area: EXECUTIVE PROCESSES: Other

Poster B128 Dopaminergic modulation of rostral-caudal fronto-striatal loops

Poster B129 EEG correlates of working memory for action
David Amadeus Vogelsang1,2, Daniella J. Furman1,2, Mark D’Esposito1,2; 1Helen Wills Neuroscience Institute, University of California, Berkeley, California, 94720, United States, 2Department of Psychology, University of California, Berkeley, California, 94720, United States Topic Area: EXECUTIVE PROCESSES: Other

Poster Session C
Sunday, March 25, 1:00-3:00 pm

Poster C1 Comparisons of Mismatch Negativity in Clinical High Risk and Schizophrenia Populations
Ian T. Kim1, Migyung Lee1,2, Pejman Sehaptopour1,2, Cheryl M. Corcoran1, Daniel C. Javitt1,2; 1Columbia University Medical Center, 2Nathan Kline Institute Topic Area: EMOTION & SOCIAL: Other

Poster C2 Improving auditory spatial attention by non-invasive brain stimulation and training
Stephan Getzmann1, Christina Hanenberg1,2, Joerg Lewald1,2; 1Leibniz Research Centre for Working Environment and Human Factors (IfADo), Germany, 2Ruhr University Bochum, Germany Topic Area: ATTENTION: Other

Poster C3 Implicit temporal orienting of attention is preserved in healthy aging
Hunter Johndro1, Monica Lyons1, Aniruddh D. Patel1, Elizabeth Race1; 1Tufts University Topic Area: ATTENTION: Development & aging

Poster C4 Working memory recruitment and network membership of visual, auditory and tactile sensory-biased regions in lateral frontal cortex
Sean M. Tobyne1, Abigail L. Noyce1, James A. Brissenden1, Stephanie R. Jones2, Manuel Gomez-Ramirez2, Christopher I. Moore2, David C. Somers2; 1Boston University, 2Brown University Topic Area: ATTENTION: Multisensory

Poster C5 Convergent functional network connectivity changes in stimulus-driven attention and awareness
Hana Eaton1, Hongyang Sun1, Jocelyn Sy1, Doug Godwin1, Padma Raghavan1, Rene Marois1; 1Vanderbilt University Topic Area: ATTENTION: Nonspatial

Poster C6 Neural mechanisms of reflexive social attention: a combined eye-tracking and fMRI study
Lara Rösler1, Matthias Gamer1; 1Julius Maximilians University of Würzburg, Würzburg, Germany Topic Area: ATTENTION: Other
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<th>Marlon de Jong¹, Berry van den Berg¹,², Marty G. Woldoff¹, Monique M. Lorist¹; ¹University of Groningen, Groningen, Netherlands, ²Duke University, Durham, NC 27708, United States</th>
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<td>Same underlying neural mechanisms for spatial neglect and anosognosia for functional disability</td>
<td>Stephanie A. Waldman¹, PeiI Chen², Meghan D. Caulfield¹; ¹Lafayette College, Easton PA, ²Kessler Foundation, West Orange, NJ</td>
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<td>A.J Simon¹, Richard Campusano¹, Josh Volponi¹, Sasha Skinner¹, Joaquin Anguera¹, Adam Gazzaley¹, David A. Ziegler¹; ¹UCSF, ²UCSF, ³UCSF, ⁴UCSF, ⁵UCSF, ⁶UCSF</td>
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<td>Differential neural activity for self-referentially processed objects in older and younger adults</td>
<td>Ryan T. Daley¹, Holly J. Bowen¹, Katelyn R. Parisi¹,², Elizabeth A. Kensinger¹, Angela H. Gutches²; ¹Boston College, ²Brandeis University</td>
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<td>Janelle Beadle¹, Mallory Feenstra¹, Abi M. Heller¹, Vince D. Calhoun²,¹, Julia Stephen²,¹,², Yu-Ping Wang³, David E. Warren⁴, Tony W. Wilson⁵; ¹University of Nebraska at Omaha, ²University of New Mexico, ³Tulane University, ⁴University of Nebraska Medical Center, ⁵The Mind Research Network</td>
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<td>Kyle Nolla¹, Mark Beeman¹; ¹Northwestern University</td>
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<td>Shruti Japee¹, Jessica Jordan¹, Savannah Lokev¹, Chris Baker¹, Leslie Ungerleider¹; ¹Lab of Brain and Cognition, NIMH/NIH</td>
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<td>Nadia Haddara¹,², L. Jack Rhodes¹, Thomas Nguyen¹, Kendra Deschamps¹, Stephanie Ijomah¹, Erica Miller¹, Vladimir Miskovic¹,²; ¹SUNY Binghamton, ²Center for Affective Science, SUNY Binghamton</td>
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<td>Elizabeth V. Goldfarb¹, Dongju Seo¹, R. Todd Constable¹, Rajita Sinha¹; ¹Yale University School of Medicine</td>
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<td>Ashley Chau-Morris¹, Maud Haffar¹,², Sheila Bouthen¹, Tarijan Daryush¹, Natalie Frye¹, Ursula Hess¹, Hugo Panteceoutou¹,², J. Bruno Debruille¹,²; ¹Research Center of the Douglas Institute, Montréal, Canada, ²Department of Psychiatry, McGill University, Montréal, Canada, ³Department of Neurosciences, McGill University, Montréal, Canada, ⁴Department of Psychology, Humboldt University, Berlin, Germany, ⁵École Normale Supérieure, Lyon, France</td>
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<td>Laurie Bayet¹, Rachel Wu², Benjamin Balas³, Richard N. Ashlin³; ¹Boston Children's Hospital, Harvard Medical School, ²University of California, Riverside, ³North Dakota State University, ⁴Haskins Laboratories</td>
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<td>Tzipi Horowitz-Kraus¹,², Rola Farah¹; ¹Educational Neuroimaging Center, Faculty of Education in Science and Technology, Technion, Haifa, Israel, ²Reading and Literacy Discovery Center, General Pediatrics, Cincinnati Children's Hospital Medical Center, Ohio, USA</td>
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Pooja M. Desai¹, Emily C. Merz², Elaine Maskus³, Xiaofu He³, Kimberly G. Noble², ¹Barnard College, Columbia University, ²Teachers College, Columbia University, ³Columbia University Medical Center
Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster C26  The relative neuropsychological effects of physical, cognitive, and interactive exercise (iPACES™) for mild cognitive impairment (MCI): Pilot data comparing two-week windows of each as in-home interventions
Kathryn M Wall¹, Jessica Stark¹, Alexa Schillaci¹, Carolyn Doty¹, Hannah Christian¹, Anvit Karla-Lall¹, Molly Maloney¹, Cay Anderson-Hanley¹; ¹Union College, NY
Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster C27  Differential associations between large-scale networks during externally and internally directed attention
Julia W. Y. Kam¹, Sandon Griffin¹, Jack J. Lin¹, Anne-Kristin Solbakk², Tor Endestad¹, Pal G. Larson¹, Robert T. Knight²; ¹University of California, Berkeley, ²University of California, Irvine, ³University of Oslo, 4Oslo University Hospital
Topic Area: EXECUTIVE PROCESSES: Goal maintenance & switching

Poster C28  Learning Cognitive Flexibility: Neural Mechanisms of Adaptive Switch Readiness
Anthony W. Sali¹, Christina Bejiani¹, Tobias Egner¹; ¹Duke University
Topic Area: EXECUTIVE PROCESSES: Goal maintenance & switching

Poster C29  Effective connectivity via brain oscillations during cognitive control post-concussion
Natasha Fansivala¹, Stephanie E. Barlow¹, Paolo Medrano¹, Robert S. Ross¹; ¹University of New Hampshire
Topic Area: EXECUTIVE PROCESSES: Goal maintenance & switching

Poster C30  Conflict-related ERPs in the Temporal Flanker Task: N2 under conditions of perceptual mismatch and response conflict
Kerstin Jost¹, Mike Wendt², Aquiles Luna-Rodriguez³, Andreas Löw³, Thomas Jacobsen²; ¹Brandenburg Medical School, ²Medical School Hamburg, ³Helmholtz-Zentrum für Infektiologie GmbH, ²Hamburg, ³Brandenburg Medical University
Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster C31  Dopaminergic polymorphisms C957T and ANKK1 contribute to distinct aspects of delay discounting
Amy T Nusbaum¹, John M Hinson¹, Paul Whitney⁵; ¹Washington State University
Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster C32  The Feedback-Related Negativity, but not Frontal Midline Theta, Reflects Prediction Errors During Both Positive and Negative Reinforcement
Eric Rawls¹, Yoojin Lee², Elizabeth Shirtcliffe³, Connie Lamm⁴; ¹University of Arkansas, ²Iowa State University
Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster C33  Altered Functional Networks Underlying Post-Error Adaptation in Women with Drug Use Disorder and Comorbid Post-Traumatic Stress Disorder
Bradford S. Martins¹, Clinton D. Kilts³, G. Andrew James¹; ¹University of Arkansas for Medical Sciences
Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster C34  Dysexecutive impairment in first-episode of Schizophrenia
Gricel Orrellana¹, Andrea Slachevsky²; ¹Facultad de Medicina, Universidad de Chile
Topic Area: EXECUTIVE PROCESSES: Other

Poster C35  Different procrastination measures correlate with different neural activities
Zhounao Duo¹,², Sunao Iwaki¹; ¹National Institute of Advanced Industrial Science and Technology, ²University of Tsukuba
Topic Area: EXECUTIVE PROCESSES: Other

Poster C36  Electrophysiological markers of stress on working memory networks in adolescents
Alana Campbell¹,², Jessica Graham¹, Margaret Nicopoli²,², Louis Murphy¹, Hannah Waltz¹, Ashley Williams¹, Candace Killian-Farrell¹,², Ayseil Belger¹,²; ¹University of North Carolina at Chapel Hill, ²Carolina Institute for Developmental Disabilities
Topic Area: EXECUTIVE PROCESSES: Working memory

Poster C37  Frontoparietal EEG phase coupling reflects the maintenance and successful memory encoding of constructed objects in visual working memory
Patrick H. Khader¹,², Satu Palva³, Frank Rösler³, Julia A. Ewerdtwalbeslo⁰; ¹Brandenburg Medical School, Neuruppin, Germany, ²Ludwig-Maximilians-Universität Munich, Germany, ³University of Helsinki, Finland, ⁰University of Hamburg, Germany
Topic Area: EXECUTIVE PROCESSES: Working memory

Poster C38  The influence of storage capacity versus control in visual working memory capacity limitations
Ying Cai¹,², Andrew D Sheldon³, Bradley R Postle²,²; ¹National Key Laboratory of Cognitive Neuroscience and Learning, Beijing Normal University, ²Department of Psychiatry, University of Wisconsin–Madison, ³Medical Scientist Training Program and Neuroscience Training Program, University of Wisconsin–Madison, ⁴Department of Psychology, University of Wisconsin–Madison
Topic Area: EXECUTIVE PROCESSES: Working memory

Poster C39  The circuit analyses of Anesthesia-resistant memory in Drosophila.
Emmanuel Antwi-Adjei¹, Diana Hilpert³, Martin Schwärzel¹; ¹Free University Berlin
Topic Area: EXECUTIVE PROCESSES: Working memory

Poster C40  Metabolic Syndrome and its Association with Self-Reported Sleep Quality and Cognitive Function
Tori Ferland1,2, Saba Chowdhry1, William Milberg1,2, Regina McGlinchey1,2, Elizabeth Leritz1,2, 1Harvard Medical School, 2VA Boston Healthcare System, 3Boston University School of Medicine
Topic Area: EXECUTIVE PROCESSES: Working memory

Poster C41  ANXIETY MODULATES AUTONOMIC REGULATION AND NEURAL ACTIVATION DURING HIGH-LOAD WORKING MEMORY FOLLOWING ACUTE STRESS IN ADOLESCENCE
Jessica Graham1,2, Ashley Williams1,2, Candace Killian-Farrell1, Hannah Waltz1, Joshua Bizzell1, Erin King1, Alana Campbell1, Aysenil Belger1,2; 1University of North Carolina at Chapel Hill, Department of Psychiatry, 2Duke-UNC Brain Imaging Analysis Center
Topic Area: EXECUTIVE PROCESSES: Working memory

Poster C42  The impact of literacy on microstructural properties of white matter
Falk Huettig1, Vidur Mahajan2, Madhuri Barma2, Nishant Lohagun3, Ouroz Khan4, Anuradha Singh3, Deepshikha Misra3, Vaisha Navang3, Ramesh Mishra4, Alexis Hervais-Adelman1; 1Max Planck Institute for Psycholinguistics Nijmegen, 2Mahajan Imaging Delhi, 3Jawaharlal Nehru University New Delhi, 4University of Hyderabad
Topic Area: LANGUAGE: Development & aging

Poster C43  Meaning above (and inside) the head: Electrophysiology to combinatorial visual morphology
Neil Cohn1, Tom Foulsham2; 1Birkbeck University, 2University of Essex
Topic Area: LANGUAGE: Lexicon

Poster C44  Testing native language neural commitment at the brainstem level: A cross-linguistic investigation of the association between frequency-following response and speech perception
Luodi Yu1, Yang Zhang1; 1Department of Speech-Language-Hearing Sciences, University of Minnesota, Minneapolis, MN, 55455, USA
Topic Area: LANGUAGE: Semantics

Poster C45  Cortical Hemodynamics and Neural Network Connectivity During Stuttered and Fluent Speech
Allison S. Hancock1, Nick Wan1,2, Sushma Alphonsa2, Sandra L. Gillam1, Ronald B. Gillam1; 1Utah State University, 2University of California, San Diego
Topic Area: LANGUAGE: Language production

Poster C46  Knowledge Structure and Expository Texts Comprehension: A Neurocognitive Study
Chun-Ting Hsu1, Roy Clariana1, Ping Li1; 1Pennsylvania State University
Topic Area: LANGUAGE: Syntax

Poster C47  Common recruitment of neural resources for phonological working memory regardless of behavioral demands.
Terri L. Scott1, Sara C. Dougherty1, Ja Young Choe2, Tyler K. Perrachione1; 1Boston University, 2Harvard University
Topic Area: LANGUAGE: Other

Poster C48  Implicit Learning of Adjacent and Non-Adjacent Dependencies: Relationships with Measures of Language, Attention, and Working Memory
Joanne A. Deocampo1, Tricia Z. King1, Christopher M. Conway1; 1Georgia State University
Topic Area: LANGUAGE: Other

Poster C49  Psychoeducational outcomes in children following left or right hemispherectomy
Kelly Halverson1, Olivia Meegoda2, Heather Beckius2, Andrea Imhof2, Stella deBoede1, Tami Katzir1, Joanna A. Christodoulou2; 1University of Houston, 2MGH Institute of Health Professions, 3CTC Widney, Los Angeles, CA, 4University of Haifa
Topic Area: LANGUAGE: Other

Poster C50  Catching a Snitch vs. catching a Bludger: Variability in world knowledge influences real-time access to word meaning
Melissa Troyer1, Marta Kutas1; 1University of California, San Diego
Topic Area: LANGUAGE: Semantic

Poster C51  Predicting Conceptual Change during Naturalistic Reading with fMRI
Benjamin Schloss1, Ping Li1; 1The Pennsylvania State University
Topic Area: LANGUAGE: Other

Poster C52  Alpha- and theta-band time-frequency representations in free reading of stories using EEG and EM coregistration
Max Cantor1, John Trueswell2, Albert Kim3; 1University of Colorado Boulder, 2University of Pennsylvania
Topic Area: LANGUAGE: Other

Poster C53  The neural substrates for predictive processes in sentence comprehension
Chih-Ting Chang1, Ping Li1,2, Jie-Li Tsai1, En-Ju Lin1, Pei-Chun Chao1, Chia-Ju Chou1, Chia-Ying Lee1,4,5,6; 1Institute of Neuroscience, National Yang-Ming University, Taipei, Taiwan, 2Department of Psychology, Pennsylvania State University, University Park, PA, USA, 3Center for Brain, Behavior, and Cognition, Pennsylvania State University, University Park, PA, USA, 4Department of Psychology, National Chengchi University, Taiwan, 5Institute of Linguistics, Academia Sinica, Taipei, Taiwan, 6Institute of Cognitive Neuroscience, National Central University, Taipei, Taiwan
Topic Area: LANGUAGE: Other

Poster C54  The Effects of Age and Familial Sinistrality on Late Positive Components
Michelle Leckey1, Kara D. Federmeier1; 1University of Illinois at Urbana-Champaign
Topic Area: LANGUAGE: Syntax

Poster C55  Dissociating the Effect of Dependency from Embedding in Syntactic Hierarchy
Kyung-Hwan Cheon1, Hee-Dong Yoon1, Hyeon-Ae Jeon1,2; 1Department of Brain and Cognitive Sciences, Daegu Gyeongbuk Institute of Science and Technology (DGIST), Daegu, Korea, 2Partner Group of the Max Planck Institute for Human Cognitive and Brain Sciences at the Department of Brain and Cognitive Sciences, DGIST, Daegu, Korea
Topic Area: LANGUAGE: Syntax

Poster C56  Age differences in memory retrieval: The role of regulatory downregulation of medial temporal lobe activity by the prefrontal cortex
Jaclyn Ford1, Elizabeth Kensinger1; 1Boston College
Poster C57  Investigating neural effects of memory training to reduce false memories in older adults
Indira Turney1, Jonathan G. Hakun1, Brenda A. Kirchhoff2, Nancy A. Dennis1, 1Pennsylvania State University, 2Saint Louis University
Topic Area: LONG-TERM MEMORY: Development & aging

Poster C58  Phenotypic expression of presenilin 1 p.Gly206Ala autosomal dominant Alzheimer's disease
Evin Bender1, Maya Lichtenstein1; 1Geisinger Health System
Topic Area: LONG-TERM MEMORY: Development & aging

Poster C59  Definition-based unitization improves associative memory of older adults: mechanism and training studies
Juan Li1, Baoxi Wang1, Zhiwei Zheng1; 1Institute of Psychology, Chinese Academy of Sciences, Beijing 100101, China
Topic Area: LONG-TERM MEMORY: Development & aging

