

MARCH 24 - 27, 2018



Cognitive Neuroscience Society

25th Annual Meeting, March 24-27, 2018
Sheraton Hotel, Boston, Massachusetts

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Schedule Overview

Saturday, March 24, 2018

11:00 am- 1:30 pm	Exhibitor Check In, <i>Exhibit Hall C</i>
11:00 am – 6:30 pm	On-site Registration & Pre-Registration Check In, <i>Grand Ballroom Foyer</i>
12:00 – 1:30 pm	Data Blitz Session 1 , <i>Back Bay A&B</i> Data Blitz Session 2 , <i>Back Bay C&D</i> Data Blitz Session 3 , <i>Grand Ballroom</i>
1:00 pm – 1:30 pm	Poster Session A Set-Up, <i>Exhibit Hall C</i>
1:30 – 3:30 pm	Poster Session A, <i>Exhibit Hall C</i>
1:30 – 5:30 pm	Exhibits Open, <i>Exhibit Hall C</i>
2:45 – 3:15 pm	Coffee Service, <i>Exhibit Hall C</i>
3:30 – 5:30 pm	Big Theory versus Big Data: What Will Solve the Big Problems in Cognitive Neuroscience? David Poeppel, <i>Grand Ballroom</i>
▶ 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), <i>Grand Ballroom</i>
5:15 – 5:30 pm	Poster Session A Take-Down, <i>Exhibit Hall C</i>
5:30 pm	Exhibit Hall Closed for the Day – No Entry
6:30 – 7:30 pm	Welcome Reception, <i>Grand Ballroom Foyer</i>

Sunday, March 25, 2018

7:30 – 8:00 am	Exhibit Hall Access for Exhibitors/Poster Session B Set-up Only, <i>Exhibit Hall C</i>
7:30 am – 5:30 pm	On-site Registration & Pre-Registration Check In, <i>Grand Ballroom Foyer</i>
8:00 – 8:30 am	Continental Breakfast, <i>Exhibit Hall C</i>
8:00 – 10:00 am	Communications Open House, Press Room, <i>Kent</i>
8:00 – 10:00 am	Poster Session B, <i>Exhibit Hall C</i>
8:00 am – 5:00 pm	Exhibits Open, <i>Exhibit Hall C</i>
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, <i>Back Bay ABCD</i>
▶ 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, <i>Grand Ballroom</i>
▶ 10:00 – 10:24 am	Talk 1: Introduction to Deep Learning for Cognitive Neuroscientists, Nikolaus Kriegeskorte
▶ 10:24 – 10:48 am	Talk 2: Deep Net Models of Vision: Architecture and Domain-Specific Training, Katherine Storrs

- ▶ 10:48 – 11:12 am **Talk 3:** Analysis-By-Synthesis – Efficient Inverse Graphics in Biological Face Processing Systems, Ilker Yildirim
- ▶ 11:12 – 11:36 am **Talk 4:** The Transparency of Deep Learning Networks, Aude Oliva
- ▶ 11:36 – 12:00 pm **Talk 5:** Q&A Period, The Speakers will take Questions from the Audience.
- 11:30 – 11:45 am Poster B Take-Down, *Exhibit Hall C*
- 12:00 – 1:00 pm Lunch Break (On your own)
- 12:00 – 1:00 pm Poster C Set-Up, *Exhibit Hall C*
- 1:00 – 3:00 pm Poster Session C, *Exhibit Hall C*
- 2:30 – 3:00 pm Coffee Service, *Exhibit Hall C*
- 3:00 – 5:00 pm Symposium 1 **Memory Modulation via Direct Brain Stimulation in Humans**, Cory Inman, Chair, *Back Bay A&B*
- ▶ 3:00 – 3:24 pm **Talk 1:** Electrical Stimulation of Entorhinal Cortex and Hippocampus Impairs Temporal and Allocentric Representations in Human Episodic Memory, Josh Jacobs
- ▶ 3:24 – 3:48 pm **Talk 2:** Network-Based Brain Stimulation Selectively Impairs Spatial Retrieval, Nitin Tandon
- ▶ 3:48 – 4:12 pm **Talk 3:** Advancements in Intracranial Stimulation of the Entorhinal Area for Enhancement of Episodic Memory, Nanthia Suthana
- ▶ 4:12 - 4:36 pm **Talk 4:** Closed-Loop Stimulation of Temporal Cortex Rescues Functional Networks and Improves Memory, Youssef Ezzyat
- ▶ 4:36 – 5:00 pm **Talk 5:** Direct Electrical Stimulation of the Amygdala Enhances Event-Specific Declarative Memory in Humans, Cory Inman
- 3:00 – 5:00 pm Symposium 2 **Understanding Human Visual Cognition Through Multivariate and Computational Analysis of MEG and EEG Data**, Radoslaw Martin Cichy, Chair, *Back Bay C&D*
- ▶ 3:00 - 3:24 pm **Talk 1:** Oscillatory Dynamics of Perceptual to Conceptual Representations in the Ventral Visual Pathway, Alex Clarke
- ▶ 3:24 – 3:48 pm **Talk 2:** Fast, Invariant Representations for Human Action in the Visual System, Leyla Isik
- ▶ 3:48 – 4:12 pm **Talk 3:** Comparing Dynamics of Processing Streams in Blind and Sighted Readers, Santani Teng
- ▶ 4:12 – 4:36 pm **Talk 4:** Identifying the Neural Architecture of Perceptual Decision Making with Normative, Shallow and Deep Neural Network Approaches, Jean-Rémi King
- ▶ 4:36 – 5:00 pm **Talk 5:** Unique Aspects of Human Object Processing Revealed by MEG and EEG, Dimitrios Pantazis
- 3:00 – 5:00 pm Symposium 3 **The Next 25 Years of Cognitive Neuroscience: Opportunities and Challenges**, Brad Postle, Chair, *Grand Ballroom*
- ▶ 3:00 – 3:24 pm **Talk 1:** Grounding Models of Neural Function in First Principles, Gyorgy Buzsaki
- ▶ 3:24 – 3:48 pm **Talk 2:** Neural Dynamics, Recurrent Neural Networks and the Problem of Time, Dean Buonomano
- ▶ 3:48 – 4:12 pm **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
- ▶ 4:12 – 4:36 pm **Talk 4:** Establishing Neural Principles of Dynamic and Interactive Social Behaviors, Steve Chang
- ▶ 4:36 – 5:00 pm **Talk 5:** Is lesion Analysis still Relevant for Contemporary Cognitive Neuroscience? Nina Dronkers
- 4:45 – 5:00 pm Poster Session C Take-Down, *Exhibit Hall C*
- 5:00 – 6:00 pm 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*
- 5:00 pm Exhibit Hall Closed for the Day – No Entry
- 6:30 pm **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, <i>Grand Ballroom</i>
▶ 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, <i>Back Bay A&B</i>
▶ 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
10:00 am – 12:00 pm	Symposium 6 Top-Down Attention to Time: A neural Oscillatory Perspective , Malte Wöstmann, Chair, <i>Back Bay C&D</i>
▶ 10:00 – 10:24 am	Talk 1: Rhythmic Facilitation of Temporal Attention as Revealed by Psychophysics and MEG, Saskia Haegens
▶ 10:24 – 10:48 am	Talk 2: EEG Power and Phase Influence Trial-By-Trial Behavioral Responses in a Temporal Association Task, Sanne ten Oever
▶ 10:48 – 11:12 am	Talk 3: Neural Tracking of Different Temporal Scales of Speech Predicts Successful Speech-in-Noise Comprehension, Anne Keitel
▶ 11:12 – 11:36 am	Talk 4: Stimulating the Neural Oscillatory Dynamics of Auditory Attention to Time and Space, Malte Wöstmann
▶ 11:36 – 12:00 pm	Talk 5: Oscillatory Brain Activity Determines the Timescale of Human Cognition, Randolph Helfrich
10:00 am – 12:00 pm	Symposium 7 Developmental Cognitive Neuroscience: Brain Construction from the Fetus through Old Age , Nim Tottenham, Chair, <i>Constitution Ballroom</i>
▶ 10:00 – 10:24 am	Talk 1: Stress of a Mother is Reflected in the Developing Brain of her unborn Child, Moriah E. Thomason
▶ 10:24 – 10:48 am	Talk 2: Cortico-Amygdala Connectivity Development: The Importance of Childhood, Nim Tottenham
▶ 10:48 – 11:12 am	Talk 3: The Developing Adolescent Brain: Insights from Cognitive Neuroscience, Adriana Galvan
▶ 11:12 – 11:36 am	Talk 4: Mapping Changes in Brain Areal Organization across Development and Beyond, Ting Xu
▶ 11:36 – 12:00 pm	Talk 5: Q&A Period
11:30 – 11:45 am	Poser Session D Take-Down, <i>Exhibit Hall C</i>
12:00 – 1:30 pm	Lunch Break (<i>On your own</i>)
12:15 – 1:15 pm	Workshop Latest Need to Know Re: NIH Funding Plus Training, Career and Research Grant Opportunities , Kathy Mann Koepke, NICHD/NIH, <i>Back Bay A&B</i>
1:30 – 2:00 pm	Poster Session E Set-Up, <i>Exhibit Hall C</i>
1:30 – 2:00 pm	YIA 1 The Interface of Memory and Perception , Morgan Barense, <i>Constitution Ballroom</i>
2:00 – 2:30 pm	YIA 2 Deconstructing Episodic Memory: An Information Processing Approach , Mike Yassa, <i>Constitution Ballroom</i>
2:30 – 4:30 pm	Poster Session E, <i>Exhibit Hall C</i>
3:30 – 4:00 pm	Coffee Service, <i>Exhibit Hall C</i>
4:30 – 5:30 pm	The Fred Kavli Distinguished Career Contributions in Cognitive Neuroscience Lecture, The Representation of Objects in the Brain: Nature or Nurture , Alfonso Caramazza, <i>Grand Ballroom</i>
5:30 – 5:45 pm	Poster Session E Take-Down, <i>Exhibit Hall C</i>
5:45 – 7:15 pm	CNS Trainee Professional Development Panel , <i>Constitution Ballroom</i>
5:45 pm	Exhibit Hall Closed for the Day – No Entry
7:30 – 10:30 pm	CNS Student Trainee Social Night, Dillon’s

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 Memory Encoding, Joshua D. Koen
 - ▶ 2:42 – 3:06 pm **Talk 4:** Impoverished Representations of Object Stimuli Revealed by Abnormal Eye Movement Behaviour, Morgan D. Barense
 - ▶ 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:

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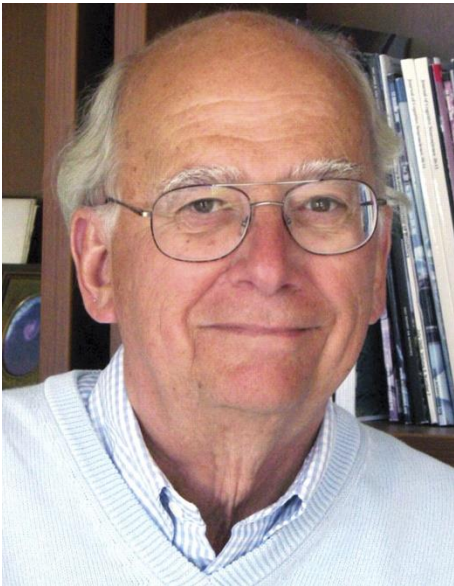
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Keynote



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.

George A Miller Prize

Congratulations to Elizabeth Spelke for being awarded this honor!

Elizabeth Spelke will accept this prestigious award and deliver her lecture on Sunday, March 25, 2018, 5:00-6:00 pm, in the Grand Ballroom.

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.

About the George A. Miller Prize in Cognitive Neuroscience

The George A. Miller Prize in Cognitive Neuroscience was established in 1995 by the Cognitive Neuroscience Society to honor the innovative scholarship of George A. Miller, whose many theoretical advances have greatly influenced the discipline of cognitive neuroscience. The first ten years of the prize were funded by generous support from the James S. McDonnell Foundation.

Each year the Prize shall recognize an individual whose distinguished research is at the cutting-edge of their discipline with realized or future potential, to revolutionize cognitive neuroscience. Extraordinary innovation and high impact on international scientific thinking should be a hallmark of the recipient's work.

An annual call for nominations for the George A. Miller Prize 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 George A. Miller lecture.

Previous Winners of the George A. Miller Lectureship

2017	Dr. David Van Essen, Washington University in St Louis
2016	Brian Wandell, Isaac and Madeline Stein Family Professor
2015	Patricia Kuhl, Ph.D., University of Washington
2014	Jon Kaas, Ph.D., Vanderbilt University
2013	Fred Gage, Ph.D., The Salk Institute
2012	Eve Marder, Ph.D., Brandeis University
2011	Mortimer Mishkin, Ph.D., NIMH
2010	Steven Pinker, Ph.D., Harvard University
2009	Marcus Raichle, Ph.D., Washington University School of Medicine
2008	Anne Treisman, Ph.D., Princeton University
2007	Joaquin M. Fuster, Ph.D., University of California Los Angeles
2006	Steven A. Hillyard, Ph.D., University of California San Diego
2005	Leslie Ungerleider, Ph.D., National Institute of Mental Health
2004	Michael Posner, Ph.D., University of Oregon
2003	Michael Gazzaniga, Ph.D., Dartmouth College
2002	Daniel Kahneman, Ph.D., Princeton University
2001	William Newsome, Ph.D., Stanford University
2000	Patricia Churchland, Ph.D., University of California, San Diego
1999	Giacomo Rizzolatti, Ph.D., University of Parma, Italy
1998	Susan Carey, Ph.D., New York University
1997	Roger Shepard, Ph.D., Stanford University
1996	David Premack, Ph.D., CNRS, France
1995	David H. Hubel, Ph.D., Harvard Medical School

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 determined 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 |



Young Investigator Award

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 modelling 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

Title	Date	Time	Location
CNS 25 th Anniversary Gala	Sunday, March 25	6:30 – 11:30 pm	Constitution Ballroom
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
CNS Trainee Professional Development Panel	Monday, March 26	5:45 - 7:15 pm	Constitution Ballroom
CNS Student Trainee Social Night	Monday, March 26	7:30 - 10:30 pm	Dillon's

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

CNSTA Professional Development Panel Organizers: Sarah Kark (Boston College), Holly Bowen (Boston College) and the CNSTA Committee Officers.

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/>). 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

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

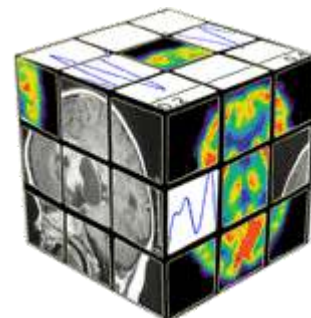
Gary Marcus, NYU

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.

