



flux

CONGRESS

The International Congress
for Integrative Developmental
Cognitive Neuroscience

Inaugural Congress: Mechanisms of Brain Development

September 19 – 21, 2013

Wyndham Grand Pittsburgh Downtown
Pittsburgh PA, USA

www.fluxcongress.org

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- Iowa Gambling Task
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Program Contents

About the Flux Congress

The aim of the congress is to provide a forum for developmental cognitive neuroscientists to share their findings on the development of brain processes that support cognition and motivation from an integrative neuroscience perspective. Thus, it will provide an opportunity for scientists in the field to expand their knowledge base, and also be better informed of translational approaches. This year's theme is mechanisms of brain development, which will primarily be discussed through human neuroimaging studies of development of brain structure, function, and connectivity. Human neuroimaging findings will be complimented by presentations on cellular and molecular mechanisms of development using postmortem research and animal models.

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Welcome

To the inaugural Flux Congress

Welcome to the inaugural meeting of Flux, the International Congress for Integrative Developmental Cognitive Neuroscience, in beautiful Pittsburgh Pennsylvania!

In recent years, Developmental Cognitive Neuroscience has been growing significantly and making important contributions to neuroscience research. The ability to have a dedicated forum for us to share our research, get valuable feedback from fellow colleagues, meet new collaborators, and discuss important issues about the state of Developmental Cognitive Neuroscience is crucial for the continued growth of the field. The significance of this critical period in our field was reinforced by the overwhelming and exciting response we received when we proposed this initiative. We would like to thank the Scientific Program Committee for helping us organize an exceptionally high quality program of speakers and poster presentations. We would also like to give a heartfelt "thank you" to all the speakers and poster presenters for their truly innovative and significant presentations. Lastly, we would like to thank

all participants for making the time to attend the meeting.

The Flux Congress isn't just about the science. We have also created a Job Bank on the Flux website so that pre- and postdoctoral fellows can be paired up with laboratories. Job seekers will also have the opportunity to identify themselves by sticking a red dot to their name badge at the Congress. In addition, the Pittsburgh Pirates are currently first place in the league (which happens roughly once per generation) and our planned optional excursion to their last home game before the playoffs should be a fantastic outing.

We hope that you are able to take advantage of this unique opportunity and leave with new ideas, new friendships and collaborators, and an enhanced creativity in your approach. We also invite you to start planning to participate in the 2nd Flux meeting in California in September 2014!

Beatriz Luna
Chair

Brad Schlaggar
Co-Chair



We are pleased to announce that the **Second Flux Congress** will take place in Southern California in September of 2014. Location and dates to be confirmed.

Conference Chairs:

Elizabeth Sowell, Ron Dahl, Adriana Galvan

Abstract Submission and Registration opens March, 2014

Visit www.fluxcongress.org for more information

Flux Congress Leadership

Congress Chairs

Bea Luna	University of Pittsburgh, USA
Brad Schlaggar	Washington University, St. Louis, USA

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Eveline Crone	Leiden University, The Netherlands
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Chandan Vaidya	Georgetown University, USA

University of Pittsburgh Local Planning Committee

Bea Luna	Psychiatry and Psychology
Erika Forbes	Psychiatry and Psychology
Cecile Ladouceur	Psychiatry and Psychology
Aarthi Padmanabhan	Psychiatry
David Paulsen	Psychiatry
Jenn Silk	Psychiatry and Psychology



The International Congress
for Integrative Developmental
Cognitive Neuroscience

Flux Congress Management & Administration

De Armond Management Ltd.

Marischal De Armond
Caitlin Martin
Breda Hamill

General Congress Information

Meeting Venue

Wyndham Grand Pittsburgh Downtown
600 Commonwealth Place, Pittsburgh, PA 15222
All conference sessions will take place in this location.

Registration

Congress registration fees include access to all sessions including the welcome reception, speaker talks, continental breakfasts and poster lunch sessions.

Name Badges

Your name badge is your admission ticket to the conference sessions, reception, breakfast, lunch, and coffee breaks. Please wear it at all times. At the end of the conference we ask that you recycle your name badge at one of the name badge recycling stations that will be set out, or leave it at the Registration Desk.

Dress Code

Dress is casual for all Flux meetings and social events.

Registration and Information Desk Hours

The Flux Registration and Information Desk, **located in the Kings Garden East Foyer** will be open during the following dates and times:

Thursday, September 19	12:00pm – 8:00pm
Friday, September 20	7:30am – 5:30pm
Saturday, September 21	7:30am – 5:30pm

If you need assistance during the meeting, please visit the Registration Desk.

Staff

Flux Congress staff from De Armond Management Ltd can be identified by ribbons on their name badges. Feel free to ask anyone of our staff for assistance. For immediate assistance, please visit us at the Registration Desk.

Poster Information

Set-Up / Removal

There are two Poster Sessions during the Congress. All posters must be set up in Kings Garden East on Thursday, September 19 between 12:00pm and 6:00pm, and all posters are to remain up for the duration of the Congress. Posters must be removed by 3:20pm on Saturday, September 21. Any posters not removed will be taken down by Congress staff and will be held at the Registration Desk until 5:30pm.

Poster Session 1: Friday, September 20

Mandatory Hours: 11:40 – 1:40pm

Poster Session 2: Saturday, September 21

Mandatory Hours: 11:20 – 1:20pm

Odd numbered posters will be presented during Poster Session 1 and **even numbered posters** will be presented during Poster Session 2.

Information on Poster Authors, Poster Numbers and Poster Titles begins on page 13. For a complete copy of all poster abstracts visit the Flux website, www.fluxcongress.org.

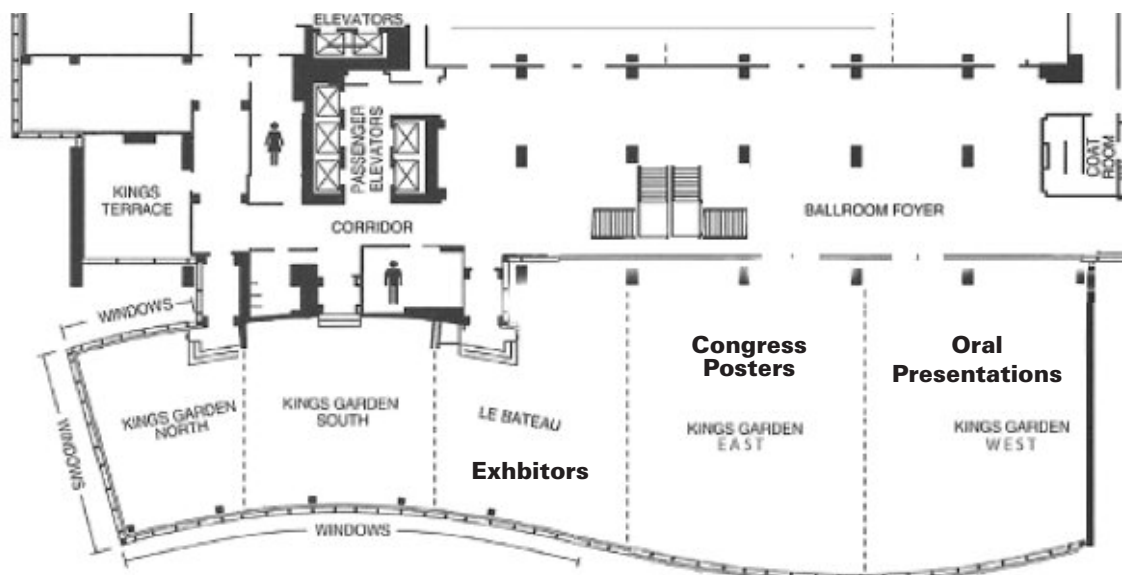
Easy reference **Poster Floor Plans** for each session can also be found on the inside back cover of this program.