Poster C60  THC disrupts the encoding of perceptual details while sparing item-context bindings.
Manoj Doss1, Jessica Weaver1, David Gallo1, Harriet de Wit1; 1University of Chicago
Topic Area: LONG-TERM MEMORY: Episodic

Poster C61  Hippocampal damage impairs creativity in conceptual combination
Heather D. Lucas1, Mahima Goel2, Kara D. Fedemeier2, Melissa C. Duff2, Neal J. Cohen2; 1Louisiana State University, 2University of Illinois Urbana-Champaign, 3Vanderbilt University
Topic Area: LONG-TERM MEMORY: Episodic

Poster C62  Building and accessing a compressed internal timeline of the future
Inder Singh1,2, Marc Howard2; 1Northeastern University, 2Boston University
Topic Area: LONG-TERM MEMORY: Episodic

Poster C63  Neural representations of temporal statistics can predict subsequent reasoning
Athula Pudhiyidath1, Anna C. Schapiro2, Alison R. Preston1; 1The University of Texas at Austin, 2Harvard Medical School
Topic Area: LONG-TERM MEMORY: Episodic

Poster C64  Episodic Memory Training Induces Functional Plasticity in PFC – Hippocampal Neural Circuitry
Farah Naaz1, Lindsay Knight1, Teodora Stoica1, Brendan Depue1; 1University of Louisville
Topic Area: LONG-TERM MEMORY: Episodic

Poster C65  Memory for stereotype-consistent and stereotype-inconsistent information is supported by distinct brain regions
Niv Reggev1, Jason Mitchell1; 1Harvard University
Topic Area: LONG-TERM MEMORY: Episodic

Poster C66  Biasing Memory Replay During Sleep: A Quantitative Synthesis of Targeted Memory Reactivation Effects
Xiaoqing Hu1, Larry Y. Cheng2, Ken A. Paller2; 1The University of Hong Kong, 2Northwestern University
Topic Area: LONG-TERM MEMORY: Episodic

Poster C67  Effect of Congruency Between Encoding and Retrieval on Associative Retrieval
Courtney R. Gray1, M. Andrew Rowley2, Kayla McGraw2, Alexandra P. Giglio2, Joanna M. Salerno2, Amy A. Oveman2, Nancy A. Dennis1; 1The Pennsylvania State University, 2Eh University
Topic Area: LONG-TERM MEMORY: Episodic

Poster C68  Comparing and contrasting the neural mechanisms of autobiographical memory and problem solving
Sarah L. Peters1, Carina L. Fan1; 1McGill University
Topic Area: LONG-TERM MEMORY: Episodic

Poster C69  Hippocampal theta-gamma coupling predicts associative memory performance as measured by chronic ambulatory electrocorticography
Anita Shankar1, Simon Henin1, Daniel Friedman1, Patricia Dugan1, Lucia Melloni1,2, Werner Doyle1, Lila Davachi3, Anli Liu1; 1New York University School of Medicine, 2Max Planck Institute for Brain Research, 3Columbia University
Topic Area: LONG-TERM MEMORY: Episodic

Poster C70  Cortical oscillations underlying strict and lax decision criteria in recognition memory
Charlie Nettles1, Evan Layher2, Justin Kantner1, Michael B. Miller2; 1California State University, Northridge, 2University of California, Santa Barbara
Topic Area: LONG-TERM MEMORY: Episodic

Poster C71  Theta oscillations increase at critical junctures of overlapping mazes
Justine Cohen1, Chantal E. Stern1; 1Boston University
Topic Area: LONG-TERM MEMORY: Episodic

Poster C72  Retrieval-induced forgetting and second language acquisition: Preliminary insights from a Welsh language word-learning study
Lyam Bailey1, Aaron J. Newman1; 1Dalhousie University
Topic Area: LONG-TERM MEMORY: Other

Poster C73  A direct pathway to anterior IPS for graspable objects: fMRI evidence from a patient with a lesion to the geniculostriate pathway
Quanjing Chen1, Colleen Schneider1, 2, Emily Prentiss1, Zoe Williams3, Bogachan Sahin4, Bradford Z. Mahon1,5,6; 1Department of Brain and Cognitive Sciences, University of Rochester, 2Medical Scientist Training Program, University of Rochester School of Medicine and Dentistry, 3Department of Ophthalmology, University of Rochester School of Medicine and Dentistry, 4Department of Neurology, University of Rochester School of Medicine and Dentistry, 5Department of Neurosurgery, University of Rochester School of Medicine and Dentistry, 6Center for Visual Science, University of Rochester
Topic Area: LONG-TERM MEMORY: Semantic

Poster C74  Searching for semantic knowledge: A vector space semantic analysis of the feature generation task
Rebecca Cutler1, Nate Klooster2, Melissa Duff1, Sean Polyn1; 1Vanderbilt University, 2University of Pennsylvania
Topic Area: LONG-TERM MEMORY: Semantic
Poster C75  The Impact of Acetylcholine Blockade on Declarative and Motor Memory Consolidation Following a Night of Sleep or a Day of Wake
Matthew Tucker1, Kathryn Taylor1, Rozina Merchant1, Sharon George1, Caroline Stoddard1, Kevin Kopera1; 1University of South Carolina School of Medicine Greenville
Topic Area: LONG-TERM MEMORY: Semantic

Poster C76  Finding the baby in the bath water – evidence for training-specific changes in MRI measures of brain structure and function
Cibu Thomas1, Adam Steel1, Aaron Treffler1, Elizabeth Aguil1a, Gang Chen1, Carlo Pierpaoli2, Chris Baker1; 1National Institute of Mental Health, 2National Institute of Biomedical Imaging and Bioengineering
Topic Area: LONG-TERM MEMORY: Skill learning

Poster C77  EEG patterns reveal internal dynamics of sleep stage N3
Achim Schilling1, Patrick Krauss1, Konstantin Tziridis1, Maximilian Traxdorf2, Holger Schulze1; 1Experimental Otologyngology University of Erlangen-Nuremberg, 2Department of Otologyngology University of Erlangen-Nuremberg
Topic Area: METHODS: Electrophysiology

Poster C78  Test-retest reliability of ERP based Neurometrics
Rachel Scrivano1, James Cole1, Paul Kieffaber1; 1College of William and Mary
Topic Area: METHODS: Electrophysiology

Poster C79  Neural correlates underlying statistical learning of adjacent and non-adjacent verbal sequential dependencies
Leyla Eghbalzad1, Joanne A. Deocampo1, Gretchen N.L. Smith2, Sabrina Na1, Tricia Z. King1, Christopher M. Conway1; 1Georgia State University, 2Indiana University School of Medicine
Topic Area: METHODS: Neuroimaging

Poster C80  Reduced Persistence of Spontaneous Brain Activity in Schizophrenia
Huang Zheng1,2, Jianbo Gao1; 1School of Computer, Electronics and Information, Guangxi University, China, 2Institute of Complexity Science and Big Data Technology, Guangxi University, China
Topic Area: METHODS: Neuroimaging

Poster C81  A Novel Information Network Flow Approach for Measuring Functional Connectivity and Predicting Behavior
Sreejan Kumar1, Kwangsun Yoo1, Monica D. Rosenberg1, Marvin M. Chun1; 1Yale University
Topic Area: METHODS: Neuroimaging

Poster C82  Quasi-Periodic Patterns of Intrinsic Brain Activity: Stability and Individual-Specificity
Behnaz Yousef1, Eric Schumacher1, Shella Keilholz1; 1School of Biomedical Engineering, Emory University/Georgia Institute of Technology, Atlanta, GA, USA, 2School of Psychology, Georgia Institute of Technology
Topic Area: METHODS: Neuroimaging

Poster C83  The Fronto-Insular Cortex Causally Mediates the Default-Mode and Central-Executive Networks to Contribute to Individual Cognitive Performance
Rui Li1,2, Juan Li1,2; 1CAS Key Laboratory of Mental Health, Institute of Psychology, 2University of Chinese Academy of Sciences
Topic Area: METHODS: Neuroimaging

Poster C84  Defining Cognition: Automated Generation of Cognitive Ontology by Text-Mining Literature
Richard Gao1, Thomas Donoghue1, Bradley Voytek1; 1University of California, San Diego
Topic Area: METHODS: Other

Poster C85  The role of physical fitness components on overall and regional cortical thickness in overweight/obese children: preliminary results from the ActiveBrains Project
Irene Esteban-Cornejo1,2, Jose Mora-González1, Cristina Cadenas-Sánchez1, Oren Contreras-Rodriguez1,4, Juan Verdejo-Roman1, Pontus Henriksson1,2,3, Jairo Migueles1, Maria Rodriguez-Ayllon1, Pablo Molina-García1, Charles Hillman1, Andrés Catena2, Francisco B. Ortega1; 1PROFITH “PRomoting FITness and Health through physical activity” research group, University of Granada, Granada, Spain, 2Northeastern University, Boston, MA, 3Bellvitge Biomedical Research Institute-IDIBELL, Barcelona, Spain, 4Centro de Investigacion Biomedica en Red de Salud Mental (CIBERSAM), Barcelona, Spain., 5Mind, Brain and Behavior Research Center (CIMCYC), University of Granada, Granada, Spain., 6Karolinska Institutet, Huddinge, Sweden.
Topic Area: NEUROANATOMY

Poster C86  Adding insult to injury: Effects of cranial radiation treatment on structural volumes and associated memory performance in brain tumour survivors
Ramy Ayoub1,2, Kiran Beera1, Ashley Fertuk1, Jovanka Skocic1, Cynthia de Medeiros1, Eric Bouffet1,2, Donald Mabbott1; 1Peter Gilgan Center for Research and Learning, The Hospital for Sick Children, 2University of Toronto
Topic Area: NEUROANATOMY

Poster C87  Concurrent temporal channels for auditory processing: behavioral and neurophysiological evidence reveals segregation of function at different scales
Xiangbin Teng1, David Poeppel1,2; 1Max Planck Institute, Frankfurt, Germany, 2Department of Psychology, New York University, New York, NY
Topic Area: PERCEPTION & ACTION: Audition

Poster C88  Effect of listening environment on cortical entrainment to continuous speech in older adults
Jacie R. McHaney1, Benjamin D. Zinszer1, Kirsten E. Smayda1, Bharath Chandrasekaran1; 1The University of Texas at Austin
Topic Area: PERCEPTION & ACTION: Audition

Poster C89  Abnormal resting-state EEG cross-frequency coupling in patients with tinnitus
Byoung-Kyong Min1, Min-Hee Ahn1, Sung Kwang Hong1,2; 1Korea University, 2Hallym University College of Medicine
Topic Area: PERCEPTION & ACTION: Audition
Poster C90  Tablet-based gameplay identifies movement patterns related to autism spectrum disorder
Anna Anzelwicz1,2,3, Krzysztof Sobota2,3, Jonathan Delafield-Butt2;
1Jagiellonian University in Krakow, Poland, 2University of Strathclyde, Glasgow, UK, 3Harimata, Krakow, Poland
Topic Area: PERCEPTION & ACTION: Development & aging

Poster C91  Age-related declines in GABA levels in the auditory cortex are associated with neural distinctiveness and auditory perception.
Poortata S. Lalwani1, Molly Simonite1, Myria Petrou1, Bradley Foerster1, Rachael Seidler1, Daniel Weissman1, Thad A. Polk1; 1University of Michigan, 2University of Florida
Topic Area: PERCEPTION & ACTION: Motor control

Poster C92  Grasping Interferes with Visuospatial Working Memory during the Encoding: Neuropysiological Evidence
Rumyena Gunduz Can1,2, Thomas Schack1,2,3, Dirk Koester1,2; 1Faculty of Psychology and Sport Science, Bielefeld University, Germany, 2Cognitive Interaction Technology - Center of Excellence, Bielefeld University, Germany, 3Research Institute for Cognition and Robotics, Bielefeld University, Germany
Topic Area: PERCEPTION & ACTION: Motor control

Poster C93  Comparing Sensorimotor Oscillations during a Motor Task with a Robot or Human Partner
Nathan Smyk1, Staci Meredith Weiss1, Jebediah Taylor1, Peter Marshall1; 1Temple University
Topic Area: PERCEPTION & ACTION: Motor control

Poster C94  Dynamic shaping of the defensive peripersonal space through kinesthetic illusion
Monica Biggio1, Ambra Bisio1, Piero Ruggeri1, Marco Bove1; 1University of Genoa, Italy
Topic Area: PERCEPTION & ACTION: Motor control

Poster C95  Cortico-Cerebellar Pathways for Understanding Language Coordination
Magda L. Dumitru1, Laurens Van Calster1, Marion Bouffier1, Steve Majors1; 1University of Liege
Topic Area: PERCEPTION & ACTION: Motor control

Poster C96  Synesthesia and Statistical Learning: Redundant Cues Improve Segmentation
Tess Allegra Forest1, Alessandra Lichtenfeld2, Bryan Alvarez2, Amy Finn1; 1University of Toronto, 2University of California, Berkeley
Topic Area: PERCEPTION & ACTION: Multisensory

Poster C97  Changes in perceived peripersonal space following the rubber hand illusion
Miranda Smit1, Veerle Kursjens1, Chris Dijkerman1, Ineke van der Ham2, Maarten van der Smagt3; 1Utrecht University, Department of Experimental Psychology, Helmholz Institute, Utrecht, The Netherlands, 2Department of Health, Medical, and Neuropsychology, Leiden University, the Netherlands
Topic Area: PERCEPTION & ACTION: Multisensory

Poster C98  Everyday taxi drivers: Do gifted navigators have larger hippocampi?

Poster C99  Fast fMRI with simultaneous EEG detects distinct thalamocortical dynamics underlying transitions in and out of sleep
Laura Lewis1,2, Jonathan Polimeni1,3, Kawai Setomoto2,3, Robert Stickgold4, Giorgio Bonmassar2,3, Bruce Rosen2,3; 1Harvard University, 2Massachusetts General Hospital, 3Harvard Medical School, 4Beth Israel Deaconess Medical Center
Topic Area: PERCEPTION & ACTION: Other

Poster C100  Consecutive TBS-fMRI on scene-selective cortex reveals non-specific effects in high-level visual cortex
Edward Silson1, Iris Groen1, Chris Baker1; 1Laboratory of Brain & Cognition, NIMH, NIH
Topic Area: PERCEPTION & ACTION: Vision

Poster C101  Perceptual and conceptual dimensions impacting animate items in the human ventral stream
Griffin E. Koch1, Marc N. Coutanche1; 1University of Pittsburgh
Topic Area: PERCEPTION & ACTION: Vision

Poster C102  A Number Signal in Early Visual Cortex
Nicholas DeWind1, Joonkoo Park2, Marty Woldorf2, Elizabeth Brannon1; 1University of Pennsylvania, 2University of Massachusetts Amherst, 3Duke University
Topic Area: PERCEPTION & ACTION: Vision

Poster C103  Ultra-rapid Serial Visual Presentation of Images Reveals Unconscious Perceptual Neural Signature of Memorability
Yalda Mohsenzadeh1, Aude Oliva1, Dimitrios Pantazis1; 1MIT
Topic Area: PERCEPTION & ACTION: Vision

Poster C104  tDCS-induced hemispheric asymmetry alters belief updating
Nikki Marinsek1, Michael B. Miller1; 1University of California, Santa Barbara
Topic Area: THINKING: Decision making

Poster C105  Are you thinking what I'm thinking? Theory of Mind activation in social dilemmas
Justin M. Campbell1, Nick Wan1,2, Bradley Robinson1, Kerry Jordan1; 1University of Pennsylvania, 2Bradley University
Topic Area: THINKING: Decision making

Poster C106  Identifying inter-relations between genetic polymorphisms and reinforcement learning: multivariate insights from behavior and computational modeling
Carrisa Cocuzza1, Jim Cavanagh2, Michael Cole1, Travis Baker1; 1Rutgers University, 2University of New Mexico
Topic Area: THINKING: Decision making

Poster C107  Seeing the forest or the trees? Evidence for differential information-seeking and updating in obsessive-compulsive patients and healthy controls
Andra Geana1, Christina L. Boisseau1,2, Steven Rasmussen1,2, Brianna Pritchett1,2, Michael J. Frank1; 1Brown University, 2Butler Hospital
Topic Area: THINKING: Decision making
Poster C108  Integrating incomplete information with imperfect advice  
Natalia Vélez1, Sajjad Torabian1, Hyowon Gweon1; 1Stanford University  
Topic Area: THINKING: Decision making  

Poster C109  Everything you can imagine is real: Component processes and brain systems of imagination  
Darya Zabelina1, Jessica Andrews-Hanna2; 1University of Arkansas, 2University of Arizona  
Topic Area: THINKING: Other  

Poster C110  Increasing salience of competitors increases selective visual attention and induces more analytic problem solving  
Tiffani Ng1, Mark Beeman1; 1Northwestern University  
Topic Area: THINKING: Problem solving  

Poster C111  Individual differences in IPS and PFC function predict fraction knowledge in children  
Priya B. Kalra1, John V. Binzak1, Yunji Park1, Elizabeth Y. Toomarian1, Percival G. Matthews1, Edward M. Hubbard1; 1University of Wisconsin–Madison  
Topic Area: THINKING: Reasoning  

Poster C112  Collective Creativity: Exploring the Existence of Group-Level Creativity in Collaborative Teams  
Adam Weinberger1, Natalie Gallagher2, Nho Dinh3, Adam Green1; 1Georgetown University, 2Northwestern University  
Topic Area: THINKING: Reasoning  

Poster C113  Understanding the neural mechanism by which neurostimulation drives visual working memory: An inside view of neurostimulation decay  
Hector Arciniega1, Marian Berryhill1; 1University of Nevada, Reno  
Topic Area: EXECUTIVE PROCESSES: Working memory  

Poster C114  Suppressing lateral orbitofronto-striatal pathway improved the learning of delayed paired associative learning task in mice  
Cheng Qi1,2, Hou Rui Qiong1, Chen Zhao Qin1, Fan Hong Mei1, T. Li Chengyu1; 1Institute of Neuroscience and Key Laboratory of Primate Neurobiology, Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences, Shanghai 200031, China, 2University of Chinese Academy of Sciences, Beijing 100049, China.  
Topic Area: EXECUTIVE PROCESSES: Working memory  