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



MAX-PLANCK-GESELLSCHAFT



Data Blitz

Session #	Date	Time	Location	Chair
Data Blitz Session 1	Saturday, March 24	Noon – 1:30 pm	Back Bay A&B	Marian Berryhill
Data Blitz Session 2	Saturday, March 24	Noon – 1:30 pm	Back Bay C&D	Evangelia Chryssikou
Data Blitz Session 3	Saturday, March 24	Noon – 1:30 pm	Grand Ballroom	Lorna Quandt

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 Cohen^{1,2}, Agustin Petroni¹, Nicolas Langer^{1,3}, Simon Henin¹, Tamara Vanderwal⁵, Michael P. Milham^{3,6}, 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

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 Greenberg^{1,2}, Victoria L Romero³, Seth Elkin-Frankston³, Matthew A Bezdek⁴, Eric H Schumacher⁴, Sara W Lazar^{1,2}; ¹Department of Psychiatry, Massachusetts General Hospital, ²Harvard Medical School, ³Charles River Analytics, ⁴Georgia 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 Tranel³; 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-Kraus^{1,2}, 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

Emily Kubicek¹, Lorna C. Quandt¹; ¹Gallaudet 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 Palombo^{1,2}, Mieke Verfaellie^{1,2}; 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 Cai^{1,2}, Andrew D Sheldon³, Bradley R Postle^{2,4}; 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 Chryssikou, University of Kansas

Speakers: Katarzyna Siuda-Krzywicka, Renee M. Visser, Patrick Ledwidge, Xiaoqing Hu, Rola Farah, Jie Zheng, Darya Zabelina, Örjan de Manzano, Louisa Kulke, Huang Zheng, Felipe Pegado, Gunes Sevinc, Pin-Hao Andy Chen, Amandine E. Grenier, Julie Sato

TALK 1: COLOR CATEGORIZATION WITHOUT COLOR NAMING: NEUROPSYCHOLOGICAL EVIDENCE

Katarzyna Siuda-Krzywicka¹, Christoph Witzel², Emma Chabani¹, Myriam Taga³, Laurent Cohen^{1,4}, Paolo Bartolomeo¹; ¹Inserm U 1127, CNRS UMR 7225, Sorbonne Universités, UPMC Univ Paris 06 UMR S 1127, Institut du Cerveau et de la Moëlle 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: 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. Henson¹, Emily A. Holmes^{1,2}; 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-Kraus^{1,2}; 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. Lin^{1,2}; 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 Kulke^{1,2,3}, Janette Atkinson^{3,4}, Oliver Braddick⁴, Annkathrin Schacht^{1,2}; ¹University of Göttingen, ²Leibniz-ScienceCampus Primate Cognition, ³University College London, ⁴University of Oxford

TALK 10: REDUCED PERSISTENCE OF SPONTANEOUS BRAIN ACTIVITY IN SCHIZOPHRENIA

Huang Zheng^{1,2}, Jianbo Gao^{1,2}; 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 Sevinc^{1,2}, Britta Hölzel³, Muhammed Milad¹, Sara W. Lazar^{1,2}; 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. Momen^{2,3}, 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 Sato^{1,2}, Sarah Mossad^{1,2}, Simeon Wong², Benjamin Hunt², Benjamin Dunkley^{1,2}, Mary Lou Smith^{1,2}, Margot Taylor^{1,2}; ¹The Hospital for Sick Children, ²University of Toronto

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 1: NEUROPLASTIC AND NEUROVASCULAR CONTRIBUTIONS TO VISUAL RECOVERY IN POST-STROKE CORTICAL BLINDNESS

Colleen Schneider^{1,2}, Emily Prentiss², Zoe Williams¹, Bogachan Sahin¹, Bradford Mahon^{1,2}; 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-Elorrieta^{1,2}, Karen Emmorey³, Liina Pylkkänen^{1,2}; ¹New York University, ²NYUAD Institute, 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. Beaty², Donna Rose Addis³, Daniel L. Schacter²; ¹Stanford University, ²Harvard University, ³University of Auckland

TALK 5: 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

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 Bedny¹; ¹Johns Hopkins University, ²DePauw University

TALK 9: 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

TALK 10: RELATIONSHIPS BETWEEN WHITE MATTER IN INFANCY AND SUBSEQUENT LANGUAGE ABILITIES IN PRESCHOOL

Jennifer Zuk^{1,2}, Michael Figuccio¹, Xi Yu¹, Joseph Sanfilippo¹, Jade Dunstan¹, Clarisa Carruthers¹, Ellen Grant^{1,2}, Nadine Gaab^{1,2,3}; 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 Brothers^{1,2}, Eddie Wlotko³, Simone Riley¹, Margarita Zeitlin¹, Connie Choi¹, Gina Kuperberg^{1,2}; 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

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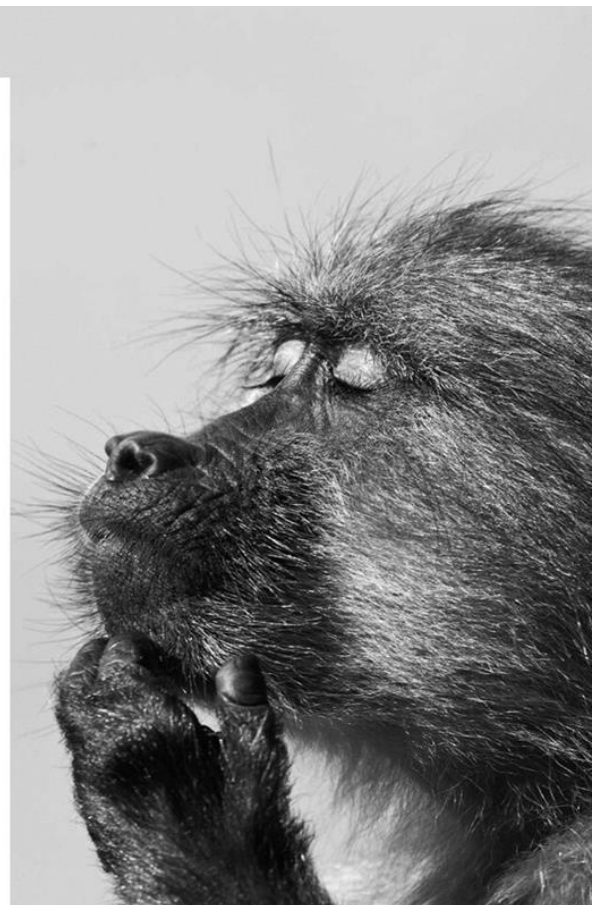
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- Interpreting BOLD: a dialogue between cognitive and cellular neuroscience
- Interoception beyond homeostasis: affect, cognition and mental health
- The origins of numerical abilities

Image: A baboon gets lost in his thoughts, by Davide Giglio, awarded a special commendation in the Royal Society Publishing photography competition, 2015.



General Information

Abstracts

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

Saturday, March 24

Coffee Service, 2:45 – 3:15 pm, *Exhibit Hall C*

Welcome Reception, 6:30 – 7:30 pm, *Grand Ballroom Foyer*

Sunday, March 25

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

Coffee Service, 2:30 – 3:00 pm, *Exhibit Hall C*

Monday, March 26

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

Coffee Service, 3:30 – 4:00 pm, *Exhibit Hall C*

Tuesday, March 27

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

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

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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:

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

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

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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

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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.

Bus Service: Boston Express Bus, C&J Bus Lines, Concord Coach Lines, Dartmouth Coach, Peter Pan Bus, Plymouth & Brockton Bus CO.. Prices ranging from \$15-\$20.

Water taxi/ shuttle is a convenient and enjoyable way to get to and from Logan Airport. Fares run between \$3.50 - \$18.50 depending on which water transportation you choose. These include: MBTA Harbor Express, Boston Water Taxi- Boston Harbor Cruises, and Rowes Wharf Water Transport.

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Exhibit Hours

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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 Brunsdon, 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 Sessions

#	Title	Date	Time	Location
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 - Noon	Back Bay ABCD
2	Human and Machine Cognition – The Deep Learning Challenge	Sunday, March 25	10:00 am - Noon	Grand Ballroom
3	Neural Mechanisms of Adaptive Forgetting	Tuesday, March 27	10:00 am - Noon	Back Bay ABCD
4	What makes musical rhythm special: cross-species, developmental, and social perspectives	Tuesday, March 27	10:00 am - Noon	Constitution Ballroom

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 psychiatric 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 touchscreencognition.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 clarify 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 Kriegeskorte^{1,2}; 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

& Kriegeskorte, 2014; Yamins et al., 2014). Our results show that this is not the case for state-of-the-art deep architectures: the deepest, best-performing DCNNs, such as 50-100 layer deep residual networks, are not best at explaining human IT. We find that architecture interacts with training. Before training, randomly-weighted networks of diverse architectures explain a significant but similar proportion of variance in IT representations. After object-classification training, networks diverge in their ability to explain IT, and this ability is not predicted by either depth or final network classification accuracy. Training the same architecture on different tasks leads to networks with representations that best match different cortical subregions; a 16-layer net trained to identify faces best predicts representations in the fusiform face area, and one trained to classify scenes best predicts representations in the parahippocampal place area. There is great scope to better understand cortical computations by discovering the architectures and training regimes which most closely arrive at the representation of visual information in the brain.

TALK 3: ANALYSIS-BY-SYNTHESIS – EFFICIENT INVERSE GRAPHICS IN BIOLOGICAL FACE PROCESSING SYSTEMS

Ilker Yildirim¹; ¹Massachusetts Institute of Technology

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 Oliva¹; ¹Massachusetts 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. Anderson¹; ¹University 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. In 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.

Invited Symposium Session 4

WHAT MAKES MUSICAL RHYTHM SPECIAL: CROSS-SPECIES, DEVELOPMENTAL, AND SOCIAL PERSPECTIVES

Tuesday, March 27, 10:00 am - 12:00 pm, Constitution Ballroom

Chair: Jessica Grahn, University of Western Ontario

Speakers: Vani G. Rajendran, Fleur L. Bouwer, Molly J. Henry, Laura K. Cirelli

The ability to synchronize to musical rhythm by picking up on a regular ‘beat’ occurs spontaneously, in every human culture. Perceiving the beat enhances basic timing processes, perceptual accuracy, and social interactions, yet its mechanisms are poorly understood. It is also unclear when this ability develops, both developmentally and evolutionarily. Burgeoning interest in rhythm and beat interventions in movement disorders (e.g., Parkinson’s disease) and language disorders (e.g., dyslexia) means understanding the neural bases of rhythm and beat perception is becoming more important. Here, we approach beat perception from different angles, from the relationship between low-level sound features and beat perception to wider social and developmental implications. First, Rajendran discusses how beat

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 behavioural 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 (relying on some periodicity, like the beat in music) has been suggested to be distinct from interval- or memory-based timing (relying 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

#	Title	Date	Time	Location
1	Memory Modulation via Direct Brain Stimulation in Humans	Sunday, March 25	3:00 pm – 5:00 pm	Back Bay A&B
2	Understanding human visual cognition through multivariate and computational analysis of MEG and EEG data	Sunday, March 25	3:00 pm – 5:00 pm	Back Bay C&D
3	The Next 25 Years of Cognitive Neuroscience: Opportunities and Challenges	Sunday, March 25	3:00 pm - 5:00 pm	Grand Ballroom
4	Episodic Memory Formation: From Neural Circuits to Behavior	Monday, March 26	10:00 am - Noon	Grand Ballroom
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
6	Top-down attention to time: A neural oscillatory perspective	Monday, March 26	10:00 am – Noon	Back Bay C&D
7	Developmental Cognitive Neuroscience: Brain Construction from the Fetus through Old Age	Monday, March 26	10:00 am – Noon	Constitution Ballroom
8	Mechanisms of Sleep's Role in Memory and Emotion Processing	Tuesday, March 27	1:30 – 3:30 pm	Back Bay A&B
9	Neural dedifferentiation and age-related cognitive decline	Tuesday, March 27	1:30 – 3:30 pm	Back Bay C&D
10	Hierarchical cortical rhythms and temporal predictions in auditory and speech perception	Tuesday, March 27	1:30 – 3:30 pm	Constitution Ballroom

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 Jacobs¹; ¹Columbia 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 Tandon¹, Kamin Kim¹, Amber Schedlbauer², Matthew Rollo¹, Suganya Karunakaran¹, Arne Ekstrom²; ¹University of Texas Health Science Center at Houston, ²University 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 Suthana¹; ¹University 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 Ezzyat¹; ¹University 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; ¹Emory 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 Isik^{1,2}, Andrea Tacchetti^{1,3}, 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 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 Teng^{1,2}, Radoslaw 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 King^{1,2}, 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 orthogonalize 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 magneto-encephalography (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 Dora

Hermes, Steve Chang, Nina 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 Buonomano¹; 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 experimentations 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

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 Kreiman^{1,2}; 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 CIRCUITRY OF HUMAN DECLARATIVE MEMORY AT THE SINGLE-NEURON LEVEL

Ueli Rutishauser^{1,2}; 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 Luo^{1,2}; 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. Morrone^{2,3}; 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 Zoefel^{1,2}; 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.

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; ¹Department 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; ¹Department 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

incoming predictable input. However, temporal predictions are rarely independent of content predictions. To illustrate, the cuckoo that shows itself at twelve o'clock drives the interest, not the mere fact of it being twelve o'clock. In this paradigm we combined both content and temporal information in a temporal association task. We presented rhythmic stimulus streams of visual images (between 3 – 8 Hz) after which an auditory stimulus was presented either at 50 ms or 50 ms + π (half a cycle) after the last image onset. Sounds needed to be categorized in one of two categories. Category A sounds had a 70% probability to be presented at time point 1 and 30% at time point 2. For sound B these probabilities were reversed. We analyzed data of the last three visual images prior to sound onset and related this to behavioral performance. Two main effects could be dissociated: 1) trials that were preceded with trials of high power at the presentation rate tended to be followed with responses inconsistent with the temporal association. 2) Trials with association inconsistent and consistent responses had a significantly different mean phase at the presentation rate. These results indicate that both power and phase influence how temporal information guides our behavioral responses. Moreover, it suggests that oscillatory responses contain information about content as well as time.

TALK 3: NEURAL TRACKING OF DIFFERENT TEMPORAL SCALES OF SPEECH PREDICTS SUCCESSFUL SPEECH-IN-NOISE COMPREHENSION

Anne Keitel¹, Joachim Gross^{1,2}, Christoph Kayser^{1,3}; 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 Obleser¹; 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 temporo-parietal 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. Thomason^{1,2,3}, Marion I. van den Heuvel^{1,2}, Rebecca Waller³, Elise Turk⁴, Martijn P. van den Heuvel⁴, Janessa H. Manning^{1,2}, Jasmine Hect¹, Edgar Hernandez-Andrade^{1,2}, Sonia Hassan^{1,2}, Roberto Romero^{2,3}; 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 Xu^{1,2}, Michael Milham^{1,3}; 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 increasingly 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 into 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 Najj¹, 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 its 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 Cremonese¹;
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 napped 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; ¹University 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 Bowman^{1,2}, Christina Webb¹, Jordan Chamberlain¹, Nancy Dennis¹; ¹Penn State University, ²University 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; ¹University 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^{1,2}, Lok-Kin Yeung³, Jennifer Ryan^{1,2}, Rosanna Olsen^{1,2}; ¹University of Toronto, ²Rotman Research Institute, ³Columbia University Medical Center

Alzheimer's disease pathology appears earliest in brain regions that overlap with the anterolateral entorhinal cortex (alERC). However, the representations and the computational properties of the alERC are poorly understood. Previous human studies treat the alERC as an extension of the neighboring perirhinal cortex, supporting object memory. Animal studies suggest that the alERC 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 alERC 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. Rugg¹; ¹University 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^{1,2}, Bohan Dai^{1,2}; ¹Max Planck Institute for Psycholinguistics, ²Donders 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 vocoded 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 Ghitza^{1,2}, David Poeppel^{1,3}; 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 Liberto^{1,2,3}, Michael J. Crosse⁴, Alain de Cheveigné^{1,2,3,5}, Edmund C. Lalor^{3,6}; 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 poster 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.

