10th Annual

Program

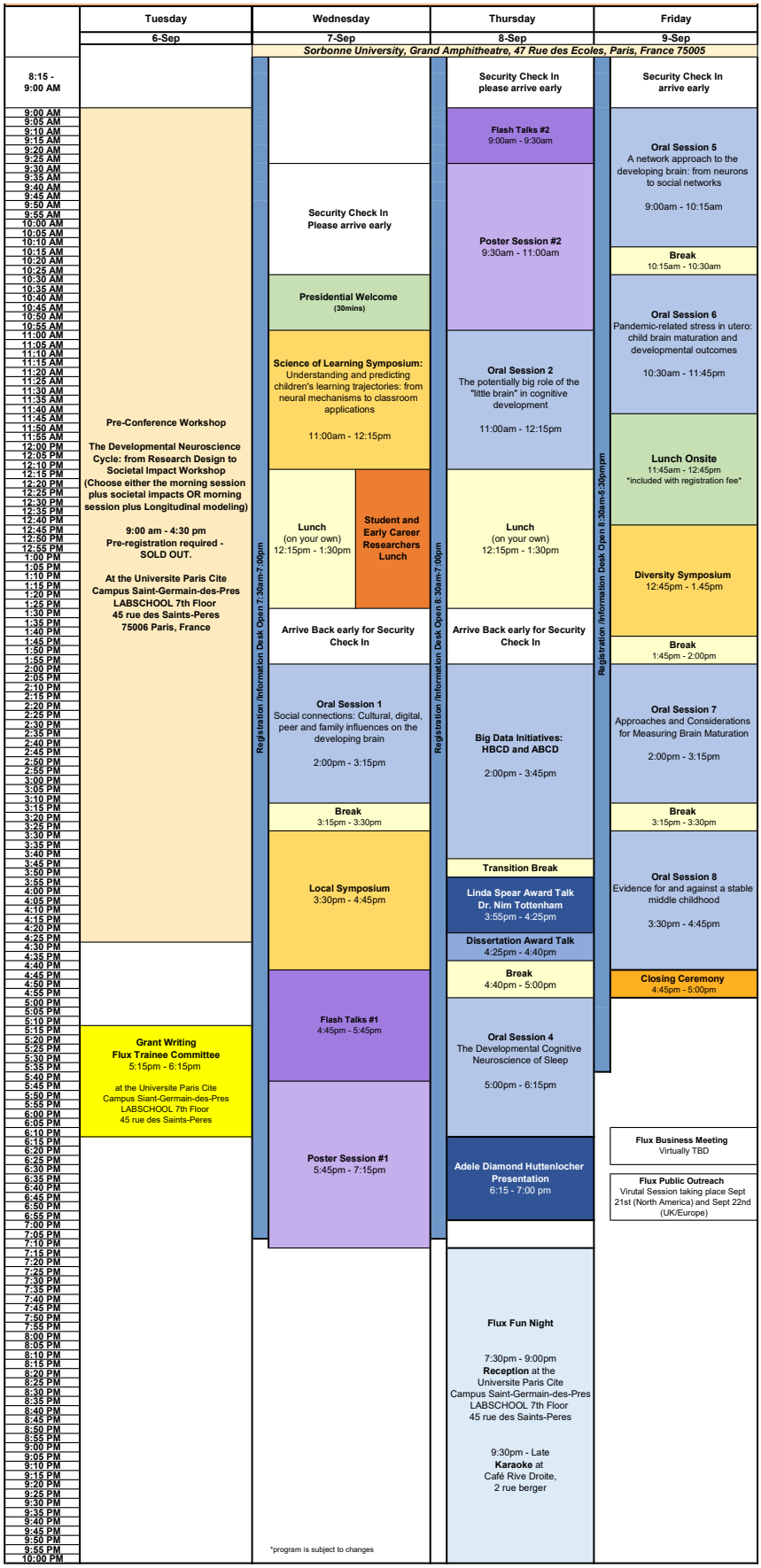
flux
CONGRESS

The International Congress
for Integrative Developmental
Cognitive Neuroscience

La Sorbonne
Paris, France

September 7-9, 2022

Program At-A-Glance



Flux Congress Sponsors

Jacobs Foundation

Sponsor of Science of Learning Symposium

The Jacobs Foundation supports research and intervention projects leading to significant outcomes for children and youth all over the world. Within our research priority Science of Learning, we explore the biological bases of skill acquisition and development of children and youth and their consequences for learning environments and institutions.

jacobsfoundation.org

Kennedy Krieger Institute

Sponsor of Young Investigator Award

Kennedy Krieger Institute is a non-profit, internationally recognized specialty pediatric healthcare, education, research and related services provider whose mission is to improve the lives of the more than 24,000 children and adolescents with disorders and injuries of the brain, spinal cord, and musculoskeletal system they serve each year. With locations throughout the Baltimore-Washington region, and welcoming children from nearby and around the world, Kennedy Krieger Institute helps children and their families through interdisciplinary inpatient and outpatient care, novel research, home and community services, training for current and future professionals and specialized school-based programs. From autism to traumatic stress, brain injuries to rare neurological disorders like leukodystrophies and Kabuki syndrome, the people who comprise the Institute are committed to changing the trajectories of young lives through innovation, commitment, compassion and expertise.

KennedyKrieger.org

Elsevier

Sponsor of the Poster Sessions

Just as the tools used in scientific research are changing, so too are the tools used in scientific communication. Elsevier has taken a leadership role in advancing the technologies necessary to create a seamless electronic information delivery environment.

elsevier.ca

Babilou Family

Founded in France in 2003 by entrepreneurial brothers Rodolphe and Edouard Carle to bridge the gap in childcare solutions, Babilou has gradually grown to become a leading light in early years education and a major operator across the globe. We set out to support the well-being of children and the work-life balance of families at a time of rising birthrates and women in the workforce. Today, in our rapidly-changing, fragilized world, our role in society is all the more relevant: bring quality education to the next generation.

babilou-family.com

Nous Imaging

We create advanced neuroimaging software tools to enable efficient acquisition of high-quality brain imaging data. Our core platform, FIRMM, reliably and accurately measures motion and its effects in real-time. FIRMM helps technologists know in real-time when the data they have collected will meet the predetermined quality thresholds for the study, saving time and eliminating the need for repeat scans. Recently, we developed a new application, FIRMM-pix, that combines gamification and biofeedback to coach patients to remain still during their scans.

nousimaging.com

NYU Langone Health

NYU Langone Health is one of the nation's premier academic medical centers. Our trifold mission to serve, teach, and discover is achieved daily through an integrated academic culture devoted to excellence in patient care, education, and research.

nyulangone.org

Flux Awards

Huttenlocher Lecturer Award

This award is presented to an outstanding researcher in the field of Developmental Cognitive Neuroscience.

2022 Awardee: **Dr. Adele Diamond** | Professor of Developmental Cognitive Neuroscience at University of British Columbia

Adele Diamond is the Canada Research Chair Tier 1 Professor of Developmental Cognitive Neuroscience at University of British Columbia in Vancouver, Canada. She helped found the field of developmental cognitive neuroscience. Her specialty is the rigorous study of executive functions (EFs) in children. She's been doing that for 40 years. EFs include focused attention, creative problem-solving, self-control, and working memory. Adele studies how EFs are affected by biological factors (such as genes and neurochemistry) and by environmental ones (e.g., impaired by stress or improved by interventions).

Her work has consistently been marked by innovation and crossing disciplinary boundaries. Her discoveries have thrice changed international medical guidelines for the treatment of diseases and have had a significant impact on educational practice worldwide, improving millions of children's lives. Adele has often broken new ground (e.g., demonstrating one of the first links between cognitive development and brain function, identifying the biological mechanism causing executive function deficits in children treated for PKU, and changing the way we think about stress).

Adele is a member of the Royal Society of Canada, was named one of the "2000 Outstanding Women of the 20th Century," and was listed as one of the 15 most influential neuroscientists alive today. Her other awards include an Award for Lifetime Contributions to Developmental Psychology in the Service of Science and Society plus two honorary degrees. She has given roughly 600 invited addresses in over 40 countries across 6 continents, including at the White House and to the Dalai Lama.

Adele was educated at Swarthmore College (BA, Phi Beta Kappa, in Sociology-Anthropology and Psychology), Harvard University (PhD in Developmental Psychology), and Yale Medical School (Postdoctoral Fellow in Neuroscience).

Linda Spear Award

The Mid-Career Award in Developmental Cognitive Neuroscience is named in honor of Dr. Linda Spear, a pioneer in developmental neuroscience. This award recognizes outstanding contributions by scientists at the mid-level of their careers.

2022 Awardee: **Dr. Nim Tottenham** | Columbia University

Nim Tottenham, PhD is a Professor of Psychology at Columbia University and Director of the Developmental Affective Neuroscience Laboratory. Her research examines brain development underlying emotional behavior in humans. In particular, her laboratory investigates the interplay between brain development and the special caregiving experienced by humans. Her research has highlighted fundamental changes in brain circuitry across development and the powerful role that early experiences, such as caregiving and stress, have on the construction of these circuits. She has authored over 125 journal articles and book chapters. She is a frequent lecturer both nationally and internationally on human brain and emotional development. She is a Fellow of the Association for Psychological Science and of the Society for Experimental Psychologists, and her scientific contributions have been recognized by the National Institute of Mental Health BRAINS Award, the American Psychological Association's Distinguished Scientific Award for Early Career Contribution to Psychology, most recently by the National Academy of Sciences Troland Research Award.

Young Investigator Award

Supported by the Kennedy Krieger Institute

The Young Investigator Award in Cognitive Neuroscience recognizes outstanding contributions by scientists early in their careers. Award recipients have been working in the area of cognitive neuroscience for no more than 10 years involved in active independent research.

2022 Awardee: **Dr. Jennifer Silvers** | University of California, Los Angeles

Dr. Jennifer Silvers holds the Bernice Wenzel and Wendell Jeffrey Term Chair in Developmental Neuroscience and is an Associate Professor in the Psychology Department at the University of California, Los Angeles (UCLA). Dr. Silvers earned dual bachelors degrees in Psychology and Cognitive Science at the University of Virginia and completed her doctoral and postdoctoral work at Columbia University before joining the faculty at UCLA in 2016. At UCLA, Dr. Silvers directs the Social Affective Neuroscience and Development (SAND) Lab, which uses behavior and brain science to understand social, cognitive, and emotional development in children, adolescents and young adults. The SAND Lab is particularly focused on understanding how early experiences and social relationships (with both caregivers and peers) shape emotion regulation, learning, and decision making across development. Dr. Silvers has authored over 50 publications and has been funded by the American Psychological Foundation, the National Institutes of Health, and the National Science Foundation. Dr. Silvers' work has been recognized with early career awards from the American Psychological Association, Association for Psychological Science, National Science Foundation, Society for Research in Child Development and International Society for Developmental Psychobiology.

Flux Dissertation Award

Flux is pleased to announce the establishment of the Flux Student Dissertation Award, which recognizes an exceptional, rigorous, and meticulous dissertation by one of the Congress' trainee members.

2022 Awardee: **Divyangana Rakesh** | Incoming PostDoc at Harvard University

Divyangana finished her PhD from The University of Melbourne, Australia in 2022 under the supervision of Prof. Sarah Whittle. Divyangana's thesis focused on examining the association between early adversities (like socioeconomic disadvantage and maltreatment), brain development, and mental health in young people. Her work has shown that early adverse experiences are associated with neurodevelopmental alterations during childhood and adolescence, and that these deviations from typical brain development are in turn associated with mental health. Her work has also demonstrated that positive psychological and environmental factors (such as positive home and school environments as well as temperament) may buffer some of the risk conferred by exposure to early adversity.

Previously, she completed a Masters in Research (Neuroscience) from University of Bordeaux, France in 2018, an MBA from MICA, India in 2013 and BSc. (Hons) in Biochemistry from University of Delhi, India in 2011.

Flux Travel Award Winners

Deaweh Benson, University of Michigan
Annie Brandes-Aitken, New York University
Sofia Cardenas, University of Southern California
Theresa Cheng, Massachusetts General Hospital
Kathy Do, University of North Carolina at Chapel Hill
Kayla Green, Erasmus University Rotterdam
Karina Grunewald, University of New South Wales
Victoria Guazzelli Williamson, University of Oregon
Steven Kasparek, Stress & Development Lab / Harvard University
Arielle Keller, University of Pennsylvania
Andrew Lynn, Vanderbilt University
Matthew Mattoni, Temple University
Adriana Sofia Méndez Leal, UCLA
Madeleine Moses-Payne, University College London
Tehila Nugiel, University of North Carolina at Chapel Hill
Ashley Parr, University of Pittsburgh
Divyangana Rakesh, University of Melbourne
Maximilian Scheuplein, Leiden University
Lucinda Sisk, Yale University
Willa Voorhies, University of California Berkeley

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 provides an opportunity for scientists in the field to expand their knowledge base, and also be better informed of translational approaches.

The Flux Society was launched in June 2014, and has seen growth in its membership each year. To learn more about the Flux Society, please visit **www.fluxsociety.org.**

Welcome
to the tenth meeting of Flux

Welcome to our 10th meeting of Flux: The Society for Developmental Cognitive Neuroscience, in Paris, France!

Despite the distance, to-date we have **602 registrations** between onsite and online attendees. We also currently have more than 540 members committed to the Flux Society.

We are greatly indebted to our amazing 2022 Program Chair **Anna van Duijvenvoorde** (Leiden University) and her program committee (full team is listed on the committees page) for creating a unique an outstanding scientific program. The program committee organized a total of **49 talks** including invited and selected Symposiums, Award talks, **15 Flash talks** as well as **404 Posters**. The program committee reviewed a large number of excellent, and extremely competitive, symposium submissions for a precious few available slots. We encourage authors to build upon any unselected submissions, or to generate new ones, to help us plan for future meetings.

We are again delighted to highlight our pioneers in the field with the **Huttenlocher Award Lecture**. This year, we are thrilled to bestow the **2022 Huttenlocher Award** to **Adele Diamond** (Professor of Developmental Cognitive Neuroscience at University of British Columbia) for her groundbreaking and pioneering work in developmental cognitive neuroscience focused on characterizing how maturation of the prefrontal cortex supports development of executive function.

The newly created **Linda Spear Mid-Career Award** has been awarded to **Nim Tottenham** (Columbia University) it its inaugural year for her groundbreaking contributions of environmental and stress effects on the development of frontolimbic cognitive affective processes. The Mid-Career Award in Developmental Cognitive Neuroscience is named in honor of Dr. Linda Spear, a pioneer in developmental neuroscience. This award recognizes outstanding contributions by scientists at the mid-level of their careers.

Jennifer Silvers (University of California, Los Angeles) is this year's **Young Investigator Awardee**, who was selected from a highly competitive set of candidates, for her outstanding work understanding the brain basis of emotion and social development. Dr. Silvers is unable to join us in Paris in 2022, but we look forward to her presentation in 2023 in Santa Rosa. We thank the **Kennedy Krieger Institute** for their continued support of the YIA!

Congratulations to **Divyangana Rakesh** (incoming PostDoc at Harvard University) on being this year's recipient of the Flux Dissertation award! Her dissertation entitled "Associations between early adversity, brain development, and mental health during adolescence" was completed at the University of Melbourne, where she conducted developmental cognitive neuroscience research with her supervisor Prof. Sarah Whittle.

Each year the **Jacobs Science of Learning Symposium (SOL)** highlights novel connections between Flux society research and the broader field of human learning. This year we feature a symposium on understanding and predicting children's learning trajectories: from neural mechanisms to classroom applications. The speakers are **Iliana Karipidis** (University of Zurich), **Eun-soo Cho** (Michigan State University), **Rogier Kievit** (Donders institute/RadboudUMC), and **Marina Bedny** (Johns Hopkins University). We continue to be grateful to the **Jacobs Foundation** for enabling this symposium, as well as support for students to participate in this year's Congress. We also thank **Jessica Church-Lang** (UT Austin) for organizing this effort.