Poster C115  Alpha Oscillatory Synchrony underlying Working Memory Maintenance in Children  
Julie Sato1,2, Sarah Mossad1,2, Simeon Wong2, Benjamin Hunt2, Benjamin Dunkley1,2, Mary Lou Smith1,2, Margot Taylor1,2; 1The Hospital for Sick Children, 2University of Toronto  
Topic Area: EXECUTIVE PROCESSES: Working memory  

Poster C116  Development of Spoken Language Comprehension in Hearing Children and Children with Cochlear Implants: Data from a Passive Listening Task  
Sharon Coffey-Corina1, Kristina Backer1, Laurie lawyer3, Andrew Kessler2, Lee Miller1, David Corina1; 1University of California, Davis, Center for Mind and Brain, 2University of Washington, Seattle, WA, 3University of Essex, U.K.  
Topic Area: LANGUAGE: Development & aging  

Poster C117  Relationships between Cortical Thickness and Reading in Typically Developing Children  
Gabrielle-Ann Torre1,2, Guinevere Eden1; 1Center for the Study of Learning, Georgetown University, Washington, DC, 2Interdisciplinary Program in Neuroscience, Georgetown University, Washington, DC  
Topic Area: LANGUAGE: Development & aging  

Poster C118  The Interhemispheric Relationship Between Chaos and Rigidity in Processing Global and Local Textual Information  
Scott Wittman1, Shelby Smith1, Kristin Ritchey1, Caleb Robinson1, April Mullen1, Charles Jackson1, Stephanie Simon-Dack1; 1Ball State University  
Topic Area: LANGUAGE: Lexicon  

Poster C119  Brain responses to morphologically complex words: an electrophysiological study on Swedish past tense forms  
Andrea Schremm1, Mikael Novén1, Merle Horne1, Mikael Roll1; 1Lund University, Sweden  
Topic Area: LANGUAGE: Other  

Poster C120  Emotional prosody modulates neural sensitivity to speech discrimination  
Yang Zhang1, Chieh Kao1, Erin Diamond2; 1University of Minnesota, 2North Memorial Health Care  
Topic Area: LANGUAGE: Other  

Poster C121  Improved diffusion Magnetic Resonance Imaging reconstruction of the Arcuate Fasciculus  
Elise B. Barbeau1,2, Kaja Sander1,2,3, Shanna Kousaie1,3, Thomas Liontis3, Denise Klein1,2,3, Michael Petrides1,2,4; 1Cognitive Neuroscience Unit, McGill University, 2Department of Neurology and Neurosurgery, McGill University, 3Center for Research on Brain, Language and Music (CRBLM), Montreal, 4Department of Psychology, McGill University  
Topic Area: LANGUAGE: Other  

Poster C122  Indirect impact of a foreign accent on cognitive processes with no spoken language  
Alice Foucart1, Hernando Santamaría-García2,3,4, Robert Hartsuiker1; 1Ghent University, Belgium, 2Pontificia Universidad Javeriana, Colombia, 3Instituto de Neurociencia Cognitiva y Translacional, Argentina, 4Centro de memoria y cognición in plentico hospital san Ignacio, Argentina  
Topic Area: LANGUAGE: Other  

Poster C123  Are unattended memory items under cognitive control?  
Jacqueline Fulvio1, Bradley Postle1; 1University of Wisconsin - Madison  
Topic Area: EXECUTIVE PROCESSES: Working memory
Poster C126  Convergence of speech-print networks as a marker of language learning
Pedro M. Paz-Alonso1, Kshipra Gurunandan1, Manuel Carreiras1,2; 1BCBL. Basque Center on Cognition, Brain and Language, 2Ikerbasque. Basque Foundation for Science
Topic Area: LANGUAGE: Semantic

Poster C127  Instantiating new objects into the discourse: the role of hippocampus and prefrontal cortex
Zachary Ekves1,2, Pedro Paz-Alonso3, Nicholas Hindy4, Sarah Solomon3, Gerry Altmann1,2; 1University of Connecticut, 2Connecticut Institute for the Brain and Cognitive Sciences, 3Basque Center on Cognition, Brain, and Language, 4University of Louisville, 5University of Pennsylvania
Topic Area: LANGUAGE: Semantic

Poster C128  Context modulates figurative language deficits
Madhushree Chakrabarty1, Eileen Cardillo1, Anjan Chatterjee1; 1University of Pennsylvania
Topic Area: LANGUAGE: Semantic

Poster C129  Discrimination and Prediction of Concreteness from Neuroimaging and Corpus Data
Dominick DiMercuolo1, Chaleece Sandberg1; 1Pennsylvania State University
Topic Area: LANGUAGE: Semantic

Poster C130  Top-down prediction and semantic facilitation in schizophrenia
Victoria Sharpe1, Ellen Lau2, Nate Delaney-Busch1, Kirsten Weber3, Lin Wang1, Gina Kuperberg4; 1Tufts University, 2University of Maryland, 3Max Planck Institute for Psycholinguistics, 4Massachusetts General Hospital
Topic Area: LANGUAGE: Semantic

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**Poster Session D**

Monday, March 26, 8:00-10:00 am

Poster D1  Acoustic Effects on Oscillatory Markers of Sustained Attention
Psyche Loui1, Emily Przybysz1, Gonçalo Sampaio2, Tedra James1, Adam Hewett2, Benjamin Morillon3, Kevin Woods4; 1Wesleyan University, 2Transparent Corp, 3Aix Marseille University, 4Massachusetts Institute of Technology
Topic Area: ATTENTION: Auditory

Poster D3  Hemispheric asymmetries in behavioral and EEG measures of visual short-term memory change with aging
Iris Wiegand1,2,3, Patrizia Maier2, Natan Napiórkowski4, Kathrin Finke4,5, Thomas Töllner1, Herrmann J Müller1, Myriam C Sander2; 1Harvard University, 2Max Planck Institute for Human Development, 3Max Planck UCL Centre for Computational Psychiatry and Ageing Research, 4LMU Munich, 5Jena University Hospital
Topic Area: ATTENTION: Development & aging

Poster D4  The neural dynamics underlying unconstrained visuo-spatial and auditory mental imagery
Lizzy Blundon1, Yana Pertels1, Lawrence Ward1,2; 1University of British Columbia, 2Brain Research Centre
Topic Area: ATTENTION: Multisensory

Poster D5  Differential effects of phasic and tonic alerting on conflict resolution. Evidence from human electrophysiology.
Dariusz Asanowicz1, Mikolaj Compa1; 1Jagiellonian University in Kraków, Poland
Topic Area: ATTENTION: Nonspatial

Poster D6  Comparing objective and subjective measures of inattention that predict forgetting
McKinley Torrance1, Barry Eom1, David DiStefano1, Elizabeth Race1; 1Tufts University
Topic Area: ATTENTION: Other

Poster D7  The effect of cognitive load on conscious access to visual sensory inputs across tasks of varying precision
Moriah Stendel1, Mathieu Landry1, David Milton1, Amir Raz2; 1McGill University, 2Lady Davis Research Institute, Jewish General Hospital
Topic Area: ATTENTION: Other

Poster D8  Testing the Assumptions of the Thought Probe Method in Mind Wandering
Jennifer Yip1, Julia Kam2, Todd Handy1; 1University of British Columbia, 2University of California - Berkeley
Topic Area: ATTENTION: Other

Poster D9  Alpha Power and 1/f Slope Provide Independent Decoding of Visual Spatial Attention
Thomas Donoghue1, Bradley Voytek1; 1University of California, San Diego (UCSD)
Topic Area: ATTENTION: Spatial

Poster D10  Truly Independent! Typologies of Attention at Different Levels of Processing
Mathieu Landry1, Jason Da Silva Castanheira1, Amir Raz2,3; 1McGill University, 2Chapman University
Topic Area: ATTENTION: Spatial

Poster D11  Age-related changes of interoception, insula cortex, and emotional sensitivity
Yuri Terasawa1, Satoshi Umeda1; 1Department of Psychology, Keio University
Topic Area: EMOTION & SOCIAL: Development & aging

Poster D12  Brain activity and network interactions in the impact of internal emotional distraction: A multi-modal brain imaging investigation
Florin Dolcos1, Alexandru Iordan2, Matthew Moore1, Yuta Katsumi1, Sandra Dolcos1; 1University of Illinois at Urbana-Champaign, 2University of Michigan
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions
Poster D13  Spatial distancing reduces emotional arousal to reactivated memories
Natasha Parikh1, Brynn McGovern1, Kevin S. LaBar1; 1Duke University
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster D14  Hierarchical Neural Representations Behind Naturalistic ‘Social Norm’ Perception In Autism and Controls
Felipe Pegado1, Hans Op de Beeck1; 1KU Leuven
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster D15  Task-dependent evaluative processing of moral and emotional content during reading comprehension: An ERP study
Angelika Kunkel1, Ian Grant Mackenzie1, Ruth Filik2, Hartmut Leuthold1; 1University of Tübingen, 2University of Nottingham
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster D16  Inter-subject synchronization of young adult brain activity reveals justification of gun violence in movies
Azeex Adegbime1, Danièle S. Bassett2,3, Daniel Romer1; 1Arenenberg Publ. Policy Ctr., Univ. of Pennsylvania, Philadelphia, PA, 2Dept. of Bioengineering, Univ. of Pennsylvania, Bioengineering, PA, 3Dept. of Electrical & Systems Eng., Univ. of Pennsylvania, Philadelphia, PA
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster D17  Eye movements predict immediate and long-term effects of emotion regulation: An eye-tracking investigation
Margaret Ó’Brien1, Yuta Katsumi1, Alexandru Iordan2, JulieAnn Scherer1, Alejandro Lleras1, Simona Buetti1, Sandra Dolcos1, Florin Dolcos1; 1University of Illinois at Urbana-Champaign, 2University of Michigan Ann Arbor
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster D18  The Brain Responses in Integration of Emotional information of Facial Expression and Emotional Prosody
Shih-Tseng T. Huang1,2; 1Department of Psychology, National Chung-Cheng University, Taiwan, 2Center for research in Cognitive Science, National Chung-Cheng University, Taiwan
Topic Area: EMOTION & SOCIAL: Emotional responding

Poster D19  Attenuated P3 and FPS During Social Support in Individuals with Psychopathic Traits
Meghan Pierce1,2, Stephen Benning2,3; 1Translational Research Center for TBI and Stress Disorders (TRACTS), VA Boston Healthcare System, Boston, MA, 2Harvard Medical School, 3University of Nevada, Las Vegas
Topic Area: EMOTION & SOCIAL: Emotional responding

Poster D20  Neural mechanism underlying the suppressing effect of self-esteem on envy and schadenfreude
Shohei Yamazaki1, Motoaki Sugiu1, Kelsy H. dos S. Kawata1, Yukako Sasaki1, Rui Nouchi1, Kohei Sakaki1, Shigeyuki Ikeda1, Ryuta Kawashima1; 1Tohoku University
Topic Area: EMOTION & SOCIAL: Other

Poster D21  Social perspective taking shapes both eye-movements and brain hemodynamic activity during viewing of drama movie
Iiro P. Jääskeläinen1, Mareike Bacha-Trams1, Elisa Ryppö1, Enrico Gleres1, Mikko Sams1; 1Aalto University School of Science, Espoo, Finland
Topic Area: EMOTION & SOCIAL: Person perception

Poster D22  Reliability of evoked responses varies as a function of autistic traits in healthy adults
Meghan Puglia1, Jessica Connelly1, James Morris1; 1University of Virginia
Topic Area: EMOTION & SOCIAL: Person perception

Poster D23  Neural and cognitive/motivational mechanisms underlying the processing of gender stereotype roles
Berry van den Berg1,2, Jolien van Breen1,3, Russell Spears1, Monique Lorist1,2; 1University of Groningen, 2University Medical Center Groningen, 3University of Exeter
Topic Area: EMOTION & SOCIAL: Self perception

Poster D24  Differences in the peri-adolescent association of cognitive abilities and striatal intrinsic functional connectivity as a function of age and sex
Rachel K Spooner1, Nicholas Christopher-Hayes1, Julia M Stephen2, Vince D Calhoun2, Yu-Ping Wang2, Tony W Wilson1, David E Warren1; 1University of Nebraska Medical Center, 2Mind Research Network, 3Tulane University
Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster D25  Characterizing the Impact of Aging on Automatic Inhibition
Tzu-Ling Li1, Erik Chang1; 1National Central University
Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster D26  Differences in Decline in the Subcomponents of the Unity-Diversity Model of Executive Functioning between Younger and Older Adults: A Meta Analysis
Ted Maldonado1, Joseph M. Orr1, Jessica A. Bernard1; 1Texas A&M University
Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster D27  Metacognitive Training Induces Neurodevelopmental Changes in Prefrontal Regions
Kshirpa Gurunandan1, M. Rosario Rueda2, Sonia Guerra2, Manuel Carreiras1,3, Pedro M. Paz-Alonso1; 1Basque Center on Cognition, Brain and Language, 2Universidad de Granada, 3kerbasque - Basque Foundation for Science
Topic Area: EXECUTIVE PROCESSES: Goal maintenance & switching

Poster D28  Functional networks involved in creative planning while performing an ongoing task
David Maillet1,2, Roger Beaty3, Aaron Kucyi4, Daniel Schacter5; 1Department of Psychology, University of Toronto, 2Baycrest Health Sciences, 3Department of Psychology, Harvard University, 4Neurology and Neurological Sciences, Stanford University
Topic Area: EXECUTIVE PROCESSES: Goal maintenance & switching

Poster D29  Connectivity Patterns in Hierarchical Cascade of Prefrontal Networks Predict Multitasking Ability
Tanya Wen1,2, De-Cyuan Liu3, Shulan Hsieh4; 1Medical Research Council, 2University of Cambridge, 3Asia University, 4National Cheng Kung University
Topic Area: EXECUTIVE PROCESSES: Goal maintenance & switching

Poster D30  Different control dimensions organize task-set representations in novel instructed behavior
Ana F. Palenciano1, Carlos Gonzalez-Garcia2, Srikanth Padmala3, Juan E. Arco1, Luiz Pessoa3, Maria Ruz1; 1University of Granada, Spain, 2Ghent University, Belgium, 3University of Maryland
Topic Area: EXECUTIVE PROCESSES: Goal maintenance & switching

Poster D31  Activation and Connectivity at the Decision and Execution Phases of a Voluntary Task Switching Paradigm
Derek M. Smith1, Eric H. Schumacher2; 1Georgia Institute of Technology
Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster D32  Does conflict adaptation affect stimulus or response selection?
Melissa Moss1, Atsushi Kikumoto1, Ulrich Mayr1; 1University of Oregon
Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster D33  Daily intermittent moderate-to-vigorous and vigorous physical activity is related to faster P3 latency in preadolescents
Dominka Pindus1, Lauren B. Raine1, Eric S. Drollette2, Daniel Westfall1, Shih-Chun Kao1, Naiman A. Khan3, Arthur F. Kramer1,4, Charles H. Hillman1,2; 1Department of Psychology, Northeastern University, 2Department of Kinesiology, University of North Carolina Greensboro, 3Department of Kinesiology and Community Health, University of Illinois at Urbana-Champaign, 4Beckman Institute for Advanced Science and Technology, University of Illinois
Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster D34  The influence of predictability and parametrically varying conflict level on performance and cognitive control
Harrison Ritz1, Amitai Shenhav1; 1Brown University
Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster D35  The role of dorsolateral prefrontal cortex in error processing: a combined ERP-TMS study
Fabio Masina1, Vincenza Tarantino1, Antonio Vallesi1,2, Daniela Mapelli1; 1University of Padua, 2San Camillo Hospital IRCCS, Venice
Topic Area: EXECUTIVE PROCESSES: Other

Poster D36  Functional Parcellation of the Temporo-Parietal Junction in Individual Subjects
Kathryn Devaney1, Emily Levin2, James Higgins3, David Somers1; 1Boston University, 2Brown University, 3Northwestern University
Topic Area: EXECUTIVE PROCESSES: Other

Poster D37  TACS on, TACS off: entrainment of neural oscillations during WM
Kevin Jones1,2, Hector Arciniega1, Jennifer Shepack1, Carlos Carrasco1, Marian Berryhill1; 1University of Nevada, Reno, 2Colorado State University
Topic Area: EXECUTIVE PROCESSES: Other

Poster D38  The Prefrontal Theta Activity During Thought Suppression Compared with Thought Free Predicts Lower Working Memory and Higher Worry Symptoms and Ruminaiton in High Trait Anxiety
Salahadin Lofti1, Maryam Ayazi1, Ken Bennette1, Lukas Dommer1, Abel Mathew1, Christine Larson1, Hanjoo Lee1; 1University of Wisconsin-Milwaukee
Topic Area: EXECUTIVE PROCESSES: Working memory

Poster D39  Behavioral oscillations in multi-item visual working memory
Jingtai Liu1, Taosheng Liu1, Susan Ravizza1; 1Michigan State University
Topic Area: EXECUTIVE PROCESSES: Working memory

Poster D40  Sex and Developmental Differences in the Oscillatory Dynamics Serving Verbal Working Memory: a MEG Study
Christine M Embury1,2, Alex I Wiesmann1, Amy L Proskov1,2, Elizabeth Heinrichs-Graham1, Yu-Ping Wang1, Vince D Calhoun1,2, Julia M Stephen4, Tony W Wilson1,2; 1University of Nebraska Medical Center, Omaha, NE, 2University of Nebraska Omaha, Omaha, NE, 3Tulane University, New Orleans, LA, 4The Mind Research Network, Albuquerque, NM, 5University of New Mexico, Albuquerque, NM
Topic Area: EXECUTIVE PROCESSES: Working memory

Poster D41  Alpha and theta enhancement during self-ordered number generation
Bobby Ruigrok1, Olga Kepinska2; 1Leiden University, 2University of California San Fransisco
Topic Area: EXECUTIVE PROCESSES: Working memory

Poster D42  Oscillatory Synchrony within the Hippocampal-Thalamo-Prefrontal Circuit of the Rat During Spatial Working Memory-Guided Decision Making
Andrew Garcia1, Amy Griffin1; 1University of Delaware
Topic Area: EXECUTIVE PROCESSES: Working memory