Poster Session	Date	Setup Begins	Session Begins	Tear-Down	Take-Down Completed
A	Saturday, March 24	1:00 pm – 1:30 pm	1:30 pm – 3:30 pm	5:15 pm – 5:30 pm	5:30 pm
B	Sunday, March 25	7:30 am* – 8:00 am*	8:00 am – 10:00 am	11:30 am – 11:45 am	11:45 am
C	Sunday, March 25	12:00 pm – 1:00 pm	1:00 pm – 3:00 pm	4:45 pm – 5:00 pm	5:00 pm
D	Monday, March 26	7:30 am* – 8:00 am*	8:00 am – 10:00 am	11:30 am – 11:45 am	11:45 am
E	Monday, March 26	1:30 pm – 2:00 pm	2:30 pm – 4:30 pm	5:30 pm – 5:45 pm	5:45 pm
F	Tuesday, March 27	7:30 am* – 8:00 am*	8:00 am – 10:00 am	11:45 am - Noon	Noon

* **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 Wu^{1,2}, 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 Kawashima^{1,2}, 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 DeGutis^{1,2}, Michael Esterman^{1,3}; 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. Gamble⁴, Kait Clark⁵, Marty G. Woldorff¹; 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 Arizpe^{1,2}, Anika Guha^{3,4}, Amyeo Jereen^{3,5}, Jeremy Wilmer³, Joe DeGutis^{1,2}; 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 Perdue^{1,2}, Ruby Almanza¹, Hannah Behrendt^{1,4}, Charles Nelson^{1,2,3}; 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 Sevinc^{1,2}, Britta Hölzel³, Muhammed Milad¹, Sara W. Lazar^{1,2}; 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

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Poster A12 Sexually Dimorphic Pupillary Responses During Facial Trustworthiness Evaluation: A Study With Intranasal Oxytocin Administration

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Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster A13 Keep calm and carry on: ERP evidence for reduced negative anticipation stress in bilingualism

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Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster A14 Resting State Functional Connectivity Neural Correlates of Emotional Regulation Strategies

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Poster A15 The Effects of Age and Emotion on Cognitive Control of Memory and Metacognitive Monitoring

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Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster A16 Brain States Encode both Perceived Emotion and the Physiological Response Induced by Visual Stimuli

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Topic Area: EMOTION & SOCIAL: Emotional responding

Poster A17 The Brain Activity in Processing Natural Dynamic Happy Facial Expressions

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Poster A18 A Cross-Correlation Analysis of the Relationship Between Central and Autonomic Nervous System Activity at Rest

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Topic Area: EMOTION & SOCIAL: Other

Poster A19 Comparing human and monkey neural circuits for processing social scenes

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Topic Area: EMOTION & SOCIAL: Person perception

Poster A20 Neural Mechanisms Underlying Shifts in Imitative Fidelity

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Topic Area: EMOTION & SOCIAL: Person perception

Poster A21 Behavioral and Brain-Imaging Predictors of Working Memory Plasticity in Younger and Older Adults

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Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster A22 C957T Polymorphism in dopamine D2 receptor gene predicts sequence learning in younger adults

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Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster A23 The Associations between Obesity and Visceral Adipose Tissue with Cognitive Function and Achievement in Children

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Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster A24 Resting-State EEG Coherence in Young Children with ADHD: A Potential Neural Marker of ADHD

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Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster A25 Differential effects of prefrontal inhibitory tDCS on voluntary task selection

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Topic Area: EXECUTIVE PROCESSES: Goal maintenance & switching

Poster A26 Sticky Rules: Conjunctions between Rules and Stimulus-Response Codes Drive Action Selection

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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 Schindler^{1,2}, 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

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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

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Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster A30 Dynamic Reconfiguration of Inhibition Control Network in Different Bilingual Contexts

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Poster A31 Temporal metacognition as the decoding of internally generated brain dynamics

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Poster A32 Frontal-midline Theta Neurofeedback Training Increases Flow Experience

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Topic Area: EXECUTIVE PROCESSES: Other

Poster A33 Context-dependent inhibition impairments for executing familiar action task found in patients with frontal glioma

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Poster A34 Frontoparietal neurostimulation alters the theta-gamma neural code for working memory

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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

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Topic Area: EXECUTIVE PROCESSES: Working memory

Poster A36 Smoothing over the differences in working memory performance by tACS

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Poster A37 Default mode network deactivation as a potential biomarker for working memory deficits in brain tumor patients

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Poster A38 Predicting task performance with multivariate pattern decoding using EEG oscillatory activity

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Topic Area: EXECUTIVE PROCESSES: Working memory

Poster A39 IMAGING STRESS EFFECTS ON WORKING MEMORY CAPACITY IN ADOLESCENTS AT-RISK

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Poster A40 Neural Correlates of the "30 Million Word Gap": Children's language exposure is related to white matter structure

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Topic Area: LANGUAGE: Development & aging

Poster A41 Phase synchronization in the brain's functional reading network during letter processing supports the development of word reading in elementary school children

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Topic Area: LANGUAGE: Development & aging

Poster A42 Tracking Attention to Spoken Language using EEG Alpha Oscillations

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Topic Area: LANGUAGE: Other

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

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Topic Area: LANGUAGE: Other

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

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

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

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Topic Area: LANGUAGE: Other

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

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

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Topic Area: LANGUAGE: Semantic

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

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Topic Area: LANGUAGE: Semantic

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

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Topic Area: LANGUAGE: Semantic

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

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

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Topic Area: LANGUAGE: Semantic

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

Kun-Yu Xu¹, Jeng-Ren Duann¹, Denise Wu¹; ¹National Central University
Topic Area: LANGUAGE: Syntax

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

Preston Thakral¹, Tracy Wang², Michael Rugg³; ¹Harvard University, ²University of Texas at Austin, ³University of Texas at Dallas
Topic Area: LONG-TERM MEMORY: Development & aging

Poster A55 Memory and processing speed predict functional independence differentially in non-Hispanic and Hispanic White middle aged and older adults

Ariana Stichel¹, Andrew McKinnon¹, John Ruiz¹, Lee Ryan¹; ¹University of Arizona
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Poster A56 Decreased hippocampal-prefrontal functional connectivity predicts episodic memory in Alzheimer's disease

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Poster A57 Multiple brain markers predict risk of progression on the Clinical Dementia Rating Scale in clinically normal older adults

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Poster A58 The neurocognitive effects of digital memory augmentation

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Topic Area: LONG-TERM MEMORY: Episodic

Poster A59 Strategically orienting retrieval toward remote and recent memories: An episodic specificity account

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Topic Area: LONG-TERM MEMORY: Episodic

Poster A60 Memory Reactivation with Neurostimulation during Sleep Elicits Electrophysiological Responses that Predict Behavioral Changes

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Topic Area: LONG-TERM MEMORY: Episodic

Poster A61 Theta oscillations during active and passive decision making for navigation

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Topic Area: LONG-TERM MEMORY: Episodic

Poster A62 Noninvasive stimulation increases fMRI connectivity during autobiographical memory retrieval more so than during rest

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Poster A63 Differential effects of negative emotion on item-specific and contextual memory precision

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Poster A64 Visual free recall of real-world scenes reveals high capacity and exquisite detail in memory

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Poster A65 Temporal Contiguity Deficits in Medial Temporal Lobe Amnesia

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Topic Area: LONG-TERM MEMORY: Episodic

Poster A66 A Synergistic Ecphory Account of Pupillary Old/New Effects During Episodic Memory Retrieval

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Poster A67 Reinstatement of spatial information in a hybrid spatial-episodic memory task

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Poster A68 Resting-state hippocampal functional connectivity depends on handedness

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Poster A69 Caudate Activation in Adolescents during Goal-Directed Memory Performance is Associated with Mood, Anxiety, and Sensation Seeking

Emily Oot^{1,3}, Jennifer Sneider^{1,2}, Julia Cohen-Gilbert^{1,2}, Derek Hamilton⁴, Anna Seraikas¹, Maya Rieselbach¹, Carolyn Caine¹, Arkadiy Maksimovskiy^{1,2}, Lisa Nickerson^{1,2}, Sion Harris^{2,5}, Marisa Silveri^{1,2}; ¹McLean Hospital, ²Harvard Medical School, ³Boston University School of Medicine, ⁴University of New Mexico, ⁵Boston Children's Hospital
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Poster A70 Improving Memory with Real-Time Phase-Locked Reactivation during Sleep

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Poster A71 Impoverished Semantic Memory in Mild Cognitive Impairment

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Poster A72 Generalization in an object category learning paradigm is better in the morning than the evening

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Poster A73 Mechanisms Underlying Memory Distortion for Emotional Orthographic Associates with EEG

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Poster A74 Explicit probabilistic sequence learning in Tourette syndrome

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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

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Topic Area: METHODS: Electrophysiology

Poster A76 Dissociating Alzheimer's Disease from Amnesic Mild Cognitive Impairment Using Time-frequency-based EEG Measures

Wendel Friedl¹, Paul Kieffaber¹; 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

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Topic Area: METHODS: Neuroimaging

Poster A79 EEG-Based Source Imaging Revealed Lower Beta-Band Top-Down Modulation of Early Visual Areas

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Topic Area: METHODS: Neuroimaging

Poster A80 P300 and theta-band oscillation: two expressions of a single novelty response

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Poster A81 Novelty enhances the reliability and timing consistency of neuronal source response

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Poster A82 Measuring Prefrontal Functional Connectivity Development in Preschool-aged Children Using fNIRS

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Topic Area: METHODS: Other

Poster A83 Characterizing inter-individual differences in brain morphology

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Topic Area: NEUROANATOMY

Poster A84 Organized patterns of cortical thinning observed across the healthy adult lifespan.

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Poster A85 Insular Functionally Connected Sub-regions of Healthy Developing Youth

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Topic Area: NEUROANATOMY

Poster A86 Collective listening: Effects of groove, tempo, and visual coupling among audience members on physical engagement with the music

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Topic Area: PERCEPTION & ACTION: Audition

Poster A87 Stochastic resonance like cross-modal enhancement as a universal neural computation and cognitive processing principle

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Topic Area: PERCEPTION & ACTION: Audition

Poster A88 FOXP2 Variation Modulates Auditory Feedback Control of Speech Production

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Topic Area: PERCEPTION & ACTION: Audition

Poster A89 **Age effects on ventral visual pathway representations: Evidence for dedifferentiation and hyperdifferentiation**

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Poster A90 **Short Form of the California Odor Learning Test**

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Poster A91 **Intentionality modulates the impact of reward and punishment on performance during sequence learning**

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Topic Area: PERCEPTION & ACTION: Motor control

Poster A92 **Effects of sharing goals with others on sense of agency and motor performance**

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Topic Area: PERCEPTION & ACTION: Motor control

Poster A93 **Sense of agency and motor performance are stronger when an individual is capable of motor prediction**

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Poster A94 **Role of Facial Expression Conflict in Motor Inhibition**

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Poster A95 **Neuroanatomical differences between monozygotic twins discordant for musical practice**

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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**

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Poster A97 **Reading and neuropsychological performance: Relationships in patients with mild-to-moderate TBI**

Keith Main¹, Salil Soman², Emma Gregory¹, Maxwell Rappoport³, Micaela Thordarson³, Jennifer Kong³, J. Wesson Ashford^{3,4}, 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 Herring^{1,2}, Thomas Reber³, Florian Mormann³, Heleen Slagter^{1,2}; 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 Coburn¹, Oshin Vartanian², Marcos Nadal³, 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 Potts^{1,2}, William T. McCuddy¹, Devi Jayan¹, Anthony J. Porcelli^{1,3}; 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 Olson^{1,2}, Gwenievere Birster¹, Scott Rauch^{1,2}, Isabelle Rosso^{1,2}; 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**

Ting-Ting Chang¹, Carol Yeh-Yun Lin¹, Nai-Shing Yen¹, Danchi Tan¹, Ying-Ching Chen¹; ¹National Chengchi University
Topic Area: THINKING: 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 Fang^{1,2}, De-Jung Tseng¹, Ching-Po Lin³, Ovid J.L. Tzeng^{1,2,4,5,6}, Hsu-Wen Huang^{2,6}, Chih-Mao Huang^{1,2};
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 A111 Brain processes supporting the generation of new and original ideas

Mathias Benedek¹, Emanuel Jauk¹, Roger Beaty²; ¹University of Graz, ²Harvard University
Topic Area: LONG-TERM MEMORY: Semantic

Poster A112 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 of Bloomington
Topic Area: NEUROANATOMY

Poster A113 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 A114 Interactions between Age and Sex in Rhythmic Attention Networks

Alex Wiesman¹, Tony W Wilson¹; ¹University of Nebraska Medical Center
Topic Area: ATTENTION: 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 Schouwenaars¹, 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 Wooten^{1,2}, Michael Esterman^{2,3}, Joe DeGutis^{1,2}, Victoria Poole^{1,2}, Elizabeth Leritz^{1,2}; 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, 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
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 Savalia¹, Denise Park^{1,3}, Gagan Wig^{1,3}; ¹University of Texas at Dallas, ²Sogang University, ³University of Texas Southwestern Medical Center
Topic Area: EMOTION & SOCIAL: Development & aging

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 diFilipo^{1,2}, Alexandra Bueno², Lissette Gimenez-Arce², Kayla Talbot², Taylor Valentin², Denice Vidals², Jill Grose-Fifer^{1,2}; 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. Lin^{1,2}; 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 Gentaz^{1,2}; 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, Sanda 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 Tin¹, Barbara Shinn-Cunningham¹, Tyler Perrachione¹; ¹Boston University

Topic Area: ATTENTION: Auditory

Poster B2 Age and sex modulate the variability of neural responses to engaging videos

Samantha Cohen^{1,2}, Agustin Petroni¹, Nicolas Langer^{1,3}, Simon Henin¹, Tamara Vanderwal⁵, Michael P. Milham^{3,6}, 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: Development & aging

Poster B3 Cross-modal activation of visual cortices depends on auditory selective attention

Chrysa Retsa¹, Pawel J. Matusz¹, Jan Schnupp^{1,2}, Micah Murray^{1,3,4,5}; 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 Okumura³, Tomoki Uno²; ¹Faculty 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 Fortenbaugh^{1,2}, David Rothlein^{1,3}, Joseph DeGutis^{1,2}, Regina McGlinchey^{1,2}, Michael Esterman^{1,3}; 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 Mamashli^{1,2}, Sheraz Khan^{1,2,3}, Hari Bharadwaj^{1,2,3}, Ainsley Losh¹, Matti Hamalainen^{2,3,4}, Tal Kenet^{1,2}; ¹Department of Neurology, MGH, Harvard

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, Reyhaneh Bakhtiari³, 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 Glimcher¹; ¹New York University

Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster B17 Generalization of Conditioned Appetitive Responses in Humans

Marta Andreatta¹, 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

Kohei Fuseda¹, 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

Motoyuki 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 Hicks², Erica Schmidt², Shaadee Samimy¹, Nancy Dennis¹, Kristina Visscher², 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 Qiu^{1,2}, June C Lo¹, Evelyn SC Koay^{3,4}, Woon-Puay Koh^{1,5}, Michael WL Chee¹, Juan Zhou^{1,6}; 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 Hinault¹, Kevin Larcher², Louis Bherer³, Alain Dagher⁴, Susan Courtney⁵; 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. Miller¹, 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, Jeremy Hogeveen¹, Cory C. Coleman¹, Matthew V. Elliott¹, Seoyoung Gam¹, 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

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

Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

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: Monitoring & inhibitory control

Poster B32 Computational modeling as a tool for detecting medication response in ADHD

Mads Pedersen^{1,2}, Michael J. Frank¹, Sigurd Ziegler², Mats Fredriksen³, Guido Biele⁴; ¹Brown University, ²University of Oslo, ³Vestfold Hospital Trust, ⁴Norwegian Institute of Public Health

Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

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

Topic Area: EXECUTIVE PROCESSES: Other

Poster B34 ERP Components Related to Proactive Interference in Visual Working Memory

Li Zhou¹, Thomas Farnbacher², Robin Thomas²; ¹Bemidji State University, ²Miami University

Topic Area: EXECUTIVE PROCESSES: Other

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

Topic Area: EXECUTIVE PROCESSES: Working memory

Poster B36 Neural mechanisms of precision in visual working memory

Elizabeth Lorenz¹, Mark D'Esposito¹; ¹University of California, Berkeley

Topic Area: EXECUTIVE PROCESSES: Working memory

Poster B37 Reduced interference in working memory following mindfulness training is associated with increases in hippocampal volume

Jonathan Greenberg^{1,2}, Victoria L. Romero³, Seth Elkin-Frankston³, Matthew A. Bezddek⁴, Eric H. Schumacher⁴, Sara W. Lazar^{1,2}; 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. Anderson³, 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: Working memory

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

Topic Area: EXECUTIVE PROCESSES: Working memory

Poster B40 Neural oscillations in the prefrontal and superior temporal cortices predict spatial working memory performance

Amy L. Proskovec^{1,2}, Alex I. Wiesman², Elizabeth Heinrichs-Graham², Tony W. Wilson^{1,2}; ¹University of Nebraska Omaha, ²University of Nebraska Medical Center

Topic Area: EXECUTIVE PROCESSES: Working memory

Poster B41 Relationships between white matter in infancy and subsequent language abilities in preschool

Jennifer Zuk^{1,2}, Michael Figuccio¹, Xi Yu¹, Joseph Sanfilippo¹, Jade Dunstan¹, Clarisa Carruthers¹, Ellen Grant^{1,2}, Nadine Gaab^{1,2,3}; ¹Boston Children's Hospital, ²Harvard Medical School, ³Harvard Graduate School of Education

Topic Area: LANGUAGE: Development & aging

Poster B42 Right lateralization of white matter tracts in infants with a genetic risk of developmental dyslexia

Clarisa Carruthers¹, Xi Yu^{1,2}, Jennifer Zuk^{1,2}, Jade Dunstan¹, Joseph Sanfilippo¹, P. Ellen Grant^{1,2}, Nadine Gaab^{1,2,3}; ¹Boston Children's Hospital, ²Harvard Medical School, ³Harvard Graduate School of Education

Topic Area: LANGUAGE: Development & aging

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 Petrill⁴; ¹University of Colorado Boulder, ²Vanderbilt University, ³Case Western Reserve University, ⁴Ohio State University

Topic Area: LANGUAGE: Other

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, Marla Mickelborough¹, Layla Gould¹, Ron Borowsky¹; ¹University of Saskatchewan