Flux Excursion

Pittsburgh Pirates vs Cincinnati Reds baseball game at PNC Park, Friday, September 20, 7pm. There are a limited number of tickets (\$20 each) available for purchase at the Registration Desk. We will meet in the hotel lobby at 6pm to walk to PNC Park.

Walking directions from Wyndham Grand Pittsburgh Downtown to PNC Park: head east on Liberty Avenue and continue onto Penn Avenue. Turn left onto 6th street and continue across Roberto Clemente Bridge. PNC Park is on your left (115 Federal Street, Pittsburgh).

Congress Venue Floor Plan Ballroom Level



Flux Congress Detailed Daily Schedule

Day 1

Thursday, September 19

1:00 – 3:00pm

E-Prime Workshop by Psychology Software Tools – *Kings Garden West*

This workshop will highlight the basics of using E-Prime - from experiment development, including basic scripting, to data analysis within E-DataAid. In addition, differences and considerations will be taken into account regarding upgrading from E-Prime 1.x to E-Prime 2.0. E-Prime users of all skill levels are welcome. The workshop will conclude with a question and answer session. E-Prime, developed by Psychology Software Tools, is the world-leading stimulus presentation software with over 20,000 users.

3:45 – 4:00pm

Welcome Comments – *Kings Garden West (all oral sessions in this room)*

Beatriz Luna, University of Pittsburgh

4:00 – 5:00pm

Keynote Address

David Lewis, University of Pittsburgh

Developmental Trajectories in Cortical Circuits: Substrates for Health and Disease

Oral Session 1: Brain Structure

Moderator: **Chandan Vaidya**, Georgetown University

5:00 – 5:20pm

Jay N. Giedd, National Institute of Mental Health

The Teen Brain: New Views from Neuroimaging

5:20 – 5:40pm

Elizabeth Sowell, University of Southern California

Structural Brain Development and the Impact of Pubertal Hormones

5:40 – 6:00pm

Christian Beaulieu, Peter S. Allen MRI Research Centre

Insights into White Matter Development from Diffusion Tensor Imaging Tractography

6:00 – 6:15pm

Oral Session 1: Panel Discussion

6:15 – 7:45pm

Welcome Reception – *Le Bateau*

Day 2

Friday, September 20

8:15 – 8:45am

Continental Breakfast – *Le Bateau*

Oral Session 2: Functional Connectivity: Approach

Moderator: **Francisco Xavier Castellanos**, NYU Child Study Center & Nathan Kline Institute

8:45 – 9:05am

Michael Milham, Child Mind Institute

Emerging Models for Biomarker Identification in the Developing Brain

9:05 – 9:25am

Adrianna Di Martino, Phyllis Green and Randolph Cowen Institute for Pediatric Neuroscience

Advancing Autism Neuroscience Through Open Data Sharing: Initial Experience from the Autism Brain Imaging Data Exchange

9:25 – 9:45am

Steve Petersen, Washington University Medical School

What Resting State Network Measures Have Done For Us (and Might Do For You)

9:45 – 10:05am

Break – *Le Bateau*

Flux Congress Detailed Daily Schedule

Day 2 Friday, September 20 *Continued*

Oral Session 3: Functional Connectivity: Development

Moderator: **Brad Schlaggar**, Washington University and St. Louis Children's Hospital

- 10:05 – 10:25am **Damien Fair**, Oregon Health and Science University
Using Graph Theory to Inform Heterogeneity in Typical and Atypically Developing Populations
- 10:25 – 10:45am **Francisco Xavier Castellanos**, NYU Child Study Center And Nathan Kline Institute
The Immediacy of Now: Towards a Mechanistic Understanding of ADHD
- 10:45 – 11:05am **Moriah E. Thomason**, Wayne State University School of Medicine
Fetal Brain Functional Dynamics Revealed by fcMRI
- 11:05 – 11:25am **Stefan Everling**, The University of Western Ontario
In Vivo Mapping of the Saccadic Eye Movement Network in Macaques and Humans Using Resting-State fMRI
- 11:25 – 11:40am **Oral Session 2 and 3: Panel Discussion**
- 11:40 – 1:40pm **Poster Session 1 / Lunch** – *Le Bateau & Kings Garden East*

Oral Session 4: Plasticity

Moderator: **Bruce McCandliss**, Vanderbilt University

- 1:40 – 2:00pm **BJ Casey**, Weill Medical College of Cornell University
Development of Fear: Evidence from Mouse to Human
- 2:00 – 2:20pm **Silvia Bunge**, University of California, Berkeley
Reasoning and the Brain: Implications for Education
- 2:20 – 2:40pm **Heather Brenhouse**, Northeastern University
Delayed Effects of Early Life Stress on Cognitive and Social Development: Neuroinflammation Plays a Role
- 2:40 – 3:00pm **Cheryl McCormick**, Brock University
Differential Susceptibility of Adolescents and Adults to the Immediate Lasting Consequences of Social Instability Stress on Cognitive And Social Behaviour in a Rodent Model
- 3:00 – 3:20pm **Break** – *Le Bateau*

Oral Session 5: Cognition

Moderator: **Silvia Bunge**, University of California, Berkeley

- 3:20 – 3:40pm **Beatriz Luna**, University of Pittsburgh
Maturation of Cognitive Control through Adolescence
- 3:40 – 4:00pm **Doug Munoz**, Queen's University
Using the Anti-Saccade Task to Characterize Top-Down Control of Behavior
- 4:00 – 4:20pm **Torkel Klingberg**, Karolinska Institutet
Predicting Working Memory Development from Neuroimaging

4:20 – 4:40pm **Jocelyne Bachevalier**, Emory University
Nonhuman Primate Models of Hippocampal-Dependent Memory Development

Summary and Discussion

4:40 – 5:00pm **Tomáš Paus**, University of Toronto
Population Neuroscience of the Adolescent Brain

6:00 – 10:00pm **Flux Excursion:** Pittsburgh Pirates vs Cincinnati Reds baseball game at PNC Park. There are a limited number of tickets (\$20 each) available for purchase at the Registration Desk. We will meet in the hotel lobby at 6pm to walk to PNC Park.

Day 3 Saturday, September 21

8:15 – 8:45am **Continental Breakfast** – *Le Bateau*

Oral Session 6: Rewards: Motivation

Moderator: **BJ Casey**, Weill Medical College of Cornell University

8:45 – 9:05am **Adriana Galvan**, University of California, Los Angeles
Ontogenetic Changes in the Neural Mechanisms Underlying Reward, Motivation and Learning: Insights from the Adolescent Brain

9:05 – 9:25am **Charles Geier**, Pennsylvania State University
The Influence of Incentives on Inhibitory Control During Adolescence: A Developmental Cognitive Neuroscience Approach

9:25 – 9:45am **James Bjork**, National Institutes of Health
Development of Motivational Neurocircuitry: The Importance of Individual Differences

9:45 – 10:05am **Monique Ernst**, National Institute of Mental Health
Striatal Functional Connectivity in Adolescents and Adults

10:05 – 10:25am **Break** – *Le Bateau*

Oral Session 7: Rewards: Social

Moderator: **Ron Dahl**, University of California, Berkeley

10:25 – 10:45am **Sarah Jayne Blakemore**, University College London
The Social Brain: A Key Determinant of Adolescent-Typical

10:45 – 11:05am **Jason Chein**, Temple University
On a Joy Ride With Friends: Explorations of the Effect of Peers on Adolescent Decision Making

11:05 – 11:20am **Oral Session 6 and 7 Panel Discussion**

11:20 – 1:20pm **Poster Session 2 / Lunch** – *Le Bateau & Kings Garden East*

Flux Congress Detailed Daily Schedule

Day 3 Saturday, September 21 *Continued*

Oral Session 8: Mechanisms of Reward

Moderator: **Linda Patia Spear**, Binghamton University SUNY

- 1:20 – 1:40pm **Susan Andersen**, Harvard Medical School
Adolescent Changes in Dopamine: Finding the Balance Between Too Little and Too Much
- 1:40 – 2:00pm **Bita Moghaddam**, University of Pittsburgh
Reward Processing in Adolescent Rodents
- 2:00 – 2:20pm **Linda P. Spear**, Binghamton University SUNY
Discussion: Further Thoughts on Adolescents and Rewards
- 2:20 – 2:40pm **Break** – *Le Bateau*