Poster D43  Ortho-semantic learning of novel words in Grade 3 students: An ERP study
Alena Galilee1, Lisa Beck1, Catherine Mimeau2, S. Hélène Deacon1, Aaron J Newman1; 1Dalhousie University, Nova Scotia, B3H 4R2, Canada, 2Université Laval, Quebec City, G1V 0A6, Quebec, Canada
Topic Area: LANGUAGE: Lexicon

Poster D44  Language control network in trilinguals
Jing Yang1, Jiali Wu2, Qi Zhang1, Ruiming Wang1, Ke Zhou2; 1Bilingual Cognition and Development Lab, Center for Linguistics and Applied Linguistics, Guangdong University of Foreign Studies, Guangzhou 510420, China, 2Bilingual Cognition and Development Lab, Center for Linguistics and Applied Linguistics, Guangdong University of Foreign Studies, Guangzhou 510420, China, 3Bilingual Cognition and Development Lab, Center for Linguistics and Applied Linguistics, Guangdong University of Foreign Studies, Guangzhou 510420, China, 4Guangdong Provincial Key Laboratory of Mental Health and Cognitive Science, Center for Studies of Psychological Application, School of Psychology, South China Normal University, Guangzhou 510631, China, 5College of Psychology and Sociology, Shenzhen University, Shenzhen 518060, China
Topic Area: LANGUAGE: Lexicon

Poster D45  Cortex can entrain to predictable sequences even in the absence of periodicity
Geoffrey Brookshire1,2, Daniel Casasanto1,2; 1Cornell University, 2University of Chicago
Topic Area: LANGUAGE: Other

Poster D46  Task switching decomposed: MEG evidence from bimodal language switching
Esti Blanco-Elorrieta1,2, Karen Emmorey3, Liina Pylkkänen1,2; 1New York University, 2NYUAD Institute, 3San Diego State University
Topic Area: LANGUAGE: Other
Poster D47  Language-specific and domain-general regions jointly predict individual differences in sentence comprehension: Evidence from a network approach
Qiuhai Yue1, Randi C. Martin1, Simon Fischer-Baum1, Michael W. Deem1; 1Rice University
Topic Area: LANGUAGE: Other

Poster D48  fMRI Mapping of Language Areas in Bilingual Neurosurgical Patients
Lok Wa Laura Leung1,2, Prashin Unadkat1, Luca Fumagalli1,2, Laura Rigolo1, Alexandra Golby1, Yanmei Tie1; 1Harvard Medical School, Boston, MA, USA, 2The Chinese University of Hong Kong, Hong Kong, 3Università degli Studi di Milano-Bicocca, Milan, Italy
Topic Area: LANGUAGE: Other

Poster D49  Auditory fMRI language ‘localizer’ study with epilepsy patients
Beau Snoad1, Phillip Gander1, Matthew Howard III1; 1University of Iowa
Topic Area: LANGUAGE: Other

Poster D50  Differences in Resting State Functional Connectivity Between Early and Late Bilinguals
Laura Mesite1, Sibylla Leon Guerrero1, Veronica Whitford1, Gigi Luk1; 1Harvard Graduate School of Education, 2The University of Texas at El Paso
Topic Area: LANGUAGE: Other

Poster D51  Rapid microstructural brain plasticity following a short word learning session: a combined TMS and diffusion kurtosis imaging study
Nikola Vukovic1, Torben Lund1, Brian Hansen1, Sune Jespersen1, Yury Shtyrov1,2; 1Center of Functionally Integrative Neuroscience (CFIN), Aarhus University, Denmark, 2Saint Petersburg State University, Saint Petersburg, Russia, 3National Research University Higher School of Economics, Moscow, Russia
Topic Area: LANGUAGE: Semantic

Poster D52  Brain Response to Semantic Violations in a Miniature Artificial Language about Time
Seana Coulson1, Tania Delgado1, Tyler Margheritis2, Tessa Verheof1,3, Esther Walker1; 1University of California, San Diego, 2Indiana University, 3Leiden University
Topic Area: LANGUAGE: Semantic

Poster D53  How abstract concepts are neurally represented
Robert Vargas1, Marcel Just1; 1Carnegie Mellon University
Topic Area: LANGUAGE: Semantic

Poster D54  The unbearable lightness of meaning: Linking adjective informativity and flexibility
Sarah Solomon1, Sharon L Thompson-Schill1; 1University of Pennsylvania
Topic Area: LANGUAGE: Semantic

Poster D55  Systematic Variability in Language Related ERP Morphology
Shannon McKnight1, Donald Bell-Souder1, Akira Miyake1, Albert Kim1; 1University of Colorado Boulder
Topic Area: LANGUAGE: Syntax

Poster D56  The Influence of Verb Bias on Online Mandarin Relative Clause (RC) Processing: an ERP study
Jou-An Chung1, Chia-Lin Lee1, Chia-Ying Lee1; 1National Taiwan University, Taiwan, 2Academia Sinica, Taiwan
Topic Area: LANGUAGE: Syntax

Poster D57  Multiple brain markers mediate age-related changes in cognition
Trey Hedden1,2, Hannah E. Nierle1, Rodrigo D. Perea1,2, Jennifer S. Rabin1,2, Rachel F. Buckley1,2,3, Aaron P. Schultz1,2, Keith A. Johnson1,2,4, Reisa A. Sperling1,2,4; 1Massachusetts General Hospital, 2Harvard Medical School, 3University of Melbourne, 4Brigham and Women’s Hospital
Topic Area: LONG-TERM MEMORY: Development & aging

Poster D58  Reward learning in pre-symptomatic and symptomatic Huntington’s disease
Madeleine Sharp1, Karen Marder2, Daphna Shohamy3; 1McGill University, 2Columbia University Medical Center, 3Columbia University
Topic Area: LONG-TERM MEMORY: Development & aging

Poster D59  I did it my way: Explaining age-related declines in inter-subject synchronization during naturalistic viewing
Karen Campbell1, Cam-CAN2, Linda Geerligs3; 1Brock University, 2Cambridge Centre for Ageing and Neuroscience, University of Cambridge and MRC Cognition and Brain Sciences Unit, 3Donders Institute for Brain, Cognition and Behaviour, Radboud University
Topic Area: LONG-TERM MEMORY: Development & aging

Poster D60  Self-Focus Encoding Increases Non-Diagnostic Recollection and the LPC Event-Related Potential
P. Andrew Leynes1, Cristina Nardini; 1The College of New Jersey, 2The College of New Jersey
Topic Area: LONG-TERM MEMORY: Episodic

Poster D61  Neural pattern classification tracks transfer-appropriate processing in episodic memory
Mikael Johansson1, Inês Bramão1,2; 1Lund University
Topic Area: LONG-TERM MEMORY: Episodic

Poster D62  Age differences in neural pattern similarity associated with false recognition
Caitlin Bowman1, Christina Webb2, Jordan Chamberlain2, Nancy Dennis2; 1University of Oregon, 2The Pennsylvania State University
Topic Area: LONG-TERM MEMORY: Episodic

Poster D63  Neural mechanisms of episodic retrieval support divergent creative thinking
Kevin P. Madore1, Preston P. Thakral2, Roger E. Beaty3, Donna Rose Addis4, Daniel L. Schacter4; 1Stanford University, 2Harvard University, 3University of Auckland
Topic Area: LONG-TERM MEMORY: Episodic

Poster D64  Scene-specific cortically distributed activation patterns predict mnemonic reactivation
Benjamin R Geb1, Erik A Wing2, Marty G Woldorff1, Roberto Cabeza1; 1Duke University
Topic Area: LONG-TERM MEMORY: Episodic
Poster D65  Remembering with high fidelity: Evidence implicating sleep and sleep spindles
Sarah Witkowski1, Jessica Creery1, Leonardo Dionisio1, Ken A. Paller1; 1Northwestern University
Topic Area: LONG-TERM MEMORY: Episodic

Poster D66  Transient and sustained processes involved in encoding emotional information
Kyle A Kurkela1, Rosalie Samide1, Maureen Ritchey1; 1Boston College
Topic Area: LONG-TERM MEMORY: Episodic

Poster D67  Current sleep disturbance in older people with a lifetime history of depression is associated with increased connectivity in the Default Mode Network
Andrew McKinnon1,2,8, Ian Hickie1, Jan Scott1, Shantel Duffy1,7, Louisa Norrie1, Zoe Terpening1, Ron Grunstein5, Jim Lagopoulos1,6, Jennifer Batchelor4, Simon Lewis1, James Shine1, Sharon Naismith1,2,3,1; Healthy Brain Ageing Program, 2School of Psychology, 3Charles Perkins Centre and Brain and Mind Centre, The University of Sydney, 4Department of Psychology, Macquarie University, 5Woolcock Institute of Medical Research, NSW, Australia, 6Sunshine Coast Mind and Neuroscience - Thompson Institute, University of the Sunshine Coast, QLD, Australia, 7Central Clinical School, Faculty of Medicine, The University of Sydney, 8Cognition and Neuroimaging Lab, Department of Psychology, The University of Arizona
Topic Area: LONG-TERM MEMORY: Episodic

Poster D68  Encoding Focus Does Not Affect Recollection of Action Memories: Event Related Potentials (ERP) and Modeling Evidence
Cristina Nardini1, Anna Abriman1, Alex Batterman1, Sabrina Bogovich1, Nick Danduone1, Suma Mallepeddi1, Palak Patel1, Tanushi Upadhyay1, Kanza Tahir1, P. Andrew Leynes111; 1The College of New Jersey
Topic Area: LONG-TERM MEMORY: Episodic

Poster D69  Functional wiring of the human medial temporal lobe
Ethan Solomon1, Joel Stein1, Sandy Das1, Michael Sperling2, Kareem Zaghloul1, Cory Inman1, Bradley Lega1, Kathryn Davis1, Gregory Worrell1, Barbara Jobst1, Daniel Rizzuto2, Michael Kanaha1,1; University of Pennsylvania, 2Thomas Jefferson University Hospital, 3National Institutes of Health, 4Emory School of Medicine, 5University of Texas Southwestern, 6Mayo Clinic, 7Dartmouth Medical Center
Topic Area: LONG-TERM MEMORY: Episodic

Poster D70  Unique Frontal Activation Patterns Associated with Depression Severity during Memory Retrieval in Women
Jennifer Sneider1,2, Julia Cohen-Gilbert1,2, Derek A. Hamilton1, Carolyn Caine1, Maya Rieselbach1, Emily Cot1,3, Anna Seraikas1, Lisa D. Nickerson1,2, Marisa M. Silveri1,2; 1McLean Hospital, 2Harvard Medical School, 3Boston University School of Medicine, 4University of New Mexico
Topic Area: LONG-TERM MEMORY: Episodic

Poster D71  Late positive event-related potential tracks outcome of cumulative memory judgments
Haopei Yang1,4, Ken McRae1,4, Stefan Köhler1,2,4,3,1; The Brain and Mind Institute, 2Rotman Institute of Philosophy, 3Rotman Research Institute, Baycrest Centre, 4Western University
Topic Area: LONG-TERM MEMORY: Episodic

Poster D72  Dopaminergic modulation of associative memory in healthy humans
Erin Kendall Braun1, Katherine Duncan2, Ragy Girgis3, Suzanne Wood2, Madeleine Sharp4, Camilla van Geen1, Anissa Abi-Dargham5, Daphna Shohamy1,6,7; 1Columbia University, 2University of Toronto, 3New York State Psychiatric Institute, 4Montreal Neurological Institute, 5Stonybrook University, 6Zuckerman Mind, Brain Behavior Institute, 7Kavli Institute for Brain Science
Topic Area: LONG-TERM MEMORY: Episodic

Poster D73  Hippocampal contributions to reward learning
Daniela Palombo1,2, Mieke Verfaellie1,4; 1VA Boston Healthcare System Jamaica Plain, 2Boston University School of Medicine, Department of Psychiatry
Topic Area: LONG-TERM MEMORY: Semantic

Poster D74  Consolidated-like memories through testing
Jaione Arnaez-Telleria1, Manuel Carreiras1,2,3, Pedro M. Paz-Alonso1; 1BCBL - Basque Center on Cognition, Brain and Language, Donostia-San Sebastián, Spain, 2IKERBASQUE, Basque Foundation for Science, Bilbao, Spain, 3Departamento de Lengua Vasca y Comunicación, UPV/EHU, Bilbao, Spain
Topic Area: LONG-TERM MEMORY: Semantic

Poster D75  Open arms and open minds: The effects of posture and modality on the recall of affect-related concepts
Hannah M. Morrow1, Gitte H. Joergensen1, Eiling Yee1; 1University of Connecticut
Topic Area: LONG-TERM MEMORY: Semantic

Poster D76  Understanding “thunder” is more difficult than “rainbow” when performing a concurrent auditory task
Roisin Healy1, Jonathan Serino1, Charles P. Davis1,2, Gitte H. Joergensen1,2, Eiling Yee1,2; 1University of Connecticut, 2Connecticut Institute for the Brain and Cognitive Sciences
Topic Area: LONG-TERM MEMORY: Semantic

Poster D77  The effects of deep breathing on EEG during a flanker distractor interference task in children: A comparison between a lo-res consumer-grade and hi-res medical-grade system
Kiat Hui Khng1; 1National Institute of Education, Nanyang Technological University
Topic Area: METHODS: Electrophysiology

Poster D78  Filtering improves skin-conductance response measures in the fMRI environment
Anthony Privratsky1, Keith Bush1, Josh Cisler2; 1University of Arkansas for Medical Sciences, 2University of Wisconsin-Madison
Topic Area: METHODS: Electrophysiology

Poster D79  Presurgical fMRI for Aiding Electrode Implantation in Deep Brain Stimulation: Case studies of Treatment-Resistant Depression
Layla Gould1, Ivar Mendez1, Chelsea Ekstrand1, Marla Mickleborough1, Tasha Elchuk1, Eric Lorentz1, Ron Borowsky1; 1University of Saskatchewan
Topic Area: METHODS: Neuroimaging

Poster D80  Localized test-retest reliability of fMRI task activity
Johan Jansma1, Geert-Jan Rutten1; 1ETZ Elisabeth Hospital, Department of Neurosurgery, Tilburg, the Netherlands
Topic Area: METHODS: Neuroimaging

Poster D81  Brain Activity Associated with Self-Injurious Thoughts and Behaviors: A Meta-Analysis of Neuroimaging Studies
Kelly Rootes-Murdy1, Xieying Huang1, Joseph C. Franklin1, Derek E. Nee1; 1Florida State University
Topic Area: METHODS: Neuroimaging

Poster D82  Dynamic transient brain networks overlap with regional gene expression in a single gene developmental disorder
Erin Hawkins1, Danyal Akarca1, Mengya Zhang1, Mark Woolrich2, Kate Baker2, Duncan Astle1; 1MRC Cognition and Brain Sciences Unit, University of Cambridge, 2Oxford Centre for Human Brain Activity, University of Oxford, 3Department of Medical Genetics, University of Cambridge
Topic Area: METHODS: Neuroimaging

Poster D83  Characterizing the Effects of Transcranial Direct Current Stimulation on Frontal Lobe Activity Using Diffuse Correlational Spectroscopy
Evangelia G. Chrysikou1, Wesley Baker2, Lin Wang2, Arjun G. Yodh2, Roy H. Hamilton2; 1University of Kansas, 2University of Pennsylvania
Topic Area: METHODS: Other

Poster D84  Neural correlates of melodic prediction violations: similarities to language processing
Allison R. Fogel1, Gina R. Kuperberg123, Aniruddh D. Patel1; 1Tufts University, 2MGH/HST Athinoula A. Martinos Center for Biomedical Imaging, 3Massachusetts General Hospital
Topic Area: OTHER

Poster D85  Expertise Matters in Evaluating Students’ Organization of Neuroscience Concepts
Noah C. Yeagley1, Jennifer L. Stevenson1, Joel P. Bish1; 1Urnsinus College
Topic Area: OTHER

Poster D86  Early visual cortex is recruited for executive functioning in congenital blindness
Shipra Kanjlia1, Marina Bedny1; 1Johns Hopkins University
Topic Area: OTHER

Poster D87  Neural correlates of rhythm induced trance: Evidence from fcmRI and EEG
Michael Hove1, Assal Habibi2, Molly J Henry3, Johannes Stelzer4, B Rael Cahn2; 1Fitchburg State University, 2University of Southern California, 3University of Western Ontario, 4Max Planck Institute for Biological Cybernetics
Topic Area: PERCEPTION & ACTION: Audition

Poster D88  The effects of the amplitude envelope of speech on speech intelligibility
Mako Ishida123, Takayuki Arai3, Makio Kashino1; 1NTT Communication Science Laboratories, 2Japan Society for the Promotion of Science, 3Sophia University
Topic Area: PERCEPTION & ACTION: Audition

Poster D89  Noradrenaline signals functional resetting: Evidence from human pupil dilation to pattern changes
Sijia Zhao1, Shigeto Furukawa2, Hsin-I Liao2, Frederic Dick3, Maria Chait4; 1Ear Institute, University College London, UK, 2NTT Communication Science Laboratories, NTT Corporation, Japan, 3Birkbeck-UCL Centre for Neuroimaging, London, UK
Topic Area: PERCEPTION & ACTION: Audition

Poster D90  Source localization of mismatch responses at 7 and 12 months in a multifeature auditory paradigm
Katherine Wolter1, Silvia Ortiz-Martilla1, Teresa Realpe-Bonilla1, April A. Benasich1; 1Rutgers University-Newark
Topic Area: PERCEPTION & ACTION: Development & aging

Poster D91  Odor Familiarity and the Conversion from Mild Cognitive Impairment to Alzheimer’s
Paul Wheeler1, Claire Murphey123; 1San Diego State University, 2SDSU/UCSD Joint Doctoral Program in Clinical Psychology, 3University of California San Diego
Topic Area: PERCEPTION & ACTION: Motor control

Poster D92  Auditory-motor Learning Drives Motor Activation in Subsequent Auditory Processing
John Myers1, Jeffrey Mock1, Edward Golob1; 1University of Texas at San Antonio
Topic Area: PERCEPTION & ACTION: Motor control

Poster D93  Assessment and Communication with Locked-in Patients Using A Vibro-tactile P300 and Motor Imagery Brain-Computer Interface
Christoph Guger123, Rossella Spataro1, Wooning Cho2, Rupert Orter2, Fan Cao3, V. Labella4; 1Guger Technologies OG, Graz, Austria, 2g.tec medical engineering GmbH, Schiedlberg, Austria, 3University of Palermo, Palermo, Italy
Topic Area: PERCEPTION & ACTION: Motor control