Topic Area: LANGUAGE: Other

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

Olessia Jouravlev^{1,2}, Zachary Mineroff¹, Evelina Fedorenko^{1,3,4};
¹Massachusetts Institute of Technology, ²Carleton University, ³Harvard
Medical School, ⁴Massachusetts General Hospital
Topic Area: LANGUAGE: Other

Poster B46 Modulatory Effects of Emotional Prosody on Neural Sensitivity to Speech Discrimination in Second Language Learners

Chieh Kao¹, Yang Zhang¹; ¹University of Minnesota
Topic Area: LANGUAGE: Other

Poster B47 Phoneme learning in a musical context

Mihye Choi¹, Ertugrul Uysal¹, Mohinish Shukla¹; ¹University of
Massachusetts Boston
Topic Area: LANGUAGE: Other

Poster B48 Predicting Reading Comprehension from Eye Movement Features using Deep Neural Network

Xiaochuan Lindsey Ma¹, Jinlong Hu², Xiaowei Zhao³, Ping Li¹; ¹Pennsylvania
State University, ²South China University of Technology, ³Emmanuel College
Topic Area: LANGUAGE: Other

Poster B49 Two late positivities during sentence comprehension: The influence of wrap-up and cognitive control

Trevor Brothers^{1,2}, Eddie Wlotko³, Simone Riley¹, Margarita Zeitlin¹, Connie
Choi¹, Gina Kuperberg^{1,2}; ¹Tufts University, ²Massachusetts General
Hospital, ³Moss Rehabilitation Research Institute
Topic Area: LANGUAGE: Semantic

Poster B50 Effective Connectivity of Aphasic Bilingual Semantic Processing

Robert Buckshaw II¹, Erin Meier¹, Swathi Kiran¹; ¹Boston University
Topic Area: LANGUAGE: Semantic

Poster B51 Semantic processing of self-adaptors, emblems, and iconic gestures: An ERP study

Kawai Chui¹, Chia-Ying Lee^{2,3}, Kanyu Yeh¹, Pei-Chun Chao³; ¹National
Chengchi University, Taiwan, ²Academia Sinica, Taiwan, ³National Yang-
Ming University, Taiwan
Topic Area: LANGUAGE: Semantic

Poster B52 University students with a history of reading difficulty show reduced neural effects of word expectancy

Suzanne Welcome¹; ¹University of Missouri - St Louis
Topic Area: LANGUAGE: Semantic

Poster B53 A noisy channel account of ERP differences in sentence comprehension

Veena D. Dwivedi¹, Janahan Selvanayagam¹, Victoria Witte², Harmonie
Chan¹, Ted Gibson³; ¹Brock University, ²Heidelberg University, ³MIT
Topic Area: LANGUAGE: Syntax

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, Brianna M. Dougherty¹, Eduardo
Europa¹, Cynthia K. Thompson¹; ¹Northwestern University, Evanston, IL
Topic Area: LANGUAGE: Syntax

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
Topic Area: LONG-TERM MEMORY: Development & aging

Poster B56 Age-related Differences in the Effects of Lying on Cognitive Control and Memory

Laura Paige¹, Angela Gutchess¹; ¹Brandeis University
Topic Area: LONG-TERM MEMORY: Development & aging

Poster B57 Age Differences in Emotional Integrative Memory

Shaina L. Garrison¹, Kelly S. Giovanello¹; ¹University of North Carolina at
Chapel Hill
Topic Area: LONG-TERM MEMORY: Development & aging

Poster B58 A trade-off in category- and item-level learning: implications for development

Erika Wharton-Shukster¹, Amy S. Finn¹; ¹University of Toronto
Topic Area: LONG-TERM MEMORY: Development & aging

Poster B59 Modeling the dynamic content, encoding, and retrieval of naturalistic stimuli

Andrew Heusser¹, Jeremy Manning¹; ¹Dartmouth College
Topic Area: LONG-TERM MEMORY: Episodic

Poster B60 Map-like coding of personal preferences facilitates social learning.

Raphael Kaplan¹, Karl Friston¹; ¹University College London
Topic Area: LONG-TERM MEMORY: Episodic

Poster B61 The role of the prefrontal cortex in accuracy of judgments of learning

Alexandra M. Gaynor¹, Elizabeth F. Chua^{1,2}; ¹The Graduate Center, The City
University of New York, ²Brooklyn College, The City University of New York
Topic Area: LONG-TERM MEMORY: Episodic

Poster B62 Familiarity and Retrieval Monitoring Effects on Dorsal Striatum Connectivity across the Adult Lifespan

Paul F Hill^{1,2}, Marianne de Chastelaine^{1,2}, Eleanor S Liu^{1,2}, Michael D
Rugg^{1,2}; ¹University of Texas at Dallas, ²Center for Vital Longevity
Topic Area: LONG-TERM MEMORY: Episodic

Poster B64 Representational similarity patterns predict subsequent source memory but are disrupted by task switching in temporo-occipital regions

Carolin Sievers¹, Fraser W. Smith¹, Janak Saada¹, Louis Renoult¹;
¹University of East Anglia, UK
Topic Area: LONG-TERM MEMORY: Episodic

Poster B65 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
Topic Area: LONG-TERM MEMORY: Episodic

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 Giovanello¹; 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 Liu^{1,2}, Paul F Hill^{1,2}, Marianne de Chastelaine^{1,2}, Michael D Rugg^{1,2}; 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. Olsen^{1,2}; 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. Davis^{1,2}, Pedro M. Paz-Alonso³, Gerry T. M. Altmann^{1,2}, Eiling Yee^{1,2}; 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 Kryklywy¹; ¹University of British Columbia, ²Oakland University
Topic Area: LONG-TERM MEMORY: Skill learning

Poster B76 **Frequency-dependent temporal fluctuations of functional connectivity within intrinsic networks in human cortex**

Aaron Kucyi¹, Josef 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 Haselgrove^{1,2}, Robert Buccigrossi³, Albert Crowley³, David Kennedy², Abby Paulson³, Nina Preuss³, Matt Travers³; ¹Neuromorphometrics, Inc, ²University of Massachusetts Medical School, ³TCG, Inc
Topic Area: METHODS: Neuroimaging

Poster B79 **The specificity and robustness of long-distance connections in weighted inter-areal structural brain networks**

Richard Betzel¹, Danielle Bassett¹; ¹University of Pennsylvania
Topic Area: METHODS: Neuroimaging

Poster B81 **Increased Default Mode Network Functional Connectivity in Individuals with Greater Meditative Experience**

Lauren Goodes¹, Yush Kukreja², 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 B82 **Local Heterogeneity Regression Analysis: A Novel Measure of Representational Sparseness in Reading**

Jeremy Purcell¹, Brenda Rapp¹; ¹Johns Hopkins University
Topic Area: METHODS: Neuroimaging

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 **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 B85 **Frontal Cortex and Executive Functions in Healthy and Neuropsychiatric Samples: A Meta-Analysis of Structural Neuroimaging Studies**

Valeria Vilomar^{1,2}, 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 Gati¹, 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 Ghitza^{1,2}, David Poeppel^{1,3}; 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 Schiff², Lucas C Parra¹; 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 Uhlhaas¹; 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 Sato⁴, Naoyuki Miyajima⁵, Masahiko Ichiki⁶, Shinichiro Nakamura¹; 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 Otsubo¹, Danielle Lim¹, Asaf Gilboa², Morgan Barense¹, Amy Finn¹; 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 Caeyenberghs²; 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 – SpAtial, Motor & Bodily Awareness – Research Group, Psychology Department, University of Turin, Turin, Italy

Topic Area: PERCEPTION & ACTION: Motor control

Poster B94 **Cognitive tuning of the defensive peripersonal space is influenced by postural adjustment ability**

Marco Bove¹, Monica Biggio¹, Ambra Bisio¹, Piero Ruggeri¹; 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 Cox^{1,2}, Sonya Bells¹, Janine Piscione¹, Brian W. Timmons^{3,4}, Ute Bartels^{1,2}, Cynthia de Medeiros¹, Jovanka Skocic¹, Kiran Beera¹, Suzanne Laughlin^{1,2}, Donald J. Mabbott^{1,2}; 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 Ruggeri¹, 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. Marshall¹; 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 Ptak^{1,2}, 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. Mruzek¹, 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 Badre¹; 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
Topic Area: THINKING: Decision making

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. Cykowicz^{1,2}, Diana Rodriguez Moreno¹, Lawrence V. Amsel^{1,2}, Chase A. Hill¹, Zhishun Wang^{1,2}, Xiaofu He^{1,2}, Christina Hoven^{1,2}; 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. Castellon¹, 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 Salvi^{1,2}, Ryan Conrardy², Richard McKinley³, Mark Beeman¹, Jordan Grafman^{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. Ross^{1,2}; 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
Topic Area: EMOTION & SOCIAL: Person perception

Poster B116 Sex Differences in Brain Network Connectivity Subservient Theory of Mind in Individuals with Alcohol Use Disorder

Sergey V. Chernyak¹, Marisa M. Silveri^{1,2}, Amy Janes¹, Jennifer T. Sneider¹, 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. Maksimovskiy^{1,4}, Anna Seraikas¹, Emily Oot^{1,5}, Maya Rieselbach¹, Carolyn Caine¹, Julia Cohen-Gilbert^{1,4}, Jennifer T. Sneider^{1,4}, Sion K. Harris³, Lisa Nickerson^{2,4}, Marisa M. Silveri^{1,4,5}; 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

Dasom Lee¹, Seyul Kwak¹, Jeanyung Chey¹; 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 Whiteman^{1,2}, 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 Walentowska^{2,1}, Agnes Moors^{3,1}, 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-tDCS

Francesca Raileanu¹, Thomas McWilliams¹, Geoffrey Genova¹, Scott Mongold¹, Morgan Taylor¹, Jasper Park¹, Anisha Jain¹, Isabella Montoya¹, Joseph Pajka¹, Erika Hussey^{1,2}, 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 Buzzell^{1,2}, Daniel Roberts¹, Craig McDonald¹; ¹George Mason University, ²University of Maryland

Paul Beatty¹, George Buzzell^{1,2}, 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. Muggleton^{1,2,3}, 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

David Amadeus Vogelsang^{1,2}, Daniella J. Furman^{1,2}, Mark D'Esposito^{1,2}; 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 B129 EEG correlates of working memory for action

Edmund Wascher¹, Bianca Zickerig¹, Stephan Getzmann¹, Stefan Arnau¹, Sven Thönes¹, Daniel Schneider¹; ¹Leibniz Research Centre for Working Environments and Human Factors

Topic Area: EXECUTIVE PROCESSES: Working memory

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 Lee^{1,2}, Pejman Sehatpour^{1,2}, Cheryl M. Corcoran¹, Daniel C. Javitt^{1,2}; 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 Hanenberg^{1,2}, Joerg Lewald^{1,2}; ¹Leibniz Research Centre for Working Environment and Human Factors (IfADo), Germany, ²Ruhr University Bochum, Germany

Topic Area: ATTENTION: Auditory

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. Somers¹; 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

Poster C7 Caffeine boosts preparatory attention for reward-related information

Marlon de Jong¹, Berry van den Berg^{1,2}, Marty G. Woldorff², Monique M. Lorist¹; ¹University of Groningen, Groningen, Netherlands, ²Duke University, Durham, NC 27708, United States

Topic Area: ATTENTION: Other

Poster C8 Same underlying neural mechanisms for spatial neglect and anosognosia for functional disability

Stephanie A. Waldman¹, Peii Chen², Meghan D. Caulfield^{1,2}; ¹Lafayette College, Easton PA, ²Kessler Foundation, West Orange, NJ

Topic Area: ATTENTION: Spatial

Poster C9 Dynamics of parietal lobe activity predict variability in sustained attention

AJ Simon¹, Richard Campusano¹, Josh Volponi¹, Sasha Skinner¹, Joaquin Anguera¹, Adam Gazzaley¹, David A. Ziegler¹; ¹UCSF, ²UCSF, ³UCSF, ⁴UCSF, ⁵UCSF, ⁶UCSF, ⁷UCSF

Topic Area: ATTENTION: Spatial

Poster C10 Differential neural activity for self-referentially processed objects in older and younger adults

Ryan T. Daley¹, Holly J. Bowen¹, Katelyn R. Parisi^{1,2}, Elizabeth A. Kensinger¹, Angela H. Gutchess²; ¹Boston College, ²Brandeis University

Topic Area: EMOTION & SOCIAL: Development & aging

Poster C11 Neural Correlates of Loneliness in Adolescence

Janelle Beadle¹, Mallory Feenstra¹, Abi M. Heller¹, Vince D. Calhoun^{2,5}, Julia Stephen^{2,5}, Yu-Ping Wang³, David E. Warren⁴, Tony W. Wilson⁴; ¹University of Nebraska at Omaha, ²University of New Mexico, ³Tulane University, ⁴University of Nebraska Medical Center, ⁵The Mind Research Network

Topic Area: EMOTION & SOCIAL: Development & aging

Poster C13 For the Win! The Role of Emotion Regulation in Competitive Gaming Performance

Kyle Nolla¹, Mark Beeman¹; ¹Northwestern University

Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster C14 Emotion processing in Moebius Syndrome

Shruti Japee¹, Jessica Jordan¹, Savannah Lokey¹, Chris Baker¹, Leslie Ungerleider¹; ¹Lab of Brain and Cognition, NIMH/NIH

Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster C15 The Impact of Anxious Arousal on the Discrimination Between Threat and Safety Cues

Nadia Haddara^{1,2}, L. Jack Rhodes¹, Thomas Nguyen¹, Kendra Deschamps¹, Stephanie Ijomah¹, Erica Miller¹, Vladimir Miskovic^{1,2}; ¹SUNY Binghamton, ²Center for Affective Science, SUNY Binghamton

Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster C16 Prosodic influence in face emotion perception: evidence from electroencephalography

Katherine M Becker¹, Donald C Rojas¹; ¹Colorado State University

Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster C17 Low-frequency connectivity with memory regions during stress and alcohol cue exposure distinguishes alcoholics from social drinkers

Elizabeth V. Goldfarb¹, Dongju Seo¹, R. Todd Constable¹, Rajita Sinha¹;

¹Yale University School of Medicine

Topic Area: EMOTION & SOCIAL: Emotional responding

Poster C18 Patient-clinician concordance in social mirroring circuitry supports non-verbal communication and placebo analgesia in the context of pain treatment – a fMRI hyperscanning study

Dan-Mikael Ellingsen^{1,2}, Changjin Jung^{1,2,3}, Jeungchan Lee^{1,2}, Kylie Isenburg^{1,2}, Jessica Gerber^{1,2}, Ishtiaq Mawla^{1,2}, Roberta Sclocco^{1,2}, Robert R Edwards⁴, John Kelley⁵, Irving Kirsch², Ted J Kaptchuk², Vitaly Napadow^{1,2};

¹Massachusetts General Hospital, ²Harvard Medical School, ³Korea Institute of Oriental Medicine, Daejeon, Korea (the Republic of), ⁴Brigham and Women's Hospital, Boston, MA, ⁵Endicott College, Beverly, MA

Topic Area: EMOTION & SOCIAL: Emotional responding

Poster C19 Personality Measures and Reward-Related Neural Activations among Individuals with Different Substance Using Patterns

Tien Tong¹, Jatin Vaidya¹, John Kramer¹, Samuel Kuperman¹, Doug Langbehn¹, Daniel O'Leary¹; ¹University of Iowa Carver College of Medicine

Topic Area: EMOTION & SOCIAL: Other

Poster C20 Effect of social context on stimuli processing: comparing the ERPs of individuals tested alone, with a friend or with a stranger

Ashley Chau-Morris¹, Maud Haffar^{1,3}, Sheila Bouten¹, Tarlan Daryoush¹, Natalie Frye¹, Ursula Hess⁴, Hugo Pantecouteau^{1,5}, J. Bruno Debruille^{1,2,3};

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

Topic Area: EMOTION & SOCIAL: Other

Poster C21 Exposure to different bodies modulates eye movements to high- and low-calorie foods

Fatemeh Fereidooni¹, Natalie A. Ceballos¹, Reiko Graham¹; ¹Texas State University

Topic Area: EMOTION & SOCIAL: Person perception

Poster C22 Probing the Time-course of Face Representations with Time-resolved Multivariate Pattern Analyses of EEG Signals

Laurie Bayet¹, Rachel Wu², Benjamin Balas³, Richard N. Aslin⁴; ¹Boston Children's Hospital, Harvard Medical School, ²University of California, Riverside, ³North Dakota State University, ⁴Haskins Laboratories