Oral Session 9: Developmental Approaches

Moderator: **Bea Luna**, University of Pittsburgh

- 2:40 – 3:00 **Russ Poldrack**, The University of Texas at Austin
Is “Efficiency” a Useless Concept?
- 3:00 – 3:20pm **Brad Schlaggar**, Washington University and St. Louis Children’s Hospital
The ‘Task B Problem’ and Other Considerations in Developmental Functional Neuroimaging
- 3:20 – 3:55pm **Summary and Discussion**
Ron Dahl, University of California, Berkeley
Moving Forward: Some Reflections on the Past, Present, & Future of a Rapidly-Growing Field
- 3:55 – 4:15pm **Closing Comments**
Beatriz Luna and **Brad Schlaggar**

Notes

Oral Presentations

Thursday, September 19

KEYNOTE LECTURE

David Lewis, MD, University of Pittsburgh

Developmental Trajectories in Cortical Circuits: Substrates for Health and Disease

In primates, both excitatory and inhibitory components of prefrontal cortical circuitry undergo marked developmental changes in molecular content, structural features and electrophysiological properties. Many of these changes are protracted, persisting through adolescence, but the rate and timing of the changes are distinctive to specific circuit components. This constellation of developmental trajectories likely provides the neural substrate for the maturation of cognitive abilities that are dependent on prefrontal circuitry, and also suggests the presence of multiple developmental epochs when circuit components may be particularly sensitive to adverse experiences. The implication of these circuit level findings in monkeys for interpreting imaging and behavioral studies of human postnatal brain development will be discussed.

Oral Session 1: Brain Structure

Jay N. Giedd, MD, National Institute of Mental Health

The Teen Brain: New Views from Neuroimaging

Dr. Giedd will summarize results from his 20 year longitudinal study using MRI, genetics, and cognitive/behavioral assessments to explore the path, mechanisms, and influences of child and adolescent brain development in health and illness. There will be an emphasis on the teen brain as a time of vulnerability but also of great opportunity.

Elizabeth Sowell, PhD, University of Southern California

Structural Brain Development and the Impact of Pubertal Hormones

In this talk, Elizabeth will discuss recent findings from her group on cross-sectional and longitudinal studies of adolescent structural brain development, and the role pubertal hormones. There will also be some discussion of individuals with fetal alcohol spectrum disorders, and how differential experience over time during development is likely important in shaping the mature brain.

Christian Beaulieu, PhD, Peter S. Allen MRI Research Centre

Insights into White Matter Development from Diffusion Tensor Imaging Tractography

Diffusion tensor magnetic resonance imaging (DTI) permits the virtual identification of white matter tracts in the human brain as well as the quantitative characterization of parameters that are thought to be linked to elements of the neural micro-structure. This talk will cover: a brief overview of DTI and tractography and their links with axon density/myelination, its application for highlighting unique trajectories of tract development with age in both cross sectional and longitudinal studies of healthy children to adolescents to young adults, and correlations of regional white matter DTI parameters to various cognitive abilities.

Friday, September 20

Oral Session 2:

Functional Connectivity: Approach

Michael Milham, MD, PhD, Child Mind Institute

Emerging Models for Biomarker Identification in the Developing Brain

Central to the development of clinical tools for developmental neuropsychiatry is the discovery and validation of biomarkers. Resting state fMRI (R-fMRI) is emerging as a mainstream approach for imaging-based biomarker identification, detecting variations in the human connectome that can be attributed to developmental and clinical variables (e.g., diagnostic status). Despite growing enthusiasm, many challenges remain. I will discuss evidence of the readiness of R-fMRI based functional connectomics to lead to clinically meaningful biomarker identification in developing populations through the lens of the criteria used to evaluate clinical tests (i.e., validity, reliability, sensitivity, specificity, and applicability). Gaps and needs for R-fMRI-based biomarker identification will be identified, and the potential of emerging conceptual, analytical and cultural innovations (e.g., the Research Domain Criteria Project (RDoC), open science initiatives, and Big Data) to address them will be highlighted. The need to expand future efforts beyond identification of biomarkers for disease status alone will be discussed, with a particular emphasis on the importance of identifying clinical variables related to risk, expected treatment response and prognosis.

Adriana Di Martino, MD, Phyllis Green and Randolph Cowen
Institute for Pediatric Neuroscience

Advancing Autism Neuroscience Through Open Data Sharing: Initial Experience from the Autism Brain Imaging Data Exchange

The Autism Brain Imaging Data Exchange (ABIDE) is a grassroots initiative that aggregated and openly shared 1112 fMRI datasets of individuals with autism and controls across 17 international labs. ABIDE was created to demonstrate the feasibility and utility of open sharing Big Data to advance our understanding of the neuronal correlates of autism. The aggregating effort, results from initial data analyses, and challenges that need to be addressed in future efforts will be discussed.

Steve Petersen, PhD, Washington University Medical School

What Resting State Network Measures Have Done for Us (and Might Do for You)

We use correlations of the BOLD signal at rest to study relationships among large collections of brain regions. This large-scale network shows separable systems of regions whose members often act together during tasks (e.g. sensorimotor and executive systems). The spatial layout of the systems on the brain has isolated locations where several systems closely articulate; regions surrounding these locations have high levels of cross-system correlation. The combination of spatial articulation and high interrelationship indicate that these locations might be particularly "vulnerable" to damage. Lesions at these points produce neuropsychological results consistent with this idea. Network-level understanding of the brain's functional organization can usefully inform other cognitive, developmental, and clinical neuroscience questions.

Oral Presentations

Oral Session 3: Functional Connectivity: Development

Damien Fair, PA-C, PhD, Oregon Health and Science University

Using Graph Theory to Inform Heterogeneity in Typical and Atypically Developing Populations

Research and clinical investigations in psychiatry largely rely on the de facto 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 for most developmental psychiatric syndromes. Another, perhaps less palpable, reality may also be interfering with progress – heterogeneity in typically developing populations. This talk will focus on the use of graph theory in combination with resting-state functional connectivity in clarifying behavioral and functional heterogeneity not only in children with mental disorders, but in typically developing children as well. I will argue that the illumination of such phenomena will likely be of significant practical importance for understanding the nature of typical development and to identifying the etiologic underpinnings of atypical developmental trajectories.

Francisco Xavier Castellanos, MD, NYU Child Study Center and Nathan Kline Institute

The Immediacy of Now: Towards a Mechanistic Understanding of ADHD

The goal of functional imaging is to identify the systems and processes that underlie typical and atypical neuronal functioning. Contrasting groups differing diagnostically can provide a test-bed for validating mechanistic models. Attention-Deficit/Hyperactivity Disorder (ADHD) provides an example of a condition characterized by suboptimal choices when weighing immediate vs. delayed gratification. Following Andrews-Hanna et al., 2010, we tested a prediction that default network subcomponents would be differentially involved in ADHD. We will report unpublished evidence of greater synchrony within the Now-oriented dorsomedial PFC default subnetwork than in the Future-oriented medial temporal lobe subnetwork in separate samples of adults and youth with ADHD vs. controls.

Moriah E. Thomason, PhD, Wayne State University School of Medicine

Fetal Brain Functional Dynamics Revealed by fcMRI

Many forms of psychopathology and neurological conditions are undergirded by disruptions in neural connectivity that may begin as early as in human fetal life. If altered dynamics can be identified before the emergence of clinical or preclinical symptoms and during the course of early functional specialization, such should advance understanding and facilitate earlier intervention. Advances in functional connectivity magnetic resonance imaging (fcMRI) have enabled a non-invasive means for examining neural dynamics at the beginning of life. We have applied fcMRI to > 50 human fetuses to learn about both typical and atypical fetal neural development.