Poster D94  The impact of a cognitive-physiological therapy on motor planning and execution in Tourette syndrome patients
Simon Morand-Beaulieu12, Marie-Ange Perreault12, Kieron P. O’Connor12, Pierre J. Blanchet12, Marc E. Lavoie12; 1Centre de recherche de l’Institut universitaire en santé mentale de Montréal, Montreal, QC, Canada, 2Université de Montréal, Montreal, QC, Canada
Topic Area: PERCEPTION & ACTION: Motor control

Poster D95  Is a round shape integrated with a /bouba/ sound? Enhanced neuronal signals at the intermodulation frequencies of congruent audio-visual stimuli
Hui Mei Chow1, Brianna Leonardo1, Aleksandra Sabov1, Vivian Ciaramitaro1; 1University of Massachusetts Boston
Topic Area: PERCEPTION & ACTION: Multisensory

Poster D96  Rubber Hand Illusion enhancement induced by motor cortex inhibition
Carlotta Fossataro1, Valentina Bruno1, Serena Giorgola2, Nadia Bolognini12, Francesca Garbarini1; 1SAMBA – SpAtial, Motor & Bodily Awareness – Research Group, Psychology Department, University of Turin, Turin, Italy, 2Department of Medicine and Surgery, University of Milano-Bicocca, Milan Italy, 3Department of Psychology & NeuroMI – Milan Center for Neuroscience, University of Milano-Bicocca, Milano, Italy,
Poster D97  Long-term tool-use changes body representation
Lara Coelho¹, Jason Schacher¹, Jon Doan¹, Claudia Gonzalez¹; ¹University of Lethbridge
Topic Area: PERCEPTION & ACTION: Multisensory

Poster D98  Biased tactile localization with an intact somatosensory system: A case study
Yuqi Liu¹, Alexandria O'Neal¹, Jared Medina; ¹University of Delaware
Topic Area: PERCEPTION & ACTION: Other

Poster D99  Spontaneous in-flight accommodation of hand orientation to unseen grasp targets: A case of action blindsight
Emily K. Prentiss¹, Colleen L. Schneider¹,², Zoë R. Williams¹, Bogachan Sahin¹, Bradford Z. Mahon¹,²; ¹University of Rochester, ²University of Rochester School of Medicine and Dentistry, ³University of Rochester Medical Center
Topic Area: PERCEPTION & ACTION: Vision

Poster D100  Unfolding of lateralized neural responses to facial information
Sanne Brederoo¹,², Berry Van den Berg¹,², Mark Nieuwenstein¹, Monique Lorist¹,²; ¹Department of Experimental Psychology, University of Groningen, The Netherlands, ²Department of Neuroscience, University Medical Center Groningen, The Netherlands
Topic Area: PERCEPTION & ACTION: Vision

Poster D101  Neuroplastic and Neurovascular Contributions to Visual Recovery in Post-Stroke Cortical Blindness
Colleen Schneider¹,², Emily Prentiss², Zoe Williams¹, Bogachan Sahin¹, Bradford Mahon¹,²; ¹University of Rochester School of Medicine and Dentistry, ²University of Rochester School of Arts Sciences and Engineering
Topic Area: PERCEPTION & ACTION: Vision

Poster D102  The Genesis of Visual Memory through Strong Perceptual Representations: Tracking the Spatio-Temporal Neural Trace of Memorability
Caitlin Mullin¹, Yalda Mohsenzadeh¹, Dimitrios Pantazis¹, Aude Oliva¹; ¹MIT
Topic Area: PERCEPTION & ACTION: Vision

Poster D103  Individual differences in dopamine D2 receptors and neural representations of subjective value reward
Jaiimie Castellon¹, Linh Dang¹, Jacob Young¹, David Zald², Gregory Samanez-Larkin¹; ¹Duke University, ²Vanderbilt University, ³University of California, San Francisco
Topic Area: THINKING: Decision making

Poster D104  What to choose? Goals determine the effect of set value on the speed of value-based decisions
Romy Fronem¹, Carolyn K. Dean Wolf¹, Amitai ShenHAV¹; ¹Brown University
Topic Area: THINKING: Decision making

Poster D105  The Association Between Health and Component Decision Processes
Alexis Porter¹, Regina Leckie², Kirk Erickson², Timothy Verstynen¹; ¹Carnegie Mellon University, ²University of Pittsburgh
Topic Area: THINKING: Decision making

Poster D106  Drift-Diffusion Modeling of Reward Learning in Depression
Victoria Lawlor¹, Christian Webb¹, Madhukar Trivedi², Maurizio Fava³, Patrick McGrath¹, Myrna Weissman⁴, Ramin Parsey⁵, Maria Quendo⁶, Patricia Deldin⁷, Gerard Bruder⁷, Diego Pizzagalli¹, Daniel Dillon¹; ¹McLean Hospital, ²University of Texas Southwestern Medical Center, ³Massachusetts General Hospital, ⁴Columbia University Medical Center, ⁵Stony Brook School of Medicine, ⁶University of Pennsylvania Perelman School of Medicine, ⁷University of Michigan
Topic Area: THINKING: Decision making

Poster D107  Investigating the cost of cognitive effort
Ceyda Sayali¹, David Badre¹; ¹Brown University
Topic Area: THINKING: Decision making

Poster D108  Optimizing STEM skills: A baseline assessment of the neural correlates of mental rotation
Steven Greening¹, Katherine Moen¹, Stephanie Saltzmann¹, Lauryn Burleigh¹, Leslie Butler¹, Jagannathan Ramanujam¹, Alex Cohen¹, Melissa Beck¹; ¹Louisiana State University
Topic Area: THINKING: Other

Poster D109  When “2 x 4” is meaningful: the N400 and P300 reveal operand format effects in multiplication
Vanessa Cerda¹, Danielle S. Dickson¹, Rosemary N. Beavers², Andres G. Ruiz¹, Nicole Y. Y. Wicha¹,²; ¹University of Texas at San Antonio, ²University of Texas Medical Branch, ³Texas Tech University Health Sciences Center, ⁴University of Texas at San Antonio Neurosciences Institute
Topic Area: THINKING: Problem solving

Poster D110  Multivariate Prediction of General Intelligence from Patterns of Gray Matter Density
Kirsten Hilger¹,², Tim Hahn³, Christian Fiebach¹,², Ulrike Basten¹; ¹Goethe University Frankfurt, Frankfurt am Main, Germany, ²IDeA Center for Individual Development and Adaptive Education, Frankfurt am Main, Germany, ³Universitätsklinikum Münster, Münster, Germany
Topic Area: LONG-TERM MEMORY: Development & aging

Poster D111  Neurocognitive Relationships between Nonsymbolic and Symbolic Ratio Processing in Children and Adults
John V. Binzak¹, Yunji Park¹, Elizabeth Y. Toomarian¹, Priya B. Kalra¹, Yun-Shiuan Chuang¹, Percival G. Matthews¹, Edward M. Hubbard¹; ¹University of Wisconsin--Madison
Topic Area: THINKING: Reasoning

Poster D112  P300, dispositional affect and sentence processing
Janahan Selvanayagam¹, Victoria Witte², Louis Schmidt³, Veena D. Dwivedi¹; ¹Brock University, ²Heidelberg University, ³McMaster University
Topic Area: LANGUAGE: Syntax

Poster D113  Neuro networks of specific and general autobiographical memory retrieval in younger and older adults
Allea Devitt¹, Reece Roberts², Abby Metson², Lynette Tippett², Donna Rose Addis³; ¹Harvard University, ²The University of Auckland
Topic Area: LONG-TERM MEMORY: Development & aging
Poster D114  Parietal and occipitotemporal cortical reinstatement differentially predict successful associative memory retrieval in older adults
Alexandra N. Trelle1, Valerie A. Carr2, Scott Guerin1, Wanjiu Guo1, Marc B. Harrison1, Manasi Jayakumar1, Jiefeng Jiang1, Geoffrey Kerchner1, Elizabeth Mormino1, Natalie Tanner1, Monica Thieu1, Anthony D. Wagner1; 1Stanford University, 2San Jose State University, 3Columbia University
Topic Area: LONG-TERM MEMORY: Development & aging

Poster D115  How do developmental shifts in attentional control influence memory encoding?
Alexandra Decker1, Amy Finn1, Katherine Duncan1; 1The University of Toronto
Topic Area: LONG-TERM MEMORY: Development

Poster D116  The ERP correlates of self-knowledge: Are assessments of one’s past, present, and future traits closer to semantic or episodic memory?
Louis Renoult1, Annick N. Tanguay2, Lauren Benton3, Lorenza Romio1, Carolin Sievers2, Patrick S. R. Davidson2; 1School of Psychology, University of East Anglia, Norwich, UK, 2School of Psychology, University of Ottawa, Ontario, Canada, 3Department of Neuroscience, Dickinson College, Pennsylvania, USA
Topic Area: LONG-TERM MEMORY: Episodic

Poster D117  Generalization of associative item-memory EEG features to associative recognition
Yvonne Y Chen1,2, Jeremy B Caplan1; 1University of Alberta, 2Baylor College of Medicine
Topic Area: LONG-TERM MEMORY: Episodic

Poster D118  Enhancing spatial memory via auditory entrainment of theta oscillations
Jessica Creery1, Hadley C. Pfalzgraf1, Ken A. Paller1; 1Northwestern University
Topic Area: LONG-TERM MEMORY: Episodic

Poster D119  Pre-stimulus EEG oscillations reflect a preparatory form of episodic retrieval orientation
Mason Price1, Emmitt Wright1, Elizabeth Griffiths2, Jeffrey Johnson1; 1University of Missouri, 2University of Surrey
Topic Area: LONG-TERM MEMORY: Episodic

Poster D120  Long-term memory specificity for faces depends on inhibition of closely related items
Brittany M. Jeye1, Scott D. Slotnick1; 1Boston College
Topic Area: LONG-TERM MEMORY: Episodic

Poster D121  Individual Differences in Value-Directed Encoding
Blake Elliott1, Samuel McClure1, Gene Brewer1; 1Arizona State University
Topic Area: LONG-TERM MEMORY: Episodic

Poster D122  Investigating neural signatures of visual encoding and recall using 7T fMRI
Elizabeth H. Hall1, Wilma A. Bainbridge1, Chris I. Baker1; 1Laboratory of Brain and Cognition, National Institutes for Mental Health
Topic Area: LONG-TERM MEMORY: Episodic

Poster D123  Self-relevance underlies disgust salience in episodic memory
David Anaki1, Hannah Tarder-Stoll2, Morris Moscovitch1,2,3; 1Bar-Ilan University, 2University of Toronto, 3Baycrest Centre for Geriatric Care
Topic Area: LONG-TERM MEMORY: Episodic

Poster D124  Dissociable cortico-hippocampal networks during the processing of time and space information in episodic encoding
Saeko Iwata1, Hikaru Sugimoto1,2, Takashi Tsukiura1; 1Graduate School of Human and Environmental Studies, Kyoto University, 2Japan Society for the Promotion of Science
Topic Area: LONG-TERM MEMORY: Episodic

Poster D125  Inhibition of distantly related items in long-term memory depends on the number of repetitions at encoding
Cassidy McCarthy1, Brittany M. Jeye, Scott D. Slotnick; 1Boston College
Topic Area: LONG-TERM MEMORY: Episodic

Poster D126  Depression and Anxiety Symptoms Influence Hippocampal Brain Activation during a Spatial Memory Task in Healthy Adolescents
Anna Seraikas1, Julia Cohen-Gilbert1,2, Emily Oot1,3, Derek A. Hamilton4, Carolyn Caine5, Maya Rieselbach1, Lisa D. Nickerson1,2, Sion K. Harris2, Marisa M. Silveri1,2, Jennifer T. Sneider1,2; 1McLean Hospital, 2Harvard Medical School, 3Boston University School of Medicine, 4University of New Mexico, 5Boston Children’s Hospital
Topic Area: LONG-TERM MEMORY: Episodic

Poster D127  Structural Integrity Deficits of Uncinate Fasciculus Predict Medial Temporal Lobe Subfield Activity During an Emotional Pattern Separation Task
Steven Granger1, Stephanie L. Leal2, Elizabeth A. Murray1, Michael A. Yassa1; 1University of California, Irvine, 2University of California, Berkeley
Topic Area: LONG-TERM MEMORY: Episodic

Poster D128  Early stage brain topology alterations in low functioning autism
Aditya Jayashankar1, Sowmyashree Kaku1, Satish Girimaji1, Sonia Bansal1, Sunil Gohel1, Rose Dawn Bharath1, Shoba Srinath1; 1National Institute of Mental Health and Neuro Sciences (NIMHANS), Bangalore, India, 2School of Health Professions, Rutgers University
Topic Area: METHODS: Neuroimaging

Poster D129  Event boundaries modulate neural representations of temporal context
Lynn Lohnas1, M. Karl Healey2, Lila Davachi1; 1New York University, 2Michigan State University
Topic Area: LONG-TERM MEMORY: Episodic

Poster Session E
Monday, March 26, 2:30-4:30 pm
Poster E1  The Auditory Contralateral Occipital Positivity Within Unimodal Versus Bimodal Stimulation
Daniel Roberts¹, Steven Chong¹, Craig McDonald¹, Baldwin Carryl¹; ¹George Mason University
Topic Area: ATTENTION: Multisensory
Poster E2  A neural score for engineering concepts: predicting STEM learning with multivariate pattern analysis of functional neuroimaging data
Joshua S. Cetron², Andrew C. Connolly², Solomon G. Diamond³, Vicki V. May³, James V. Haxby¹, David J. M. Kraemer¹; ¹Dartmouth College, ²Geisel School of Medicine at Dartmouth, ³Thayer School of Engineering at Dartmouth
Topic Area: THINKING: Reasoning

Poster E3  Visual vs. auditory attentional cueing and auditory spatial discrimination
Norbert Kopco¹,²,³, Rene Sebena¹, Bernadeta Hrebenarova¹, Jyrki Ahveninen², Virginia Best³, Barbara Shinn-Cunningham²; ¹Institute of Computer Science, P. J. Safarik University, Kosice, Slovakia, ²Martinos Center for Biomedical Imaging, Mass Gen Hospital/Harvard Medical School, Boston, MA, USA, ³Hearing Research Center, Boston University, Boston, MA, USA
Topic Area: ATTENTION: Multisensory

Poster E4  Limited attention facilitates learning of peripheral information in children
Michael Paul Dubois¹, Theresa Pham¹,², Danielle Lim¹, Amy Finn¹; ¹University of Toronto, ²University of Western Ontario
Topic Area: Development & aging

Poster E6  The neural timecourse of the endogenous shifting of attention to objects
Charles Giattino¹, Saikiran Gudla¹, Marty Woldorff¹,²; ¹Duke University
Topic Area: ATTENTION: Spatial

Poster E7  Neural correlates of eye movements during naturalistic viewing
Jessica Robin¹, Bradley R. Buchsbaum¹,², Rosanna K. Olsen¹,²; ¹Rotman Research Institute, Baycrest, ²University of Toronto
Topic Area: Other

Poster E8  Investigating the Dynamics of Social Attention with a Gaze-Contingent Display using Recurrence-Quantification Analysis
Aleya Flechsenhar¹, Lara Roesler¹, Matthias Gamer¹; ¹Department of Experimental Clinical Psychology, University of Wuerzburg
Topic Area: Other

Poster E9  Object-feature binding is maintained under dynamic shifts of spatial attention
Emma Wu Dowd¹, Julie D. Golomb¹; ¹The Ohio State University
Topic Area: Spatial

Poster E10  Facilitation and inhibition in selective attention: Two sides of the same coin?
Heleen A. Slagter¹, Dirk van Morselaar¹; ¹University of Amsterdam
Topic Area: Spatial

Poster E11  Localizing six bilateral sensory-biased regions in human frontal cortex.
Abigail Noyce¹, Sean Tobyne¹, Samantha Michalka², Barbara Shinn-Cunningham¹, David Somers¹; ¹Boston University, ²Olin College of Engineering
Topic Area: ATTENTION: Multisensory

Poster E12  Continuing Development in School-Age Children with Perinatal Stroke: Differing Degrees of Neuropasticity for Language and Affect
Philip Lai¹; ¹University of Nebraska-Kearney
Topic Area: EMOTION & SOCIAL: Development & aging

Poster E13  Amygdala activation as a predictor of fragile X-associated tremor/ataxia syndrome onset
Emily Fourth¹, Annie Shelton¹, David Hessl¹,², Susan, M Rivera¹,²; ¹University of California, Davis, ²UC Davis MIND Institute
Topic Area: EMOTION & SOCIAL: Development & aging

Poster E14  Evidence for Individual Differences in Emotionally-Driven Pupillary Reactivity
Connor Mckee¹, Paola Tirado¹, Justin Litvin¹, Ivan Carbajal¹, Anthony Ryals¹; ¹University of North Texas
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster E15  Using Graph Theory to Uncover the Brain Network Organization Underlying Flow Experiences During a Semi-Naturalistic Behavioral Paradigm
Richard Huskey¹, Shelby Wilcox¹, Rene Weber¹,²; ¹School of Communication, The Ohio State University, ²Department of Communication, University of California Santa Barbara, ³Department of Psychological and Brain Sciences, University of California Santa Barbara
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster E16  Neurobiological Underpinnings of the Intersection between Emotion and Impulse Control in Adolescents
Julia E. Cohen-Gilbert¹,², Lisa D. Nickerson¹,², Jennifer T. Sneider¹,², Emily N. Oot¹,², Anna M. Seraikas¹, Maya Rieselbach¹, Carolyn E. Caine¹, Elena R. Stein¹, Sion K. Harris¹,²; ¹Boston Children's Hospital, ²Harvard Medical School, ³Boston University School of Medicine, ⁴Boston Children's Hospital
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster E17  Mental context reinstatement may underlie successful retrieval of extinction memories
Augustin C. Hennings¹, Jarrod A. Lewis-Peacock¹, Joseph E. Dunsmoor¹; ¹University of Texas at Austin
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster E18  Integration of reward with effort anticipation during performance monitoring revealed by ERPs and EEG spectra perturbations
Davide Ghiazza¹, Gilles Pourtois¹; ¹Ghent University
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster E19  When the Emotional Stroop Task Does Not Produce a Stroop Effect in Adolescents
Diana Rodriguez Moreno¹, Yael M. Cyczowicz¹,², Lawrence V. Amsel¹,², Zhishun Wang¹,², Xiaofu He¹,², Christina Hoven¹,²; ¹New York State Psychiatric Institute, ²Columbia University
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions
Poster E20  Inter-subject representational similarity analysis reveals individual variations in affective experience when watching erotic movies
Pin-Hao Andy Chen1, Eshin Jolly1, Todd F. Heatherton1, Luke J. Chang1; 1Dartmouth College
Topic Area: EMOTION & SOCIAL: Emotional responding