We thank **Michelle Achterberg (Erasmus University Rotterdam)** and **Ethan McCormick (Radboud UMC)** for organizing the pre-conference workshop "The Developmental Neuroscience Cycle: from Research Design to Societal Impact" including interactive workshops on Creating Societal Impact and Longitudinal Modeling.

A special thank you to the Flux Trainee Committee Co-Chairs, **Sofia (Sofi) Cárdenas** (University of Southern California) and **Maximilian Scheuplein** (Leiden University) as well as the rest of their committee: Leehyun Yoon (UC Davis), Paola Odriozola (Yale University), Jessica Flannery (Limbix Health), Eliya Ben-Asher (University of Texas at Austin), Tehila Nugiel (UNC Chapel Hill), Andrew Lynn (Vanderbilt University), Divyangana Rakesh (Incoming postdoc at Harvard University), Matt Mattoni (Temple

University), Nicolas Murgueitio (University of North Carolina at Chapel Hill) and Theresa Cheng (Massachusetts General Hospital) for organizing the two trainee panels – **Mentor/Mentee Match-up, Career Perspectives Panel, Grant Writing Workshop, and Student & Early Career Researchers Lunch onsite**.

We gratefully thank **Gregoire Borst** (Université Paris Cité) and his onsite team (full team is listed on the committees page) in Paris for all their work on the ground to assist with our event at the beautiful historic facilities at the Sorbonne University as well as all of their organization for the Flux Fun Night. For all those with a ticket, we can't wait to celebrate with you onsite for food, drinks & karaoke on Thursday, September 8th at the LabSchool (Université Paris Cité) then Karaoke at Café Rive Droite.

We thank the Flux Diversity Working Group Co-Chairs **Stefanie Bodison** (University of Florida) Chair and **Jenn Pfeifer** (University of Oregon) their committee members (full team is listed on the committees page as well as on the website) for all their work to develop the Flux Diversity Session onsite during the conference as well as the far reaching Affinity Groups. Learn more about how you can participate here - **fluxsociety.org/flux-diversity-working-group**.

Flux is very excited by our new **Communications Committee** chaired by Tzipi Horowitz-Kraus, Technion-Israel Institute of Technology with Clare McCann, UCLA; Tova Cohen, UNC Chapel Hill; Andrew Lynn, Vanderbilt University; Arielle S. Keller, University of Pennsylvania; Eliya Ben-Asher, University of Texas at Austin for their work to establish better communication with our society and beyond to the wider community. They have taken Flux to the next level in social media (Facebook, Twitter, Linkedin), established a new blog on the Flux website, and the new Flux Podcast. We are amazed at what they've accomplished in such a short time! Thank you team for your work.

We are also thankful to our newest Sponsors **Nous Imaging** & **Babilou Family** as well as to **Elsevier** for their continued significant support of Flux and, importantly, publishing **Developmental Cognitive Neuroscience**, the official journal of Flux. We are also thankful for the continued generous support of the Young Investigator Award by the **Kennedy Krieger Institute**.

The **Business Meeting** for Flux Society members, will be happening post conference virtually – stay tuned for details. We are also continuing our exciting Public Outreach Events on September 21st & 22nd with two panels focused on North America & UK/Europe. Promote these events and encourage people to register to attend – more details at **fluxsociety.org/fluxoutreach**.

We also want to give a special thank you to **Podium Conference** Specialists Marischal DeArmond and Lauren Moline. Lauren will be moving on from the Flux family, but we wish her well and are indebted to all of the work she's done for Flux over the years.

A reminder of the bond that brings us together is that **"Flux" is not an acronym (not FLUX)** but rather a term used to highlight that, as developmental cognitive neuroscientists, we are distinct in our investigations of the dynamic nature of cognition through development as stated in the aim of the Flux society ***"To advance the understanding of human brain development by serving as a forum for professional and student scientists, physicians, and educators to: exchange information and educate the next generation of developmental cognitive neuroscience researchers; make widely available scientific research findings on brain development; encourage translational research to clinical populations; promote public information by discussing implications on the fields of education, health, juvenile law, parenting, and mental health, and encourage further progress in the field of developmental cognitive neuroscience."*** The Flux Society strives to support Flux meetings going forward, but also to expand our ability to provide venues for scientific discussion and translational application.

We want to remind you of our ever growing **job bank** where there are postings for every level of career development for those looking for a position and those looking to hire.

We are delighted to invite you to plan on attending **Flux 11, September 6-9th, 2023** in Santa Rosa, California. The scientific program will be chaired by the amazing, **Jessica Church Lang** (UT Austin) with what promises to be an outstanding meeting.

A warm thank you to the members of the **Flux society and conference participants** for their enthusiasm and making the time to attend the Flux conference in-person or virtually! Welcome new Fluxers and a special thank you to those who have been supporting Flux through its maturation, your contributions are noted and greatly appreciated!

We are looking forward to expanding our understanding of developmental cognitive neuroscience and virtually interacting with attendees and are confident that you will leave with greater understanding, new friends, and enhanced creativity in your approach

Connect and Like us on **Facebook**, **Twitter** & **LinkedIn**. Please tweet throughout the meeting using #Flux2022.

Sincererly,

Damien Fair
President

Deanna Barch
Executive Treasurer

Nim Tottenham
Board Member

Christian K. Tamnes
Board Member

Bea Luna
Past President

Margaret Sheridan
Executive Board Secretary

Lucina Uddin
Board Member

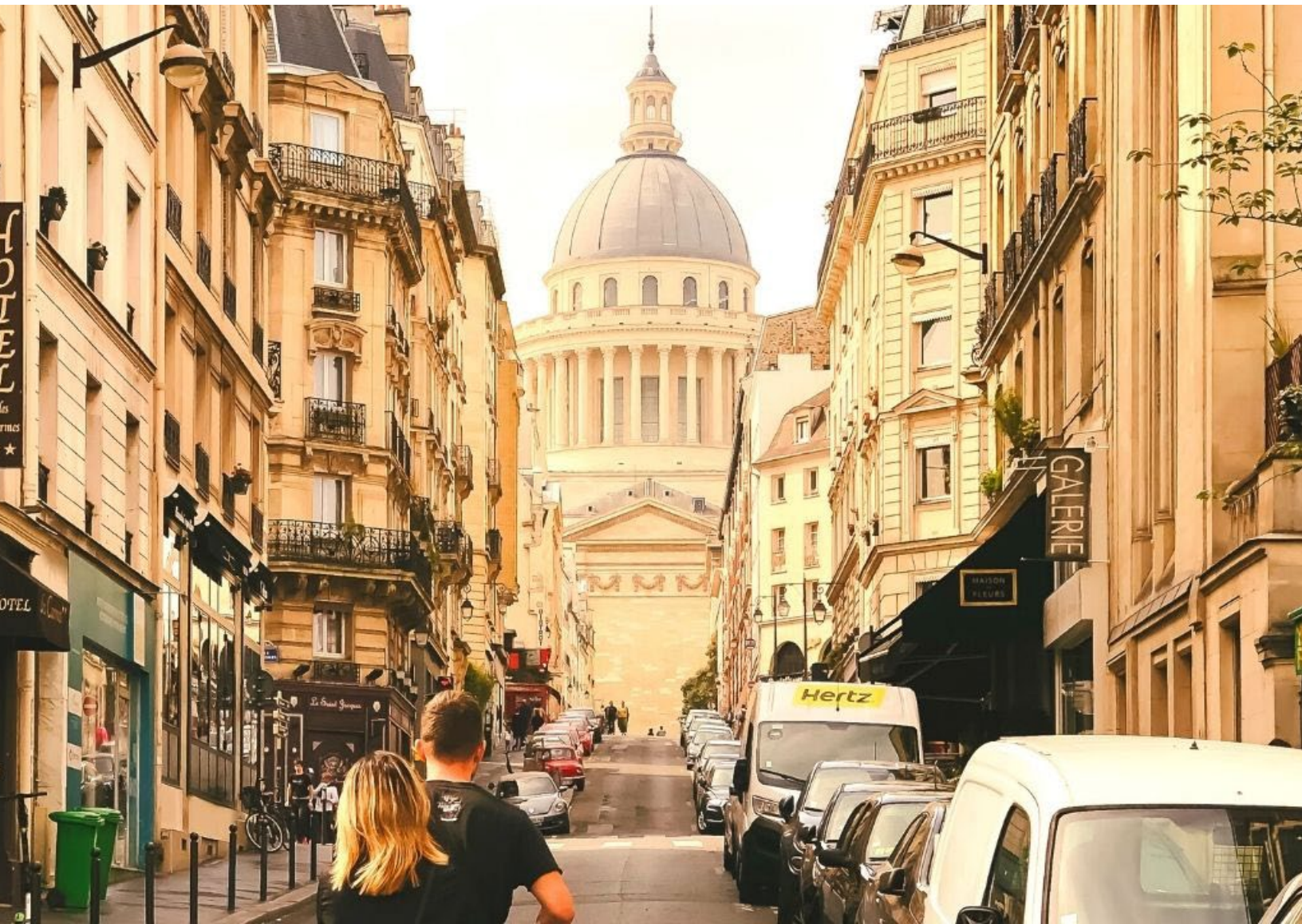
Tzipi Horowitz-Kraus
Board Member

Eveline Crone
Vice-President

Brad Schlaggar
Board Member

Jennifer Pfeifer
Board Member

Nikolaus Steinbeis
Board Member



Flux Leadership

Society Executive Committee

Damien Fair President	University of Minnesota, USA
Beatriz Luna Past President	University of Pittsburgh, USA
Eveline Crone Vice President	Leiden University, Netherlands
Margaret Sheridan Secretary	University of North Carolina, Chapel Hill, USA
Deanna Barch Executive Treasurer	Washington University, St. Louis, USA
Nim Tottenham	Columbia University, USA
Brad Schlaggar	Washington University, St. Louis, USA
Jennifer Pfeifer	University of Oregon, USA
Christian K. Tamnes	University of Oslo, Norway
Lucina Uddin	University of California, Los Angeles, USA
Tzipi Horowitz-Kraus	Technion, Israel
Nikolaus Steinbeis	University College London, UK

Congress Scientific Program Committee

Anna van Duijvenvoorde Chair	Leiden University
Jessica Church-Lang	University College London
Nikolaus Steinbeis	University of Texas at Austin
Michelle Achterberg	Erasmus University Rotterdam
Joe Bathelt	Royal Holloway, University of London
Juliet Davidow	Northeastern University
Adriana Galván	University of California, Los Angeles
Berna Gűroğlu	Leiden University
Anne-Laura van Harmelen	Leiden University
Teresa Iuculano	Centre National de la Recherche Scientifique (CNRS), Université Paris
Ethan McCormick	Radboud University, Nijmegen
Kate Mills	University of Oregon
Nora Raschle	University of Zurich
Eva Telzer	University of North Carolina at Chapel Hill

Local Host Committee (Paris)

Gregoire Borst Chair	Université Paris Cité
Chiara Andreola	Wim De Neys
Esther Boissin	Matthieu Raoelison
Mélanie Maximino-Pinheiro	Iris Menu
Julia Mathan	Ilse Coolen
Mathieu Cassotti	Nicolas Poirel
Ania Aite	Elise Kelin
Gaelle Rouvier	Nina Franiatte
Arnaud Viarouge	Marine Lemaire
Émilie Salvia	Sabrina Bouhassoun
Teresa Iuculan	Gabriela Rezende
Irene Altarelli	Julie Vidal
Aikaterini Voudouri	Lorna Le Stanc,
Claire Pruvot	Arnaud Cachia
Elora Taieb	André Knops
Sixtine Omont	Alex De Carvalho
Nydia Vurdah	

Award Committees

Bea Luna	University of Pittsburg
Christan Krog Tamnes	University of Oslo
Jennifer Pfeifer	University of Oregon
Margaret Sheridan	University of North Carolina, Chapel Hill

Communications Committee

Tzipi Horowitz-Kraus Chair	Technion- Israel Institute of Technology
Clare McMann	UCLA
Tova Cohen	UNC Chapel Hill
Andrew Lynn	Vanderbilt University
Arielle S. Keller	University of Pennsylvania
Eliya Ben-Asher	University of Texas at Austin

Flux Diversity Working Group

Stefanie Bodison University of Florida	DWG Co-Chair
Jennifer Pfeifer University of Oregon	DWG Co-Chair
Divy Rakesh	Trainee Liaison
Lucina Uddin	Board Liaison
Carlos Cardenas-Iniguez	AG Coordinator
• Maya Rosen Kate Mills	A&A
• Julia Moser Marjolein Barendse	First-Gen
• Ethan McCormick	LGBTQIA
• Kayla Green	BIPOC
Chuck Geier	Communications Liaison
Kate Mills	Programs Committee Liaison
Julia Moser	Conference Planning Lead

Flux Trainee Committee

Sofia (Sofi) Cárdenas	University of Southern California
Maximilian Scheuplein	Leiden University
Leehyun Yoon	University of California, Davis
Paola Odriozola	Yale University
Jessica Flannery	Limbix Health
Eliya Ben-Asher	University of Texas at Austin
Tehila Nugiel	University of North Carolina at Chapel Hill
Andrew Lynn	Vanderbilt University
Divyangana Rakesh	Incoming PostDoc at Harvard University
Matt Mattoni	Temple University
Theresa Cheng	Massachusetts General Hospital
Nicolas Murgueitio	University of North Carolina at Chapel Hill

Flux Congress Management

Podium Conference Specialists

Marischal De Armond	Cendrine DeVis
Lauren Moline	Jude Ross

FLUX PARIS 2022

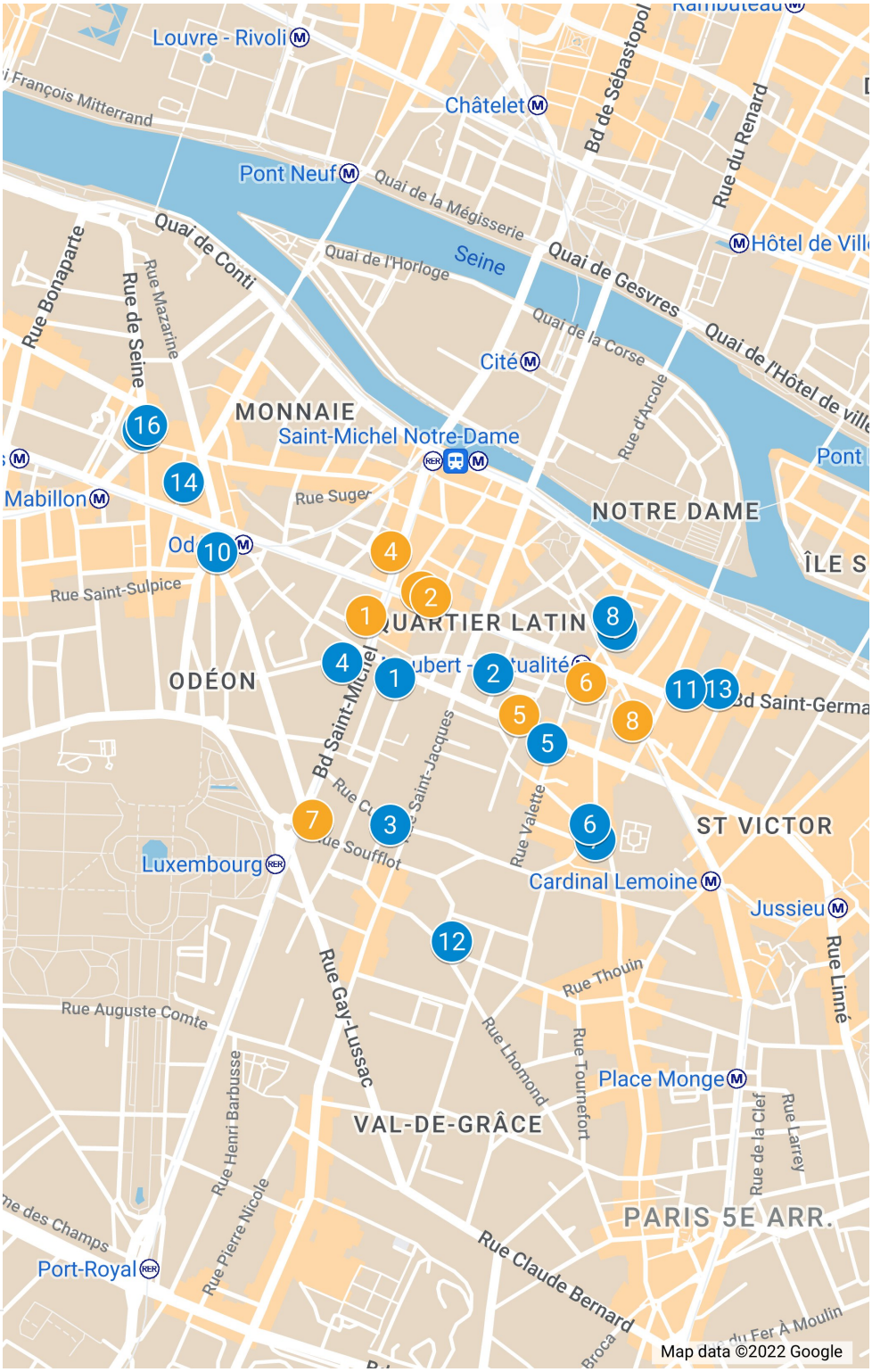
(on phones, click on one location and "view map legend")