Stefan Everling, PhD, The University of Western Ontario

In Vivo Mapping of the Saccadic Eye Movement Network in Macaques and Humans Using Resting-State fMRI

Stefan will present results from several studies in which his team has successfully utilized resting-state fMRI to investigate the organization of the saccadic eye movement network in macaque monkeys. Results show that functional connectivity measures based on the low-frequency fluctuations of the BOLD signal are largely determined by

the underlying anatomical architecture, but also display dynamic fluctuations that have been previously ignored. Stefan will show that the technique can be used for comparative mapping of human and macaque brain networks and for the identification of targets for further electrophysiological studies in macaque.

Oral Session 4: Plasticity

BJ Casey, PhD, Weill Medical College of Cornell University

Development of Fear: Evidence from Mouse to Human

The study of fear learning and memory has garnered significant interest in recent years for its potential role in anxiety and stress related disorders. Regulating fear is a principle component of these disorders. By studying the development of fear learning and memories, insight can be gained into not only how these systems function normally across development, but also how they may go awry. This lecture will present developmental, environmental, and genetic evidence for changes in fear processes that may provide insights for better treatments and preventative measures for vulnerable populations.

Silvia Bunge, PhD, University of California, Berkeley

Reasoning and the Brain: Implications for Education

Reasoning, or the ability to think logically and solve novel problems, is a prerequisite for scholastic achievement. In this talk Sylvia will first review what we've learned about the brain mechanisms that support reasoning and its growth over childhood and adolescence – in particular, the neural changes that best predict future reasoning ability. She will then provide evidence that intensive practice of reasoning skills can alter brain structure, function, and behavior. Finally, she will argue that a deeper understanding of cognitive and brain development could help us to address the needs of individual children in the face of growing class sizes.

Heather Brenhouse, PhD, Northeastern University

Delayed Effects of Early Life Stress on Cognitive and Social Development: Neuroinflammation Plays a Role

Exposure to early life stress (ELS) such as childhood abuse or trauma increases vulnerability to psychiatric disorders, including depression, drug abuse and schizophrenia. Notably, many behavioral consequences of ELS typically manifest in adolescence, which could provide an opportunistic window for treatment before the deleterious effects of ELS take hold. The developmental mechanisms that regulate delayed effects of ELS can also provide insight into the bases of typical brain and behavioral maturation. We will discuss recent work in rodents revealing that neuroinflammation during pre- and peri-adolescence is critically involved in the network of neural and behavioral consequences of ELS. This talk will explore the need to understand typical maturational changes in brain-immune interaction as we learn more about how ELS derails both neurocircuitry and neuroinflammation during a period of rapid and tumultuous development.

Cheryl McCormick, PhD, Brock University

Differential Susceptibility of Adolescents and Adults to the Immediate Lasting Consequences of Social Instability Stress on Cognitive and Social Behaviour in a Rodent Model

Cheryl will review results with her lab model indicating that as adults, rats exposed to social instability stress in adolescence have heightened anxiety, impaired social behaviour, and cognitive differences compared to non-stressed control rats, whereas the same stressor procedures applied in adulthood do not have such lasting

consequences. She also will describe recent studies exploring the basis for the differential sensitivity of adolescents compared to adults, in which questions such as a different “mind” versus an immature brain in adolescence, and differences in perception of stressors versus different experience of stress in adolescence are considered.

Oral Session 5: Cognition

Beatriz Luna, PhD, University of Pittsburgh

Maturation of Cognitive Control through Adolescence

The ability to flexibly and adaptively control behavior is present early in development but improves significantly into young adulthood. I will review studies where we have characterized developmental trajectories of brain systems underlying cognitive control of behavior from childhood through adolescence into young adulthood. Taken together, neuroimaging and behavioral results suggest that the core neural substrates of executive function are available by adolescence. However, there are continued changes and refinements in the system that support the ability to consistently and flexibly control behavior, which is still immature in adolescence. These key changes may define different stages of development such as the adolescent period when adult level cognitive control is accessible but not yet reliable.

Doug Munoz, PhD, Queen’s University

Using the Anti-Saccade Task to Characterize Top-Down Control of Behavior

The antisaccade task (look away from a visual stimulus) is a very useful tool to investigate child development and reveal deficits in sensory, motor and executive function. Monkeys can also be trained to perform the antisaccade task and their behaviour is qualitatively similar to human behaviour. Detailed neurophysiological studies have revealed how neurons in specific regions of the frontal cortex, basal ganglia, and superior colliculus must be regulated for correct performance of anti-saccades. These neurophysiological results can be used to develop models to understand suboptimal top-down executive control of behavior.

Torkel Klingberg, MD, PhD, Karolinska Institutet

Predicting Working Memory Development from Neuroimaging

In two analyses of longitudinal data we aimed at finding brain signals predicting future WM in children. BOLD signal, gray matter density and fractional anisotropy data was measured in children and adolescents aged 6-20. It found that in addition to information from behavioral testing, imaging data could provide unique information about future WM capacity. Moreover, while cross-sectional analyses related the WM capacity to fronto-parietal networks, future WM capacity was predicted from striatal activity and structure of fronto-parietal and fronto-striatal pathways. These studies show a novel aspect of the dynamics of neural development.

Jocelyne Bachevalier, PhD, Emory University

Nonhuman Primate Models of Hippocampal-Dependent Memory Development

This presentation will review a series of developmental neuropsychological non-human primate studies that inform us on the time course of development of relational memory processes in relation to the morphological maturation of the hippocampus. Several classes of behavioral paradigms used in monkeys and their analogs in humans will be described as well as the specific medial temporal structures that support memory demands on these tasks. The data will

also demonstrate how the insult to the hippocampus in infancy becomes evident later in childhood and how the neural reorganization of the brain following these early lesions may severely impact some cognitive functions while facilitating others.

Summary and Discussion

Tomáš Paus, PhD, University of Toronto

Population Neuroscience of the Adolescent Brain

Saturday, September 21

Oral Session 6: Rewards: Motivation

Adriana Galvan, PhD, University of California, Los Angeles

Ontogenetic Changes in the Neural Mechanisms Underlying Reward, Motivation and Learning: Insights from the Adolescent Brain

Adolescence is characterized by strong motivational drives and limited behavioral regulation. Converging evidence suggests that this developmental phenotype is governed by distinct neurodevelopmental trajectories in the cognitive and affective systems that underlie these behaviors. By probing these systems under an array of conditions in children, adolescents and adults, we have learned how ontogenetic differences in striatal sensitivity and prefrontal engagement render adolescents more prone to risk-taking, reward seeking and impulsive behavior. In this talk, I will present our work demonstrating heightened striatal sensitivity in adolescents to basic appetitive and aversive stimuli, discuss recent findings showing that the adolescent brain is uniquely sensitive to contextual changes in social, stressful and learning domains, and review these findings within the context of prevailing theories of adolescent behavior and neurodevelopment. In addition, I will explore how neurobiologically-supported increases in motivation and exploration during adolescence facilitate the attainment of autonomy as individuals transition into adulthood.

Charles Geier, PhD, Pennsylvania State University

The Influence of Incentives on Inhibitory Control During Adolescence: A Developmental Cognitive Neuroscience Approach

Adolescents’ risk taking may be viewed as stemming from one or more decisions, particularly those made in the context of salient incentives. Decision making, in turn, is supported by more basic cognitive and affective processes, of which incentive processing and inhibitory control are primary. Characterization of the normative interaction of incentive processing and inhibitory control across adolescence may provide critical insight on the basic mechanisms contributing to the complex behavioral phenomenon of risk taking. In this talk, I will present our on-going work examining the effects of incentives on cognitive control. This will include examination of developmental changes in reactivity in the ventral striatum as well as circuitry underlying cognitive control as a function of incentive context. Additionally, methods that enable assessment of different stages of reward processing as well as minimizing age-related differences in subjective reward valuation will be discussed. Overall, our results suggest that adolescents demonstrate persistent differences in the integration of incentives and inhibitory control, which may contribute to differential adolescent decision-making and risk taking.