Poster E21  Emotion recognition in pediatric brain tumor patients: viewing patterns and white matter structure
Iska Moxon-Eme1,2, Eric Bouffet1, Suzanne Laughlin1, Jovanka Skocic1, Cynthia de Medeiros1, Donald J. Mabbot1,2; 1The Hospital for Sick Children, 2The University of Toronto, 3Pediatric Oncology Group of Ontario
Topic Area: EMOTION & SOCIAL: Emotional responding

Poster E22  Transcranial direct current stimulation modulate fear extinction-processes
Martin Herrmann1, Natalie Dittert1, Thomas Polak1; 1Department of Psychiatry, Psychosomatics and Psychotherapy, University Hospital Wuerzburg, Germany
Topic Area: EMOTION & SOCIAL: Person perception

Poster E23  The Emotional Homunculus: Visual emotion discrimination and personality traits effects in somatosensory cortex
Beatriz Calvo-Merino1, Irena Arslanova1, Vasiliki Meletaki1, Bettina Forster; 1City, University of London, UK
Topic Area: EMOTION & SOCIAL: Person perception

Poster E24  Individual differences in empathy, but not mentalizing, predict visual attention to naturalistic social stimuli
Callie De La Cerda1, Ashley Frost1, Katherine Warnell1; 1Texas State University
Topic Area: EMOTION & SOCIAL: Person perception

Poster E25  The Importance of Vestibular and Proprioceptive Signals on Perspective-Taking
Anastasios Pavlidou1, Maria Gallagher2, Elisa Raffaella Ferrè2, Christophe Lopez1; 1Aix Marseille Univ, CNRS, LINA, FR3C, Marseille, France, 2Royal Holloway University of London, Egham, United Kingdom
Topic Area: EMOTION & SOCIAL: Self perception

Poster E26  Cognitive flexibility tracks with dynamic transitions in intrinsic connectivity profiles
Shruti Vij1, Lucina Uddin1,2; 1Department of Psychology, University of Miami, 2Neuroscience Program, University of Miami Miller School of Medicine
Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster E27  Differential Effects of Maternal Exposures in Early Life on Working Memory Versus Inhibitory Control in Preschool-Aged Children
Cassandra Svelnys1, Michaela Gusman1, Michelle Huezo1, Andreina Tuccella1, Rosalind J. Wright1,2,5, Michelle Bosquet Enlow1,2; 1Boston Children’s Hospital, 2Harvard Medical School, 3Krivis Children’s Hospital, New York, NY, 4Mindhich Child Health & Development Institute, New York, NY, 5lcahn School of Medicine at Mount Sinai, New York, NY
Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster E28  Longitudinal associations between conflict monitoring and emergent academic skills: an event-related potentials study
Elif Isbell1, Susan Calkins1, Veronica Cole2, Margaret Swingler2, Esther Leerkes1; 1University of North Carolina at Greensboro, 2University of North Carolina at Chapel Hill
Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster E29  Temporal information and trait impulsivity guide prefrontal preparatory activity
Jacqueline R. Janowich1, James F. Cavanagh1; 1University of New Mexico
Topic Area: EXECUTIVE PROCESSES: Goal maintenance & switching

Poster E30  High-frequency alpha activity and its unsuccessful reduction in schizophrenia
Kuk-In Jang1, Jihoon Oh1, Wookyoung Jung1, Sungkane Kim1, Sang Min Lee1, Seung Huh1, Seung-Hwan Lee1, Jeong-Ho Chae1; 1The Catholic University of Korea
Topic Area: EXECUTIVE PROCESSES: Goal maintenance & switching

Poster E31  Norepinephrine transporter phenotype impacts oscillatory power during cognitive flexibility
Sara White1, Paolo Medrano1, Robert S. Ross1; 1University of New Hampshire
Topic Area: EXECUTIVE PROCESSES: Goal maintenance & switching

Poster E32  Effect of reward prospect on corticospinal excitability during task preparation is dependent on task and action requirements.
Carsten Bundt1, Marcel Brass1, Wim Notebaert1; 1Ghent University
Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster E33  Effective connectivity in the cognitive control network
Fan Zhang1,2, Sunao Iwaki2; 1University of Tsukuba, 2National Institute of Advanced Industrial Science and Technology
Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster E34  Cross-language positive and negative priming effects reverse when priming manipulations proceed from L2 to L1, compared with L1 to L2
Ewald Neumann1, Ivy Nkrumah2; 1University of Canterbury, 2University of Ivory Coast, Ghana
Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster E35  Investigation of latent inhibitory control variables and aerobic fitness
Daniel Westfall1, Lauren B. Raine1, Eric S. Drollette2, Mark R. Scudder3, Shih-Chun Kao1, Matthew B. Pontifex4, Arthur F. Kramer5,6, Charles H. Hillman1; 1Northeastern University, Boston, Massachusetts, 2The University of North Carolina at Greensboro, Greensboro, North Carolina, 3University of Pittsburgh, Pittsburgh, Pennsylvania, 4Michigan State University, East Lansing, Michigan, 5University of Illinois, Urbana, Illinois
Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster E36  Obesity is associated with lower executive function but inconspicuous prefrontal brain activity.
Jennifer Beier1, Bodo Warnigs1, Ann-Cathrin Koschke2, Andreas J Fallgatter2, Martin Passnacht3, Martin J Herrmann1; 1Department of Psychiatry, Psychosomatics and Psychotherapy, University Hospital Wuerzburg, Germany, 2Department of Internal Medicine I, Division of Endocrinology and Diabetes, University Hospital, University of Wuerzburg, Wuerzburg, Germany, 3Department of Psychiatry, University Hospital of Tuebingen, Germany
Topic Area: EXECUTIVE PROCESSES: Other

Poster E37  Reinforcement and Punishment Effects on Incentive Integration and Motivated Cognitive Control
Debbie Yee1, Carolyn Dean Wolf2, Todd Braver3; 1Washington University in St. Louis, 2Brown University
Topic Area: EXECUTIVE PROCESSES: Other

Poster E38  Retroactive attentional shifts predict performance in a working memory task: Evidence by lateraled EEG patterns
Daniel Schneider1, Anna Barth1, Laura Klatt1, Edmund Wascher1; 1Leibniz Research Centre for Working Environment and Human Factors
Topic Area: EXECUTIVE PROCESSES: Working memory

Poster E39  Different dimensions of attended and unattended items are maintained in different states in visual working memory
Qing Yu1, Bradley Postle1; 1University of Wisconsin-Madison
Topic Area: EXECUTIVE PROCESSES: Working memory

Poster E40  Predicting cognitive performance on the basis of electrophysiological properties of resting state neuronal dynamics
Elena Cesnaitė1, Keyvan Mahjoory2, Arno Villringer1,2, Vadim V. Nikulin1,2; 1Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany, 2Functional Brain Mapping Laboratory, Université Libre de Bruxelles, Brussels, Belgium
Topic Area: EXECUTIVE PROCESSES: Working memory

Poster E41  The acute effects of moderate-intensity aerobic exercise and high-intensity interval exercise on working memory
Shih-Chun Kao1, Joseph Ritondale1, Keita Kamijo1, Eric Drollette4, Naiman Khan1, Charles Hillman1; 1Northeastern University, 2University of Illinois at Urbana-Champaign, 3Waseda University, 4University of North Carolina at Greensboro
Topic Area: EXECUTIVE PROCESSES: Working memory

Poster E42  The relationship between theta oscillations and the function of working memory processes during reading comprehension
Shelby Smith1, Anna Allen1, Kristin Ritchey1, Scott Wittman1, Caleb Robinson1, Tania Morales1, Charles Jackson1, Tyler Halbert1, Cor Conner1, Alaina Myers1, Kierstin Riels1, Austin Tatum1; 1Ball State University
Topic Area: EXECUTIVE PROCESSES: Working memory

Poster E43  Interactive, non-speech acoustic experience modulates theta, beta and gamma oscillatory responses to speech at 9-months-of-age
Silvia Ortiz-Martillana1, Teresa Realpe-Bonilla1, April A Benasich1; 1Center for Molecular and Behavioral Neuroscience, Rutgers University Newark, NJ, USA
Topic Area: LANGUAGE: Development & aging

Poster E44  A double-dissociation of semantic and phonological processing in young children
Yael Weiss-Znaya1, Hannah G. Cweigegen2, James R. Booth3; 1The University of Texas at Austin, 2Vanderbilt University
Topic Area: LANGUAGE: Development & aging

Poster E45  Spatio-temporal granularity of dorsal stream processing during word production
F.-Xavier Alario1, Catherine Liègeois-Chauvel2,3, Anne-Sophie Dubarry4, Irene Wang1, S. Alomar5, Mad M. Najm6, Patrick Chauvel2,3, Jorge Gonzalez-Martinez7, Aix Marseille Univ, CNRS, LPC, Marseille, France, 2Aix Marseille Univ, INSERM, INS, Inst Neurosci Syst, Marseille, France, 3Cleveland Clinic Foundation, Cleveland (OH), USA, 4Aix Marseille Univ, CNRS, LPL, Aix-en-Provence, France
Topic Area: LANGUAGE: Lexicon

Poster E46  ERPs reveal early feedforward orthographic and phonological selectivity during single word reading.
Laurie S. Glezer1, Kathryn J. Midgley1, Karen Emmorey1, Phillip J. Holcomb1; 1San Diego State University
Topic Area: LANGUAGE: Other

Poster E47  Orthographic priming by fingerspelled and printed letters
Zed Sevcikova Sehyr1, Jamie Renna1, Katherine Midgley1, Karen Emmorey1, Philip Holcomb1; 1San Diego State University
Topic Area: LANGUAGE: Other

Poster E48  Functional Connectivity of Language and Memory as a Cognitive Biomarker in Temporal Lobe Epilepsy
Elise Roger1, Cédric Pichat1, Marcela Perrone-Bertolotti1, Emilie Cousin1, Lorella Minotti2, Anne-Sophie Job2, Chrystèle Mosca2, Philippe Kahane2, Monica Baciu1; 1Univ Grenoble Alpes, CNRS LPPC UMR 5105, F-38000 Grenoble, France, 2Univ. Grenoble Alpes, Grenoble Institute of Neuroscience & Neurology Department CHUGA, France
Topic Area: LANGUAGE: Other

Poster E49  The relationship between a chaotic home environment and language processing in children
Elisa Gallegos1, Julie Schneider1, Michael Lopez1, Yvonne Ralph1, Mandy J Maguire1; 1University of Texas at Dallas
Topic Area: LANGUAGE: Other

Poster E50  Language output monitoring in sign production: an electroencephalography study
Soren Mickelsen1, Linda Nadalet1, Megan Mott2, Katherine Midgley2,3, Phillip Holcomb2,3,4, Karen Emmorey1,2, Stephanie Ries1,2,4; 1School of Speech Language and Hearing Sciences, San Diego State University, 2Department of Psychology, San Diego State University, 3Center for Clinical and Cognitive Neuroscience, San Diego State University, 4Joint-Doctoral Program in Language and Communicative Disorders, San Diego State University & University of California San Diego
Topic Area: LANGUAGE: Other

Poster E51  Spatiotemporal Dissociations associated with Fulfilling and Violating Predictions at Multiple Levels of Representation: A multimodal approach
Poster E52  Distinguishing semantic and social neural networks in neurotypicals and autism

Gina R. Kuperberg1,2, Lotte Schoot1,2, Lin Wang1,2, Edward Alexander2, Nate Delaney-Busch2, Eddie Wlotko2, Minjae Kim1,2, Lena Warnke2, Sheraz Kahn1, Matti Hamalainen1; 1Martinos Center for Biomedical Imaging, Massachusetts General Hospital, 2Tufts University
Topic Area: LANGUAGE: Semantic

Poster E53  The neural basis of verb and noun semantic representations in congenitally blind individuals

Elizabeth Johnson1, Hiroaki Mizuhara1, Lingfei Tang2,4,5, John D. E. Gabrielli1; 1Bingham and Women's Hospital, Division of Cognitive and Behavioral Neurology, Harvard Medical School, Boston, MA, USA, 2Department of Brain and Cognitive Sciences and McGovern Institute for Brain Research, Massachusetts Institute of Technology, Cambridge, MA, USA, 3Florida International University, Miami, FL, USA, 4Department of Neurology, University of California, San Francisco, 5Bioengineering Graduate Group, University of California, San Francisco and Berkeley
Topic Area: LONG-TERM MEMORY: Development & aging

Poster E54  Hippocampal theta phase coherence signals binding during retrieval and novelty processing

Brett Fishcl1, Giacomo Macaluso2,4,5, Rie Yamawaki1,2,3, Yayoi Shigemune1,4; 1Graduate School of Human and Environmental Studies, Kyoto University, 2Graduate School of Medicine, Kyoto University, 3Kyoto University Hospital, 4Graduate School of Letters, Chuo University
Topic Area: LONG-TERM MEMORY: Episodic

Poster E55  Some Complex Concepts Require Language: An eye-tracking study with 12- to 24-mo-old infants and adults

Takashi Tsukiura1, Karin Norimoto1, Rie Yamawaki1,2,3, Yayoi Shigemune1,4; 1Graduate School of Human and Environmental Studies, Kyoto University, 2Graduate School of Medicine, Kyoto University, 3Kyoto University Hospital, 4Graduate School of Letters, Chuo University
Topic Area: LONG-TERM MEMORY: Development & aging

Poster E56  Distinguishing semantic and social neural networks in neurotypicals and autism

Gina R. Kuperberg1,2, Lotte Schoot1,2, Lin Wang1,2, Edward Alexander2, Nate Delaney-Busch2, Eddie Wlotko2, Minjae Kim1,2, Lena Warnke2, Sheraz Kahn1, Matti Hamalainen1; 1Martinos Center for Biomedical Imaging, Massachusetts General Hospital, 2Tufts University
Topic Area: LANGUAGE: Semantic

Poster E57  The neural basis of verb and noun semantic representations in congenitally blind individuals

Elizabeth Johnson1, Hiroaki Mizuhara1, Lingfei Tang2,4,5, John D. E. Gabrielli1; 1Bingham and Women's Hospital, Division of Cognitive and Behavioral Neurology, Harvard Medical School, Boston, MA, USA, 2Department of Brain and Cognitive Sciences and McGovern Institute for Brain Research, Massachusetts Institute of Technology, Cambridge, MA, USA, 3Florida International University, Miami, FL, USA, 4Department of Neurology, University of California, San Francisco, 5Bioengineering Graduate Group, University of California, San Francisco and Berkeley
Topic Area: LONG-TERM MEMORY: Development & aging

Poster E58  Hippocampal theta phase coherence signals binding during retrieval and novelty processing

Brett Fishcl1, Giacomo Macaluso2,4,5, Rie Yamawaki1,2,3, Yayoi Shigemune1,4; 1Graduate School of Human and Environmental Studies, Kyoto University, 2Graduate School of Medicine, Kyoto University, 3Kyoto University Hospital, 4Graduate School of Letters, Chuo University
Topic Area: LONG-TERM MEMORY: Episodic

Poster E59  Some Complex Concepts Require Language: An eye-tracking study with 12- to 24-mo-old infants and adults

Takashi Tsukiura1, Karin Norimoto1, Rie Yamawaki1,2,3, Yayoi Shigemune1,4; 1Graduate School of Human and Environmental Studies, Kyoto University, 2Graduate School of Medicine, Kyoto University, 3Kyoto University Hospital, 4Graduate School of Letters, Chuo University
Topic Area: LONG-TERM MEMORY: Development & aging

Poster E60  Distinguishing semantic and social neural networks in neurotypicals and autism

Gina R. Kuperberg1,2, Lotte Schoot1,2, Lin Wang1,2, Edward Alexander2, Nate Delaney-Busch2, Eddie Wlotko2, Minjae Kim1,2, Lena Warnke2, Sheraz Kahn1, Matti Hamalainen1; 1Martinos Center for Biomedical Imaging, Massachusetts General Hospital, 2Tufts University
Topic Area: LANGUAGE: Semantic

Poster E53  The neural basis of verb and noun semantic representations in congenitally blind individuals

Elizabeth Johnson1, Hiroaki Mizuhara1, Lingfei Tang2,4,5, John D. E. Gabrielli1; 1Bingham and Women's Hospital, Division of Cognitive and Behavioral Neurology, Harvard Medical School, Boston, MA, USA, 2Department of Brain and Cognitive Sciences and McGovern Institute for Brain Research, Massachusetts Institute of Technology, Cambridge, MA, USA, 3Florida International University, Miami, FL, USA, 4Department of Neurology, University of California, San Francisco, 5Bioengineering Graduate Group, University of California, San Francisco and Berkeley
Topic Area: LONG-TERM MEMORY: Development & aging

Poster E54  Hippocampal theta phase coherence signals binding during retrieval and novelty processing

Brett Fishcl1, Giacomo Macaluso2,4,5, Rie Yamawaki1,2,3, Yayoi Shigemune1,4; 1Graduate School of Human and Environmental Studies, Kyoto University, 2Graduate School of Medicine, Kyoto University, 3Kyoto University Hospital, 4Graduate School of Letters, Chuo University
Topic Area: LONG-TERM MEMORY: Episodic

Poster E55  Some Complex Concepts Require Language: An eye-tracking study with 12- to 24-mo-old infants and adults