RESTAURANTS (*better for dinner)

1. Balzar Brasserie
2. L'invitée
3. Le Cosi
4. *Bouillon Racine
5. La Petite Périgourdine
6. Les Pipos
7. Le Petit Café
8. Al Dar
9. Trois Fois plus de Piment
10. *L'Avant Comptoir de la Terre
11. Chez Gladines
12. Café de la Nouvelle Mairie
13. *Bar à iode
14. Crêperie Little Breizh
15. *Freddy's
16. *La Boissonnerie

ON THE GO

1. MONOPRIX (Supermarket)
2. Berliner Das Original – Kebab
3. Chipotle
4. Oteiza
5. Maison FOREST (Boulangerie)
6. La Maison d'Isabelle (Boulangerie)
7. Burger King
8. Eric Kayser (Boulangerie)



Items are ordered by distance from La Sorbonne.

"On-the-go" options might be more suited when you do not have more than a one hour break.

General Congress Information

Meeting Venue

Pre-Conference workshops (September 6)
Universite Paris Cite, Campus Saint-Germain-des-Pres, LabSchool 7th Floor, 45 rue des Saints-Pères 75006 Paris, France

Main Conference (September 7-9)
Sorbonne University, Grand Amphitheatre & Salon, 47 Rue des Ecoles, Paris, France

Registration

Congress registration fees include access to all sessions including, speaker presentations, coffee breaks, and poster sessions.

Name Badges

Your name badge is your admission ticket to all conference sessions 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, or leave it at the Registration Desk.

Registration and Information Desk Hours

The Registration and Information Desk is located in the vestibule when you enter at 47 Rue des Ecoles. It will be open during the following dates and times:

- Wednesday, September 7 7:30am – 7:00pm
- Thursday, September 8 8:30am – 7:00pm
- Friday, September 9 8:30am – 5:30pm

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

Staff

Congress staff from Podium Conference Specialists can be identified by orange ribbons on their name badges. For immediate assistance, please visit us at the registration desk.

Complimentary Wifi

Complimentary Wifi is available during the conference.

ID : Congres

Password: o2335xr3

Flux Fun Night - September 8 from 7:30pm – 1:00am

This year's Flux excursion will take place at the Université Paris Cite, Campus Saint-Germain-des-Pres, LabSchool 7th Floor, 45 rue des Saints-Peres then for Karaoke to Café Rive Droite, 2 rue berger, 75001 Paris. Advance ticket purchase is required for this event and is now sold out – no tickets can be purchased onsite.

Poster Information Set-Up / Removal

There are two Poster Sessions onsite during the Meeting and posters have been allocated to one of the sessions based on poster themes. Poster presenters must set-up and remove their posters during the following times.

Poster Session 1 – Wednesday, September 7

- Set-up: 1:30pm – 5:30pm
- Poster Session Hours: 5:45pm – 7:15pm
- Removal of all posters by: 8:00pm on September 7

Poster Session 2 – Thursday, September 8

- Set-up: 8:15am – 9:15am
- Poster Session Hours: 9:30am – 11:00am
- Removal of all posters by: 1:00pm on September 8

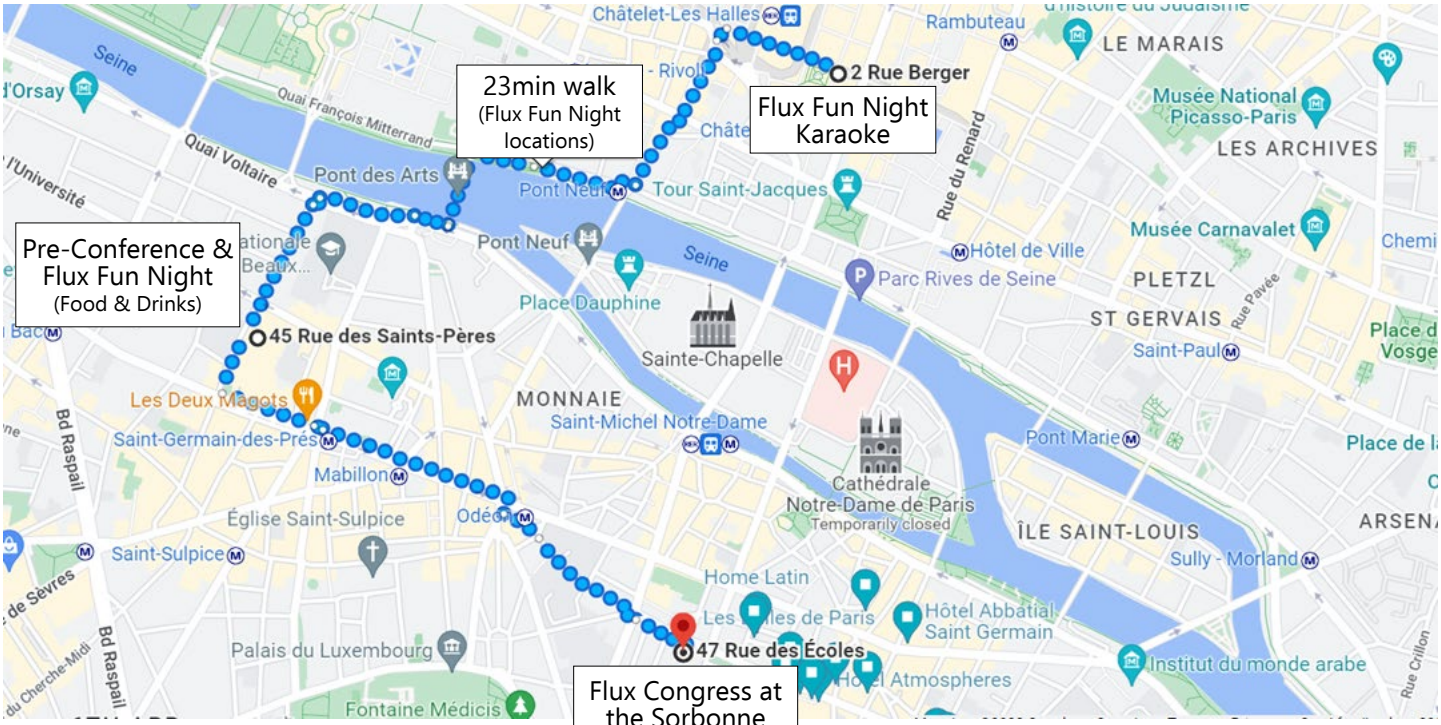
Please note: All physical posters not removed will be disposed of by organizers.

All posters are available with videos through the Whova Platform for 90days.

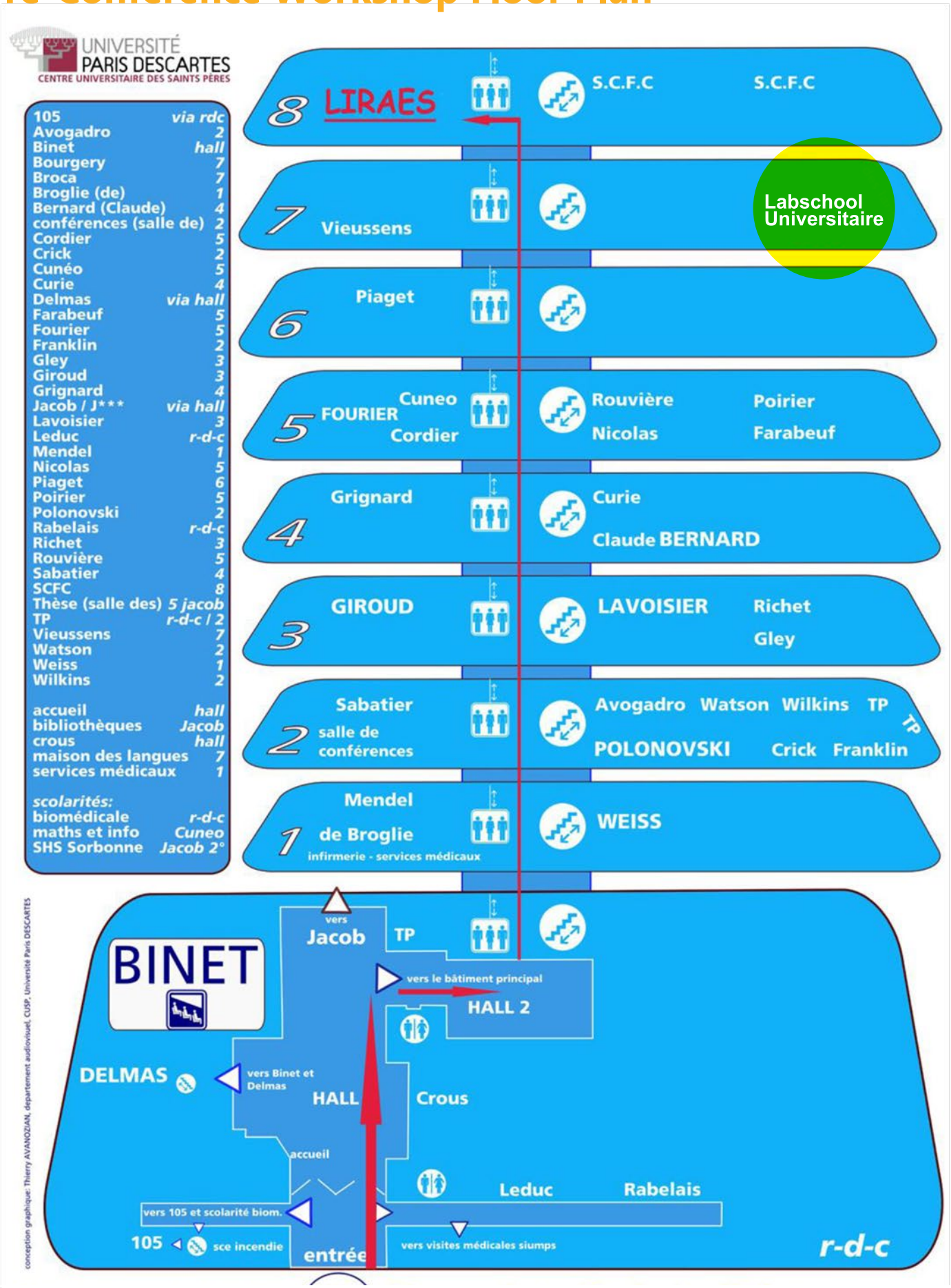
Download the Whova App on your mobile:
https://whova.com/portal/fluxc_202009/

or desktop:
https://whova.com/portal/webapp/fluxc_202009/

Flux 2022 Locations



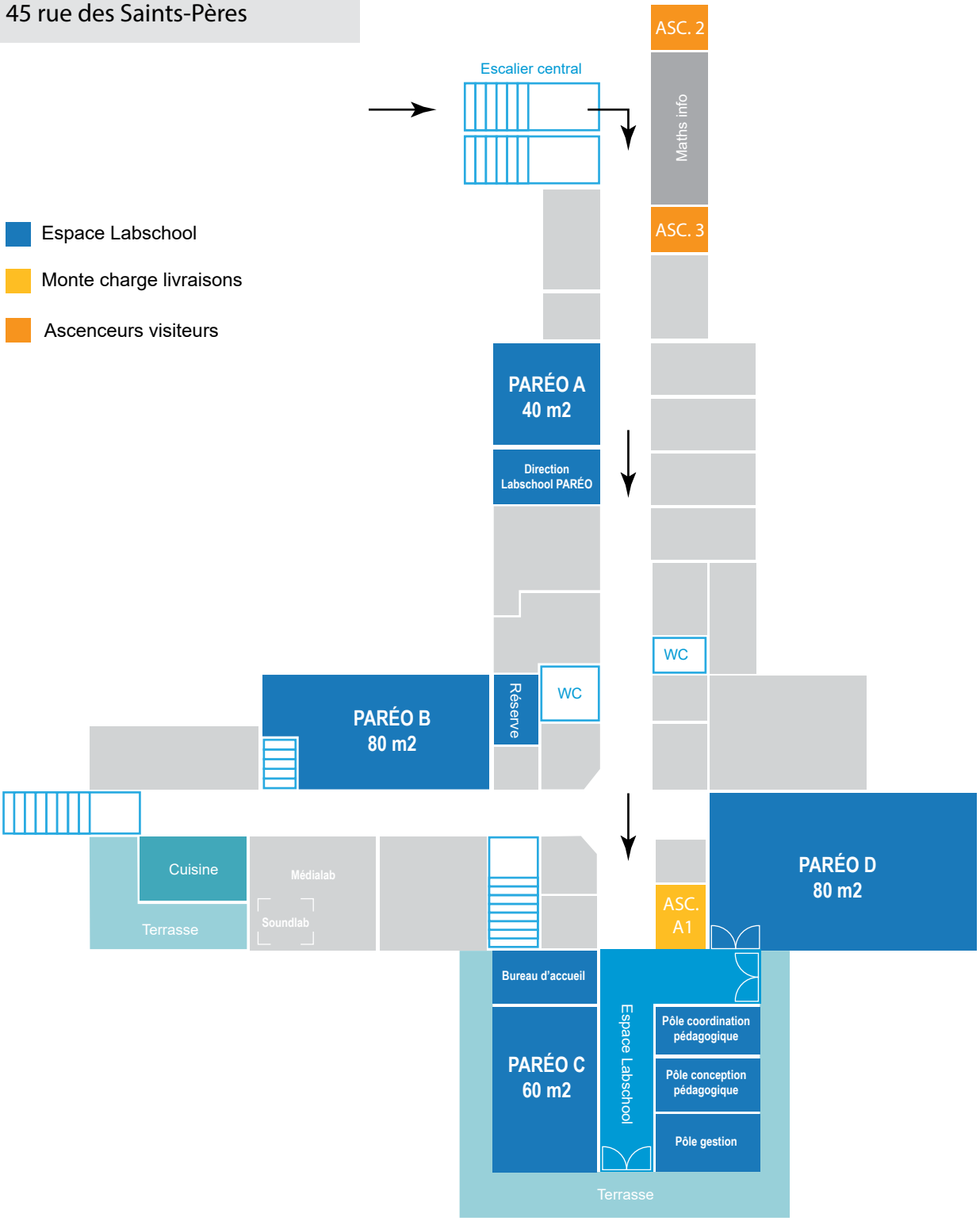
Pre-Conference Workshop Floor Plan



Plan de la Labschool PARÉO

Plateforme d'accompagnement, de recherche en réussite éducative et orientation

Étage 7
Campus Saint-Germain-des-Prés
45 rue des Saints-Pères



Flux Congress Program Schedule

TUESDAY, SEPTEMBER 6, 2022

Room Pareo D -Labschool 7th Floor, Universite Paris Cite, Campus Saint-Germain-des-Pres, 45 rue des Saints-Pères 75006 Paris

9:00am – 4:30pm

Pre-Conference Workshops

Societal Impact:

Dr. Michelle Achterberg, Dr. Lara Wierenga, Dr. Karlijn Hermans, Dr. Mara van der Meulen, Simone Dobbelaar, Lina van Drunen,

Longitudinal Modelling:

Dr. Ethan McCormick, Dr. Kathryn Mills, Dr. Michelle Byrne, Dr. John Flournoy, Niamh MacSweeney, Landry Huffman, & Sanne Kellij

When conducting developmental neuroscience research, we all face similar challenges, but these difficulties are rarely reflected in our scientific papers. Questions such as, how to balance between the perfect research design and feasibility? How to manage the data in such a way that it is open and safe? Which longitudinal models and statistical approaches are best suitable to answer our developmental research questions? How to translate science to a broader public without being too unnuanced? Pre-pandemically, these kinds of experiences were sometimes shared at the coffee machine or during lunch, but in current times we often have to solve these challenges in solitude.