Oral Presentations

James Bjork, PhD, National Institutes of Health

Development of Motivational Neurocircuitry: The Importance of Individual Differences

Adolescent risk-taking has been attributed to an imbalanced opponent-process, where robust approach/reward neurocircuitry is unchecked by executive control circuits. However, a disproportionate amount of adolescent mortality and morbidity from behavioral causes is concentrated in youth with childhood histories of poor behavior control compared to age-peers. This presentation will feature data from several datasets showing that the most robust increases in recruitment of mesolimbic neurocircuitry by prospective or delivered rewards tends to occur in youth already at behavioral risk for drug abuse and other poor psychosocial outcomes. In addition, avenues for future developmental research on incentive neurocircuitry will be highlighted.

Monique Ernst, MD, PhD, National Institute of Mental Health

Striatal Functional Connectivity in Adolescents and Adults

This presentation will address commonalities and differences between adults and adolescents in how striatal structures are functionally connected with other key brain structures. Two types of data will be discussed, (1) the functional connectivity of core structures engaged in response to incentives using Dynamic Causal Modeling analysis during fMRI paired with a reward task, and (2) intrinsic connectivity during resting state using the striatum as seed. Findings show that the basic circuitry involved in reward processes is similar in adults and adolescents. However, the strength and pattern of connectivity differ as a function of age. Most notable findings are (1) the amplified role of the insula in adolescents relative to adults, and (2) the specific effect of age on the intrinsic connectivity of the striatum that affects mostly the ventral but not dorsal regions. These findings will be related to vulnerability for aberrant behavior and clinical implications.

Oral Session 7: Rewards: Social

Sarah-Jayne Blakemore, PhD, University College London

The Social Brain: A Key Determinant of Adolescent-Typical

Behavior Adolescence is a period of formative biological and social transition. Social cognitive processes involved in navigating increasingly complex and intimate relationships continue to develop throughout adolescence. It is proposed that a significant proportion of adolescent-typical behaviour is driven by the potential social reward of peer acceptance. This talk will focus on the development of the social brain, the network of regions involved in understanding other people's minds. The social brain develops structurally, functionally and behaviourally during adolescence.

Jason Chein, PhD, Temple University

On a Joy Ride With Friends: Explorations of the Effect of Peers on Adolescent Decision Making

One hallmark of adolescent risk taking is that it typically occurs when adolescents are with their friends. In a series of behavioral and neuroimaging (fMRI) studies with human adolescents and adults, we have explored how social context influences decision making. Results suggest that the presence of peers affects adolescent decision-making by priming a reward sensitive motivational state. To further explore this phenomenon, we have recently developed a rodent model of peer influences. A parallel between the human and rodent findings suggests that the peer effect on human adolescent risk-taking may reflect a hard-wired, evolutionarily conserved process through which the presence of age-mates increases individuals' sensitivity to potential rewards in their immediate environment.

Oral Session 8: Mechanisms of Reward

Susan L. Andersen, PhD, Harvard Medical School

Adolescent Changes in Dopamine: Finding the Balance Between Too Little and Too Much

Dopamine is a major modulatory neurotransmitter that undergoes dramatic changes during adolescence. This presentation will focus on what role dopamine receptors play in motivational neurocircuitry during adolescence and how environmental influences change their expression. Specifically, evidence will be provided showing how adolescent overproduction of D1 receptors that are expressed in the prefrontal cortex explain high-risk behavior during adolescence. In contrast, reductions in this same population contribute to anhedonia and depressive behaviors that also emerge during this stage.

Bitá Moghaddam, PhD, University of Pittsburgh

Reward Processing in Adolescent Rodents

Adolescents often respond differently than adults to the same motivating contexts. Delineating the neural processing differences of adolescents is critical to understanding this phenomenon, as well as the bases of adolescent psychiatric vulnerabilities. We believe that age-related changes in the ways rewarding stimuli are processed in key brain regions could underlie the unique predilections and vulnerabilities of adolescence. I will present single-unit activity data from the VTA, orbital frontal cortex, nucleus accumbens, and dorsal striatum of adolescent and adult rats during a reward-motivated instrumental task. We observe striking age-related region-specific differences in the neural encoding of salient events during this task. These data provide insight on how rewards might shape adolescent behavior differently, and for their increased vulnerabilities to affective and addictive disorders.

Linda P. Spear, PhD, Binghamton University SUNY

Discussion: Further thoughts on adolescents and rewards

Oral Session 9: Developmental Approaches

Russ Poldrack, PhD, The University of Texas at Austin

Is "Efficiency" a Useless Concept?

Changes in activation with development are often described in terms of changes in "efficiency" of brain function. Russ will argue that this is generally a redescription of the data rather than a useful explanation, and will ask how we might better understand such changes from a neural and computational standpoint.

Bradley L. Schlaggar, MD, PhD, Washington University and St. Louis Children's Hospital

The 'Task B Problem' and Other Considerations In Developmental Functional Neuroimaging

In this brief talk, Brad will highlight a handful of conceptual and practical considerations relevant to developmental cognitive neuroscience, and group-wise comparisons per se.

Summary and Discussion

Ron Dahl, MD, University of California, Berkeley

Moving Forward: Some Reflections on the Past, Present, & Future of a Rapidly-Growing Field

This presentation will provide some brief reflections on this inaugural conference and some perspective taking on this rapidly growing

young field of developmental cognitive neuroscience. The primary themes of this discussion will focus on: a) how to better integrate different aspects of the field (including social, affective, and behavioral dimensions of developmental cognitive neuroscience, as well as basic, clinical, and policy level research); b) considerations of structures (i.e. meetings, society, journals, data-sharing etc.) that can best promote positive development of the field. Audience discussion and suggestions will be welcomed to consider a broad perspective on these important issues to help shape the future of our field.

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Poster Session 1 (*Kings Garden East*)

Friday, September 20 (presentation hours: 11:40-1:40pm)

Poster Session 2 (*Kings Garden East*)

Saturday, September 21 (presentation hours: 11:20-1:20pm)

Posters in bold represent first author

Poster board numbers work in the following way:

Poster Session – Theme – Board Number (E.g. 2-A-10)

Odd numbered posters will be presented during Poster Session 1, and **even numbered posters** will be presented during Poster Session 2.

Location of individual poster boards indicated on poster board floor plans at the back of the program booklet. All posters must be put up between 12:00pm and 6:00pm on Thursday, September 19, and removed by 3:20pm on Saturday, September 21. Posters not removed by this time will be held at the Registration Desk until 5:30pm.