Topic Area: EMOTION & SOCIAL: Person perception

Poster C23 Alterations in neural circuits supporting executive functions in children with reading difficulties

Tzipi Horowitz-Kraus^{1,2}, 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

Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster C24 Socioeconomic Disadvantage, Prefrontal Cortical Structure, and Executive Function in School-Aged Children

Pooja M. Desai¹, Emily C. Merz², Elaine Maskus², Xiaofu He³, Kimberly G. Noble²; ¹Barnard College, Columbia University, ²Teachers College, Columbia University, ³Columbia University Medical Center

Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster C25 **Local functional connectivity development in early childhood: Associations with socioeconomic status**

Ursula A Tooley¹, Allyson P Mackey¹; ¹University of Pennsylvania
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**

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Topic Area: EXECUTIVE PROCESSES: Goal maintenance & switching

Poster C28 **Learning Cognitive Flexibility: Neural Mechanisms of Adaptive Switch Readiness**

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Topic Area: EXECUTIVE PROCESSES: Goal maintenance & switching

Poster C29 **Effective connectivity via brain oscillations during cognitive control post-concussion**

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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**

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Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster C31 **Dopaminergic polymorphisms C957T and ANKK1 contribute to distinct aspects of delay discounting**

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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**

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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**

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Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster C34 **Dysexecutive impairment in first-episode of Schizophrenia**

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Topic Area: EXECUTIVE PROCESSES: Other

Poster C35 **Different procrastination measures correlate with different neural activities**

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Topic Area: EXECUTIVE PROCESSES: Other

Poster C36 **Electrophysiological markers of stress on working memory networks in adolescents**

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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**

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Topic Area: EXECUTIVE PROCESSES: Working memory

Poster C38 **The influence of storage capacity versus control in visual working memory capacity limitations**

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Topic Area: EXECUTIVE PROCESSES: Working memory

Poster C39 **The circuit analyses of Anesthesia-resistant memory in Drosophila.**

Emmanuel Antwi-Adjei¹, Diana Hilpert², 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**

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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 Graham^{1,2}, Ashley Williams^{1,2}, Candace Killian-Farrell¹, Hannah Waltz¹, Joshua Bizzell¹, Erin King¹, Alana Campbell¹, Aysenil Belger^{1,2}; 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 Barnwal², Nishant Lohagun³, Ouroz Khan³, Anuradha Singh³, Deepshikha Misra³, Vaishna Narang³, 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; ¹Tilburg 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

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Topic Area: LANGUAGE: Other

Poster C45 Cortical Hemodynamics and Neural Network Connectivity During Stuttered and Fluent Speech

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Topic Area: LANGUAGE: Other

Poster C46 Knowledge Structure and Expository Texts Comprehension: A Neurocognitive Study

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Topic Area: LANGUAGE: Other

Poster C47 Common recruitment of neural resources for phonological working memory regardless of behavioral demands.

Terri L. Scott¹, Sara C. Dougherty¹, Ja Young Choi², 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 deBode³, Tami Katzir⁴, 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: Semantic

Poster C52 Alpha- and theta-band time-frequency representations in free reading of stories using EEG and EM coregistration

Max Cantor¹, John Trueswell², Albert Kim¹; ¹University of Colorado Boulder, ²University of Pennsylvania
Topic Area: LANGUAGE: Semantic

The neural substrates for predictive processes in sentence comprehension

Poster C53

Chih-Ting Chang¹, Ping Li^{2,3}, Jie-Li Tsai⁴, En-Ju Lin⁵, Pei-Chun Chao¹, Chia-Ju Chou¹, Chia-Ying Lee^{1,4,5,6}; 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: Semantic

Poster C54 The Effects of Age and Familial Sinistrality on Late Positive Components

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Topic Area: LANGUAGE: Syntax

Poster C55 Dissociating the Effect of Dependency from Embedding in Syntactic Hierarchy

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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

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Topic Area: LONG-TERM MEMORY: Development & aging

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

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Topic Area: LONG-TERM MEMORY: Development & aging

Poster C59 Definition-based unitization improves associative memory of older adults: mechanism and training studies

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Topic Area: LONG-TERM MEMORY: Development & aging

Poster C60 THC disrupts the encoding of perceptual details while sparing item-context bindings.

Manoj Doss¹, Jessica Weafer¹, 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. Federmeier², Melissa C. Duff³, 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

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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

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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

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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 Melloni^{1,2}, 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

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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

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Topic Area: LONG-TERM MEMORY: Semantic

Poster C74 Searching for semantic knowledge: A vector space semantic analysis of the feature generation task

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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

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Poster C76 Finding the baby in the bath water – evidence for training-specific changes in MRI measures of brain structure and function

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Topic Area: LONG-TERM MEMORY: Skill learning

Poster C77 EEG patterns reveal internal dynamics of sleep stage N3

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Topic Area: METHODS: Electrophysiology

Poster C78 Test-retest reliability of ERP based Neurometrics

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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

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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

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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

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Topic Area: METHODS: Neuroimaging

Poster C84 Defining Cognition: Automated Generation of Cognitive Ontology by Text-Mining Literature

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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-Cornejo^{1,2}, Jose Mora-González¹, Cristina Cadenas-Sánchez¹, Oren Contreras-Rodriguez^{3,4}, Juan Verdejo-Roman⁵, Pontus Henriksson^{1,6}, Jairo Migueles¹, Maria Rodriguez-Ayllon¹, Pablo Molina-García¹, Charles Hillman², Andrés Catena⁵, 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 Ayoub^{1,2}, Kiran Beera¹, Ashley Ferkul¹, Jovanka Skocic¹, Cynthia de Medeiros¹, Eric Bouffet^{1,2}, Donald Mabbott^{1,2}; 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

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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

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Topic Area: PERCEPTION & ACTION: Audition

Poster C90 **Tablet-based gameplay identifies movement patterns related to autism spectrum disorder**

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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, Holly Gagnon¹, Kaitlin Cassady¹, Molly Simmonite¹, Myria Petrou¹, Bradley Foerster¹, Rachael Seidler², Stephan Taylor¹, Daniel H. Weissman¹, Thad A. Polk¹; ¹University of Michigan, ²University of Florida
Topic Area: PERCEPTION & ACTION: Development & aging

Poster C92 **Grasping Interferes with Visuospatial Working Memory during the Encoding: Neurophysiological Evidence**

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Topic Area: PERCEPTION & ACTION: Motor control

Poster C93 **Comparing Sensorimotor Oscillations during a Motor Task with a Robot or Human Partner**

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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;
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Topic Area: PERCEPTION & ACTION: Motor control

Poster C96 **Synesthesia and Statistical Learning: Redundant Cues Improve Segmentation**

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Topic Area: PERCEPTION & ACTION: Multisensory

Poster C97 **Changes in perceived peripersonal space following the rubber hand illusion**

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Topic Area: PERCEPTION & ACTION: Multisensory

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

Steven Weisberg¹, Nora Newcombe², Anjan Chatterjee¹; ¹University of Pennsylvania, ²Temple University
Topic Area: PERCEPTION & ACTION: Other

Poster C99 **Fast fMRI with simultaneous EEG detects distinct thalamocortical dynamics underlying transitions in and out of sleep**

Laura Lewis^{1,2}, Jonathan Polimeni^{2,3}, Kawin Setsompop^{2,3}, Robert Stickgold⁴, Giorgio Bonmassar^{2,3}, Bruce Rosen^{2,3}; 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**

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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**

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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 Wan^{1,2}, Bradley Robinson¹, Kerry Jordan¹; ¹Utah State University, ²Cincinnati Reds
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. Boisseau^{1,2}, Steven Rasmussen^{1,2}, Brianna Pritchett^{1,2}, Michael J. Frank¹; ¹Brown University, ²Butler Hospital
Topic Area: THINKING: Decision making

Poster C108 Integrating incomplete information with imperfect advice

Natalia Véllez¹, 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.

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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

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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

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Poster C115 Alpha Oscillatory Synchrony underlying Working Memory Maintenance in Children

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Poster C117 Are unattended memory items under cognitive control?

Jacqueline Fulvio¹, Bradley Postle¹; ¹University of Wisconsin - Madison
Topic Area: EXECUTIVE PROCESSES: Working memory

Poster C118 Development of Spoken Language Comprehension in Hearing Children and Children with Cochlear Implants: Data from a Passive Listening Task

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Topic Area: LANGUAGE: Development & aging

Poster C119 Relationships between Cortical Thickness and Reading in Typically Developing Children

Gabrielle-Ann Torre^{1,2}, 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 C120 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 C122 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 C123 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 C124 Improved diffusion Magnetic Resonance Imaging reconstruction of the Arcuate Fasciculus

Elise B. Barbeau^{1,2,3}, Kaija Sander^{1,2,3}, Shanna Kousaie^{1,3}, Thomas Liotis³, Denise Klein^{1,2,3}, Michael Petrides^{1,2,4}; ¹Cognitive Neuroscience Unit, Montreal Neurological Institute, 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 C125 Indirect impact of a foreign accent on cognitive processes with no spoken language.

Alice Foucart¹, Hernando Santamaría-García^{2,3,4}, Robert Hartsuiker¹; ¹Ghent University, Belgium, ²Pontificia Universidad Javeriana, Colombia, ³Instituto de Neurociencia Cognitiva y Traslacional, Argentina, ⁴Centro de memoria y cognición intellectus hospital san Ignacio, Argentina
Topic Area: LANGUAGE: Other

Poster C126 **Convergence of speech-print networks as a marker of language learning**

Pedro M. Paz-Alonso¹, Kshipra Gurunandan¹, Manuel Carreiras^{1,2}; 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 Ekves^{1,2}, Pedro Paz-Alonso³, Nicholas Hindy⁴, Sarah Solomon⁵, Gerry Altmann^{1,2}; 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 DiMercurio¹, 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 Kuperberg^{1,4}; ¹Tufts University, ²University of Maryland, ³Max Planck Institute for Psycholinguistics, ⁴Massachusetts General Hospital
Topic Area: LANGUAGE: Semantic

Lizzy Blundon¹, Yana Pertels¹, Lawrence Ward^{1,2}; 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**

McKinze 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 Raz^{1,2}; 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 Raz^{1,2}; 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, Sanda Dolcos¹; ¹University of Illinois at Urbana-Champaign, ²University of Michigan
Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster Session D

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

Poster D1 **Acoustic Effects on Oscillatory Markers of Sustained Attention**

Psyche Loui¹, Emily Przyssinda¹, Gonçalo Sampaio¹, 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 Wiegand^{1,2,3}, Patrizia Maier², Natan Napiórkowski⁴, Kathrin Finke^{4,5}, Thomas Töllner⁴, Hermann J Müller⁴, 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**

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**

Azeez Adebimpe¹, Danielle S. Bassett^{2,3}, Daniel Romer¹; ¹Annenberg 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 O'Brien¹, Yuta Katsumi¹, Alexandru Iordan², JulieAnn Scherer¹, Alejandro Lleras¹, Simona Buetti¹, Sanda 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. Huang^{1,2}; 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 Pierce^{1,2}, Stephen Benning³; 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 Sugiura¹, Kelssy 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 Ryyppö¹, Enrico Glerean¹, 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 Berg^{1,2}, Jolien van Breen^{1,3}, Russell Spears¹, Monique Lorist^{1,2}; 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 Wang³, 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**

Kshipra Gurunandan¹, M. Rosario Rueda², Sonia Guerra², Manuel Carreiras^{1,3}, Pedro M. Paz-Alonso¹; ¹Basque Center on Cognition, Brain and Language, ²Universidad de Granada, ³Ikerbasque - Basque Foundation for Science
Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster D28 **Functional networks involved in creative planning while performing an ongoing task**

David Mailet^{1,2}, Roger Beaty³, Aaron Kucyi⁴, Daniel Schacter³; 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 Wen^{1,2}, 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. Schumacher¹; 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

Dominika Pindus¹, Lauren B. Raine¹, Eric S. Drollette², Daniel Westfall¹, Shih-Chun Kao¹, Naiman A. Khan³, Arthur F. Kramer^{1,4}, Charles H. Hillman^{1,5}; 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, ⁵Department of Health Sciences, Northeastern University

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, Antonino Vallesi^{1,2}, 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 Jones^{1,2}, Hector Arciniega¹, Jennifer Shepack¹, Carlos Carrasco¹, Marian Berryhill¹; ¹University of Nevada, Reno, ²Colorado State University

Topic Area: EXECUTIVE PROCESSES: Working memory

Poster D38 The Prefrontal Theta Activity During Thought Suppression Compared with Thought Free Predicts Lower Working Memory and Higher Worry Symptoms and Rumination in High Trait Anxiety

Salahadin Lotfi¹, 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 Embury^{1,2}, Alex I Wiesman¹, Amy L Proskovec^{1,2}, Elizabeth Heinrichs-Graham¹, Yu-Ping Wang³, Vince D Calhoun^{4,5}, Julia M Stephen⁴, Tony W Wilson^{1,2}; 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 Ruijgrok¹, Olga Kepinska²; ¹Leiden University, ²University of California San Francisco

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: Development & aging

Poster D44 Language control network in trilinguals

Jing Yang¹, Jiali Wu², Qi Zhang³, Ruiming Wang⁴, Ke Zhou⁵; 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 Brookshire^{1,2}, Daniel Casasanto^{1,2}; ¹Cornell University, ²University of Chicago

Topic Area: LANGUAGE: Other

Poster D46 Task switching decomposed: MEG evidence from bimodal language switching

Esti Blanco-Elorrieta^{1,2}, Karen Emmorey³, Liina Pykkänen^{1,2}; 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 Leung^{1,2}, Prashin Unadkat¹, Luca Fumagalli^{1,3}, 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 Whitford², 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 Shtyrov^{1,2,3}; 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 Marghetis², Tessa Verhoeff^{1,3}, 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 Lee²; ¹National Taiwan University, Taiwan, ²Academia Sinica, Taiwan
Topic Area: LANGUAGE: Syntax

Poster D57 **Multiple brain markers mediate age-related changes in cognition**

Trey Hedden^{1,2}, Hannah E. Nierle¹, Rodrigo D. Perea^{1,2}, Jennifer S. Rabin^{1,2}, Rachel F. Buckley^{1,2,3}, Aaron P. Schultz^{1,2}, Keith A. Johnson^{1,2,4}, Reisa A. Sperling^{1,2,4}; 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 Nardini¹; 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; 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. Beaty², Donna Rose Addis³, Daniel L. Schacter²; 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 Geib¹, Erik A Wing¹, 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 McKinnon^{1,4,8}, Ian Hickie¹, Jan Scott¹, Shantel Duffy^{1,7}, Louisa Norrie¹, Zoe Terpening¹, Ron Grunstein⁵, Jim Lagopoulos^{1,6}, Jennifer Batchelor⁴, Simon Lewis¹, James Shine¹, Sharon Naismith^{1,2,3}; ¹Healthy 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 Bogovic¹, Nick Danduone¹, Suma Mallepeddi¹, Palak Patel¹, Tanushi Upadhyay¹, Kanza Tahir¹, P. Andrew Leynes¹; 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 Zaghloul³, Cory Inman⁴, Bradley Lega⁵, Kathryn Davis¹, Gregory Worrell⁶, Barbara Jobst⁷, Daniel Rizzuto¹, Michael Kahana¹; ¹University 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 Sneider^{1,2}, Julia Cohen-Gilbert^{1,2}, Derek A. Hamilton⁴, Carolyn Caine¹, Maya Rieselbach¹, Emily Oot^{1,3}, Anna Seraikas¹, Lisa D. Nickerson^{1,2}, Marisa M. Silveri^{1,2,3}; 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 Yang^{1,4}, Ken McRae^{1,4}, Stefan Köhler^{1,2,4,3}; ¹The 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 Shohamy^{1,6,7}; ¹Columbia University, ²University of Toronto, ³New York State Psychiatric Institute, ⁴Montreal Neurological Institute, ⁵Stony Brook 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 Palombo^{1,2}, Mieke Verfaellie^{1,2}; ¹VA Boston Healthcare System Jamaica Plain, ²Boston University School of Medicine, Department of Psychiatry
Topic Area: LONG-TERM MEMORY: Other