During this one-day preconference workshop, we want to reflect upon several challenges (and opportunities!) that we have experienced in running longitudinal studies. Together with the Flux community, we want to have interactive discussions on what practical, logistical, and creative solutions we as developmental neuroscientists have for the challenges, we concur in our research field. Moreover, we want to map out which challenges are unsolved and might benefit from the joint commitment of the entire flux community.

In the morning session (09:00 – 12:30), we will start the day by discussing optimal research designs, where we will share our experiences with the unique L-CID design, (a longitudinal, neuroimaging, randomized controlled intervention, developmental twin study) and include methodological considerations surrounding the impact that specific choices in the research design have for future statistical analyses. Next, we discuss lessons learned on running a longitudinal study with annual visits and share and collect tips and tricks to reduce dropout. Third, we will discuss our road to open science, and the challenges we are currently experiencing.

In the afternoon session (14:00 – 16:30), **we will have two parallel sessions.**

An interactive workshop where we will discuss how we can make societal impacts with our nuanced fundamentalneuroimaging findings and an in-depth workshop on longitudinal modelling.

The societal impact workshop will offer participants the opportunity to learn about and experience creative methods to contribute to societal impact with fundamental research findings. The L-CID team will first briefly share experiences with a variety of outreach projects and on how to select the optimal method for each societal impact goal. The main part of the workshop will be interactive, in which participants will be working on assignments as a team in order to experience novel methods that the L-CID team has developed over the last year. The goal is that these methods inspire your own project's societal impact ambitions. The workshop will end with an in-depth discussion on any pitfalls related to societal impact with fundamental research, encouraging participants to share creative solutions and best practices.

The longitudinal modelling workshop will focus on advanced applications for longitudinal models, moving beyond the defaults of canonical growth models. Topics will include assessing nonlinearities in development while avoiding overfitting, distinctions between time-varying covariate and multi-variate models, understanding the consequences of development, detecting sensitive periods, and linking intensive longitudinal data (e.g., EMA or physiology data) with panel data. We aim to provide three key resources to attendees: 1) A heuristic decision tree to guide model selection in longitudinal

Flux Congress Program Schedule

modeling, by drawing specific contrasts between methods (e.g., mixed-effects vs. structural equation models), and highlighting the relative strengths and weaknesses of different modeling frameworks in a variety of research contexts. 2) A bibliography of primary-source empirical and methodological work that covers the foundations and applications of different longitudinal models, providing a resource to enable future learning. 3) Open-source code that enables readers a hands-on and practical experience of fitting, interpreting, and displaying longitudinal models with freely-available data.

The ultimate goal of this pre-conference workshop is to provide an open-space to share best practices from developmental neuroscience projects, have a transparent discussion on the challenges and opportunities that our research field holds, and equip attendees with cutting-edge methodological training in advanced modeling frameworks for longitudinal data.

5:15pm – 6:15pm

Grant Writing Workshop

Room Pareo D -Labschool 7th Floor, Universite Paris Cite, The Saint-Germain-des-Pres Campus, 45 rue des Saints-Pères, Paris

Grant writing is quite daunting, and understanding what assessors are looking for can be incredibly challenging for early career and graduate researchers. With us, we will have Dr. Virginia Salo (Program Officer, NIH), Dr. Darby Saxbe (Associate Prof., USC), Dr. Tiffany Ho (Assistant Prof., UCSF/UCLA), and Dr. Katie McLaughlin (Prof., Harvard University), who will use their knowledge and extensive experience to shed light on how to write competitive grant applications.

Virtual

Flux Career Panels (Virtual – in Whova, watch anytime)

This year we are hosting two separate pre-recorded career perspective panels where speakers share more about their journeys and their current roles. One panel will focus on traditional academic career paths. A second panel will focus on non-academic careers. Given both panels are pre-recorded, you are welcome to listen to them at any point throughout the conference, and feel free to reach out to any of the panelists via email if you'd like to hear more about their experiences.

Academic Career Panel

For our academically focused panel, we are joined by Dr. Laurel Gabard-Durnam (Northeastern), Dr. Tiffany Ho (USSF & UCLA), and Dr. Elizabeth Norton (Northwestern).

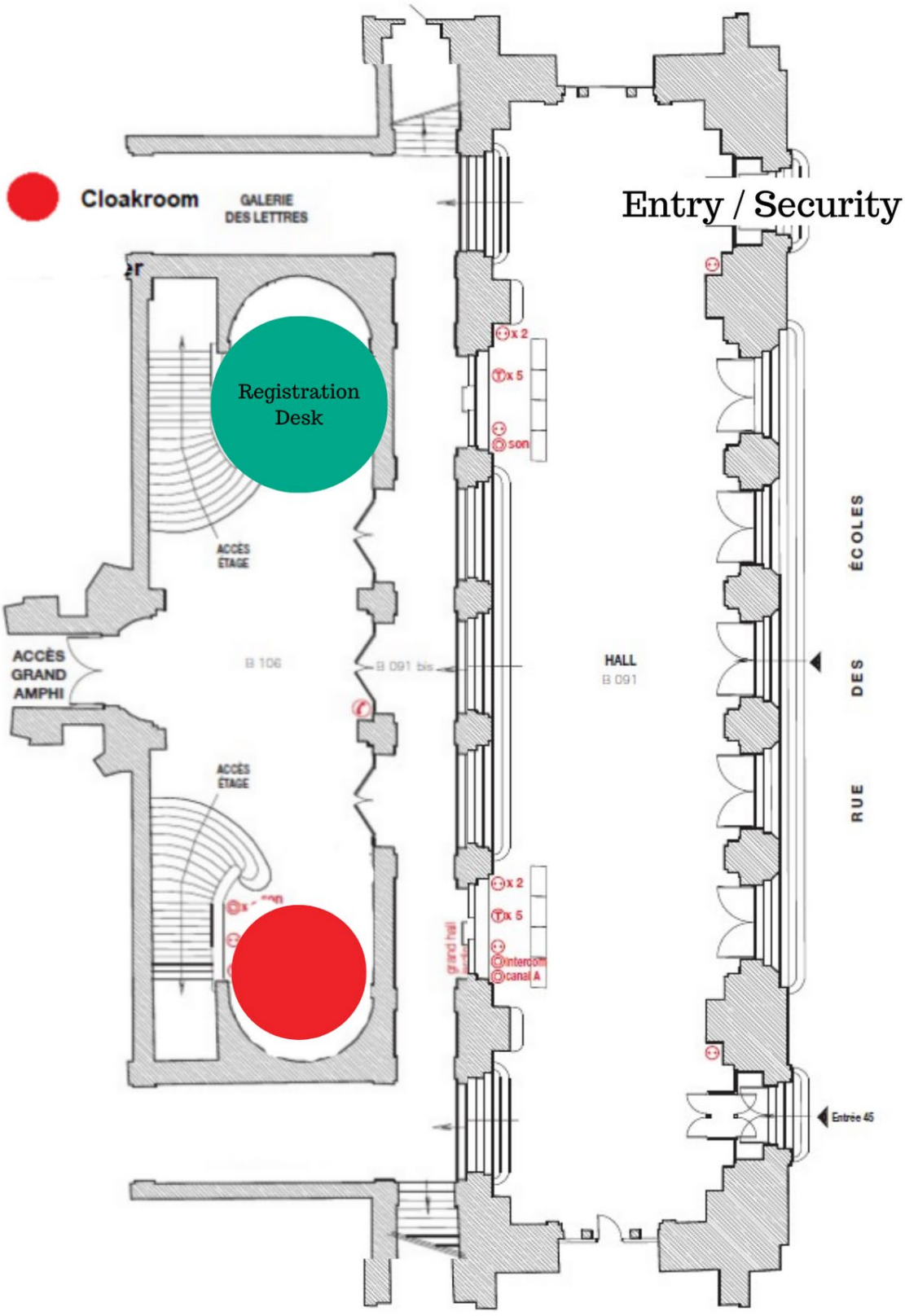
Industry Career Panel

For our non-academic career panel, we are joined by Dr. Laura Engelhard (Direct TV Donors), Dr. Aarthi Padmanabhan (Limbix), and Dr. Shabnam Hakimi (Toyota).

Flux Congress Floor Plan at the Sorbonne

1st Floor Hall & Entry -

between Entrance off 47 Rue des Ecole & Grand Amphitheatre



Flux Congress Program Schedule

WEDNESDAY, SEPTEMBER 7, 2022

Grand Amphitheatre & Grand Salon, Sorbonne University, 47 Rue des Ecoles, Paris

9:30am **Doors open & security check**

10:30pm – 11:00am **Presidential Welcome**

Gregoire Borst, *Université Paris Cité*
Bea Luna, *University of Pittsburgh*
Damien Fair, *University of Minnesota*
Anna van Duijvenvoorde, *Leiden University*

11:00pm –12:15pm **Jacobs Science of Learning Symposium**

JACOBS FOUNDATION
Our Promise to Youth

Understanding and predicting children's learning trajectories: from neural mechanisms to classroom applications

Chairs: **Milene Bonte**, *Maastrict University*
Silvia Brem, *University of Zurich*

Longitudinal EEG/fMRI trajectories of letter-speech sound processing during (a)typical reading acquisition
Iliana Karipidis, *University of Zurich*

Dynamic Assessment of Decoding and Its Implication for Early Identification of Reading Disability
Eunsoo Cho, *Michigan State University*

Quantifying the dynamics of learning
Rogier Kievit, *Donders institute/RadboudUMC*

Brain plasticity with altered learning experience: braille reading
Marina Bedny, *Johns Hopkins University*

12:15pm – 1:30pm **Lunch, on your own**
or Student & Early Career Researchers Lunch

Get to know fellow students and early career researchers and join our outdoor lunch gathering on Wednesday, September 7, between 12:15-1:30 pm. The group will meet at the main conference entrance and head to Luxembourg Gardens (Fontaine Médicis) around 12:25 pm. Please bring your own lunch and join the Flux Trainee Slack channel, which will be used as the primary source of communication. We hope to see you soon!

1:30pm – 2:00pm **Security Check**

2:00pm – 3:15pm **Oral Session 1 - Social connections: Cultural, digital, peer and family influences on the developing brain**

Chair: **Anne-Laura Harmelen**, *Leiden University*

Effects of isolation on adolescent cognition
Livia Tomova, *University of Cambridge*

Habitual checking of social media relates to longitudinal functional brain development
Maria Maza, *University of North Carolina Chapel Hill*

Ventral striatal responses to excited smiles: Cultural variation and real-world correlates
Elizabeth Mary Blevins, *Stanford University*

Flux Congress Program Schedule

The role of family connections on the developing brain
Helen Minnis, *University of Glasgow*

3:15pm – 3:30pm **Break / Coffee**

3:30pm – 4:45pm

Local Symposium - Environmental factors shaping typical and pathological brain development from the womb to early adulthood: insights from animal and human cohorts

Chair: **Teresa Iuculano**, *Centre National de la Recherche Scientifique (CNRS), Université Paris*

Early environmental influence on the brain in a lifespan perspective - focus on birth weight
Kristine Beate Walhovd, *University of Oslo*

Uncovering the stress neuromatrix
Nuno Sousa, ICVS, *University of Minho*

The association between malleable neurobiological markers and cognitive capacity
Jakob André Kaminski, *Charité Universitätsmedizin*

Adverse environmental factors for mathematical learning: the interplay between Socio-Economic Status and anxiety
Teresa Iuculano, La Sorbonne, *Université Paris Cité & Centre National de la Recherche Scientifique*

4:45pm – 5:45pm

Flash Talks #1

Chair: **Teresa Iuculano**, *Centre National de la Recherche Scientifique (CNRS), Université Paris*

1-A-10 Probing striatal tissue iron as a sensitive index of brain maturation and function in infancy
Laura Cabral[1], Finn Calabro[1], Jerod Rasmussen[2], Will Foran[1], Ashok Panigrahy[1], Bea Luna[1]
[1]University of Pittsburgh, [2]University of California, Irvine

1-A-11 Do neuroplasticity and genetic factors contribute to cognitive training? An imaging-genetics study in healthy children.
Iris Menu[1], Qin He[1], Julie Victor[1], Gabriela Rezende[1], Lorna Le Stanc[1], Julie Vidal[1], Catherine Oppenheim[1], Edouard Duchesnay[1], Boris Chaumette[1], Olivier Houdé[2], Grégoire Borst[2], Arnaud Cachia[1]
[1]Université Paris Cité, [2]Institut Universitaire de France

1-C-88 How do adolescents use choice to learn about themselves?
Madeleine Moses-Payne[1], Douglas Lee[2], Jonathan Roiser[1]
[1]University College London, [2]National Research Council of Italy

1-G-12 Maternal neglect is associated with delayed development of functional connectivity in late childhood
Elena Pozzi[1], Divyangana Rakesh[1], Zeus Gracia-Tabuenca[2], Sarah Whittle[1]
[1]University of Melbourne, [2]McGill University

1-G-13 Early childhood household instability, adolescent structural neural network architecture, and young adulthood depression: a 21-year longitudinal study
Felicia Hardi[1], Leigh Goetschius[2], Scott Tillem[1], Vonnie McLoyd[1], Nestor Lopez-Duran[1], Colter Mitchell[1], Luke Hyde[1], Christopher Monk[1]
[1]University of Michigan, [2]University of Maryland Baltimore County

1-G-14 The development of iron status during youth: implications for adolescent neurocognition
Bart Larsen[1], Erica Baller[1], Michael Georgieff[2], Monica Calkins[1], Nina Laney[1], Tyler Moore[1], David Roalf[1], Kosha Ruparel[1], Ruben Gur[1], Raquel Gur[1], Theodore Satterthwaite[1]
[1]University of Pennsylvania, [2]University of Minnesota