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A - Clinical Populations

1-A-1 A typical rich-club organization in brain connectivity as an endophenotype of attention deficit hyperactivity disorder

*Marguerite Matthews*¹, Siddarth Ray¹, Joel Nigg¹, Damien Fair¹

¹Oregon Health & Science University

2-A-2 The relationship between cortical thickness and executive functions in 5-7 year olds with and without ADHD

*Maria Kharitonova*¹, Margaret Sheridan²

¹Boston Children's Hospital/Harvard Medical School, ²Boston Children's Hospital

1-A-3 Abnormal white matter diffusivity in preschool-age children with ADHD

*Daniel Peterson*¹, Deana Crocetti¹, Keith Slifer¹, Martha Denckla¹, Stewart Mostofsky¹, E. Mark Mahone¹

¹The Kennedy Krieger Institute

2-A-4 Examination of frontal lobe cortical thickness and symptom severity in girls with ADHD

*Benjamin Dirlikov*¹, Deana Crocetti¹, Martha Denckla¹, E Mahone¹, Stewart Mostofsky¹

¹The Kennedy Krieger Institute

1-A-5 Atypical development of functional connectivity during face processing in autism

*Andrew Lynn*¹, Beatriz Luna², Will Foran², Dani Simmonds², Aarthi Padmanabhan², Michael Hallquist², Kirsten O'Hearn²

¹University of Pittsburgh, ²University of Pittsburgh Medical Center

2-A-6 Maturation of the neural substrates underlying face recognition typically and in autism

*Kirsten O'Hearn*¹, Andrew Lynn¹, Jennifer Fedor¹, William Foran¹, Aarthi Padmanabhan¹, Beatriz Luna¹

¹University of Pittsburgh School of Medicine

1-A-7 Visuomotor functional connectivity relates to autism severity

*Mary Beth Nebel*¹, Ani Eloyan¹, Carrie Nettles², Kristie Sweeney², Katarina Ament², Rebecca Ward², Ann Choe¹, Anita Barber¹, Brian Caffo¹, James Pekar³, Stewart Mostofsky³

¹Johns Hopkins University, ²Kennedy Krieger Institute, ³Johns Hopkins and Kennedy Krieger Institute

2-A-8 Functional connectivity of the amygdala in very early childhood depression: a resting-state fMRI study

*Michael Gaffrey*¹, Joan Luby², Janet Singer², Jonathan Power², Steven Petersen², Deanna Barch²

¹Washington University School of Medicine, ²Washington University in St. Louis

1-A-9 Child maltreatment and prefrontal cortex and amygdala function during effortful emotion regulation

*Katie McLaughlin*¹, Margaret Sheridan¹

¹Harvard Medical School

1-A-10 Altered amygdala connectivity in youth exposed to trauma

*Moriah Thomason*¹, Hilary Marusak², Maria Tocco¹, Gregory Baldwin¹, Katherine Angell¹

¹Wayne State University, ²Wayne State University School of Medicine

1-A-11 Along-tract statistics reveal alterations in structural connectivity in male and female adolescents with a fetal alcohol spectrum disorder

*Kristina Uban*¹, Megan Herting¹, John Colby¹, Prapti Gautam¹, Elizabeth Sowell¹

¹Children's Hospital Los Angeles

2-A-12 Cognitive change and white matter maturation in children prenatally exposed to alcohol: comparisons with typical controls

*Prapti Gautam*¹, S. Christopher Nunez¹, Sarah Mattson², Edward Riley², Megan Herting¹, Kristina Uban¹, John Colby¹, Eric Kan¹, Elizabeth Sowell¹

¹USC/Children's Hospital Los Angeles, ²San Diego State University

1-A-13 Motor overflow is associated with reduced motor cortex activation in attention-deficit/hyperactivity disorder

*Keri Rosch*¹, Andrew Gaddis¹, Benjamin Dirlikov¹, Deana Crocetti¹, Lindsey MacNeil¹, John Muschelli¹, Brian Caffo¹, James Pekar¹, Stewart Mostofsky¹

¹The Kennedy Krieger Institute

2-A-14 Relationship between early deprivation and pubertal development in structural brain development of post-institutionalized adolescents

*Amanda Hodel*¹, Ruskin Hunt¹, Megan Gunnar¹, Kathleen Thomas¹

¹University of Minnesota

1-A-15 Cognitive outcome of very preterm born children predicted with a DTI multivariate model

*Henrik Ullman*¹, Megan Spencer-Smith¹, Peter Anderson², Torkel Klingberg¹

¹Karolinska Institutet, ²Murdoch Children's Research Institute

2-A-16 Neural network multistability and evidence of aberrant development in adolescents with psychosis

*Peter Bachman*¹, Molly Erickson², Chantelle Kinzel¹, Maria Jalbrzikowski¹, Carrie Bearden¹

¹University of California, Los Angeles, ²University of Maryland

1-A-17 Maladaptive decision making, variation in 5-HTTLPR, and substance use outcomes in high risk individuals

*Jessica O'Brien*¹, Sarah Lichenstein¹, Shirley Hill²

¹University of Pittsburgh, ²University of Pittsburgh School of Medicine

2-A-18 The differential role of parental socioeconomic status in the neural basis of arithmetic

Ozlem Ece Demir¹, Jérôme Prado², James Booth¹

¹Northwestern University, ²Centre National de la Recherche Scientifique (CNRS)

1-A-19 Structural alterations in the dorsal visual processing system in children with Williams syndrome

Melanie Sottile¹, Jonathon Kippenhan², Katherine Roe², Carolyn Mervis³, Daniel Eisenberg², Joseph Masdeu², Philip Kohn², Karen Berman²

¹NIMH, ²NIMH/IRP/NIH, ³University of Louisville

B - Network Connectivity

2-B-20 Functional magnetic resonance imaging in mice: bridging the gap in translational research for psychiatric diseases

Ben Jarrett¹, James Stafford², Damian Fair¹

¹Oregon Health & Science University, ²NYU School of Medicine

1-B-21 Human-macaque comparisons using functional and structural connectivity

Brian Mills¹, Oscar Miranda-Dominguez¹, David Grayson², Andrew Woodall¹, Kathy Grant¹, Chris Kroenke¹, Damien Fair¹

¹Oregon Health & Science University, ²University of California, Davis

2-B-22 The nuisance of nuisance regression: spectral misspecification in a common approach to resting-state fMRI preprocessing reintroduces noise and obscures functional connectivity

Michael Hallquist¹, Kai Hwang¹, Beatriz Luna¹

¹University of Pittsburgh

1-B-23 The importance of applying physiological regression to rsfMRI

Will Foran¹, Kai Hwang¹, Aarthi Padmanabhan¹, Michael Hallquist¹

¹University of Pittsburgh Medical Center

2-B-24 Development of cingulo-opercular and default mode networks across childhood and adolescence

Anita Barber¹, Stewart Mostofsky¹

¹Johns Hopkins University/Kennedy Krieger Institute

1-B-25 The development of human amygdala-cortical functional connectivity at rest

Laurel Gabard-Durnam¹, Jessica Flannery¹, Bonnie Goff¹, Dylan Gee¹, Kathryn Humphreys¹, Eva Telzer¹, Todd Hare¹, Nim Tottenham¹

¹University of California, Los Angeles

2-B-26 Conservation of network properties in resting-state functional connectivity in humans and non-human primates

Joshua Swearingen¹, Xun Zhu¹, Christine Corbly², Eric Forman², Anders Andersen², Zhiming Zhang², Peter Hardy², Jane Joseph¹

¹Medical University of South Carolina, ²University of Kentucky

1-B-27 Investigation of Language Networks During Infancy Using Functional Connectivity MRI

Christopher Smyser¹, Joshua Shimony¹, Terrie Inder¹, Abraham Snyder¹, Jeffrey Neil¹

¹Washington University

C - Dopamine Mechanisms

2-C-28 Differences between adolescent and adult rats in behavior and sensitivity to methylphenidate during a response inhibition task

Nicholas Simon¹, Timothy Gregory¹, Jesse Wood¹, Bitu Moghaddam¹

¹University of Pittsburgh

1-C-29 Polymorphisms in the dopamine receptor 2 gene region influence improvements during working memory training in children and adolescents

Stina Söderqvist¹, Hans Matsson², Myriam Peyrard-Janvid², Juha Kere², Torkel Klingberg²

¹Karolinska Institutet/Cogmed Systems, ²Karolinska Institutet

2-C-30 Neural response to inhibitory load depends on Dopamine transporter genotype in healthy children

Alaina Pearce¹, Jennifer Foss-Feig¹, Chandan Vaidya¹

¹Georgetown University

1-C-31 DRD2 variation predicts resilience to substance use disorders in high risk offspring from multiplex alcohol dependence families

Sarah Lichenstein¹, Jessica O'Brien¹, Shirley Hill¹

¹University of Pittsburgh

2-C-32 The influence of COMT genotype and sex on reward processing during adolescence