Poster D74 Consolidated-like memories through testing

Jaione Arnaez-Telleria¹, Manuel Carreiras^{1,2,3}, 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. Davis^{1,2}, Gitte H. Joergensen^{1,2}, Eiling Yee^{1,2}; 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 Ellchuk¹, 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, Xieyining 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 Baker³, 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. Chryssikou¹, 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. Kuperberg^{1,2,3}, 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; ¹Ursinus 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 fMRI 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 Ishida^{1,2,3}, Takayuki Arai³, Makio Kashino¹; ¹NTT Communication Science Laboratories, ²Japan Society for the Promotion of Science, ³Sophia University
Topic Area: PERCEPTION & ACTION: Audition

Poster D89 Norepinephrine signals functional resetting: Evidence from human pupil dilation to pattern changes

Sijia Zhao¹, Shigeto Furukawa², Hsin-I Liao², Frederic Dick³, Maria Chait¹; 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 Wolfert¹, Silvia Ortiz-Mantilla¹, 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 Murphy^{1,2,3}; ¹San Diego State University, ²SDSU/UCSD Joint Doctoral Program in Clinical Psychology, ³University of California San Diego
Topic Area: PERCEPTION & ACTION: Development & aging

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 Guger^{1,2}, Rossella Spataro³, Woosang Cho², Rupert Ortner², Fan Cao¹, V. Labella³; 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-psychophysiological therapy on motor planning and execution in Tourette syndrome patients

Simon Morand-Beaulieu^{1,2}, Marie-Ange Perreault^{1,2}, Kieron P. O'Connor^{1,2}, Pierre J. Blanchet^{1,2}, Marc E. Lavoie^{1,2}; 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 Giurgola², Nadia Bolognini^{3,4}, 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,

⁴Neuropsychological Laboratory, IRCCS, Istituto Auxologico Italiano, Milano, Italy

Topic Area: PERCEPTION & ACTION: Multisensory

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 Medina¹; 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. Schneider^{1,2}, Zoë R. Williams³, Bogachan Sahin³, Bradford Z. Mahon^{1,3}; 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 Brederoo^{1,2}, Berry Van den Berg^{1,2}, Mark Nieuwenstein¹, Monique Loris^{1,2}; 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 Schneider^{1,2}, Emily Prentiss², Zoe Williams¹, Bogachan Sahin¹, Bradford Mahon^{1,2}; 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 reward value

Jaime Castrellon¹, Linh Dang², Jacob Young³, 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 Froemer¹, 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 McGrath⁴, Myrna Weissman⁴, Ramin Parsey⁵, Maria Oquendo⁶, Patricia Deldin⁷, Gerard Bruder⁴, 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. Ruiz³, Nicole Y. Y. Wicha^{1,4}; 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 Hilger^{1,2}, Tim Hahn³, Christian Fiebach^{1,2}, Ulrike Basten¹; ¹Goethe University Frankfurt, Frankfurt am Main, Germany, ²DeA Center for Individual Development and Adaptive Education, Frankfurt am Main, Germany, ³Universitätsklinikum Münster, Münster, Germany

Topic Area: THINKING: Reasoning

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 Neural networks of specific and general autobiographical memory retrieval in younger and older adults

Aleea Devitt¹, Reece Roberts², Abby Metson², Lynette Tippett², Donna Rose Addis²; 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, Wanjia Guo¹, Marc B. Harrison¹, Manasi Jayakumar¹, Jiefeng Jiang¹, Geoffrey Kerchner¹, Elizabeth Mormino¹, Natalie Tanner¹, Monica Thieu³, 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 & aging

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 Sievers¹, Patrick S. R. Davidson²; ¹School of Psychology, University of East Anglia, Norfolk, 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 Chen^{1,2}, 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 Moscovitch^{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 Sugimoto^{1,2}, 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-Gilbert^{1,2}, Emily Oot^{1,3}, Derek A. Hamilton⁴, Carolyn Caine¹, Maya Rieselbach¹, Lisa D. Nickerson^{1,2}, Sion K. Harris⁵, Marisa M. Silveri^{1,2}, Jennifer T. Sneider^{1,2}; 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, Suril Gohel², 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. Cetron¹, 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 Kopco^{1,2,3}, Rene Sebena¹, Bernadeta Hrebenarova¹, Jyrki Ahveninen², Virginia Best³, Barbara Shinn-Cunningham³; 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: Auditory

Poster E4 Limited attention facilitates learning of peripheral information in children

Michael Paul Dubois¹, Theresa Pham^{1,2}, Danielle Lim¹, Amy Finn¹; ¹University of Toronto, ²University of Western Ontario
Topic Area: ATTENTION: Development & aging

Poster E6 The neural timecourse of the endogenous shifting of attention to objects

Charles Giattino¹, Saikiran Gudla¹, Marty Woldorff¹; ¹Duke University
Topic Area: ATTENTION: Nonspatial

Poster E7 Neural correlates of eye movements during naturalistic viewing

Jessica Robin¹, Bradley R. Buchsbaum^{1,2}, Rosanna K. Olsen^{1,2}; ¹Rotman Research Institute, Baycrest, ²University of Toronto
Topic Area: ATTENTION: 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: ATTENTION: 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: ATTENTION: 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: ATTENTION: Spatial

Poster E11 Localizing six bilateral sensory-biased regions in human frontal cortex.

Abigail Noyce¹, Sean Tobbyne¹, 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 Neuroplasticity 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 Fourie¹, Annie Shelton¹, David Hess^{1,2}, Susan, M Rivera^{1,2}; 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 Weber^{2,3}; 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-Gilbert^{1,2}, Lisa D. Nickerson^{1,2}, Jennifer T. Sneider^{1,2}, Emily N. Oot^{1,3}, Anna M. Seraikas¹, Maya Rieselbach¹, Carolyn E. Caine¹, Elena R. Stein¹, Sion K. Harris^{1,4}, Marisa M. Silveri^{1,2}; ¹McLean 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 Gheza¹, 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. Cycowicz^{1,2}, Lawrence V. Amsel^{1,2}, Zhishun Wang^{1,2}, Xiaofu He^{1,2}, Christina Hoven^{1,2}; 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-Emre^{1,2,3}, Eric Bouffet¹, Suzanne Laughlin¹, Jovanka Skocic¹, Cynthia de Medeiros¹, Donald J. Mabbott^{1,2}; 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: Other

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**

Anastasia Pavlidou¹, Maria Gallagher², Elisa Raffaella Ferrè², Christophe Lopez¹; ¹Aix Marseille Univ, CNRS, LNIA, 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 Uddin^{1,2}; 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 Huevo¹, Andreina Tuccella¹, Rosalind J. Wright^{3,4,5}, Michelle Bosquet Enlow^{1,2}; ¹Boston Children's Hospital, ²Harvard Medical School, ³Kravis Children's Hospital, New York, NY, ⁴Mindich Child Health & Development Institute, New York, NY, ⁵Icahn 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, Sungkean 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 Zhang^{1,2}, Sunao Iwaki^{2,1}; 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. Kramer^{1,5}, 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 Warrings¹, Ann-Cathrin Koschker², Andreas J Fallgatter³, Martin Fassnacht², 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 Tübingen, 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 Braver¹; 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 lateralized 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 Cesnaite¹, Keyvan Mahjoory², Arno Villringer^{1,3}, Vadim V. Nikulin^{1,4};

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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 Ritondale², Keita Kamijo³, Eric Drollette⁴, Naiman Khan², Charles Hillman¹; ¹Northeastern University, ²University of Illinois at Urbana-Champaign, ³Wasada 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, Cori 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-Mantilla¹, 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-Zruya¹, Hannah G. Cweigenberg¹, James R. Booth²; 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 Liégeois-Chauvel^{2,3}, Anne-Sophie Dubarry⁴, Irene Wang³, S Alomar³, Imad M. Najm³, Patrick Chauvel^{2,3}, Jorge Gonzalez-Martinez³; ¹Aix 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, Katherine J. Midgely¹, 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 Baci¹; ¹Univ. Grenoble Alpes, CNRS LPNC 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 Midgley^{2,3}, Phillip Holcomb^{2,3,4}, Karen Emmorey^{1,3,4}, Stephanie Ries^{1,3,4}; 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

Gina R. Kuperberg^{1,2}, Lotte Schoot^{1,2}, Lin Wang^{1,2}, Edward Alexander², Nate Delaney-Busch², Eddie Wlotko², Minjae Kim^{1,2}, Lena Warnke², Sheraz Kahn¹, Matti Hamalainen¹; ¹Martinos Center for Biomedical Imaging, Massachusetts General Hospital, ²Tufts University
Topic Area: LANGUAGE: Semantic

Poster E52 Distinguishing semantic and social neural networks in neurotypicals and autism

Hillary Levinson¹, Miriam Rosenberg-Lee¹, William Graves¹; ¹Rutgers University
Topic Area: LANGUAGE: Semantic

Poster E53 The neural basis of verb and noun semantic representations in congenitally blind individuals

Giulia V. Elli¹, Rashi Pant¹, Rebecca Achtman², Marina Bedny¹; ¹Johns Hopkins University, ²DePauw University
Topic Area: LANGUAGE: Semantic

Poster E54 The neural encoding of thematic roles

Jayden Ziegler¹, Miriam Hauptman², Jesse Snedeker¹, Evelina Fedorenko^{3,4}; ¹Harvard University, ²Tufts University, ³Harvard Medical School, ⁴Massachusetts General Hospital
Topic Area: LANGUAGE: Semantic

Poster E55 Impaired metaphor comprehension in primary progressive aphasia

Eileen Cardillo¹, Nathaniel B. Klooster¹, Marguerite McQuire¹, Michael Bonner¹, Charles Jester¹, Murray Grossman¹, Corey McMillan¹, Anjan Chatterjee¹; ¹University of Pennsylvania
Topic Area: LANGUAGE: Semantic

Poster E56 Language and music do and do not share the merging operations in syntax

Tomomi Hida¹, Hiroaki Mizuhara¹; ¹Kyoto University
Topic Area: LANGUAGE: Syntax

Poster E57 Some Complex Concepts Require Language: An eye-tracking study with 12- to 24-mo-old infants and adults

Ertugrul Uysal¹, Mihye Choi¹, Mohinish Shukla¹; ¹University of Massachusetts Boston
Topic Area: LANGUAGE: Syntax

Poster E58 Direct brain recordings reveal prefrontal cortex dynamics of memory development

Elizabeth Johnson^{1,2}, Qin Yin², Lingfei Tang², Eishi Asano², Noa Ofen²; ¹University of California, Berkeley, ²Wayne State University
Topic Area: LONG-TERM MEMORY: Development & aging

Poster E59 Functional specialization of hippocampal subfields in young children

Qijing Yu¹, Sruthi Ramesh¹, Bryn Thompson¹, David Chen¹, Mayu Nishimura^{1,2}, Noa Ofen¹; ¹Wayne State University, ²McMaster University
Topic Area: LONG-TERM MEMORY: Development & aging

Poster E60 Human aging reduces the neurobehavioral influence of motivation on episodic memory

Maiya Geddes^{1,2}, Aaron T. Mattfeld^{2,3}, Carlo de los Angeles², Anisha Keshavan^{2,4,5}, John D. E. Gabrieli²; ¹Brigham and Women's Hospital, Division of Cognitive and Behavioral Neurology, Harvard Medical School,

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Topic Area: LONG-TERM MEMORY: Development & aging

Poster E61 Effects of aging on functional networks in the cortical midline structures underlying the self-reference effect by taking self-perspectives

Takashi Tsukiura¹, Karin Norimoto¹, Rie Yamawaki^{1,2,3}, Yayoi Shigemune^{1,4}; 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 E62 Hippocampal theta phase coherence signals binding during retrieval and novelty processing

Donna J. Bridge¹, Christina M. Zelano¹, Nathan Whitmore¹, John Walker¹, Josh Rosenow¹, Stephan U Schuele¹, Jessica W. Templar¹, Joel L Voss¹, Stephen A VanHaerents¹; ¹Northwestern University
Topic Area: LONG-TERM MEMORY: Episodic

Poster E63 Remembering emotional stimuli re-instantiates valence coding voxel-patterns from visual and temporal cortex

Holly Bowen¹, John Ksander², Elizabeth Kensinger¹; ¹Boston College, ²Brandeis University
Topic Area: LONG-TERM MEMORY: Episodic

Poster E64 High-resolution dynamic neural correlates and functional connectivity of autobiographical memory retrieval

Charles Ferris¹, Cory Inman¹, G. Andrew James², Stephan Hamann¹; ¹Emory University, ²University of Arkansas for Medical Sciences
Topic Area: LONG-TERM MEMORY: Episodic

Poster E65 Associative Recognition for Word Pairs in Temporarily Ambiguous Sentences: Behavioral and Electrophysiological Evidence

Kathryn Bousquet¹, Axel Mecklinger², Debra Long¹, Tamara Swaab¹; ¹University of California, Davis, ²Saarland University, Saarbrücken
Topic Area: LONG-TERM MEMORY: Episodic

Poster E66 Neurocognitive bases for the functional role of gaze direction during episodic memory retrieval

Roger Johansson¹, Inês Bramão¹, Richard Dewhurst², Mikael Johansson¹; ¹Department of Psychology, Lund University, ²School of Culture and Society, Aarhus University
Topic Area: LONG-TERM MEMORY: Episodic

Poster E67 Targeted stimulation influences age-related changes in connectivity and function of hippocampal-cortical networks

Aneesa Nilakantan¹, John Walker¹, Sandra Weintraub¹, Stephen VanHaerents¹, Donna Bridge¹, M-Marsel Mesulam¹, Joel Voss¹; ¹Northwestern University
Topic Area: LONG-TERM MEMORY: Episodic

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. Henson¹, Emily A. Holmes^{1,2}; 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 Denis^{1,2}, Verda Bursal^{1,2}, Shanice Oquin^{1,2}, Alexandra Morgan^{1,2}, Robert Stickgold^{1,2}; 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. Weidemann^{1,2}, 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. Kahana¹; ¹University of Pennsylvania
Topic Area: LONG-TERM MEMORY: Episodic

Poster E74 Awake Targeted Memory Reactivation and Foreign Language Learning

Linda J. Hoffman¹, Kylie 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. Chrysiakou³; 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 Elteto¹, Karolina Janacsek^{1,2}, Dezsó Nemeth^{1,2}; 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 Jha^{1,2}, Hans Rolf Jager^{1,2}, Michel Thiebaut de Schotten^{6,7}, Geraint Rees^{1,3,4,5}, Parashkev Nachev^{1,2}; 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 Vu³; 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 Myachykov^{1,2}, Yuri Shtyrov^{1,3,4}; 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

Ana Pinheiro¹, Michael Schwartze², Sonja A. Kotz²; ¹Voice, Affect and Speech Laboratory, Faculty of Psychology, University of Lisbon, Lisbon, Portugal, ²Basic and Applied NeuroDynamics Laboratory, Faculty of Psychology and Neuroscience, Department of Neuropsychology and Psychopharmacology, Maastricht University, Maastricht, The Netherlands
Topic Area: PERCEPTION & ACTION: Audition

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 Jensen¹, Alvin Li¹, Scott Makeig², Gedeon Deak¹; ¹UC San Diego, Cognitive Science, ²Swartz Center for Computational Neuroscience
Topic Area: PERCEPTION & ACTION: Development & aging

Poster E92 Electrocorticographic dissociation of alpha- and beta-band activity in human sensorimotor cortex

Arjen Stolk¹, Loek Brinkman², Mariska van Steensel², Erik Aarnoutse², Robert T. Knight¹, Frans Leijten², Floris de Lange³, Ivan Toni³; ¹University of California, Berkeley, ²Utrecht University, ³Donders Institute
Topic Area: PERCEPTION & ACTION: Motor control

Poster E93 Association between Unintentional Interpersonal Postural Coordination Produced by Interpersonal Light Touch and the Intensity of Social Relationship

Tomoya Ishigaki^{1,2,3}, Ryota Imai¹, Shu Morioka¹; ¹Kio University, ²Fit-care Home-visit Nursing Station, ³Higashiikoma 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. Ciaramitaro¹, 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: Multisensory

Poster E97 Silent lip reading generates speech signals in auditory cortex

Karthikeyan Ganesan¹, Jacob Zweig², Marcia Grabowecky², Satoru Suzuki², Vernon Towle³, James Tao³, Shasha Wu³, David Brang¹; ¹University of Michigan, ²Northwestern University, ³University of Chicago
Topic Area: PERCEPTION & ACTION: Multisensory

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 Munro², Margot Crossman³, 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 Yeo^{1,2}, Courtney Pollack¹, Gavin 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 Nakai^{1,2}, Akane Hayakawa¹, Takuya Osuki¹, Jeong-won Jeong¹, Ayaka Sugiura¹, Erik C Brown³, 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