1-G-15 Spontaneous activity development unfolds along the sensorimotor-association axis through adolescence
Valerie Sydnor[1], Bart Larsen[1], Azeez Adebimpe[1], Maxwell Bertolero[1], Matthew Cieslak[1], Sydney Covitz[1], Yong Fan[1], Raquel Gur[1], Ruben Gur[1], David Roalf[1], Russell Shinohara[1], Dani Bassett[1], Theodore Satterthwaite[1]
[1]University of Pennsylvania

1-B-16 The changing role of testosterone and prefrontal emotion control: From adolescence to young adulthood
Anna Tyborowska[1], Inge Volman[2], Hannah Niermann[1], Anna Dapprich[1], Sanny Smeekens[3], Antonius Cillessen[1], Ivan Toni[1], Karin Roelofs[1]
[1]Radboud University Nijmegen, [2]University of Oxford, [3]Pro Persona

1-E-17 The relation between kindergartener's home math environment and neural representations of number
Andrew Lynn[1], Gavin Price[1]
[1]Vanderbilt University

1-L-19 Sensory over-responsivity in childhood is common, has robust neural correlates, and indicates diverse psychiatric risk
Rebecca Schwarzlose[1], Rebecca Tillman[1], Caroline Hoyniak[1], Joan Luby[1], Deanna Barch[1]
[1]Washington University in St. Louis

1-O-18 Cortical responses to music and speech measured with fMRI in one-month-old infants
Heather Kosakowski[1], Samuel Norman-Haignere[2], Anna Mynick[3], Atsushi Takahashi[1], Rebecca Saxe[1], Nancy Kanwisher[1]
[1]Massachusetts Institute of Technology, [2]University of Rochester Medical Center, [3]Dartmouth

5:45pm – 7:15pm **Poster Session #1**

THURSDAY, SEPTEMBER 8, 2022

Grand Amphitheatre & Grand Salon, Sorbonne University, 47 Rue des Ecoles, Paris

9:30am **Doors open & security check**

9:00am – 9:30am **Flash Talks #2**

Chair: **Kate Mills**, *University of Oregon*

2-H-209 Transdiagnostic Neural Pathways to Inattention and Hyperactivity
Natalia Zdorovtsova[1]
[1]Astle Lab, MRC Cognition and Brain Sciences Unit

2-J-210 Maternal Hair Cortisol Predicts Periodic and Aperiodic Infant Frontal EEG Activity Longitudinally Across Infancy
Annie Brandes-Aitken[1], Nicolo Pini[2], Natalie Brito[1]
[1]New York University, [2]Columbia University

2-L-211 Responding to Threat: Associations between Neural Reactivity to and Avoidance of Threat in Pediatric Anxiety
Elizabeth Kitt[1], Sadie Zacharek[1], Paola Odriozola[1], Cristina Nardini[1], Grace Hommel[1], Alyssa Martino[1], Tess Anderson[1], Hannah Spencer[1], Alexis Broussard[1], Carla Marin[1], Wendy Silverman[1], Eli Lebowitz[1], Dylan Gee[1]
[1]Yale University

Flux Congress Program Schedule

2-D-212 Heterogeneity in Early Adolescent Reward Networks and Associations with Behavioral Outcomes
Matthew Mattoni[1], David Smith[1], Thomas Olino[1]
[1]Temple University

2-B-213 Intergenerational transfer effects on corticolimbic gray matter volume of mother-child dyads
Plamina Dimanova[1], Réka Borbás[1], Lynn Fehlbaum[1], Nora Raschle[1]
[1]University of Zurich

2-I-349 Longitudinal trajectories of functional brain network integration during the first two years of life and their relation to later working memory ability at 8-12 years
Mackenzie Woodburn[1], Margaret Sheridan[1], Weiyan Yin[1], Weili Lin[1], Jessica Cohen[1]
[1]University of North Carolina at Chapel Hill

9:30 – 11:00am **Poster Session #2**

11:00am – 12:15pm **Oral Session 2 - The potentially big role of the "little brain" in cognitive development**

Chairs: **Mary Beth Nebel**, *Kennedy Krieger Institute*
Sikoya Ashburn, *the University of North Carolina at Chapel Hill*

Cortico-Cerebellar Contributions to Cognition
Maedbh King, *University of California, Berkeley*

Cerebellar connectivity within working memory sub-networks in children with ADHD
Sikoya Ashburn, *University of North Carolina*

Cerebellar modulation of social behaviors in autism
Catherine Stoodley, *American University*

Using template ICA to investigate participant-specific features of cerebellar functional organization
Mary Beth Nebel, *Kennedy Krieger Institute*

12:15pm – 1:30pm **Lunch, on your own**

1:30pm – 2:00pm **Security Check**

2:00pm – 3:45pm **Big Data Initiatives: HBCD and ABCD**

Chairs: **Terry Jernigan**, *University of California, San Diego*
Hugh Garavan, *University of Vermont*

Prenatal exposure to social determinants of health influences child brain and cognitive development: Findings relevant to the HBCD study
Cynthia Rogers, *Washington University School of Medicine*

Introduction to Healthy Brain and Child Development Data Coordinating Center
Christopher Smyser, *Washington University*

Introduction to Healthy Brain and Child Development Administrative Core
Christina Chambers, *University of California San Diego*

FEMINisT and FEMA: Image registration and linear mixed effects modeling for whole-brain analysis of ABCD data
Diliana Pecheva, University of California, *San Diego*

Studying prenatal influences on child development: results from the ABCD study and opportunities in the HBCD study
Alexandra Potter, *University of Vermont Larner College of Medicine*

Flux Congress Program Schedule

Focusing on the generalizability of imaging analyses
Chun Chieh Fan, *UCSD*

The ABCD Data Exploration and Analysis Portal
Wesley Thompson, *Laureate Institute for Brain Research*

3:45pm – 3:55pm **Break**

3:55pm – 4:24pm **Linda Spear Award Talk**
Nim Tottenham, *Columbia University*

4:24pm – 4:40pm **Flux Dissertation Award Talk**
Divyangana Rakesh, *Incoming PostDoc at Harvard University*

4:40pm – 5:00pm **Break**

5:00pm – 6:15pm **Oral Session 4 - The Developmental Cognitive Neuroscience of Sleep**
Chair: **Tracy Riggins**, *University of Maryland*

Relations between nap transitions and brain development
Rebecca Spencer, *University of Massachusetts, Amherst*

Sleep to grow a healthy brain, with support of the gut microbiome
Salome Kurth, *University of Fribourg, Switzerland*

Sleep and selective memory consolidation in infants
Sabine Seehagen, *Ruhr University Bochum*

Adolescent Sleep: Implications for Behavioral and Brain Function Related to Risky Decision-Making
Adriana Galvan, *UCLA*

6:15pm – 7:00pm **Huttenlocher Award Lecture**
Adele Diamond, *University of British Columbia*

Babilou Family

7:30pm – 1:00am **Flux Fun Night – Tickets ONLY**
7:30pm at Labschool 7th Floor, Universite Paris Cite, The Saint-Germain-des-Pres Campus, 45 rue des Saints-Pres for food & Drinks, then to the Café Rive Droite, 2 rue berger, Paris for Karaoke

FRIDAY, SEPTEMBER 9, 2022

Grand Amphitheatre, Sorbonne University, 47 Rue des Ecoles, Paris

8:15am – 9:00am **Doors open & security check**

9:00am – 10:15am **Oral Session 5 – A network approach to the developing brain: from neurons to social networks**
Chairs: **Joe Bathelt**, *Royal Holloway, University of London*
Nora Raschle, *University of Zurich*

Behavioral synchrony across development tunes the 'social brain'
Adi Ulmer-Yaniv, *Reichman university*

Flux Congress Program Schedule

Exploring multilayer network associations between brain structure and function, and the exposome in middle to late childhood
Ivan Simpson-Kent, *University of Pennsylvania*

Understanding and breaking legacies of stress
Brian Dias, *USC Keck School of Medicine/Children's Hospital Los Angeles*

Towards mechanistic understanding of memory development
Noa Ofen, *Wayne State University*

10:15am – 10:30am **Break**

10:30am – 11:45am **Oral Session 6 - Pandemic-related stress in utero: child brain maturation and developmental outcomes**

Chair: **Emma Duerden,** *Western University*

Prenatal maternal distress during the COVID-19 pandemic and associations with infant brain connectivity
Kathryn Manning, *University of Calgary*

Brain development in infants with a family history of neurodevelopmental conditions born before versus during the pandemic
Jannath Begum-Ali, *University of London, Birkbeck*

Maternal uncertainty stress as a risk factor for delayed child neurocognitive development: data from the COVID-19 pandemic
Moriah Thomason, *New York University*

Neuroimaging Infants in Low and Middle income Settings: Challenges and Opportunities in a time of COVID
Kirsten Donald, *University of Cape Town*

11:45am – 12:45am **Lunch, onsite - included with registration**

Grand Salon, Sorbonne University

12:45am – 1:45pm **Combatting LGBTQIA+ Discrimination in Access and Opportunity: A Call to Action for the Flux Society**

Speakers: **Ethan McCormick**, *Radboud University Nijmegen*
David Pagliaccio, *New York State Psychiatric Institute*
Rachel Romeo, *University of Maryland*
Carlos Cardenas-Iniguez, *University of Southern California*

The lesbian, gay, bisexual, trans, queer, intersex, asexual (LGBTQIA+) community is in an ongoing struggle for equal recognition within an often-hostile society. Across the globe, legal and society barriers are erected that hamper our ability to live as full persons within our community, institutions, and families. Being queer is still legally punishable by death in many countries, and even in places where progress has been made, there are now efforts underway to roll back rights and protections for queer, and especially trans, individuals and to once again categorize us as "others" who are somehow dangerous to children. This is of course false, but represents the lengths to which those who seek to marginalize the LGBTQIA+ community will go. Within scientific and academic spheres, LGBTQIA+ individuals face challenges of representation and access to the same range of opportunities that are available to our cisgender, heterosexual colleagues.

These barriers often interact with legal and societal structures that make queer individuals feel unsafe studying, working, or even existing openly, leading to a lack of senior researchers who can serve as role models and a feeling that some places are "off limits." However, even in these places, we know that LGBTQIA+ people exist — as researchers, students, and as members of the community — a lack of visibility must never be mistaken for an absence. As a Society dedicated

Flux Congress Program Schedule

to the study of the developing brain and associated physical, cognitive, and mental health development of young people, we have a responsibility to work actively to tear down these barriers limiting the ability of the LGBTQIA+ community to live their lives openly and free from fear. In this call to action, we outline the challenges facing the LGBTQIA+ community, how members of Flux can work to dismantle them and support queer researchers and participants in their research and home institutions, and how this intersects with the broader goals of the Flux Diversity Working Group.

1:45pm – 2:00pm **Break**

2:00pm – 3:15pm **Oral Session 7 - Approaches and Considerations for Measuring Brain Maturation**

Chair: **Ethan McCormick,** *Radboud University Nijmegen*

Identifying the midpoint of cortical thinning using nonlinear mixed models
Delia Fuhrmann, *King's College London*

Brain age prediction as a method for measuring brain maturation
Dani Beck, *University of Oslo*

Towards a more inclusive and equitable developmental cognitive neuroscience
Jazlyn Nketia, Brown University

Applying Precision Functional Mapping Techniques to Quantify Age-Related Changes in Network Topography
Robert Hermosillo, *University of Minnesota*

3:15pm – 3:30pm **Break**

3:30pm – 4:45pm **Oral Session 8 - Evidence for and against a stable middle childhood**

Chair: **Allyson Mackey,** *University of Pennsylvania*

The age of reason: Functional brain network development during childhood
Ursula Tooley, *Washington University in St. Louis*

Maturation of cortical microstructure and relations to cognition and parental socioeconomic status in childhood and adolescence: Two T1w/T2w ratio studies
Linn Norbom, *University of Oslo*

The dynamic interplay between white matter plasticity and learning throughout childhood
Jason Yeatman, *Stanford University*

Region-specific myelin changes along the mouse lifespan
Sebastian Timmler, *University of Cambridge*

4:45pm – 5:00pm **Closing Ceremony**

Post Conference Flux Public Outreach Events

PUBLIC TALKS – NORTH AMERICA & EUROPE

As you are no doubt aware, the communication gap between scientists and community members is bridged in part through educators like yourself, and we would love to start a conversation about 1) what developmental cognitive neuroscience is, and what we are learning about the young brain in action, and 2) how to recruit, train, and support diverse future scientists who do impactful work for their communities.

Please spread the word to educators who may be interested in participating in this free event – we hope to begin a lively conversation with teachers across the world. This event is sponsored by the Jacob's Foundation, an international organization committed to improving learning and education for the world's youth (jacobsfoundation.org/en).

JACOBS FOUNDATION
Our Promise to Youth

In this 2nd year of this outreach, we are offering two panels presenting in two separate time zones, as itemized below:

NORTH/SOUTH AMERICA
September 21st at 8pm EST

Register in advance for this meeting:
us06web.zoom.us/meeting/register/tZwvdemurDkrG-9Puz-JcCaQhWluIsIpieX3v

Panel

- Ali Cohen, *Assistant Professor at Emory University*
- Lucina Uddin, *Professor at the University of California, Los Angeles*
- Andrew Lynn, *Vanderbuilt University*
- Theresa Cheng, *Postdoctoral researcher at Massachusetts General Hospital*
- Jessica Church Lang, *Associate Professor, University of Texas at Austin (Moderator)*

The Virtual event will go as follows:

- 20min introduction on DCN/Flux (Andrew)
- 20min case study outreach (Ali Cohen)
- 45min panel discussion and Q&A (all)

UK/EUROPE
September 22nd at 6pm UK Time

Register in advance for this meeting:
us06web.zoom.us/meeting/register/tZMtc-ioqTopHN-bIByS2qKPg5gtb68wYgwEE

Panel

- Michelle Achterberg, *Postdoctoral researcher at Leiden University and Erasmus University Rotterdam*
- Maxi Scheuplein, *PhD Student, Leiden University*
- Tzipi Horowitz-Kraus, *Associate Professor at Technion- Israel Institute of Technology*
- Nikolaus Steinbeis, *Professor at University College London*

The Virtual event will go as follows:

- 20min introduction on DCN/Flux (Niko)
- 20min case study outreach (Michelle)
- 45min panel discussion and Q&A (all)

Flux Congress Oral Presentations

WEDNESDAY, SEPTEMBER 7

Jacobs Science of Learning Symposium - Understanding and predicting children's learning trajectories: from neural mechanisms to classroom applications

Longitudinal EEG/fMRI trajectories of letter-speech sound processing during (a)typical reading acquisition

Iliana I. Karipidis[1], Sarah V. Di Pietro[1], Gorka Fraga-González[1], Silvia Brem[1]

[1]*University of Zurich*

BACKGROUND AND AIM: Literacy acquisition in alphabetic languages requires extensive training of letter-speech sound associations, which are continuously automatized to support fast and precise decoding of written language. This talk provides an overview of recent neuroimaging findings on developmental trajectories of functional brain activation during audiovisual processing of text. I will present fMRI and EEG data of a longitudinal study tracking letter-speech sound processing in the first five years of reading acquisition. Finally, I will discuss how typical and atypical learning trajectories in literacy could be explained by underlying neural processes. METHODS: Longitudinal EEG and fMRI studies have employed audiovisual processing tasks to investigate how functional responses to letters and speech sounds change over the course of reading acquisition in semi-transparent alphabetic languages (ages 5-11y). In addition, group comparisons and multiple regression analyses have illustrated how longitudinal functional brain changes differ in typical and atypical reading development. RESULTS: Longitudinal studies demonstrate that reading acquisition rapidly changes how the brain processes and integrates written and spoken language. Activation in the left superior temporal gyrus (STG) during audiovisual processing of letters and speech sounds increased in the first two years of formal reading instruction, a development that was less pronounced in struggling readers. In addition, audiovisual integration effects in the STG of prereaders were associated with early reading fluency outcomes. Non-linear developmental trajectories of audiovisual letter-speech sound processing were also found in the lateral inferior precentral gyrus, independent of children's reading ability. Activation to letters and letter-speech sound pairs in text-selective parts of the ventral occipitotemporal cortex (vOTC) also followed a non-linear development which was characterized by a peak in activation at the start of reading acquisition. Children with atypical reading skills showed distinct developmental patterns of vOTC activation and the corresponding electrophysiological visual N1 response to written letters. CONCLUSIONS: Recent findings suggest that learning-dependent functional brain changes across multiple brain regions follow a non-linear, inverse u-shaped trajectory that can be captured with different neuroimaging methods. Longitudinal neuroimaging data not only allow to study developmental trajectories of different parts of the brain's reading network but also to pinpoint when and how the developmental trajectories of children with reading disorders diverge from the ones of typical readers. Understanding how individual developmental trajectories of letter and speech sound processing are related to children's reading achievement could improve early identification of children with poor reading outcomes and provide information about helpful intervention approaches.