Nikki Lee¹, Lydia Krabbendam¹, Thomas White², Sukhi Shergill²

¹VU University Amsterdam, ²King's College London

1-C-33 Influence of variability in dopamine availability on resting state functional connectivity over adolescence

Aarthi Padmanabhan¹, Kai Hwang¹, Beatriz Luna¹

¹University of Pittsburgh

D - Emotion Processing

2-D-34 Developmental changes in amygdala-based fear learning from early childhood through adulthood

Daniel Lumian¹, Laurel Gabard-Durnam¹, Bonnie Goff¹, Dylan Gee¹, Jessica Flannery¹, Nim Tottenham¹

¹University of California, Los Angeles

1-D-35 Developmental changes in amygdala connectivity during involuntary attention to positive and negative emotions

Eric Murphy¹, Megan Norr¹, Chandan Vaidya¹

¹Georgetown University

2-D-36 The relationship between anxiety and brain activity during an emotional inhibitory control task in adolescents and young adults

Kelly Jedd¹, Julia Cohen-Gilbert², Kathleen Thomas¹

¹University of Minnesota, ²Harvard Medical School - McLean Hospital

1-D-37 Developmental changes in brain function supporting emotionally-modulated cognitive control

Sarah Ordaz¹, Will Foran², Kai Hwang², Aarthi Padmanabhan², Beatriz Luna²

¹Stanford University, ²University of Pittsburgh

2-D-38 Effects of emotional distracters and reinforcement on neural systems of attentional control in adolescents

Cecile Ladouceur¹, Micheal Schlund², Alan Anticevic³, Deanna Barch⁴

¹University of Pittsburgh, ²John Hopkins University, ³Yale University, ⁴Washington University

1-D-39 Stress-system genetic variation and early life stress predict limbic reactivity to emotional faces in school-age children

David Pagliaccio¹, Joan Luby¹, Deanna Barch¹

¹Washington University in St. Louis

2-D-40 Development of emotional face processing in infants as measured with near-infrared spectroscopy

Katherine Perdue¹, Alissa Westerlund¹, Ross Vanderwert¹, Miranda Ravicz¹, Lina Montoya¹, Charles Nelson¹

¹Boston Children's Hospital

1-D-41 Brain mechanisms for frustration in children: atypical processing of social reward

Susan Perlman¹

¹University of Pittsburgh

E - Executive Function

2-E-42 Separate cue and target processing in typical development

Jessica Church¹, Silvia Bunge¹, Steven Petersen¹, Bradley Schlaggar¹

¹The University of Texas at Austin

1-E-43 Behavioral and neural substrates of self-control

Theresa Teslovich¹, Alisa Powers¹, Chelsea Helion¹, Catherine Insel², Jennifer Silvers², Kevin Ochsner², Walter Mischel², BJ Casey¹

¹Weill Cornell Medical College, ²Columbia University

2-E-44 Age-related increases in preparatory frontal alpha and beta band neural oscillations support developmental improvements in inhibitory control from adolescence to adulthood

Kai Hwang¹, Avniel Ghuman¹, Beatriz Luna¹

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1-E-45 Impulsive decision-making in adolescents is associated with decreased structural integrity of cortico-striatal white matter

Diane Goldenberg¹, Eva Telzer², Andrew Fuligni¹, Adriana Galvan¹

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2-E-46 Relations between neurophysiological and behavioral measures of children's error processing

Jennie Grammer¹, Palak Vani², William Gehring², Frederick Morrison¹

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1-E-47 Individual differences in executive function related to BOLD activation on a go/no-go task in typically developing children and adolescents

Christopher Nuñez¹, Prapti Gautam², Eric Kan², Susan Bookheimer³, Elizabeth Sowell²

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2-E-48 Behavioral inhibition and altered frontolimbic functioning in late childhood

Bradley Taber-Thomas¹, Santiago Morales¹, Eran Aday¹, Koraly Perez-Edgar¹

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1-E-49 Task control systems are implicated for mapping meaning onto letter strings

Binyam Nardos¹, Kunal Mathur¹, Joshua Siegel², Rebecca Lepore², Steven Petersen², Bradley Schlaggar²

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2-E-50 Attention moderates the effects of memory encoding and subsequent item recognition: Evidence from combined eye tracking and fMRI

Julie Markant¹, Dima Amso¹

¹Brown University

1-E-51 Neural audience effect on relational reasoning in adolescence

Laura Wolf¹, Iroise Dumontheil², Sarah-Jayne Blakemore¹

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2-E-52 The development of hierarchical cognitive control and rule abstraction

Dima Amso¹, Kerstin Unger¹, David Badre¹

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1-E-53 A longitudinal study of fronto-parietal and fronto-striatal networks during working memory development

Fahimeh Darki¹, Torkel Klingberg¹

¹Karolinska Institute

2-E-54 Association of DLPFC BOLD activity and gamma oscillations during working memory in early adolescence

Daniel Simmonds¹, Nicola Polizzotto¹, Raymond Cho¹, Beatriz Luna¹

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1-E-55 Development of cognitive control in early childhood: working memory filtering

Margaret Sheridan¹, Maria Kharitonova¹

¹Harvard Medical School

2-E-56 Visual-spatial working memory and the development of mathematical cognition

Miriam Rosenberg-Lee¹, Sarit Ashkenazi², Arron Metcalfe³, Anna Swigart³, Vinod Menon³

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1-E-57 Changes in pupillary responses during a working memory task

Jesse Niebaum¹, Alison Singley¹, Silvia Bunge¹

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F - Reward Processing

2-F-58 Chronic nicotine exposure results in increased sweet food consumption but not increased body weight in adolescent female mice

Alicia Revitsky¹, Laura Klein¹

¹Pennsylvania State University

1-F-59 Adolescent stress or impulsivity effects on alcoholism vulnerability in adulthood: role of gap junction intracellular communication

Laura Rupprecht¹, Kathryn Stone², Tukiet Lam², Erol Gulcicek², Mary Torregrossa¹

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2-F-60 Neural representation of expected value in the adolescent brain

Emily Barkley-Levenson¹, Adriana Galvan²

¹University of Southern California, ²UCLA

1-F-61 Developmental and individual differences in craving for food

Jennifer Silvers¹, Catherine Insel¹, Alisa Powers², Theresa Teslovich², Chelsea Helion³, Jochen Weber¹, BJ Casey², Walter Mischel¹, Kevin Ochsner¹

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2-F-62 Kids, candy, brain and behavior: developmental differences in responses to candy gains and losses

Katherine Luking¹, Joan Luby¹, Deanna Barch¹

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1-F-63 Developmental changes in incentive processing during inhibitory control: a longitudinal fMRI study

David Paulsen¹, Beatriz Luna¹, Charles Geier²

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2-F-64 Incentive effects on inhibitory control across developmental and cigarette-smoking samples

David Lydon¹, Amanda Child¹, John Beahm¹, Charles Geier¹

¹The Pennsylvania State University

1-F-65 Adolescent risky decisions: The influence of pubertal hormones, reward magnitude, and social comparison feedback

Zdena Op de Macks¹, Lance Kriegsfeld¹, Silvia Bunge¹, Ron Dahl¹

¹University of California, Berkeley

2-F-66 Sex difference in striatal brain response during reward processing in adolescence

Gabriela Alarcon¹, Anita Cservenka¹, Bonnie Nagel¹

¹Oregon Health & Science University

1-F-67 Relating the developmental mismatch in structural brain maturation to adolescent risk-taking behaviors

Anne-Lise Goddings¹, Kathryn Mills¹, Liv Clasen², Jay Giedd², Sarah-Jayne Blakemore¹

¹UCL, ²NIMH

G - Social Processing

2-G-68 Developmental changes in amygdala-insula connectivity mediates normative age-related increases in trust appraisals

Bonnie Goff¹

¹UCLA

1-G-69 The stimuli drive the response: child face stimuli alter brain response in youth