Ché Lucero^{1,2}, Geoffrey Brookshire², Colin Quirk², Susan Goldin-Meadow², Edward Vogel², Daniel Casasanto^{1,2}; 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

Topic Area: THINKING: Decision making

Poster E105 Attentional Differences and Estimation Frame Incongruence Predict Bias in Economic Judgments

Kylie Fernandez¹, Joseph Schmidt¹, Camelia Kuhnen², 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 Neuteboom¹, Ekaterina Dobryakova¹;
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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 Bathelt¹, 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 perceptual 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 Allendorfer¹, Rodolphe Nenert¹, Amber N Martin¹, Daniel Mirman¹, Jennifer Vannest², Jerzy P Szaflarski¹; 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. Beach^{2,3}, Ola Ozernov-Palchik⁴, 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 Hui^{1,2}, Laura Rigolo¹, Prashin Unadkat¹, Kim Willment¹, Alexandra Golby¹; ¹Brigham and Women's Hospital, Harvard Medical School, Boston, US, ²Navy 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 Arnoux^{1,2}, Monica N. Toba¹, Joel Daouk³, Jean-Marc Constans³, Laurent Puy^{1,2}, Momar Diouf⁴, Mélanie Barbay^{1,2}, Olivier Godefroy^{1,2};
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Topic Area: METHODS: Neuroimaging

Poster E119 Fiber Tract Asymmetry: A novel approach to assessing white matter integrity with Diffusion Tensor Imaging (DTI)

Ansgar Furst^{1,2}, Andrei Vakhtin^{1,2}, Miguel T. Robinson¹, Dana Waltzman³, Max Wintermark^{2,1}, Wesson J. Ashford^{1,2}; 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. Vakhtin^{1,2}, Wesson J. Ashford^{1,2}, Miguel T. Robinson¹, Dana Waltzman³, Max Wintermark^{2,1}, Ansgar J. Furst^{1,2}; 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-Gefen^{1,2}; ¹George Mason University, ²MaxWave Research LLC
Topic Area: OTHER

Poster E124 Neurocognitive markers of suicidal ideation

Alex Mitko^{1,4}, Regina McGlinchey^{1,2,4}, Melissa Amick^{1,3,4}, Michael Esterman^{1,3,4}; 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

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 Wang^{1,2,3}, Jianfeng Zhang⁴, Jiajie Zou⁴, Huan Luo^{1,2,3}, Nai Ding^{4,5,6,7}; ¹School of Psychological and Cognitive Sciences, Peking University,

²McGovern Institute for Brain Research, Peking University, ³Beijing Key Laboratory of Behavior and Mental Health, Peking University, ⁴College of Biomedical Engineering and Instrument Sciences, Zhejiang University, ⁵Key Laboratory for Biomedical Engineering of Ministry of Education, Zhejiang University, Zhejiang Univ, Hangzhou, China, ⁶State Key Laboratory of Industrial Control Technology, Zhejiang University, Hangzhou, China, ⁷Interdisciplinary Center for Social Sciences, Zhejiang University, Hangzhou, China # These authors contribute equally
Topic Area: ATTENTION: Auditory

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 Wascher¹; ¹Leibniz Research Centre for Working Environment and Human Factors
Topic Area: ATTENTION: Development & aging

Poster F4 Integrating modality-specific expectancies for the deployment of spatial attention

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Topic Area: ATTENTION: Multisensory

Poster F5 Neural Mechanisms Underlying the Interactive Relationship between Working Memory and Cognitive Control During Conflict Processing

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Topic Area: ATTENTION: Nonspatial

Poster F6 Individual peak alpha frequency in touch – cognitive and methodological implications

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Topic Area: ATTENTION: Other

Poster F7 An Investigation of Brain-to-Brain Coherence in the Prefrontal Cortex During Joint Sentence Reading and Joint Fluid Reasoning Tasks

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Topic Area: ATTENTION: Other

Poster F8 Attentional bias toward fearful facial expressions: EEG correlates in theta oscillations

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Topic Area: ATTENTION: Spatial

Poster F9 Combining eye-tracking and EEG to measure attention to salient and emotional stimuli

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Topic Area: ATTENTION: Spatial

Poster F10 Alterations in Intrinsic Functional Brain Connectivity for Hypertensive Women Post-Menopause

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Topic Area: EMOTION & SOCIAL: Development & aging

Poster F11 Brain activation during thoughts of one's own death and its association with the fear of death in older adults

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Topic Area: EMOTION & SOCIAL: Development & aging

Poster F12 Trait affective empathy mediates the relations between intrinsic default network functional connectivity and subjective happiness

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Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster F13 Neurocognitive and emotion processing deficits in Bipolar Disorder and their first degree relatives

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Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster F14 Believing, Desiring, or Just Thinking About: Toward a Neuroscientific Account of Propositional Attitudes

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Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster F15 Building an Effective Math Anxiety Intervention: Understanding the Role of Emotion Regulation

Rachel Pizzie¹, David J. M. Kraemer¹; ¹Dartmouth College

Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster F16 Neural correlates of emotional inhibitory control in adolescents with and without family history of alcoholism

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Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster F17 Neuro-behavioral mechanisms of resilience against anxiety: An integrative brain-personality-behavior approach using structural equation modeling

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Topic Area: EMOTION & SOCIAL: Emotion-cognition interactions

Poster F18 Common Neural Correlates of Empathy and Worry when Processing Fearful Human Faces

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Topic Area: EMOTION & SOCIAL: Emotional responding

Poster F19 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

Poster F20 Differential Sensitivity to Reward and Punishment in East Asians vs. Western Europeans

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Topic Area: EMOTION & SOCIAL: Other

Poster F21 Sex-related differences in behavioral and neural processing of facial threat cues via magnocellular and parvocellular pathways.

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Topic Area: EMOTION & SOCIAL: Person perception

Poster F22 SCHIZOPHRENIA AND STIGMA: AN ERP STUDY

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Topic Area: EMOTION & SOCIAL: Person perception

Poster F23 Freewill and the Self: A Transcranial Magnetic Stimulation Study of Libet's Postulate

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Topic Area: EMOTION & SOCIAL: Self perception

Poster F24 Characterizing the neural basis of adolescent cognitive control using connectome-based predictive modeling

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Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster F25 Functional and structural connectivity of cognitive control networks during narrative comprehension from birth to 9 years

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Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster F26 Conflict Control on Emotional and Non-emotional Conflicts in Preadolescent Children

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Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster F27 Relations between catechol-O-methyltransferase (COMT) genotype and inhibitory control development in childhood

Maureen Bowers¹, George Buzzell¹, Virginia Salo¹, Troller-Renfree Sonya¹, Hodgkinson Colin², Goldman David², Gorodetsky Elena³, McDermott Jennifer⁴, Henderson Heather⁵, Nathan Fox¹; ¹University of Maryland, College Park, ²National Institute on Alcohol Abuse and Alcoholism, ³National

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Topic Area: EXECUTIVE PROCESSES: Development & aging

Poster F28 Managing two languages relates to managing two goals: fMRI evidence from task-switching

Kelly A. Vaughn¹, Arturo E. Hernandez¹; ¹University of Houston

Topic Area: EXECUTIVE PROCESSES: Goal maintenance & switching

Poster F29 Fast synchronization and slow synaptic learning as a solution to the stability-plasticity dilemma

Pieter Verbeke¹, Tom Verguts¹; ¹Ghent University

Topic Area: EXECUTIVE PROCESSES: Goal maintenance & switching

Poster F31 Influence of motivational incentives on conflict resolution: new evidence from Alzheimer's disease patients

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Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster F32 The Negative Association of Underweight to Academic Performance and Cognitive Control in Undergraduate Women

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Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster F33 Effects of cognitive engagements after acute exercise on inhibitory control

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Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster F34 The Effects of Vascular Risk Factors on Inhibitory Control in Cognitively Healthy Young Adults

Juliette Seremak¹, Heather Nall¹, Alexandra Roach¹; ¹University of South Carolina Aiken

Topic Area: EXECUTIVE PROCESSES: Monitoring & inhibitory control

Poster F35 Functional Brain Alterations Associated with Cognitive Control in Blast-Related Mild Traumatic Brain Injury

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Topic Area: EXECUTIVE PROCESSES: Other

Poster F37 Neural Mechanisms of Perceptual Comparison Process for Detecting Feature-Binding Changes

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Topic Area: EXECUTIVE PROCESSES: Working memory

Poster F38 Neural Mechanisms Underlying Cognitive Control over Attentional Capture by Working Memory Content

Peter S. Whitehead¹, Mathilde M. Ooi¹, Tobias Egner¹, Marty G. Woldorff¹; ¹Duke University

Topic Area: EXECUTIVE PROCESSES: Working memory

Poster F39 Shifting auditory attention in perceptual and mnemonic space: an investigation of event-related EEG parameters in a sound localization and sound detection paradigm

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Topic Area: EXECUTIVE PROCESSES: Working memory

Poster F40 Visual memories bypass normalization

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Topic Area: EXECUTIVE PROCESSES: Working memory

Poster F41 Can TMS to Visual Cortex Reactivate Activity-Silent Representations in Visual Working Memory?

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Topic Area: EXECUTIVE PROCESSES: Working memory

Poster F42 The relationship between lexical development and neural measures of speech discrimination in monolingual and bilingual children: Longitudinal evidence

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Topic Area: LANGUAGE: Development & aging

Poster F43 The development of print sensitivity in the visual word form system in pre-readers is influenced by orthographic experience and familial risk of dyslexia

Jade Dunstan¹, Xi Yu¹, Jennifer Zuk^{1,2}, Clarisa Carruthers¹, Joseph Sanfilippo¹, Ellen Grant^{1,2}, Nadine Gaab^{1,2,3}; ¹Boston Children's Hospital, ²Harvard Medical School, ³Harvard Graduate School of Education

Topic Area: LANGUAGE: Development & aging

Poster F44 Linking Auditory Processing and Lexical Representation via Phonological Discrimination

Vivi Tecoulesco¹, Erika Skoe¹, Letitia Naigles¹; ¹University of Connecticut

Topic Area: LANGUAGE: Lexicon

Poster F45 Spoken Language Processing in Cochlear Implant Users Under Perceptually Challenging Conditions: Fluent-Automatic Versus Slow-Effortful Neurocognitive Processing

Gretchen N.L. Smith¹, William G. Kronenberger¹, David B. Pisoni²; ¹Indiana University School of Medicine, ²Indiana University

Topic Area: LANGUAGE: Other

Poster F46 The left-lateralized N170 and the phonological mapping hypothesis when learning to read in the adulthood

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Topic Area: LANGUAGE: Other

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

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Topic Area: LANGUAGE: Other

Poster F49 ERP Evidence for Probabilistic Lexical Prediction

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Topic Area: LANGUAGE: Other

Poster F50 ERP exploration of semantic organization for abstract and concrete words in bilinguals and persons with aphasia

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Topic Area: LANGUAGE: Semantic

Poster F51 Relational versus Plural Concepts: The Role of the Left Angular Gyrus

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Topic Area: LANGUAGE: Semantic

Poster F52 An MEG study of lexico-semantic processing in sentence comprehension: A Representational Similarity Analysis

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Topic Area: LANGUAGE: Semantic

Poster F53 Semantic Priming of Reading by Visual Processing Stream: Exploring Encoding Through Stimulus Quality.

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Topic Area: LANGUAGE: Semantic

Poster F54 Baseline semantic processing skills are important for typicality-based naming therapy outcomes

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

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Topic Area: LANGUAGE: Syntax

Poster F56 Neurodevelopmental impact of early bilingual acquisition on children's syntactic processing.

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Topic Area: LANGUAGE: Syntax

Poster F57 Traumatic stress does not exert lesion-like effects on hippocampal function in children

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Topic Area: LONG-TERM MEMORY: Development & aging

Poster F58 Sensory dominance and multisensory integration as screening tools in aging

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Topic Area: LONG-TERM MEMORY: Development & aging

Poster F59 The Tell-Tale Heart: Infant memory for a stressful social event at 4-months.

Isabelle Mueller¹, Nancy Snidman¹, Jennifer DiCorcia¹, Akhila Sravish¹, Erin Duffy¹, Ed Tronick¹; ¹University of Massachusetts Boston

Topic Area: LONG-TERM MEMORY: Development & aging

Poster F60 Mesial temporal lobe epilepsy is characterized by hippocampal stiffness alterations and relational memory deficits

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Topic Area: LONG-TERM MEMORY: Episodic

Poster F61 The sleep spindle refractory period segments memory reactivation events across time

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Topic Area: LONG-TERM MEMORY: Episodic

Poster F62 False memory for spatial location is mediated by V1

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Topic Area: LONG-TERM MEMORY: Episodic

Poster F63 Effects of emotional valence on retrieval-related recapitulation effects and subjective memory vividness

Sarah Kark¹, Ryan Daley¹, Elizabeth Kensinger¹; ¹Boston College

Topic Area: LONG-TERM MEMORY: Episodic

Poster F64 Thalamocortical spindles relate to changes in memory representations

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Topic Area: LONG-TERM MEMORY: Episodic

Poster F65 Sex differences in the brain during long-term item memory

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Topic Area: LONG-TERM MEMORY: Episodic

Poster F66 Increased fMRI connectivity of the anterior-medial hippocampal-cortical network via noninvasive brain stimulation

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Topic Area: LONG-TERM MEMORY: Episodic

Poster F67 Improving Episodic Autobiographical Memory in Older Adults with a Novel Digital Memory Augmentation Device

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Topic Area: LONG-TERM MEMORY: Episodic

Poster F68 Opposing mnemonic and decision-making biases in recognition memory judgments

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Topic Area: LONG-TERM MEMORY: Episodic

Poster F69 The effects of selective retrieval and selective suppression on spatial memory

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Topic Area: LONG-TERM MEMORY: Episodic

Poster F70 Tracking the impact of retrieval suppression on individual memory representations

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Topic Area: LONG-TERM MEMORY: Episodic

Poster F71 Boosting Face Memory With Targeted Memory Reactivation During Sleep

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Topic Area: LONG-TERM MEMORY: Episodic

Poster F72 Hippocampal sensitivity to event boundaries in encoding of naturalistic events

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Topic Area: LONG-TERM MEMORY: Episodic

Poster F73 The Durability of Statistical Learning: Direct and Indirect Measures

Helen Liu¹, Katherine Duncan¹, Amy S. Finn¹; ¹University of Toronto

Topic Area: LONG-TERM MEMORY: Other

Poster F74 Social value learning shifts conceptual representations of faces

Ariana M. Familiar¹, Sharon L. Thompson-Schill¹; ¹University of Pennsylvania

Topic Area: LONG-TERM MEMORY: Semantic

Poster F75 Dyslexia and Reading Ability Predict Sequence Learning Impairments

Brianna Wenande¹, Emily Een¹, Mark A. Gluck², Jessica R. Petok¹; ¹St. Olaf College, ²Rutgers University

Topic Area: LONG-TERM MEMORY: Skill learning

Poster F76 Alpha phase modulates the amplitude and variance of suprathreshold TMS-induced motor evoked potentials

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Topic Area: METHODS: Electrophysiology

Poster F77 Comparing Functional and Structural Predictors of Cognition via Machine Learning

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Topic Area: METHODS: Neuroimaging

Poster F78 Streams of Thought: An ICA Methodology for Lagged Resting State Analysis

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Topic Area: METHODS: Neuroimaging

Poster F79 Cognitive and sensorimotor aspects of handwriting in multiple sclerosis: an fMRI study

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Topic Area: METHODS: Neuroimaging

Poster F80 Temporal variability of functional brain connectivity predicts individual differences in attention

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Topic Area: METHODS: Neuroimaging

Poster F81 Optimizing fMRI experimental outcomes via neuroadaptive task designs

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Topic Area: METHODS: Neuroimaging

Poster F82 Reverse Inference Problem with Task Difficulty and Reaction Times

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Topic Area: METHODS: Other

Poster F83 Polygenic risk and trajectories of cognitive impairment in schizophrenia: associations limited to the “Cognitively Stable”

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Topic Area: OTHER

Poster F84 Contribution of the prefrontal and parietal regions to time estimation and temporal control: A study of patients with a brain tumor before and after surgery

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Topic Area: OTHER

Poster F85 The mediate effect of changes in resting-state functional connectivity on resilience due to short-term intensive meditation: a randomized controlled trial