Dynamic Assessment of Decoding and Its Implication for Early Identification of Reading Disability

Eunsoo Cho, *Michigan State University*

BACKGROUND AND AIM: Dynamic assessment is an interactive testing procedure that provides instruction as part of the assessment to measure students' ability to learn from instruction. This approach stands in contrast to the traditional way of identifying learning disabilities, which primarily relies on static tests that ask students to perform independently to measure the product of learning. This research aims to develop and validate a dynamic assessment of decoding as an early screening assessment that provides information about the level of instructional intensity a student needs for optimal learning outcomes. METHODS: In a series of studies, we examined the predictive validity of dynamic assessment in first-grade classrooms. In Study 1, 105 students were assessed on dynamic assessment and static measures of phonological awareness and word reading at the beginning of first grade and then again evaluated on a standardized, static measure of word reading at the end of the school year. A multiple moderated regression model was run to examine whether the dynamic assessment can predict students' word reading development, controlling for the autoregressor, and whether it is more sensitive in measuring individual differences in word reading for students at risk for reading disability. In Study 2, 134 first-grade students at risk for reading disability were assessed on dynamic and other static assessments (phonological awareness, rapid naming, oral vocabulary, IQ). Students' word reading skill was progress monitored for 14 weeks as they received supplemental, small group reading intervention. We fit individual growth curve models to examine whether the dynamic assessment can predict students' response to intervention beyond which well-established predictors of reading can explain that. RESULTS: Results of Study 1 indicated that dynamic assessment made a significant and unique contribution in predicting word reading development above and beyond the autoregressor, particularly for students with poor phonological awareness skills. For these students, the dynamic assessment explained 3.5% of the unique variance in end-of-first-grade word recognition that was not attributable to the autoregressive effect. Results of Study 2 indicated that the dynamic assessment was a significant predictor of final level and growth, uniquely explaining 3% to 13% of the variance in responsiveness beyond static predictors of word reading development. CONCLUSIONS: These results suggest that DA provides an important source of individual differences in word reading development that cannot be fully captured by merely assessing the present level of reading skills through static assessment, particularly for students at risk for developing reading disabilities. In addition, our results support the use of dynamic assessment in screening students who are likely to show a slow response to intervention and need individualized, intensive instructional support.

Flux Congress Oral Presentations

Quantifying the dynamics of learning

Rogier Kievit, *Donders institute/RadboudUMC*

Quantifying the dynamics of learning BACKGROUND AND AIM: Cognitive ability, measured through standardized tests, provides a highly predictive measure of lifespan outcomes including academic achievement, job success, as well as mental and physical health. However, these cognitive 'snapshots' omit a crucial aspect of cognitive ability: Short term variability in cognitive performance. Individuals with more variable performance are more likely to be mis-stratified into schools or careers with potential lifelong consequences, and more likely to perform at levels that necessitate intervention for periods of time. However, the precise nature of this variability has been largely neglected due to a dearth of suitably rich datasets and quantitative techniques that can appropriately tease apart the distinct components in a timeseries of trials. This approach will help tease apart the impact of learning, inattention and strategy use in a day-to-day learning environment. METHODS: We use a cutting-edge quantitative framework called Dynamic SEM (Hamaker et al., 2018) to tease apart distinct components of trial timeseries (mean, trends, inertia and variability), as well as their associated random effects (i.e. individual differences). Additionally, we use multilevel DSEM to distinguish local temporal resolution (trial to trial) from higher level temporal resolution (day to day) for each component. To allow this rich model to fit, we use response time and performance data in a uniquely rich childhood sample (>300.000 children, 12 tasks, over 700 million items, age 6-8). Our goal us to demonstrate how short-term temporal features of cognitive performance (variability, inertia, short term trends) are associated with individual differences in long term learning outcomes and learning trajectories. Additionally, we examine methodological extensions that can separate out distinct levels of temporal resolution, as well as the (in)consistency of cognitive variability across task domains. RESULTS: We find that variability can be reliably be estimated, and differs substantially between people as well as between temporal resolutions. We find that older children, as well as better performing children (above and beyond age effects) demonstrate less residual variability, and that this variability provides unique predictive information above and beyond mean performance. CONCLUSIONS: We demonstrate how oft-neglected dynamic aspects of cognitive performance helps shed new light on cognitive development, and could and should be considered as integral to a child's cognitive performance profile as their mean performance.

Brain plasticity with altered learning experience: braille reading

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Is there a default 'reading brain'? Consistent with this idea, across a variety of languages and scripts reading recruits ventral occipito-temporal cortices (vOTC). The vOTC contains a posterior-to-anterior gradient, with more posterior regions processing simple visual features of letters and more anterior portions representing letter combinations and whole words. A series of recent studies suggests that this vOTC profile emerges even in blind readers of Braille, a tactile reading system. I will present evidence from two studies suggesting that Braille reading by congenitally blind adults has distinctive neural characteristics. In the first study, congenitally blind and sighted adults performed analogous reading (tactile/visual) and spoken word listening tasks. Written and spoken stimuli varied in their word-likeness, e.g., in the tactile condition, from shapes made of Braille dots, to consonant strings and finally words. Unlike in the sighted, in blind readers, a posterior-to-anterior gradient did not emerge in vOTC, instead responses to spoken and written words were high throughout. Compared to sighted readers of print, Braille readers recruited additional areas in parietal/parieto-occipital cortex, adjacent to but posterior to early somatosensory cortices, with an anterior-to-posterior increase Braille-word selectivity. Parietal cortices also responded to unique orthographic properties of Braille words (i.e., contractions) in a second study. Among blind readers, individual differences in laterality of responses to Braille were predicted more by reading hand early in the processing hierarchy (S1), and by the laterality of spoken language further along the processing hierarchy. Together these data suggest that there are multiple neural routes to reading. The individual profile of each reading brain is shaped by the sensory modality of the reading script and individual differences in the neural basis of spoken language, all of which build on intrinsic connectivity patterns.

Oral Session 1 - Social connections: Cultural, digital, peer and family influences on the developing brain

Effects of isolation on adolescent cognition

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BACKGROUD AND AIM: Loneliness and isolation are increasing in societies all around the world, particularly in young people (Hammond 2019, Twenge 2019). Animal research has consistently shown that a lack of social interaction leads to increased reward sensitivity, higher anxiety and inflexibility during learning - particularly during adolescence (Tomova et al. 2019, Orben et al. 2020). Yet, it is unclear how well results from animal models of isolation can be translated to humans. Do social isolation and loneliness in human adolescents cause similar modulations in brain function and cognition? Previous research in adult humans has shown that acute loneliness affects brain functioning in a similar level as food craving after fasting (Tomova et al. 2020). METHODS: Here, we assessed how short-term isolation of 3-4 hours affects feelings of loneliness and behavioural measures of reward processing (including reward responsiveness and reward learning) and fear learning in adolescents aged 16-19 years. We also assessed whether access to virtual social interactions mitigates the effects of isolation. RESULTS: We find that short-term isolation affects self-reported feelings of loneliness, reward processing and fear learning in adolescents. Access to virtual social interactions remediates some, but not all effects of isolation. CONCLUSIONS: The implications of this research in the light of adolescent loneliness and mental health problems will be discussed.

Flux Congress Oral Presentations

Habitual checking of social media relates to longitudinal functional brain development

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Background and aim: The emergence of digital-social contexts has drastically changed the landscape of adolescent development. It provides unprecedented opportunities for social interactions during a critical developmental period when the adolescent brain is especially sensitive to social feedback, peer evaluation, and status. Given the growing ubiquity of digital media in adolescents' lives, it is critical to examine how digital-social connections interact with the developing brain. The current study aimed to explore how teens' frequency of checking behaviors on social media platforms relates to longitudinal changes in functional brain development across adolescence. Methods: Adolescent participants (N=169, Mage=12.8, SDage=0.52) completed a social media use questionnaire where they reported the frequency with which they check three social media platforms (Facebook, Instagram, & Snapchat). Additionally, they completed an fMRI Social Incentive Delay Task to measure neural responses when anticipating and receiving social rewards and avoiding social punishments annually across three waves. Results: We conducted longitudinal whole-brain analyses and found that adolescents who reported habitual checking of social media showed longitudinal increases in neural sensitivity to social anticipation in the amygdala, insula, ventral striatum, and dorsolateral prefrontal cortex, whereas adolescents who reported non-habitual checking behaviors showed longitudinal decreases in neural sensitivity within the same brain regions. Conclusions: Findings suggest that checking behaviors on social media in early adolescence are associated with the brain's sensitivity to social rewards and punishments developmentally. Future studies should explore the neurodevelopmental trajectories of social reward responsiveness from an earlier age to uncover the causal pathways behind this association.

Ventral striatal responses to excited smiles: Cultural variation and real-world correlates

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Prior work has shown that European Americans ideally want to feel excitement and other high arousal positive affective states more than Chinese. Consistent with cultural differences in "ideal affect," European Americans showed greater neural activity in regions associated with reward, including the nucleus accumbens (NAcc), when viewing excited (vs. calm) smiling faces compared to Chinese. However, it remains unclear whether these differences in reward-related activity are specific to social stimuli and whether they are related to meaningful behaviors in people's everyday lives. To probe these questions, European Americans (N = 26) and Chinese (N = 27) played the Social Incentive Delay (SID) task in the fMRI scanner, where they had the potential to receive a social reward, which was a smiling face, that varied in magnitude (calm, moderate, excited). Participants also played the Monetary Incentive Delay (MID) task, where they had the potential receive a monetary reward that varied in magnitude ($1, $3, $5). After scanning, participants rated the emotional expressions of six friends in their social media profile photos. While they were no differences for monetary rewards, as predicted, European Americans showed greater NAcc activation than Chinese when they viewed excited smiling faces, B = .09, SE = .04, t(703) = 2.50, p = .01. Moreover, across cultures, individuals who showed greater NAcc responses to excited smiling faces had more friends who showed excited smiles in their profile photos, r = .30, p = .03. These findings suggest that culturally-shaped affective values selectively shape neural responses to smiling faces, and that these responses have implications for real-world social relationships.

The role of family connections on the developing brain

Helen Minnis, *University of Glasgow*

Background and aim: Attachment relationships between young children and their parents or carers form a crucial bedrock of children's social development and have developmental implications across the lifespan. When typically developing babies or young children are stressed, they exhibit attachment behaviours such as crying and reaching out to be picked up. In secure attachment relationships, attachment behaviours usually involve noise and movement. Some children who have experienced abuse or neglect do not habitually signal their needs to their parents or carers, through noise or movement, when stressed. When this lack of signalling needs is extreme, the child may warrant a diagnosis of an Attachment Disorder. The aim of this presentation will be to demonstrate the differences in responses to stress in typically developing children and children with an Attachment Disorder. Methods: This presentation will use short videos of infant-child interactions to demonstrate the subtleties of child-parent interaction in the context of an Attachment Disorder. Data will then be presented from two studies using machine learning to examine subtle attachment behaviours in the context of both typical development and Attachment Disorder. Results: Findings show that machine learning can contribute to the detection of these subtle but important symptoms. Data from our previous studies will place this in context by discussing the way infant problems with signalling needs can be associated with wider social difficulties, including indiscriminate behaviours and problems with making social judgements from faces so that children can decide who to trust. Lastly, the presentation will discuss the longer-term implications of Attachment Disorders by discussing data from our studies of adolescents who have been engaged in criminal behaviour. Conclusion: Attachment Disorder behaviour in young children is a developmental emergency because young children need the involvement of parents to resolve stressful situations, yet early intervention can resolve these symptoms quickly thus potentially preventing negative outcomes such as criminal behaviour. Machine learning can support the detection of these subtle symptoms. https://doi.org/10.1016/j.psychres.2014.01.004 https://doi.org/10.1371/journal.pone.0240277

Flux Congress Oral Presentations

Local Symposium - Environmental factors shaping typical and pathological brain development from the womb to early adulthood: insights from animal and human cohorts

Early environmental influence on the brain in a lifespan perspective - focus on birth weight

Kristine Beate Walhovd, *University of Oslo*

To what extent can prenatal environmental influence on the brain persist across the lifespan, and to what extent does it affect brain changes? In observational and experimental longitudinal studies at the Center for Lifespan Changes in Brain and Cognition, we link prenatal and early life factors to brain and behavioral correlates at various ages. Here, we focus on birth weight (BW). BW reflects genetic, but also prenatal environmental factors affecting fetal growth, including brain growth. BW has been associated with brain features at later stages but it is unknown whether and how BW relates to lifespan brain characteristics and changes. Addressing this requires mapping of associations longitudinally and across the human age range. In this presentation, a number of questions are addressed, including: How does BW associate with brain morphometry through the lifespan? Can BW affect lifespan brain changes? To what extent are there brain effects of BW differences beyond genetics through the lifespan? Data are presented on the associations of BW and neuroanatomical, including cortical, characteristics and their change as investigated in multiple cohorts.

Uncovering the stress neuromatrix

Nuno Sousa, ICVS, *University of Minho*

Stressful stimuli in healthy subjects activate a consistent and reproducible set of brain regions; yet, the notion that there is a single and constant stress neuromatrix is not sustainable. In this talk longitudinal data in rodents will be presented to highlight the impact of chronic maladaptive stress on the fine structure of the brain and in its behavioral and functional outcomes; in parallel, it reveals the existence of brain connectomic signatures of resistance versus vulnerability to stress exposure that may guide interventional strategies. Finally, human data will be shown to demonstrate how these approaches can inform on the pathophysiology of several neuropsychiatric conditions.

The association between malleable neurobiological markers and cognitive capacity

Jakob André Kaminski[1]

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BACKGROUND AND AIM: Environmental influences, for example stress and stressful experiences, can affect the activity of genes and lead to individual structural changes in the genetic material. With these so-called epigenetic changes, the genetic material adapts to the requirements of its environment. The information as to whether and under what circumstances a gene is active can be passed on to the next generation of cells together with the genetic material. METHODS: In our study we linked the intelligence tests of nearly 1,500 adolescents with the epigenetic changes. For the study, we interrogated genes that are important to dopaminergic signal transmission. Dopamine plays an important role in the brain's reward system. It significantly controls a person's drive and motivation. RESULTS: We were able to show that the epigenetic regulation of signal transmission with dopamine and individual performance in intelligence tests are related. We found evidence for an effect of the epigenetic modulation in a dopamine receptor gene on intelligence. Fewer dopamine receptors would be formed on neurons and signal transmission would be reduced. In the present study, this silencing of the gene was associated with poorer results in intelligence tests. In further analysis, we analyzed in more detail how strongly environmental influences lead to neurobiological changes and affect performance in intelligence tests and could show relatively large effect sizes for malleable markers. CONCLUSIONS: Especially with regard to the activity of the dopamine-controlled reward system, we have previously observed correlations with stress and intelligence performance. The importance of environment-dependent control of gene activity now joins other known influences on performance in intelligence tests, such as poverty or genetic constitution. We observed in the present study that individual differences in intelligence tests are also related to epigenetic changes and differences in brain activity that are subject to environmental influences.