Takashi Tsukiura1, Karin Norimoto1, Rie Yamawaki1,2,3, Yayoi Shigemune1,4; 1Graduate School of Human and Environmental Studies, Kyoto University, 2Graduate School of Medicine, Kyoto University, 3Kyoto University Hospital, 4Graduate School of Letters, Chuo University
Topic Area: LONG-TERM MEMORY: Development & aging

Poster E56  Distinguishing semantic and social neural networks in neurotypicals and autism

Gina R. Kuperberg1,2, Lotte Schoot1,2, Lin Wang1,2, Edward Alexander2, Nate Delaney-Busch2, Eddie Wlotko2, Minjae Kim1,2, Lena Warnke2, Sheraz Kahn1, Matti Hamalainen1; 1Martinos Center for Biomedical Imaging, Massachusetts General Hospital, 2Tufts University
Topic Area: LANGUAGE: Semantic

Poster E57  The neural basis of verb and noun semantic representations in congenitally blind individuals

Elizabeth Johnson1, Hiroaki Mizuhara1, Lingfei Tang2,4,5, John D. E. Gabrielli1; 1Bingham and Women's Hospital, Division of Cognitive and Behavioral Neurology, Harvard Medical School, Boston, MA, USA, 2Department of Brain and Cognitive Sciences and McGovern Institute for Brain Research, Massachusetts Institute of Technology, Cambridge, MA, USA, 3Florida International University, Miami, FL, USA, 4Department of Neurology, University of California, San Francisco, 5Bioengineering Graduate Group, University of California, San Francisco and Berkeley
Topic Area: LONG-TERM MEMORY: Development & aging

Poster E58  Hippocampal theta phase coherence signals binding during retrieval and novelty processing

Brett Fishcl1, Giacomo Macaluso2,4,5, Rie Yamawaki1,2,3, Yayoi Shigemune1,4; 1Graduate School of Human and Environmental Studies, Kyoto University, 2Graduate School of Medicine, Kyoto University, 3Kyoto University Hospital, 4Graduate School of Letters, Chuo University
Topic Area: LONG-TERM MEMORY: Episodic

Poster E59  Some Complex Concepts Require Language: An eye-tracking study with 12- to 24-mo-old infants and adults

Takashi Tsukiura1, Karin Norimoto1, Rie Yamawaki1,2,3, Yayoi Shigemune1,4; 1Graduate School of Human and Environmental Studies, Kyoto University, 2Graduate School of Medicine, Kyoto University, 3Kyoto University Hospital, 4Graduate School of Letters, Chuo University
Topic Area: LONG-TERM MEMORY: Development & aging

Poster E60  Distinguishing semantic and social neural networks in neurotypicals and autism

Gina R. Kuperberg1,2, Lotte Schoot1,2, Lin Wang1,2, Edward Alexander2, Nate Delaney-Busch2, Eddie Wlotko2, Minjae Kim1,2, Lena Warnke2, Sheraz Kahn1, Matti Hamalainen1; 1Martinos Center for Biomedical Imaging, Massachusetts General Hospital, 2Tufts University
Topic Area: LANGUAGE: Semantic
Poster E68  Persistence of hippocampal activation patterns in post-encoding rest predicts subsequent voluntary, but not involuntary recall of distressing film clips
Renee M. Visser1, Richard N. Hanson1, Emily A. Holmes1,2; 1Medical Research Council Cognition and Brain Sciences Unit, University of Cambridge, UK, 2Karolinska Institutet, Stockholm, Sweden
Topic Area: LONG-TERM MEMORY: Episodic

Poster E69  Episodic simulations reveal the structure of affective representations in medial prefrontal cortex
Philipp C. Paulus1, Ian Charest2, Roland G. Benoit1; 1Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany, 2University of Birmingham, UK
Topic Area: LONG-TERM MEMORY: Episodic

Poster E70  Prioritization of weakly-encoded information for sleep-dependent consolidation
Dan Denis1,2, Verda Bursali1,2, Shancie Oquin1,2, Alexandra Morgan1,2, Robert Stickgold1,2; 1Beth Israel Deaconess Medical Center, 2Harvard Medical School
Topic Area: LONG-TERM MEMORY: Episodic

Poster E71  Dynamics of brain activity reveal a unitary recognition signal
Christoph T. Weidemann1,2, Michael J. Kahana2; 1Swansea University, Wales, UK, 2University of Pennsylvania
Topic Area: LONG-TERM MEMORY: Episodic

Poster E72  Characterizing EEG signatures of inattention that predict forgetting
David DiStefano1, Helen Schmidt1, Paige Hickey1, Elizabeth Race1; 1Tufts University
Topic Area: LONG-TERM MEMORY: Episodic

Poster E73  Mental Chronometry of Episodic Memory Retrieval
Logan J. Fickling1, Michael J. Kahana2; 1University of Pennsylvania
Topic Area: LONG-TERM MEMORY: Episodic

Poster E74  Awake Targeted Memory Reactivation and Foreign Language Learning
Linda J. Hoffman1, Kyle H. Alm2, Chi T. Ngo1, Ingrid R. Olson1; 1Temple University, 2Johns Hopkins University
Topic Area: LONG-TERM MEMORY: Other

Poster E75  Investigating the Neural Bases of Featured-Based Semantic Control: Evidence from High Resolution Functional Neuroimaging
Andrew C. Connolly1, Gavin K. Hanson2, Evangelia G. Chrysikou3; 1Dartmouth School of Medicine, 2Case Western Reserve, 3University of Kansas
Topic Area: LONG-TERM MEMORY: Semantic

Poster E76  The conflicting outcomes of the organizational processing on test-potentiated learning.
SinYi Wang1, ShihKuen Cheng1; 1National Central University
Topic Area: LONG-TERM MEMORY: Semantic

Poster E77  Age-related differences in the underlying mechanisms of temporal statistical learning
Noémi Elte1, Karolina Janacsek1,2, Dezso Nemeth1,2; 1Eotvos Lorand University, Budapest, Hungary, 2Brain, Memory and Language Lab, Hungarian Academy of Sciences, Budapest, Hungary
Topic Area: LONG-TERM MEMORY: Skill learning

Poster E79  Calibrating Atypical Timing in Clinical Populations Through Music
Lisa Hirt1, Lara Pantlin1; 1Colorado State University
Topic Area: METHODS: Electrophysiology

Poster E80  Anterior-Posterior Insular Segmentation of FreeSurfer Generated Region-of-Interest Volume
Brittany Strauss1, Todd D’Amour1, Jeremy D. Cohen1; 1Xavier University of Louisiana, New Orleans, LA, USA
Topic Area: METHODS: Neuroimaging

Poster E81  The limits of behavioural outcome prediction following focal brain injury
Tianbo Xu1, Ashwani Jha1,2, Hans Rolf Jager1,2, Michel Thiebaut de Schotten6,7, Geraint Rees1,2,4,5,6, Parashkev Nachev1,2; 1Institute of Neurology, UCL, London, WC1N 3BG, UK., 2National Hospital for Neurology and Neurosurgery, Queen Square, UK., 3Institute of Cognitive Neuroscience, UCL, London WC1N 3AR, UK., 4Faculty of Life Sciences, UCL, London, WC1E 6BT, UK., 5Wellcome Trust Centre for Neuroimaging, UCL, London WC1N 3BG, UK., 6Brain Connectivity Behaviour group, Paris, France, 7Sorbonne Universités, UPMC Univ Paris 06, Inserm, CNRS, Institut du cerveau et la moelle (ICM) - Hôpital Pitié-Salpêtrière, Boulevard de l’hôpital, F-75013, Paris, France
Topic Area: METHODS: Neuroimaging

Poster E82  Multimodal structural predictors of naming therapy outcomes in persons with aphasia
Erin Meier1, Jeffrey Johnson1, Yue Pan1, Maria Dekhtyar1, Swathi Kiran1; 1Boston University
Topic Area: METHODS: Neuroimaging

Poster E83  SHARP (Strengthening Human Adaptive Reasoning and Problem Solving): A case study for highlighting the role of independent test and evaluation in government funded research
Dimitrios Donavos1, Alexis Jeannotte2, Amber Sprenger3, Chrissy Thuy-Diem Vu4; 1Booz Allen Hamilton, 2IARPA/ODNI (US Government), 3MITRE Corporation
Topic Area: METHODS: Other

Poster E85  Context-dependent selective role of the left medial prefrontal cortex in communication: a TMS study
Beatriz Martin-Luengo1, Matteo Feurra1, Alicia Vorobiova1, Andriy Myachykov1,2, Yury Shtyrov1,2,3,4; 1National Research University - Higher School of Economics, 2Northumbria University, 3Aarhus University, 4Saint Petersburg State University
Topic Area: OTHER

Poster E86  Statistical learning of nonadjacent dependencies among different modalities
Yu-Huei Lian1, Kunyu Xu1, Denise H. Wu1; 1National Central University
Topic Area: OTHER

Poster E87  Similar motor-related sensory attenuation for tones and voices
Poster E88  
Time-Frequency Effects of Syntactic Violation in Music, Language, and Rhythm  
Juho Daniel Lee¹, Harim Jung¹, Christine Mathew¹, Psyche Loui¹; ¹Wesleyan University  
Topic Area: PERCEPTION & ACTION: Audition

Poster E89  
Developmental perceptual impairments: when tone-deafness and prosopagnosia co-occur  
Sebastien Paquette¹, Hui Charles Li¹, Stephanie Buss¹, Gottfried Schlaug¹; ¹Music and Neuroimaging Laboratory, Beth Israel Deaconess Medical Center, Harvard Medical School  
Topic Area: PERCEPTION & ACTION: Audition

Poster E90  
Statistical learning of categorical regularities in adults and children  
Yaelan Jung¹, Dirk B. Walther¹, Amy S. Finn¹; ¹University of Toronto  
Topic Area: PERCEPTION & ACTION: Development & aging

Poster E91  
Reward processing during dyadic social interaction: An EEG study of parents and young children  
Julia Anna Adrian¹, Kevin Jenson¹, Alvin Li¹, Scott Makeig²; Gideon Deak¹; ¹UC San Diego, Cognitive Science, ²Swartz Center for Computational Neuroscience  
Topic Area: PERCEPTION & ACTION: Audition

Poster E92  
Electroocorticographic dissociation of alpha- and beta-band activity in human sensorimotor cortex  
Arjen Stolk¹, Loek Brinkman², Mariska van Steensel², Erik Aarnoutse³; ¹University of California, Berkeley, ²Utrecht University, ³Donders Institute  
Topic Area: PERCEPTION & ACTION: Audition

Poster E93  
Association between Unintentional Interpersonal Postural Coordination Produced by Interpersonal Light Touch and the Intensity of Social Relationship  
Tomoya Ishigaki¹;², Ryota Imai¹, Shu Morikawa¹; ¹Kio University, ²Fit-care Home-visit Nursing Station, ³Hiashiikoma Hospital  
Topic Area: PERCEPTION & ACTION: Motor control

Poster E94  
Neural correlates of executed and imagined joystick directional movements: a functional near-infrared spectroscopy study  
Matthew A. Mathison¹, Donald C. Rojas¹; ¹Colorado State University  
Topic Area: PERCEPTION & ACTION: Motor control

Poster E95  
Seen and heard emotions alter perception and cortisol  
Vivian M. Ciamaritaro¹, Sarah C. Izen¹, Hannah E. Lapp¹, Daniel A. Harris²; Richard G. Hunter¹; ¹University of Massachusetts Boston, Dept of Psychology, Developmental and Brain Sciences Program, ²Brown University, School of Public Health  
Topic Area: PERCEPTION & ACTION: Multisensory

Poster E96  
Boosting auditory pitch learning with unconscious visual information  
Milton Avila¹, João Pereira Leite¹, Cristina Marta Del-Ben¹; ¹Ribeirão Preto Medical School, University of São Paulo  
Topic Area: PERCEPTION & ACTION: Audition

Poster E97  
Silent lip reading generates speech signals in auditory cortex  
Karthikeyan Ganesan¹, Jacob Zweig², Marcia Grabowecky²; Satoru Suzuki², Vernon Towle¹, James Tao¹, Shasha Wu¹, David Brang¹; ¹University of Michigan, ²Northwestern University, ³University of Chicago  
Topic Area: PERCEPTION & ACTION: Audition

Poster E98  
Responsivity of a human mirror neuron system to the transitivity of an action when the end result of a movement is visible but not when it is obscured  
Jonathan Silas¹, James Munro¹, Margot Crossman²; Joseph Levy³; ¹Middlesex University, ²Edinburgh Napier University, ³University of Roehampton  
Topic Area: PERCEPTION & ACTION: Other

Poster E99  
Electroretinographic Markers of NMDA-dependent Functions in Healthy Controls and Patients with Schizophrenia  
Angus MacDonald III¹, Pantea Maghimi¹, Theoden Netoff¹; Robert Miller¹; ¹University of Minnesota  
Topic Area: PERCEPTION & ACTION: Vision

Poster E100  
A search for the representational content in the putative number form area  
Darren Yeo¹;², Courtney Pollack¹; Gina Price¹; ¹Peabody College, Vanderbilt University, USA, ²Nanyang Technological University, Singapore  
Topic Area: PERCEPTION & ACTION: Vision

Poster E101  
Eccentricity-dependent gradient in neural suppression in the primary visual cortex.  
Akari Nagashima¹, Yasuo Nakai¹;², Akane Hayakawa¹, Takuya Osuki¹, Jeong-won Jeong¹; Ayaka Sugihara¹, Erik C Brown¹; Eishi Asano¹; ¹Wayne State University, ²Wakayama Medical University, ³Oregon Health and Science University  
Topic Area: PERCEPTION & ACTION: Vision

Poster E102  
Structural connections differ for central vs. peripheral V1  
Sara Sims¹, Thomas DeRamus¹, Utkarsh Pandey¹; Jennifer Robinson²; Kristina Visscher¹; ¹University of Alabama at Birmingham, ²Auburn University  
Topic Area: PERCEPTION & ACTION: Vision

Poster E103  
Unconscious number discrimination in the human visual system  
Chê Lucero¹;², Geoffrey Brookshire², Colin Quirk²; Susan Goldin-Meadow²; Edward Vogel², Daniel Casasanto¹;²; ¹Cornell University, ²The University of Chicago  
Topic Area: PERCEPTION & ACTION: Vision

Poster E104  
Naturalistic decision-making dynamics in spiking neuron circuits  
John C. Ksander¹, Donald B. Katz¹; Paul Miller¹; ¹Brandeis University
### Poster E105: Attentional Differences and Estimation Frame Incongruence Predict Bias in Economic Judgments

Kylie Fernandez¹, Joseph Schmidt¹, Camelia Kuhnenn¹, Nichole Lighthall¹; ¹University of Central Florida, ²UNC Kenan-Flagler Business School  
Topic Area: THINKING: Decision making

### Poster E106: An Altered Cortico-Basal Ganglia Network Activation during Reward Anticipation in Multiple Sclerosis

Pei-Pei Liu¹, Angela Spirou¹, Eliane Neubeboom¹, Ekaterina Dobryakova¹; ¹Kessler Foundation, NJ  
Topic Area: THINKING: Decision making

### Poster E107: A behavioral and neural study of motivations for deception

Anastasia Shuster¹, Dino Levy¹; ¹Tel Aviv University  
Topic Area: THINKING: Decision making

### Poster E108: The cingulum as an important measure of individual difference in brain development

Joe Batheil¹, Mengya Zhang¹, the CALM team¹, Duncan Astle¹; ¹MRC Cognition & Brain Sciences Unit, University of Cambridge  
Topic Area: THINKING: Development & aging

### Poster E109: How Does the Brain Compose Mental Images?

Dillon Plunkett¹, Joshua D. Greene¹; ¹Harvard University  
Topic Area: THINKING: Other

### Poster E110: Quality of conceptual categories predict speeded, but not non-speeded, cognitive ability

Emily Fritzon¹, F. Sayako Earle¹; ¹University of Delaware  
Topic Area: THINKING: Problem solving

### Poster E111: ANS acuity, math achievement, and dyscalculia: Evidence for a domain-specific executive function relation

Eric Wilkey¹, Courtney Pollack¹, Gavin R. Price¹; ¹Department of Psychology & Human Development, Peabody College Vanderbilt University  
Topic Area: THINKING: Reasoning

### Poster E112: Visual Prediction of Novel Objects as a Function of Preparation Time, Temporal Expectancy, and Hemispheric Lateralization

Cybelle M. Smith¹, Kara D. Federmeier¹; ¹University of Illinois, Urbana-Champaign  
Topic Area: LONG-TERM MEMORY: Priming

### Poster E114: Neural correlates of self-generation and verbal memory performance during paired-associate learning

Sangeeta Nair¹, Jane B Allendorf¹, Rodolphe Nenert¹, Amber N Martin¹, Daniel Mirman¹, Jennifer Vannest², Jerzy P Szafiarski¹; ¹University of Alabama at Birmingham, ²Cincinnati Childrens Hospital  
Topic Area: LONG-TERM MEMORY: Semantic

### Poster E115: Age-Related Deficits in Feedback-Based Cognitive Sequence Learning Among Healthy Older Adults

Layla Dang¹, Mark A. Gluck², Jessica R. Petok¹; ¹Saint Olaf College, Northfield, MN 55057, ²Rutgers University, Newark, NJ 07102  
Topic Area: LONG-TERM MEMORY: Skill learning

### Poster E116: Reliability of the Mismatch Negativity in a Kindergarten Population Oversampled for Dyslexia Risk

Sean McWeeny¹, Brittany Manning¹, Emily M. Harriott¹, Sarah D. Beach²,³, Ola Ozemov-Palchik¹, John D. E. Gabrieli², Nadine Gaab³, Elizabeth S. Norton¹; ¹Northwestern University, ²Massachusetts Institute of Technology, ³Harvard University, ⁴Tufts University  
Topic Area: METHODS: Electrophysiology

### Poster E117: A Face-name Association Task fMRI for Mapping Memory Networks in Epilepsy Patients

Yanmei Tie¹, Rui Hui¹,², Laura Rigolo¹, Prashin Unadkat¹, Kim Willment¹, Alexandra Golby¹; ¹Brigham and Women's Hospital, Harvard Medical School, Boston, US, ²Naval General Hospital, Beijing, China  
Topic Area: METHODS: Neuroimaging

### Poster E118: Determining the functional anatomy of the human brain by using a combined VLSM and Bayesian network analysis approach