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Topic Area: OTHER

Poster F86 Dissociating the functions of delta and beta oscillatory entrainments: from intrapersonal and interpersonal perspectives

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Topic Area: PERCEPTION & ACTION: Audition

Poster F87 Hearing Creatively: Default Network Selectively Synchronizes to Auditory Cortex in Jazz Improvising Musicians

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Topic Area: PERCEPTION & ACTION: Audition

Poster F88 Structural and Functional Correlates of Musical Anhedonia

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Topic Area: PERCEPTION & ACTION: Audition

Poster F89 Aging in the sensorimotor system: Lower GABA levels are associated with decreased network segregation and impaired behavior

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Topic Area: PERCEPTION & ACTION: Development & aging

Poster F90 Rhythm-based temporal prediction in children with Autism Spectrum Disorder (ASD)

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Poster F91 Training the human mirror neuron system: An EEG study

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Topic Area: PERCEPTION & ACTION: Motor control

Poster F92 Asymmetric Interference Between Cognitive Task Components and Concurrent Sensorimotor Coordination

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Topic Area: PERCEPTION & ACTION: Motor control

Poster F93 Sleep Quality's Effect on EEG Activity Underlying Information Processing during Motor Control

Katherine A. Hyson¹, Robert S. Ross¹, Wayne J. Smith¹, Ronald V. Croce¹; ¹University of New Hampshire
Topic Area: PERCEPTION & ACTION: Motor control

Poster F94 Deficit of Prediction Ability as A Potential Cause of Phantom Noise in Autism Spectrum Disorder

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Topic Area: PERCEPTION & ACTION: Multisensory

Poster F95 Full-body ownership illusion elicited by visuo-vestibular integration

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Topic Area: PERCEPTION & ACTION: Multisensory

Poster F96 Atypical multisensory temporal integration in posterior superior temporal cortex may underlie language, social, and perceptual deficits in autism spectrum disorders

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Topic Area: PERCEPTION & ACTION: Multisensory

Poster F97 Deaf signers' sensorimotor system activity during perception of one and two handed signs

Emily Kubicek¹, Lorna C. Quandt¹; ¹Gallaudet University
Topic Area: PERCEPTION & ACTION: Other

Poster F98 Atypical lateralization of intrinsic functional connectivity underlies aberrant face processing in autism spectrum disorders

Lily M. Solomon-Harris¹, Naail A. Khan¹, Vladyslava Replete¹, Cynthia S. Peng², W. Dale Stevens¹, Alex Martin²; ¹York University, Toronto, ²National Institute of Mental Health, National Institutes of Health

Topic Area: PERCEPTION & ACTION: Vision

Poster F99 Stimulus Integrity Modulates the Effect of Context on Object Recognition

Leslie Y. Lai¹, William C. Heindel¹, Elena K. Festa¹; ¹Brown University

Topic Area: PERCEPTION & ACTION: Vision

Poster F100 Color categorization without color naming: neuropsychological evidence

Katarzyna Siuda-Krzywicka¹, Christoph Witzel², Emma Chabani¹, Myriam Taga³, Laurent Cohen^{1,4}, Paolo Bartolomeo¹; 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

Topic Area: PERCEPTION & ACTION: Vision

Poster F101 Correlation of memory regions with face and object regions differentially predict performance on face/object memory tasks

Michal Ramot¹, Catherine Walsh¹, Alex Martin¹; ¹National Institute of Mental Health, National Institutes of Health

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Poster F102 Predicting Automation Aid Response Time from EEG versus Low Cost Wearable Devices

Dean Cisler¹, Carryl Baldwin¹, Pamela Greenwood¹, Ryan McKendrick²; ¹George Mason University, ²Northrop Grumman

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Poster F103 Prefrontal Cortex Supports the Transfer of Hierarchical Task Structure to Novel Environments

Adam Eichenbaum¹, Jason Scimeca¹, Mark D'Esposito¹; ¹Helen Wills Neuroscience Institute, University of California - Berkeley

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Poster F104 The Effects of rTMS on Criterion Shifting during Memory Recognition

Evan Layher¹, Lukas Volz¹, Tyler Santander¹, Michael Miller¹; ¹University of California Santa Barbara

Topic Area: THINKING: Decision making

Poster F105 Why did Pandora open the box? When curiosity overrides prospective risk

Johnny King Lau¹, Hiroki Ozono², Anthony Haffey¹, Kei Kuratomi³, Asuka Komiya⁴, Kou Murayama¹; ¹The Centre for Integrative Neuroscience and Neurodynamics, University of Reading, UK, ²Kagoshima University, Japan, ³Kochi University of Technology, Japan, ⁴Hiroshima University, Japan

Topic Area: THINKING: Decision making

Poster F106 The influence of expected reward and efficacy on cognitive effort allocation

Carolyn K. Dean Wolf¹, Elizabeth V. Cory¹, Amitai Shenhav¹; ¹Brown University

Topic Area: THINKING: Decision making

Poster F107 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. Momsen^{2,3}, Nicole Y.Y. Wicha¹; ¹The University of Texas at San Antonio, ²University of California San Diego, ³San Diego State University

Topic Area: THINKING: Development & aging

Poster F108 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

Topic Area: THINKING: Other

Poster F109 High and low-frequency activity in intracranial electroencephalography reflect the difficulty of mental arithmetic operations

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Poster F110 A right-hemispheric advantage for fast inferential reasoning

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Topic Area: THINKING: Reasoning

Poster F111 Associations between cortical thickness and reasoning vary by socioeconomic status in early childhood

Julia A. Leonard¹, Rachel R. Romeo¹, Anne T. Park², Megumi Takada¹, Sydney T. Robinson², John D.E. Gabrieli¹, Allyson P. Mackey²;

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Topic Area: THINKING: Reasoning

Poster F112 Timing the automatic activation and the early and late inhibition of the actions associated to a real object with event-related brain potentials

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Topic Area: PERCEPTION & ACTION: Motor control

Poster F113 Neuroimaging of Functional Movement Disorders Before and After Treatment

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Poster F114 Learning to control unstable dynamics via movement sonification improves generalization

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Poster F115 Making plans in wonderland: Sensorimotor alterations increase temporal similarity of motor planning and imagery

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Poster F116 Timbre Impacts the Consistency of Music-Color Synesthesia

Radhika S. Gosavi¹, Rory Bade¹, Edward M. Hubbard¹; ¹University of Wisconsin-Madison

Topic Area: PERCEPTION & ACTION: Multisensory

Poster F117 Getting ready for Mars: how the brain perceives new gravitational environments

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Topic Area: PERCEPTION & ACTION: Multisensory

Poster F118 The relation between affective touch and pupil size

Chris Dijkerman¹, Roel van Hooijdonk¹, Sebastiaan Mathot², Evelien Schat¹, Hannah Spencer¹, Stefan van der Stigchel¹; ¹Utrecht University, The Netherlands, ²University of Groningen, the Netherlands

Topic Area: PERCEPTION & ACTION: Multisensory

Poster F119 Functional Specificity and Sex Differences in the Neural Circuits Supporting the Inhibition of Automatic Imitation

Kohinoor M. Darda¹, Emily E. Butler¹, Richard Ramsey¹; ¹Bangor University

Topic Area: PERCEPTION & ACTION: Other

Poster F120 Frequency modulation of neural oscillations according to visual task demands

Jason Samaha¹, Andreas Wutz^{2,3}, Bradley Postle¹, David Melcher²; ¹University of Wisconsin-Madison, ²University of Trento, ³Massachusetts Institute of Technology

Topic Area: PERCEPTION & ACTION: Vision

Poster F121 Serial dependence in numerosity perception.

Michele Fornaciai¹, Joonkoo Park^{1,2}; ¹University of Massachusetts, Amherst, MA, USA, ²Commonwealth Honors College, Amherst, MA, USA.

Topic Area: PERCEPTION & ACTION: Vision

Poster F122 Impact of Working Memory Load and Stimulus Movement on Non-symbolic Number Perception

Justin Bonny¹; ¹Morgan State University

Topic Area: PERCEPTION & ACTION: Vision

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Gregor Hayn-Leichsenring¹, Anjan Chatterjee¹; ¹University of Pennsylvania

Topic Area: PERCEPTION & ACTION: Vision

Poster F124 Effects of directed attention on stimulus attribute weighting: An ERP study

Alison Harris¹, Aleena Young¹; ¹Claremont McKenna College

Topic Area: THINKING: Decision making

Poster F125 Perceptual decision making is supported by a hierarchical processing cascade, in both biological and artificial neural networks

Laura Gwilliams^{1,2}, Jean-Rémi King^{3,1}; ¹New York University, ²NYU Abu Dhabi, ³Frankfurt Institute for Advanced Studies

Topic Area: THINKING: Decision making

Poster F126 The influence of negotiation style during online negotiations: an event-related potential (ERP) study

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Topic Area: THINKING: Decision making

Poster F127 Neural Correlates of Encoding and Retrieving Probabilities of Event Occurrences.

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Topic Area: THINKING: Decision making

Poster F128 Distribution of Relative Quantities in Nature and Human Culture

Santiago Alonso-Diaz¹, Luis Alejandro Lee-Penagos¹, Gabriel Ignacio Penagos-Londoño¹; ¹Department of Economics, Universidad Javeriana, Bogotá Colombia

Topic Area: THINKING: Decision making

Poster F129 FEEDBACK PROCESSING AND RISK TAKING IN HIGH-ACHIEVING ADOLESCENTS

Kayla Talbot¹, Taylor Valentin¹, Max Lobel¹, Danielle diFilipo^{1,2}, Jill Grose-Fifer^{1,2}; ¹John Jay College of Criminal Justice, CUNY, ²The Graduate Center, CUNY

Topic Area: THINKING: Development & aging

Poster F130 An event-related potential study of number format and the problem-size effect in arithmetic

Danielle S. Dickson¹, Bianca O. Obinyan¹, Nicole Y. Y. Wicha¹; ¹University of Texas at San Antonio

Topic Area: THINKING: Problem solving

Poster F131 Individual differences in information processing predict distinct structural connectivity patterns

Justin C. Hayes¹, Katherine L. Alfred¹, David J. M. Kraemer¹; ¹Dartmouth College

Topic Area: THINKING: Problem solving

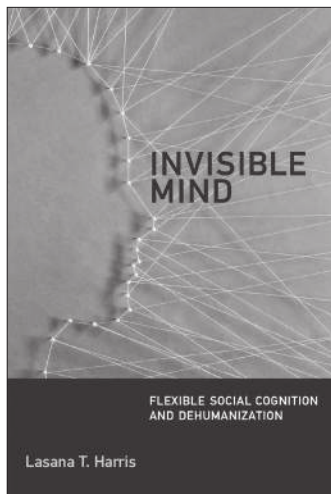
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Alyssa J. Kersey¹, Kelsey D. Csumitta¹, Jessica F. Cantlon¹; ¹University of Rochester

Topic Area: THINKING: Reasoning

Poster F133 Neural Activity While Listening to Sentences Predicts University STEM Educational Outcomes

Richard J. Daker¹, H. Moriah Sokolowski², Ian M. Lyons¹; ¹Georgetown University, Department of Psychology, ²University of Western Ontario, Brain and Mind Institute



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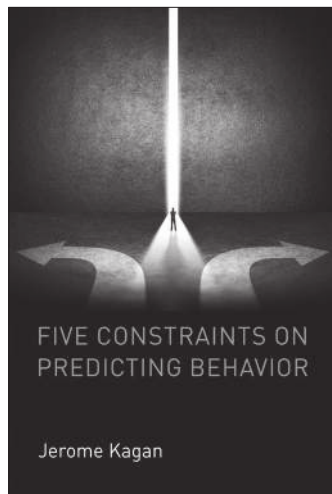
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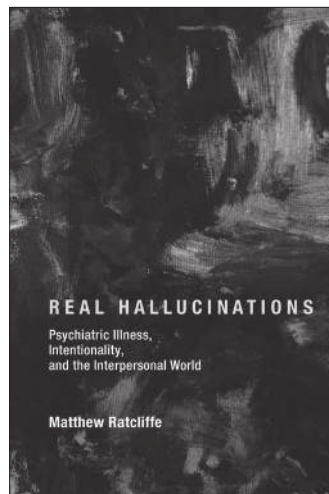
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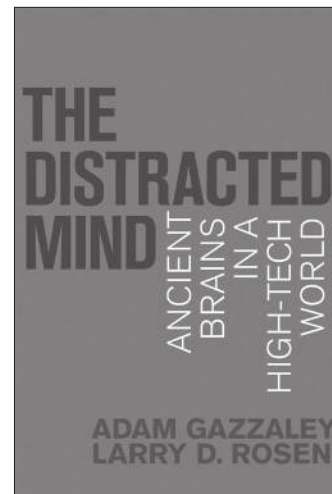
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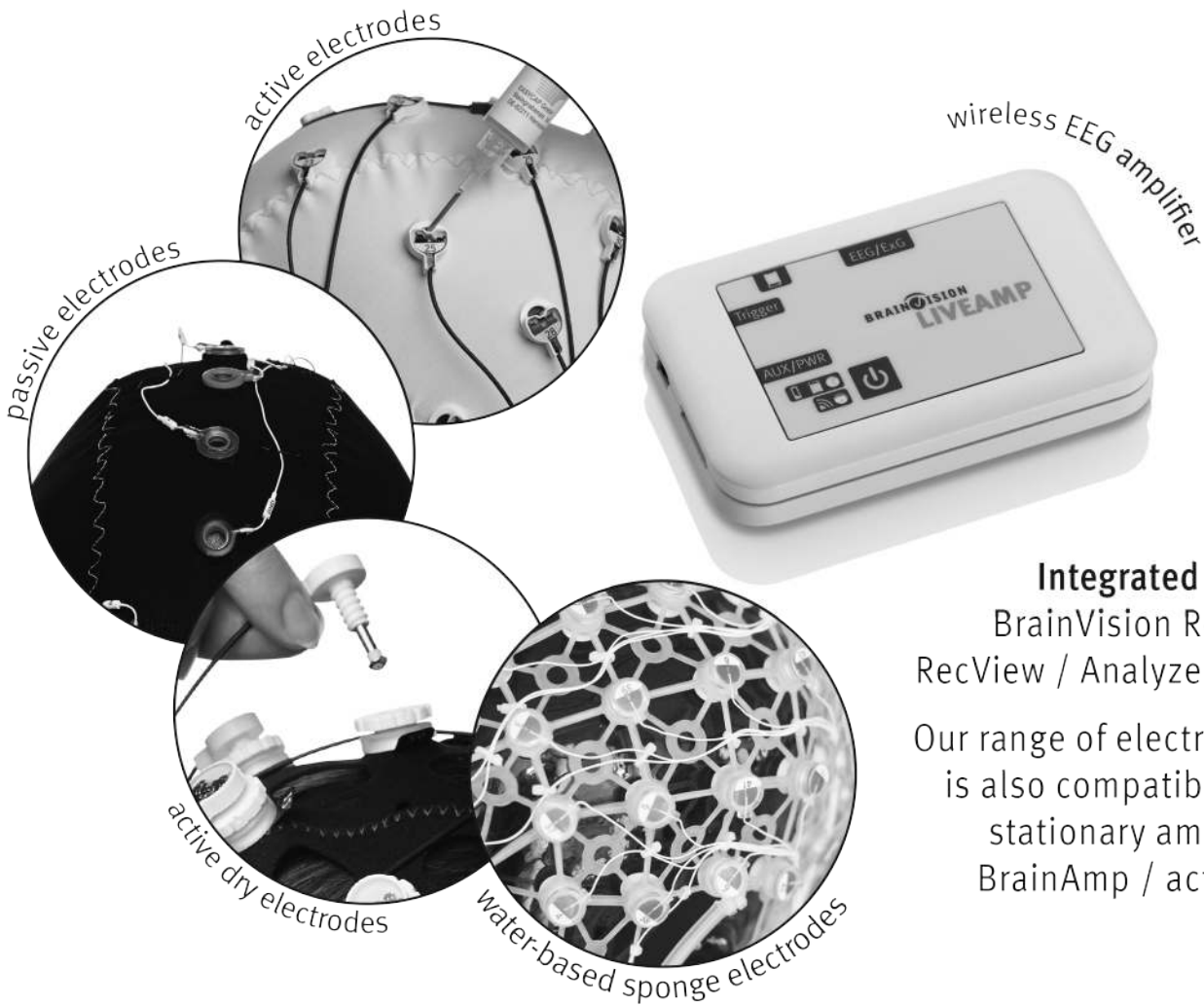
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