Adverse environmental factors for mathematical learning: the interplay between Socio-Economic Status and anxiety

Teresa Iuculano, *La Sorbonne, Université Paris Cité & Centre National de la Recherche Scientifique*

BACKGROUND AND AIM: Individual differences in learning can stem from many factors, including the child's upbringing. Notably, growing up in disadvantaged households, such as those of low Socio-Economic Status (SES), has been linked to increased behavioral/emotional problems and lower school attainment. Critically, academic discrepancies between low and high SES pupils - i.e., the educational achievement gap - represent a significant societal and economic burden: low SES children are less likely to successfully progress in their educational path, less likely to find a job, and are significantly more prone to vocational failures as adults. Even more critically, the educational achievement gap is widening and is already evident during the early school years - with some academic domains affected more than others. Mathematics, for example, shows greater performance disparities as a function of SES compared to other school subjects, including reading. What are the factors that can negatively interact with math learning in children growing up in low SES environments? And what are the brain systems that are most impacted? One factor which has been systematically linked to low SES - and to adverse environments more generally - is stress. Overcrowded households, scarcity of resources and unstable routines can generate high levels of stress and anxiety in low SES children, affecting the appropriate development of neurocognitive systems important for successful

learning. METHODS: In this talk, I will present evidence that sheds light on the relationship between SES, general anxiety, math-specific anxiety, and math performance in two independent samples of low (and high) SES pupils at a critical stage of arithmetical skill development (ages 7 to 9). Further, by combining these measures with task-based functional resonance imaging (fMRI) during an arithmetic problem-solving task, I will start to characterize the behavioral and neural correlates that can account for poor math skills in low SES. RESULTS: In the first study, we show that along with deficits in math performance, children from low SES report higher levels of general as well as math-specific anxiety, compared to their higher SES peers. Notably, a significant negative relationship between anxiety and math performance was uniquely evident in the low SES group. In the second study, we show that family income - yet not parental education - significantly contributed to the relationship between anxiety and math performance. Moreover, family income was a significant moderator between anxiety scores and functional brain activation in emotion-related circuits anchored in the amygdala, leading to poorer arithmetic performance in lower SES pupils. CONCLUSIONS: These results are discussed in the light of neurobiological models of math learning & adversity, and within the context of venues for intervention.

THURSDAY, SEPTEMBER 8

Oral Session 2 - The potentially big role of the "little brain" in cognitive development

Cortico-Cerebellar Contributions to Cognition

Maedbh King, *University of California, Berkeley*

Anatomical, neuropsychological, and neuroimaging research have revealed extensive connectivity between most of the cerebral cortex and the cerebellum, pointing to the involvement of the cerebellum in a broad range of functions beyond its traditional association with motor control. In my talk, I will discuss recent work that uses functional magnetic resonance imaging to develop a comprehensive functional map of the cerebellum and to explore how this map is constrained by cortical input patterns. Furthermore, I will demonstrate how the architecture of cortico-cerebellar connectivity changes over the course of learning, and how these results may provide foundational information for understanding how cortico-cerebellar networks are impacted in neurological disease and developmental disorders that affect the cerebellum.

Using template ICA to investigate participant-specific features of cerebellar functional organization

Mary Beth Nebel, *Kennedy Krieger Institute*

Obtaining accurate representations of functional brain areas in individual participants is essential for fMRI-based biomarker development, clinical translation, and more nuanced discovery science. Studies investigating these participant-specific features tend to be cortico-centric. However, recent work by Marek and colleagues suggested that inter-individual variability in cerebellar functional regions may exceed that of the cortex. One roadblock to the widespread examination of inter-individual variability in the functional organization of the cerebellum is the amount of data required to produce reliable estimates. In this talk, I will describe template independent component analysis (ICA), a fast hierarchical ICA framework using empirical population priors, which has previously been shown to produce reliable individual-level estimates of cortical functional areas using less data than standard approaches. I will demonstrate the utility of template ICA to the cerebellum using resting-state data from the Human Connectome Project to estimate the necessary population priors, which are then applied to data from the Midnight Scan Club.

Cerebellar modulation of social behaviors in autism

Catherine Stoodley[1], Laura Rice[1], Anila D'Mello[2]
[1]American University, [2]MIT

BACKGROUND AND AIM: There is an increasing appreciation for the role of the cerebellum in non-motor functions, including social cognition. It has been proposed that cerebellar learning mechanisms could be particularly important during development, a time of rapid skill learning. Regional cerebellar differences in neurodevelopmental conditions could impact the learning of different types of information depending on which cerebro-cerebellar circuits are affected. Differences in cerebellar structure and function are well documented in autism, but the specific contribution of these cerebellar differences to core autism symptoms has yet to be established. Here we test the hypothesis that the right posterolateral cerebellum is important for the acquisition of socially-relevant information. METHODS: We combined neuromodulation with neuroimaging in 10 adults with autism (24.9±9.0 years) and 16 age-matched neurotypical adults (21.9±2.6 years). Participants completed baseline measures of autism symptoms and the NIH Cognition Toolbox. Participants performed the Cyberball task following 20min of 1.5mA transcranial direct current stimulation (tDCS) targeting the right posterolateral cerebellum. Each participant completed three sessions, in which anodal (excitatory), cathodal (inhibitory) and sham tDCS were administered. Analyses assessed the impact of cerebellar modulation on behavior and brain activation patterns. RESULTS: Both groups showed significant learning during the task at baseline (sham), though higher autism symptom scores correlated with poorer learning on the task (-.51, $p=0.01$) and cerebellar activation was reduced in the autism group. In both groups, better learning correlated with increased cerebellar activation during the task ($p<0.001$, FDR cluster $p<0.05$). Cathodal tDCS improved social learning in the autism group ($p=0.035$) and was associated with increased cerebellar activation and more typical functional connectivity patterns.

CONCLUSIONS: These findings suggest that the cerebellum modulates the acquisition of social information, consistent with its well-documented role in motor learning, and indicate that regional cerebellar differences in autism could impact social behaviors via cerebellar modulation of relevant cerebro-cerebellar networks supporting social cognition.

Cerebellar connectivity within working memory sub-networks in children with ADHD

Sikoya Ashburn[1], Jessica Cohen[1]

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BACKGROUND AND AIM: Altered cerebellar structure and function have been implicated in attention-deficit/hyperactivity disorder (ADHD); however, the precise role of the cerebellum remains unclear. One theory is that cerebellar abnormalities contribute to the working memory (WM) impairment observed in children with ADHD. Given that the cerebellum is densely interconnected with cortical regions engaged during WM tasks, it is important to consider how cerebellar-cortical connectivity underlies WM performance, and how this may be altered in ADHD. Therefore, the goal of the proposed research is to examine how cerebellar regions are incorporated into WM-related cortical networks and how this differs in children with and without ADHD. METHODS: We are currently collecting resting state data and behavioral WM measures in children with and without ADHD, aged 10-12. We will extract and correlate timeseries across cerebellar and cortical regions of interest (ROIs) based on a recent investigation of WM-related activation in adolescents with ADHD (Mukherjee et al., 2021) and a WM meta-analysis in children and adults (Rottschy et al., 2012). We will use the Louvain community detection algorithm to define sub-networks within this set of ROIs, and will quantify within-module degree to probe differences in within-sub-network connectivity across groups, and will relate within-module degree to WM performance. RESULTS: We expect to find at least two sub-networks that consist of ROIs that have previously been associated with WM load and WM task complexity. We also expect the ADHD group to have increased within-module degree (within-network connections) in children with, as compared to without, ADHD. Finally, we expect that increased within-module degree of cerebellar nodes within the task complexity sub-network will be related to poorer WM performance in the children with ADHD. CONCLUSIONS: These results will clarify the role of the cerebellum in ADHD and WM by augmenting knowledge of network structure and cerebellar involvement in children with and without ADHD.

Big Data Initiatives: HBCD and ABCD

Prenatal exposure to social determinants of health influences child brain and cognitive development: Findings relevant to the HBCD study

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BACKGROUND AND AIM: Exposure to social determinants of health like poverty, neighborhood crime, environmental toxins and racial discrimination are increasingly recognized as negatively impacting brain and cognitive development. This presentation will highlight research supporting this link and discuss how it has informed the HBCD study. METHODS: Along with other prior studies, studies including approximately 400 caregiver-infant dyads that were recruited during pregnancy with assessments of income to needs, neighborhood poverty, neighborhood crime exposure, racial discrimination, depression, perceived stress, and stressful life events will be reviewed. Infants in these studies underwent MRI scans during the neonatal period. Image analyses included resting state functional connectivity, diffusion tractography of white matter tracts and structural analyses of volume and surface area with a focus on brain regions related to emotion regulation and emotion processing. Latent factors encompassing social disadvantage variables and psychosocial stress variables were created and related to neonatal brain measures. RESULTS: Prenatal social disadvantage was significantly related to the functional connectivity of cortical networks, neonatal diffusion measures of multiple white matter tracts including the cingulum bundle the uncinate fasciculus and the fornix. Social disadvantage was also related to cortical gray matter volumes and surface area. Psychosocial stress was not significantly related these measures when controlling for social disadvantage. Neighborhood crime and prenatal substance use were also found to contribute to early brain development. CONCLUSIONS: Prenatal exposure to social determinants of health particularly those that index social disadvantage and poverty were related to multiple measures of neonatal brain development including cortical networks, white matter tracts and structural cortical development. Analyses linking these findings to early childhood development are ongoing and will be discussed.

Introduction to Healthy Brain and Child Development Data Coordinating Center

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BACKGROUND AND AIM: The landmark Healthy Brain and Child Development (HBCD) study will provide a representative reference data resource to the scientific community enabling unprecedented investigation of neurodevelopment and the impact of environmental, genetic, and biological factors on brain and behavioral health and developmental trajectories from infancy through childhood. Through this study, a sociodemographically diverse cohort of 7,500 pregnant women from 25 sites across the U.S. will be recruited and followed with their children through the first decade of life. Children will undergo rigorous data collection across modalities including neuroimaging, neurophysiology, behavioral and cognitive assessments, and collection of biospecimens via a balanced protocol developed by field-leading experts. Leveraging multiple population-specific technical innovations, the HBCD Data Coordinating Center (HDCC) will provide the management and oversight of data collection, quality control, curation, processing, management, sharing, and analytics to facilitate and support all study activities. METHODS: This presentation will introduce the HDCC infrastructure developed to fully support these activities and configured upon an Open Science framework. This will include implementation of an optimized,

state-of-the-art MRI protocol harmonized in infants/toddlers across all three major vendors which leverages innovations in scanner technology. Also encompassed is an EEG protocol linked with an automated processing pipeline for developmental EEG which provides innovative derivative measures. Data and project management will occur through a centralized tracking and distribution platform linked to a high-throughput compute backbone which overcomes limits of commercially-available systems for management and integrated processing of multimodality data from large, multi-site studies. High performance computing will be supported through unique access to a combination of field-leading resources. Study-specific methods for secure collection, management, and analysis of personally identifiable information (PII) data, including flexible methods designed to accommodate varied electronic health record systems across sites will be employed. Finally, substantive HBCD-specific enhancements to the Data Exploration and Analysis Portal (DEAP 2.0) will produce a crucial tool for data access to authenticated users while promoting best practices in reproducible statistical analysis and providing flexible computation without the need to download restricted-access data. RESULTS AND CONCLUSIONS: The result of this combination of HDCC resources will be a state-of-the-art, longitudinal data set of unparalleled scale which provides deep understanding of the biological and environmental factors that affect a child's health, brain, and behavioral development and shapes research, clinical care, and public policy for decades to come.

Introduction to Healthy Brain and Child Development Administrative Core

Charles Nelson[1]

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BACKGROUND AND AIM: The Healthy Brain and Child Development (HBCD) study is a longitudinal, prospective cohort study of child development beginning in the second trimester of pregnancy and continuing until 10 years of age. The aim of the study is to better understand developmental trajectories of children over the first decade of life, as well as risk and protective factors that may influence those trajectories. The study, initiated in 2021, is funded by the U.S. National Institutes of Health, led by the National Institute of Drug Addiction and 10 other Institutes and Centers. The study is being managed through the HBCD Consortium Administrative Core (HCAC) in collaboration with the HBCD Data Coordinating Center (HDCC), and is being conducted by a consortium of investigators at 25 sites across the U.S. A wide-ranging set of factors will be measured including socioeconomic, environmental, genetic/epigenetic, social stressors and exposures such as substance use, that will be captured from questionnaires, geolocation, records, and biospecimens. Outcome measures will include cognitive, behavioral, physical, neuroimaging and EEG assessments. METHODS: The study sample will be comprised of 7,500 participants, recruited primarily in the second trimester of pregnancy, and their children. Recruitment is slated to begin in Fall of 2022 and to continue for approximately three years. Recruitment targets for each site are based on the diversity of pregnant persons at the study sites as well as the overall U.S. population of pregnant individuals. The sampling strategy further involves oversampling for some factors, including substance use, with attention to maintaining internal validity as well as external generalizability. The core study protocol is vetted and approved by the Consortium Steering Committee and reviewed by an external scientific board. Input is also sought from local Community Advisory Boards at each site. Across the Consortium, attention is focused on minimizing participant burden as well as protecting against risks of participation; providing added value to families through return of results; ensuring access to study navigator support; and a commitment to principles of Diversity, Equity and Inclusion across all levels of the study. RESULTS AND CONCLUSIONS: The HBCD study is designed to answer questions about child development, with a focus on brain and behavior, over the critical early years of life. This study will offer scientists across the globe unique opportunities to better understand the interplay between complex factors that influence developmental trajectories over time.

FEMINisT and FEMA: Image registration and linear mixed effects modeling for whole-brain analysis of ABCD data

Diliana Pecheva[1], Chun Fan, Clare Palmer, Pierre Nedelec, John Iversen, Oleksandr Frei, Wesley Thompson, Donald Hagler, Ole Andreassen, Terry Jernigan, Thomas Nichols, Anders Dale

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INTRODUCTION: Developmental changes have been associated with a myriad of microstructural and morphological alterations across the brain, as measured by MRI. These associations may be strongly localised or spatially diffuse. Therefore, it would be advantageous to analyse multimodal MRI data in concert, and across the whole brain. Here we outline how to carry out multimodal, whole-brain analyses at the voxel and vertex level for ABCD data using publicly available resources from the ABCD Data Analysis and Informatics Research Centre. METHODS: First it is necessary to establish anatomical correspondence between participants and across scans. The ABCD study presents the unique challenge of integrating multimodal data from tens of thousands of scans at multiple timepoints, within a feasible computation time. To address this need, we developed the Fast, Efficient Multi-modal Image Normalisation Tool (FEMINisT). FEMINisT employs an iterative approach to synthesize a cohort-specific atlas from linear and nonlinear deformations of 11 channels of dMRI and sMRI data. The FEMINisT ABCD atlas was generated from baseline and two-year follow up imaging data. The performance of FEMINisT was evaluated against two widely used methods. Following spatial normalization of images, we can perform voxelwise statistical analyses. For this we developed a fast and efficient mixed-effects algorithm (FEMA). The linear mixed effects (LME) model is a versatile modeling approach to deal with correlations among observations, however, has seldom been used in whole-brain imaging analyses due to its heavy computational requirements. By utilizing the method-of-moments estimator, effect binning, and sparsity of the random effect design matrix, FEMA can finish whole brain voxelwise LME analyses within minutes. Using realistic simulated data and real ABCD data, we evaluated the results from FEMA against the classical restricted maximum likelihood approach. RESULTS Using the multimodal registration algorithm from FEMINisT we constructed an ABCD-specific atlas from eleven dMRI and sMRI modalities. FEMINisT achieves alignment comparable to the current state-of-the-art multimodal registration, at a fraction of the computation time. The aligned voxelwise data can then be input to FEMA for whole-brain LME analysis. FEMA delivers statistical power and control of type I errors equivalent to classical LME, while showing orders of magnitude improvement in the computational speed. Furthermore, FEMA can be

employed in vertex-wise analyses of cortical surface measures and connectome-wise analyses, enabling researchers to quickly examine the relationships between large numbers of neuroimaging metrics and variables of interest while considering complex study designs including repeated measures and family structures. CONCLUSION The FEMINisT ABCD atlas and FEMA are two publicly available resources developed to facilitate whole brain, voxel-, vertex- and connectome-wise analyses of the ABCD data.