Hilary Marusak¹, Timothy Lozon², Amy Novotny², Moriah Thomason¹

¹Wayne State University School of Medicine, ²Wayne State University

2-G-70 Development of size- and view-invariance in LOC: an fMR-adaptation study

Mayu Nishimura¹, Suzy Scherf², Valentinos Zachariou³, Michael Tarr³, Marlene Behrmann³

¹Wayne State University, ²Pennsylvania State University, ³Carnegie Mellon University

1-G-71 The joint development of hemispheric specialization for words and faces

Eva Dundas¹, David Plaut¹, Marlene Behrmann¹

¹Carnegie Mellon University

2-G-72 fMRI in freely viewing non-human primates as a tool to understand functional brain development

Jane Joseph¹, Xun Zhu¹, Faraday Davies¹, Joshua Swearingen¹, Christine Corbly², Ashley Kangas², Eric Forman², Anders Andersen², Zhiming Zhang², Lee Blonder², Ramesh Bhatt², Peter Hardy²

¹Medical University of South Carolina, ²University of Kentucky

1-G-73 Emerging structure-function relations in the developing face processing system

Suzy Scherf¹, Cibu Thomas², Jaime Doyle³, Marlene Behrmann³

¹Pennsylvania State University, ²National Institutes of Health, ³Carnegie Mellon University

2-G-74 Peer influences on approach and consummatory behavior during adolescence: Evidence from humans and mice

Jason Chein¹, Sheree Logue¹, Thomas Gould¹, Ashley Smith¹, Laurence Steinberg¹

¹ Temple University

1-G-75 Social regulation of craving for food in adolescence and adulthood

Rebecca Martin¹, Suneet Goraya¹, Yvette Villanueva¹, Kevin Ochsner¹

¹Columbia University

2-G-76 Children's neural activity during natural viewing of educational television exhibits category-specific responses

Rosa Li¹, Jessica Cantlon²

¹Duke University, ²University of Rochester

1-G-77 Social influences on risk perception across adolescence and adulthood

Lisa Knoll¹, Lucía Magis Weinberg¹, Sarah-Jayne Blakemore¹

¹University College London

2-G-78 “You deceived me... Please be my friend!” Neurobiological correlates of violation of social expectations in adolescents

Kaitlyn Breiner¹, Adriana Galván¹

¹UCLA

1-G-79 Peer influence on the receipt of reward during adolescence

Ashley Smith¹, Jason Chein¹, Laurence Steinberg¹

¹Temple University

2-G-80 Default distrust? An fMRI investigation of the neural development of trust and cooperation

Anne-Kathrin Fett¹, Paula Gromann¹, Vincent Giampietro², Sukhi Shergill², Lydia Krabbendam¹

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1-G-81 Successful in secondary education: a vulnerable balance between friends and homework

Mariette Huizinga¹, Wouter Weeda¹, Nikki Lee¹, Lydia Krabbendam¹

¹VU University Amsterdam

2-G-82 Being rejected and taking revenge: Neural correlates of punishing initiators of social exclusion during adolescence

Berna Guroglu¹, Geert-Jan Will¹, Pol van Lier², Eveline Crone¹

¹Leiden University, ²VU University

1-G-83 Theory of mind and social functioning in typically developing children: An fMRI investigation with a novel movie-based task

Sarah Hope Lincoln¹, David Dodell-Feder¹, Alexandra Arnold², Christine Hooker¹

¹Harvard University, ²Lesley University

H - Brain Structure

2-H-84 Evidence for neurophysiological change in the adolescent striatum revealed using multivariate pattern analysis of time-averaged fMRI activation

Bart Larsen¹, Bea Luna²

¹University of Pittsburgh, ²University of Pittsburgh Medical Center

1-H-85 Resting-state functional connectivity MRI reveals a developmental change in basal ganglia functional organization from childhood to adulthood

Deanna Greene¹, Timothy Laumann¹, Joseph Dubis¹, S. Katie Ihnen¹, Maital Neta¹, Jonathan Power¹, John Pruett Jr.¹, Kevin Black¹, Bradley Schlaggar¹

¹Washington University School of Medicine

2-H-86 Sex steroid receptor gene expression correlates with expression of neurodevelopmental genes and modulates gray matter volume in the human brain

Tuong-Vi Nguyen¹, Peter Schmidt¹, Jonathan Kippenhan¹, Melanie Sottile¹, Jeffrey Bloch¹, Victor Ekuta¹, Joel Kleinman², Barbara Lipska¹, Bhaskar Kolachana¹, Venkata Mattay¹, Daniel Weinberger¹, Karen Berman¹

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1-H-87 What are we measuring in developmental structural MRI?

Kathryn Mills¹, Anne-Lise Goddings², Jay Giedd³, Sarah-Jayne Blakemore²

¹Institute of Cognitive Neuroscience, ²University College London,

³National Institute of Mental Health

2-H-88 A longitudinal MRI study: puberty specific cortical and subcortical maturation in adolescence

Megan Herting¹, Prapti Gautam¹, Ronald Dahl², Elizabeth Sowell¹

¹University of Southern California/Children's Hospital Los Angeles,

²University of California Berkley

1-H-89 The relationship between socioeconomic variables and brain development

Suzanne Houston¹, Kimberly Noble², Eric Kan³, Hauke Bartsch⁴, Elizabeth Sowell⁵

¹University of Southern California, ²Columbia University, ³Children's Hospital, Los Angeles, ⁴University of California at San Diego,

⁵Children's Hospital, Los Angeles/University of Southern California

2-H-90 Human superior temporal sulcus subserves both concrete and abstract social cognition in typical development

Mbemba Jabbi¹, Victor Ekuta¹, Ranjani Prabhakaran¹, Katherine Damme¹, Brett Cropp¹, Katherine Roe¹, J. Shane Kippenhan¹, Philip Kohn¹, Alex Martin¹, Karen F. Berman¹

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Flux Congress Program-at-a-Glance

1st Flux Congress 2013 Congress Schedule At-a-Glance											
Thursday 19-Sep				Friday 20-Sep				Saturday 21-Sep			
<div>Registration /Information Desk Open 12-8pm</div> <div>Posters on Display</div> <div>Exhibits on Display</div> <div>Welcome Reception (6:15-7:45pm)</div>				<div>Registration /Information Desk Open 7:30am-5:30pm</div> <div>Posters on Display</div> <div>Exhibits on Display</div>				Continental Breakfast (8:15-8:45am)			
								Oral Session 2: Functional Connectivity: Approach (8:45-9:45am)			
								Break (9:45-10:05am)			
								Oral Session 3: Functional Connectivity: Development (10:05-11:40am)			
								Poster Session 1 and Lunch (11:40-1:40pm)			
								Oral Session 4: Plasticity (1:40-3:00pm)			
								Break (3:00-3:20pm)			
								Oral Session 5: Cognition (3:20-4:40pm)			
								Summary & Discussion (4:40-5:00pm)			
								Pittsburgh Pirates Ballgame at PNC Park (ticketed event) (6-10pm) 6pm meeting point at the hotel lobby			
Oral Session 6: Rewards: Motivation (8:45--10:05am)											
Break (10:05-10:25am)											
Oral Session 7: Rewards: Social (10:25-11:20am)											
Poster Session 2 and Lunch (11:20-1:20pm)											
				Oral Session 8: Mechanisms of Reward (1:20-2:20pm)							
				Break (2:20-2:40pm)							
				Oral Session 9: Developmental Approaches (2:40-3:20pm)							
				Summary & Closing (3:20-4:15pm)							

Flux Posters Floor Plan Kings Garden East



Poster Session 1
Friday, September 20
(presentation hours: 11:40 – 1:40pm)

Poster Session 2
Saturday, September 21
(presentation hours: 11:20 – 1:20pm)

Odd numbered posters will be presented during Poster Session 1, and **even numbered posters** will be presented during Poster Session 2.



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