Audrey Arnoux¹,², Monica N. Toba¹, Joel Daouk¹, Jean-Marc Constats³, Laurent Puy¹,², Moram Drou², Mélanie Barbay¹,², Olivier Godefroy¹,²; ¹Laboratory of Functional Neurosciences, EA 4559, University of Picardy Jules Verne, Amiens, France, ²Department of Neurology, Amiens University Hospital, Amiens, France, ³Department of Imaging, Amiens University Hospital, Amiens, France, ⁴Department of Biostatistics, Amiens University Hospital, Amiens, France  
Topic Area: METHODS: Neuroimaging

### Poster E119: Fiber Tract Asymmetry: A novel approach to assessing white matter integrity with Diffusion Tensor Imaging (DTI)

Ansgar Furst¹,², Andrei Vakhtin¹,², Miguel T. Robinson¹, Dana Waltzman³, Max Winkler²,³, Wesson J. Ashford¹,²; ¹Veterans Affairs Palo Alto Health Care System, ²Stanford University, ³Centers for Disease Control and Prevention  
Topic Area: METHODS: Neuroimaging

### Poster E120: Fractional Anisotropy Asymmetries of White Matter Tracts in Traumatic Brain Injury

Andrei A. Vakhtin¹,², Wesson J. Ashford¹,², Miguel T. Robinson¹, Dana Waltzman³, Max Winkler²,³, Ansgar J. Furst¹; ¹Veterans Affairs Palo Alto Health Care, ²Stanford University, ³Centers for Disease Control and Prevention  
Topic Area: METHODS: Neuroimaging

### Poster E121: Data-driven subgrouping of task-based and resting state fMRI timeseries

Jonathan T. Parsons¹, Kathleen M. Gates¹, Joseph B. Hopfinger¹; ¹University of North Carolina at Chapel Hill  
Topic Area: METHODS: Neuroimaging

### Poster E122: Mechanisms of Timing: An integrative theoretical approach

Lara Pantlin¹, Mark Prince¹, Deana Davalos¹; ¹Colorado State University
Topic Area: METHODS: Other

Poster E123  Estimating the Memory and Cognitive Capabilities of Time-Delayed Neural Structures
Yosef Tirat-Gefen1,2; 1George Mason University, 2MaxWave Research LLC
Topic Area: OTHER

Poster E124  Neurocognitive markers of suicidal ideation
Alex Mitko1,4, Regina McGlinchey1,2,4, Melissa Amick1,3,4, Michael Esterman1,3,4; 1VA Boston Healthcare System, 2Harvard Medical School, 3Boston University School of Medicine, 4Translational Research Center for TBI and Stress Disorders (TRACTS)
Topic Area: OTHER

Poster E125  Funding opportunities at the National Science Foundation
Uri Hasson1; 1National Science Foundation
Topic Area: OTHER

Poster E126  Predictability and Repetition in Sound: Characterising the Sustained EEG Response to Regularity
Rosy Southwell1, Candida Tufo1, Maria Chait1; 1University College London
Topic Area: PERCEPTION & ACTION: Audition

Poster E127  Statistical Learning and Gestalt-like Principles Predict Human Melodic Expectations
Aniruddh Patel1, Emily Morgan1, Allison Fogel1; 1Tufts University
Topic Area: PERCEPTION & ACTION: Audition

Poster E128  Behavioral and ERP Correlates of Declined Sensorimotor Control of Speech Production With Ageing
Jingting Li1, Hanjun Liu1; 1The First Affiliated Hospital, Sun Yat-sen University
Topic Area: PERCEPTION & ACTION: Development & aging

Poster E129  The development of planning in tool use: EEG, eye tracking, motion tracking, and video
Ori Ossmy1, Brianna Kaplan1, Danyang Han1, Melody Xu1, Karen Adolph1; 1New York University
Topic Area: PERCEPTION & ACTION: Development & aging

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**Poster Session F**

Tuesday, March 27, 8:00-10:00 am

Poster F1  Individual Differences in Neural Representations of Semantic Content
Katherine L. Alfred1, Justin C. Hayes1, Rachel G. Pizzie1, David J. M. Kraemer1; 1Dartmouth College
Topic Area: THINKING: Reasoning

Poster F2  Prior knowledge guides speech segregation in human auditory cortex
Yuanye Wang1,2,3, Jianfeng Zhang1, Jiajie Zou1, Huan Luo1,2,3, Nai Ding4,5,6,7; 1School of Psychological and Cognitive Sciences, Peking University,

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Poster F3  Mobile EEG in a complex driving simulation – evaluating the effect of age on cognitive states
Julian Elias Reiser1, Marlene Pacharra1, Stephan Getzmann1, Edmund Wascher2; 1Leibniz Research Centre for Working Environment and Human Factors
Topic Area: ATTENTION: Multisensory

Poster F4  Integrating modality-specific expectancies for the deployment of spatial attention
Paola Mengotti1, Frank Boers1, Pascasie L. Dombert1, Gereon R. Fink1,2, Simone Vossel1,2; 1Research Centre Juelich, Germany, 2University Hospital Cologne, Germany, 3University of Cologne, Germany
Topic Area: ATTENTION: Multisensory

Poster F5  Neural Mechanisms Underlying the Interactive Relationship between Working Memory and Cognitive Control During Conflict Processing
Khoi Vo1, Elise Demeter2, Tobias Egner1, Marty Woldorf1; 1Duke University, 2University of North Carolina Charlotte
Topic Area: ATTENTION: Multisensory

Poster F6  Individual peak alpha frequency in touch – cognitive and methodological implications
Alexander Jones1, Jonathan Silas1; 1Middlesex University London
Topic Area: ATTENTION: Multisensory

Poster F7  An Investigation of Brain-to-Brain Coherence in the Prefrontal Cortex During Joint Sentence Reading and Joint Fluid Reasoning Tasks
Murat Perit Cakir1, Erdinç İşbi1, Çağatay Taşcı1; 1Middle East Technical University
Topic Area: ATTENTION: Multisensory

Poster F8  Attentional bias toward fearful facial expressions: EEG correlates in theta oscillations
Robert D. Torrence1, Lucy J. Tramp1,2, Donald C. Rojas1; 1Colorado State University, 2University of the West of Scotland
Topic Area: ATTENTION: Multisensory

Poster F9  Combining eye-tracking and EEG to measure attention to salient and emotional stimuli
Louisa Kulke1,2,3, Jane Atkinson1,4, Oliver Braddick4, Annekathrin Schacht1,2; 1University of Göttingen, 2Leibniz-ScienceCampus Primate Cognition, 3University College London, 4University of Oxford
Topic Area: ATTENTION: Multisensory

Poster F10  Alterations in Intrinsic Functional Brain Connectivity for Hypertensive Women Post-Menopause

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85 Cognitive Neuroscience Society
Subjective happiness

Brain activation during thoughts of one's own death and its association with the fear of death in older adults
Kanam Hirano1, Kentaro Oba1, Toshiki Saito1, Shohei Yamazaki1, Ryuta Kawashima1, Motoaki Sugiuara1; 1Tohoku University
Topic Area: EMOTION & SOCIAL: Development & aging

Trait affective empathy mediates the relations between intrinsic default network functional connectivity and subjective happiness
Yuta Katsumi1, Natsumi Kondo2, Sandra Dolcos3, Florin Dolcos3, Takashi Tsukiura2; 1University of Illinois at Urbana-Champaign, 2Kyoto University
Topic Area: EMOTION & SOCIAL: Development & aging

Neurocognitive and emotion processing deficits in Bipolar Disorder and their first degree relatives
Hugo Sandoval1, Jose Gavito1, Christopher Dudo3, Michael Escamilla3; 1Texas Tech PLFSOM El Paso Radiology, 2Texas Tech PLFSOM El Paso Biostatistics and Epidemiology, 3Texas Tech PLFSOM El Paso Psychiatry
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Believing, Desiring, or Just Thinking About: Toward a Neuroscientific Account of Propositional Attitudes
Regan Bernhard1, Steven Frankland1, Joshua Greene1; 1Harvard University
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Building an Effective Math Anxiety Intervention: Understanding the Role of Emotion Regulation
Rachel Pizzie1, David J. M. Kraemer1; 1Dartmouth College
Topic Area: EMOTION & SOCIAL: Emotional responding

Neural correlates of emotional inhibitory control in adolescents with and without family history of alcoholism
Maya Rieselbach1, Lisa D. Nickerson1, Jennifer T. Sneider1, Anna Seraikas1, Emily Oot1, Carolyn Caine1, Elena Stein1, Sion K. Harris1, Marisa M. Silver1,2,4, Julia E. Cohen-Gilbert1, 1McLean Hospital, 2Boston Children's Hospital, 3Harvard Medical School, 4Boston University School of Medicine
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Neuro-behavioral mechanisms of resilience against anxiety: An integrative brain-personality-behavior approach using structural equation modeling
Sandra Dolcos1, Matthew Moore1, Steven Culpepper1, K. Luan Phan2, Florin Dolcos1; 1University of Illinois at Urbana-Champaign, 2University of Illinois at Chicago
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Common Neural Correlates of Empathy and Worry when Processing Fearful Human Faces
Lindsay Knight1, Teodora Stoica1, Farah Naaz1, Nicholas Fogeleman1, Brendan Depue1; 1University of Louisville
Topic Area: EMOTION & SOCIAL: Emotional responding

Weakened adaptation for negative compared to positive emotions in individuals high in social anxiety
Erinda Morina1, Sarah C. Izen1, Vivian M. Ciaramitaro1; 1University of Massachusetts Boston
Topic Area: EMOTION & SOCIAL: Emotional responding

Differential Sensitivity to Reward and Punishment in East Asians vs. Western Europeans
Ramiro Eduardo Rea Reyes1, Youngbin Kwak1, JaeHyung Kwon2, Jaeseung Jeoong1; 1University of Massachusetts, Amherst, 2Korea Advanced Institute of Science and Technology
Topic Area: EMOTION & SOCIAL: Other

Sex-related differences in behavioral and neural processing of facial threat cues via magnocellular and parvocellular pathways.
Hee Yoon Im1,2, Reginald Adams, Jr3, Cody Cushing1, Jasmine Boshyan1,2, Noreen Ward1, Kestutis Kveraga1,2; 1Massachusetts General Hospital, 2Harvard Medical School, 3The Pennsylvania State University
Topic Area: EMOTION & SOCIAL: Person perception

SCHIZOPHRENIA AND STIGMA: AN ERP STUDY
Denice Vidal1, Jayden Zeng1, Lorraine Singh1, Brianna Riviezzo1, Jill Gross-Fifer1,2; 1John Jay College of Criminal Justice, CUNY, 2The Graduate Center, CUNY
Topic Area: EMOTION & SOCIAL: Person perception

Freewill and the Self: A Transcranial Magnetic Stimulation Study of Libet's Postulate
Julian Paul Keenan1, Olivia Tam1, Briana Goncalves1, Saeed Yas1, Heather Soder1,3; 1Montclair State University, 2University of Texas
Topic Area: EMOTION & SOCIAL: Self perception

Characterizing the neural basis of adolescent cognitive control using connectome-based predictive modeling
Raihyung Lee1, Seyul Kwak1, Dasom Lee1, Jeanyung Chey1; 1Seoul National University
Topic Area: EXECUTIVE PROCESSES: Development & aging

Functional and structural connectivity of cognitive control networks during narrative comprehension from birth to 9 years
Rola Farah1, Tzipi Horowitz-Kraus1,2; 1Technion- Israel Institute of Technology, 2Cincinnati Childrens Hospital Medical Center
Topic Area: EXECUTIVE PROCESSES: Development & aging

Conflict Control on Emotional and Non-emotional Conflicts in Preadolescent Children
Tongran Liu1,2, Xiuying Liu1,2, Danfeng Li1,2, Jiannong Shi1,2; 1CAS Key Laboratory of Behavioral Science, Institute of Psychology, Chinese Academy of Sciences, China, 2Department of Psychology, University of Chinese Academy of Sciences, China
Topic Area: EXECUTIVE PROCESSES: Development & aging

Relations between catechol-O-methyltransferase (COMT) genotype and inhibitory control development in childhood
Maureen Bowers1, George Buzzell1, Virginia Salo1, Troller-Renfree Sonya1, Hodgkinson Colwin1, Goldman David2, Gorodetsky Elena2, McDermott Jennifer1, Henderson Heather2, Nathan Fox1; 1University of Maryland, College Park, 2National Institute on Alcohol Abuse and Alcoholism, 3National...
Poster F47  The Neurophysiology of Visual Rhyme in Deaf Undergraduate Readers
Kali Cika1, Daniel Koo1, Lawrence Pick1, Veronica Cristiano1, Karen Garrido-Nag1; 1Gallaudet University
Topic Area: LANGUAGE: Other

Poster F48  Sensory simulation, motor simulation and mentalizing during narrative reading: Insights from eye-tracking
Marloes Mak1, Roel M. Willems1,2; 1Radboud University, Nijmegen, the Netherlands, 2Max Planck Institute for Psycholinguistics, Nijmegen, the Netherlands
Topic Area: LANGUAGE: Other

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Emily Morgan1,2, Nate Delaney-Busch1, Minjae Kim3, Lena Wamke1, Eddie Wlotko1, Gina Kuperberg1,2; 1Tufts University, 2UC Davis, 3Boston College, 4Moss Rehab Center, 5Massachusetts General Hospital
Topic Area: LANGUAGE: Other

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Erika Exton1, Chaleece Sandberg1; 1Penn State University
Topic Area: LANGUAGE: Other

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Adina Williams1, Li Na Pylkänen1,2; 1New York University, New York, 2New York University, Abu Dhabi
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Lin Wang1,2, Ole Jensen1, Gina Kuperberg1,2; 1Department of Psychiatry and the Athinoula A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Harvard Medical School, Charlestown, MA, USA, 2Department of Psychology, Tufts University, Medford, MA, USA, 3Centre for Human Brain Health, University of Birmingham, Birmingham, UK
Topic Area: LANGUAGE: Semantic

Josh Neudorf1, Chelsea Ekstrand1, Shaylyn Kress1, Alexandra Neufeld1; 1University of Saskatchewan
Topic Area: LANGUAGE: Semantic

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Natalie Gilmore1, Erin Meier1, Jeffrey P. Johnson1, Swathi Kiran1; 1Boston University
Topic Area: LANGUAGE: Semantic

Poster F55  Cortical tracking of linguistic phrases: bottom-up and top-down effects of prosodic processing
Anastasia Glushko1,2, Max Wolpert1,2, Alessandro Tavano3, David Poeppel4, Karsten Steinhauser2,3; 1McGill University, 2The Centre for Research on Brain, Language and Music, 3Max Planck Institute for Empirical Aesthetics
Topic Area: LANGUAGE: Syntax

Poster F56  Neurodevelopmental impact of early bilingual acquisition on children’s syntactic processing.
Neelima Wagley1, Xiaosu Hu1, Aliisa Baron2, Akemi Tsutsumi Rioboo1, Isabel Hernandez1, James Booth2, Teresa Satterfield3, Lisa M. Bedore2, Ioulia Kovelman1; 1University of Michigan, 2University of Texas - Austin, 3Vanderbilt University
Topic Area: LANGUAGE: Syntax

Poster F57  Traumatic stress does not exert lesion-like effects on hippocampal function in children
Jennifer Stevens1, Sanne van Rooij1, Ye Ji Kim1, Timothy Ely1, L. Alexander Vance1, Bekh Bradley1,2, Tanja Jovanovic1; 1Emory University School of Medicine, 2Atlanta Veterans’ Affairs Medical Center
Topic Area: LONG-TERM MEMORY: Development & aging

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Pawel J. Matusz1, Alison F. Eardley2, Trudi Edginton3, Rebecca Oyekan2, Emily Smyth2, Micah M. Murray1,4,5,6; 1University Hospital Center - University of Lausanne, Switzerland, 2University of Westminster, London, UK, 3City, University of London, 4Fondation Asile des Aveugles - University of Lausanne, Switzerland, 5Center for Biomedical Imaging, Switzerland, 6Vanderbilt University
Topic Area: LONG-TERM MEMORY: Development & aging

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Topic Area: LONG-TERM MEMORY: Development & aging

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Hillary Schwarc1, Curtis L. Johnson2, Bradley P Sutton1, Tracey M Wszalek1, Graham Huesmann2; 1University of Illinois, 2University of Delaware, 3Carle Foundation Hospital
Topic Area: LONG-TERM MEMORY: Episodic

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Topic Area: LONG-TERM MEMORY: Episodic

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Jessica M. Karanian1,2, Scott D. Slotnick1; 1Wesleyan University, 2Tufts University, 3Boston College
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Sarah Kark1, Ryan Daley1, Elizabeth Kensinger1; 1Boston College
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Topic Area: LONG-TERM MEMORY: Episodic

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Bryan Hong1, Chris B Martin1, Andrew Xia1, Chris J Honey1, 2, Morgan D Barense1, 2, 3; 1University of Toronto, 2Johns Hopkins University, 3Rotman Research Institute
Topic Area: LONG-TERM MEMORY: Episodic

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Azara Lalla1, Anuya Patil1, Jennifer D Ryan1, 2, 3, Katherine Duncan1; 1Department of Psychology, University of Toronto, ON, Canada, 2Rotman Research Institute, Baycrest, Toronto, ON, Canada, 3Department of Psychiatry, University of Toronto, ON, Canada
Topic Area: LONG-TERM MEMORY: Episodic

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Ann-Kristin Meyer1, 2, 3, Roland G. Benoit1; 1Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany, 2International Max Planck Research School on Neuroscience of Communication
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Nora Preuss1, Henrik Ehrsson2; 1Karolinska Institutet
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Lily M. Solomon-Harris1, Naail A. Khan1, Vladyslava Replete1, Cynthia S. Peng1, W. Dale Stevens1, Alex Martin2; 1York University, Toronto, 2National Institute of Mental Health, National Institutes of Health
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Topic Area: THINKING: Development & aging
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I-Tzu Hung1,2, Joshua Oon Soo Goh2,3; 1National Health Research Institutes, Miaoli, Taiwan, 2National Taiwan University, Taipei, Taiwan, 3National Institute on Aging, Baltimore, MD, USA
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