Studying prenatal influences on child development: results from the ABCD study and opportunities in the HBCD study.

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BACKGROUND AND AIM: The prenatal period is consequential for later physical, emotional, and cognitive development. Prior retrospective studies of the effects of prenatal exposures (i.e. substance use during pregnancy, medication use during pregnancy, maternal stress) are challenged by the many confounds that accompany these exposures. METHODS: This talk will provide an overview of studies on the prenatal environment using data available from the Adolescent Brain Cognitive Development (ABCD) study. This is a large, ten-year longitudinal study of over 11,500 children recruited at ages 9 or 10. Youth and caregiver data are collected at annual in-person visits, with multi-modal MRI data collected every other year. At baseline, caregivers provided information about pregnancy and a wide variety of prenatal exposures maternal substance use, family history, medication use during pregnancy, etc. Outcome variables include adolescent brain development, neurocognition, social function, sleep, psychopathology, and substance use. The unique size and design of ABCD enables multiple analytic strategies that have been used to examine the developmental consequences of prenatal exposures while accounting for co-morbidities, and a variety of potential covariates. RESULTS: Studies of prenatal cannabis exposure have consistently found relationships to adolescent mental health including attention problems. However these studies do not find differences in cognitive performance or brain structure or function when covariates are accounted for. This contrasts with studies of the effects of prenatal alcohol exposure in the ABCD cohort, that report structural brain changes associated with exposure. The neurodevelopmental effects of prenatal cannabis may become more pronounced as youth move through adolescence, a hypothesis that can be explored using future releases of ABCD data. CONCLUSIONS: One limitation of using ABCD data to study prenatal exposures is that pregnancy data were obtained when the youth were 9-10 years old. The HEALthy Brain Child Development (HBCD) study's design will allow for prospective assessment of the prenatal environment, and longitudinal data collection from the time of exposure through childhood. HBCD will enable studies of the timing, dosage, poly-substance use profile, and persistence of prenatal exposures as they affect infant brain and behavioral development. Important factors that promote healthy development will be collected in HBCD providing insights and policy guidance about the modifiable, environmental factors affecting development. Examples of synergies between ABCD and HBCD and how this will enable modeling prenatal variables both within and across datasets will be explored.

Focusing on the generalizability of imaging analyses

Chun Chieh Fan, *UCSD*

Background and aim: The arrival of large-scale population level neuroimaging datasets provides a rich source for neuroscientists to explore the interested questions. Here, I would use two examples to highlight the potential biases and pitfalls of analyzing large-scale imaging data. First, I will discuss the impact of population stratification on the imaging analyses, how the background heterogeneity would lead to erroneous inference. Second, I will discuss the utility of the variance component model and how missing the generative model can lead to biased interpretation. Finally, I will showcase our recent paper on imaging scoring, demonstrating that by focusing on generalizable imaging instruments, we can gain substantial insight into the inner workings of the human brain. Methods: Statistical analyses with multiple large scale imaging datasets, including ABCD, HCP-D, and UK Biobank. Results: Structural imaging measures are particularly susceptible to the population heterogeneity whereas all other imaging modalities can have evident residual confounds. By focusing on the generalizability of the imaging analyses rather than the in-sample variance explained, we can use imaging scoring as a good instrument variable for various inferences. Conclusion: The heterogeneity in the study population and the average small effect sizes mandates a carefully planned analysis.

The ABCD Data Exploration and Analysis Portal

Wesley Thompson, *Laureate Institute for Brain Research*

The ABCD Study is collecting data on almost 12,000 participants annually over at least 10 years in multiple domains, including neuroimaging, genetics, mental and physical health, neurocognition, substance use, and so forth. The rich nature of the data give rise to a potentially bewildering array of possible analyses, especially as the number of assessments increases over time. To address this issue and ease the burden of accessing the ABCD Study data, we have created the Data Analysis and Exploration Portal (DEAP), hosted on NDA. This web-based tool that provides guidance on best practices for longitudinal analyses and interactive data access and download. In this talk, we will describe DEAP and provide an overview of the longitudinal analyses that have been implemented, as well as plans going forward for improving data access and download capabilities for the ABCD Study.

Flux Congress Oral Presentations

Oral Session 4 - The Developmental Cognitive Neuroscience of Sleep

Relations between nap transitions and brain development

Rebecca Spencer[1], Tracy Riggins[1]

[1]University of Massachusetts, Amherst

BACKGROUND AND AIM: Naps are important during infancy and early childhood as they enhance memory consolidation. However, a normal part of development is the transition out of naps. Although a number of factors contribute to when a child naps, little is known of why children transition out of naps when they do. Studies from our lab and others suggest that children who transition out of naps are able to hold memories for longer without interference and also have superior performance on cognitive assessments, even when controlling for age. This suggests that nap transitions may be related to cognitive development and, importantly, development of underlying brain structures. Consistent with this, we found differences in hippocampal volumes for habitual and non-habitual nappers. However, this work was cross-sectional and used parent-reported sleep measures. More recently, we have begun a longitudinal study of brain development across the nap transition. We hypothesize that maturation of the hippocampus results in more efficient memory storage, which reduces the buildup of homeostatic sleep pressure, and eventually contributes to nap transitions. METHODS: We recruited children, 36-54 months, who are habitual nappers at enrollment. Children were invited to return 6- and 12-months later. As slow wave activity (SWA; delta EEG in sleep) serves as a marker of homeostatic sleep pressure, we used polysomnography to record sleep during an experimental nap. Nap habituality was verified with actigraphy. Structural MRI collected at each time point was used to characterize brain development. RESULTS: Due to pandemic-related interruptions, to date, polysomnography and MRI data are available for a sample of n=25 children (36-54 months),18 of whom returned for the same measures 6 months later. In this sample, children were habitual nappers at time 1 and most had transitioned out by time 2. At the first assessment, smaller hippocampal head volume appeared to be associated with greater SWA. However, at the second visit, there was a significant positive correlation (r=.514, p=.029) with greater hippocampal head volume associated with greater SWA. Ongoing analyses will compare hippocampal structure and function relations across habitual and non-habitual nappers and, longitudinally, across the nap transition. CONCLUSION: Results support our hypothesis, suggesting a relation between hippocampal development and the accumulation of homeostatic sleep pressure (SWA as a proxy). The shift in the direction of this relation is consistent with work showing larger hippocampal volumes are reflective of maturation in younger children, whereas smaller volumes were reflective of maturation in older children, possibly reflecting a shift from synaptogenesis to synaptic pruning. Ultimately, a better scientific understanding of nap transitions will support the development of science-based guidelines and policies regarding napping in childcare and early education settings.

Sleep to grow a healthy brain, with support of the gut microbiome

Salome Kurth[1]

[1]University of Fribourg, Switzerland

How is sleep linked to the development of the brain and of cognition? The specific hypotheses discussed here entail, that (i) sleep undergoes parallels with anatomical and cognitive maturation, that (ii) adequate sleep is essential to the maturation of cognitive functions, and that (iii) the establishment of sleep rhythm is intertwined with the gut microbiome maturation. Sleep is considered a multidimensional construct and unique to this behavioral state is sleep EEG neurophysiology. Across childhood and adolescence, the EEG markers of deep sleep are fundamentally topographically reorganized, with the regions undergoing structural maturation exhibiting more deep-sleep features. Further, this topography predicts the maturation of behavioral skills emphasizing its prognostic potential. The consequences of disturbed sleep are discussed in the framework of COVID confinement with parent-ratings of children's executive function. Confinement acutely decreased sleep quality in young children, which yet rebounded after several weeks. The induced worsening of sleep quality predicted later lower inhibitory self-control, inhibition and emotional control, highlighting mid-term behavioral consequences of poor sleep during developmental periods. Further, sleep in infancy is associated with the gut microbiome. Specifically, daytime sleep habits are linked to bacterial diversity, and a more mature microbiome indicates more nighttime activity. Gut microbial profiles were also associated with deep-sleep neurophysiological features. For both sleep habits and gut microbiota, concurrent associations with behavioral development are stronger than predictive associations, with strongest associations at age 3 months. Sleep habits are closer associated with personal-social development, while gut microbiota more closely relate to motor development. Thus, the sleep-brain-gut axis in infancy is relevant to behavioral development and potentially identifies an early sensitive period for later functionality of sleep rhythm and gut microbial balance. Re-normalization of maturation trajectories of sleep-brain-gut linkages might prove beneficial treatment in pediatric at-risk groups.

Sleep and selective memory consolidation in infants

Sabine Seehagen[1], Carolin Konrad[1], Rachel Barr[2], Jane Herbert[3], Janika Pelz[1], Neele Hermesch[1]

[1]Ruhr University Bochum, [2]Georgetown University, [3]University of Wollongong

BACKGROUND AND AIM: Each day, infants encounter a wealth of new information. Being spoilt for choice, infants have to select what information to focus on, learn about, and retain in memory. Given their limited knowledge and experience, how they engage in this selection process is a puzzle. In adult populations, sleep preferentially supports consolidation of recently acquired memories that receive salience tags during or shortly after encoding (Stickgold & Walker, 2013). In this talk, we will present three studies that test the role of sleep for selective memory consolidation in infants. Across the studies we predict that sleep will selectively support consolidation of those memories that contain cues indicating their relevance for the future. METHODS: In all three studies, learning experiences are systematically embedded in infants' naturally occurring sleep-wake patterns so that infants are randomly assigned to either sleep soon after learning (nap condition) or to stay awake for an extended period of time (wake condition). Learning experiences are characterized

by differences in the presence of cues intended to mark their relevance for the future. Specifically, we examine the effects of relevance vs. irrelevance of an action for achieving a goal (Study 1), presence vs. absence of caregiver language to mark a televised event as relevant (Study 2), and surprising vs. expected outcomes of an event (Study 3). In the first study, we used a deferred imitation paradigm to test if sleep supports 15- and 24-month-old infants (N = 96) to selectively remember goal-relevant actions, but not goal-irrelevant actions. In a second ongoing study we are examining if sleep after encoding facilitates 15- and 24-month-old infants to selectively remember televised events that their caregiver identities to them as relevant through the use of standardized language cues (final sample will be N = 102). In a third study, we will test if sleep after encoding enables 11- and 18-month-old infants to selectively retain information about events with unexpected outcomes, rather than expected outcomes. RESULTS: In Study 1, napping did unexpectedly not selectively enhance imitation of relevant actions. However, as expected, infants in the nap condition were less likely to faithfully reproduce the demonstrated action sequence including an irrelevant action. In Study 2, preliminary analyses based on a subsample suggest an age-related increase in memory performance but, as yet, no selective sleep-dependent memory consolidation of media content accompanied by caregiver language. CONCLUSIONS: The results from this body of work to date suggest that selectivity in sleep-dependent memory consolidation in infants might occur under some circumstances but that the range of cues that mark a memory as relevant needs further investigation.

Adolescent Sleep: Implications for Behavioral and Brain Function Related to Risky Decision-Making

Adriana Galvan, UCLA

Background and Aims: Sleep is a basic need that suffers during adolescence. Biological, neural and social changes at puberty impact sleep patterns in adolescents that influence learning, motivational, emotional and cognitive mechanisms. In this talk, I will discuss a series of studies showing that insufficient and irregular sleep patterns in adolescents coupled with socioeconomic factors may influence poor behavioral and health outcomes. Methods: Adolescents participated in a study examining sleep duration and quality, as measured with actigraphy, as well as sleep context. Following a 2-week period of monitoring sleep, participants completed a brain scan aimed at examining decision-making, emotion processing, and neural connectivity. Results: While poor sleep was associated with increased risky driving on the Driving Game (i.e., running more yellow lights), good sleep emerged as a novel buffer against risky driving in lower sensation-seeking adolescents. Neural activity in the ventral striatum (VS), a key node of the risk-taking circuit, also moderated the sleep-risk association: sleep was related to risk-taking in individuals demonstrating high, but not low, VS response during risky decision-making, suggesting that reward-related neural response may underly the connection between sleep and risk-taking in adolescence. Conclusions: This work highlights significant individual variation in adolescent sleep, that sleep can act as both an exacerbator and a buffer of risky behavior, and that sleep quality (in addition to sleep duration) is significantly related to behavioral performance. Taken together, these results underscore the importance of determining the relation between adolescent sleep and behavior.

FRIDAY, SEPTEMBER 9

Oral Session 5 – A network approach to the developing brain: from neurons to social networks

Behavioral synchrony across development tunes the 'social brain'

Adi Ulmer-Yaniv[1], Roy Salomon[2], Ortal Shimon-Raz[1], Shani Waidergoren[1], Ruth Feldman[1]

[1]Reichman university, [2]Bar Ilan university

BACKGROUND AND AIM: The mother-child bond is the primary context in which well-matched synchronized behavioral moments support the development of social skills, interactive reciprocity, and communication. These early experiences of synchrony are later transferred to other attachments and support mental health and social adaptation across the lifespan. Empathy, the ability to understand and identify with emotions of others, is a core skill for predicting social interaction and facilitating prosocial behavior. Animal models have shown the long-term negative effects of maternal-newborn physical separation and unpredictable caregiving on the adult brain and functioning. Extant research suggests that premature birth may be a risk factor for social development and that deficits persist throughout life. METHODS: We examined the long-term effects of premature birth and maternal-infant contact on behavioral synchrony and the neural representation of empathy. Using fMRI, we examined the neural representation of empathy to distinct emotions. RESULTS: We found that Kangaroo Care enhanced mother-child behavioral synchrony across development, which, in turn, predicted sensitivity to emotion-specific empathy in the insula and amygdala. When mothers viewed themselves interacting with their infants, neural regions of the parental caregiving network showed higher activations compared to non-social interactions. Additionally, for the synchronous interaction, the insula and amygdala showed higher temporal consistency compared to non-social interactions. These findings show how maternal brain circuits are sensitive to the synchronous component of parent-child interactions. In comparison, following mother-child dyads from infancy to adulthood and exposing the adult children to interactions with their mothers across development, we found activations in the same "parental network", indicating that this network sustains affiliations and behavioral synchrony before parenthood. Importantly, the neural activation was age invariant, despite high variability in the interactions. These findings support conceptual models, such as attachment theory, that suggest that early relationship build a stable "internal working model" of attachment. CONCLUSIONS: In combination, these studies show that behavioral synchrony is rooted in parent-child early life experiences and caregiving. Behavioral synchrony across life shapes the neural representation of empathy and increases neural

sensitivity to empathy to different affective states. The same brain regions that sustain parental attachment also sustain the neural representation of the child's attachment to the parent and this representation is consistent across time. Early attachment provides the context where brain regions are tuned towards social interactions and behavioral synchrony and these behavioral patterns, in turn, shape the neural patterns and dynamics.

Exploring multilayer network associations between brain structure and function, and the exposome in middle to late childhood

Ivan Simpson-Kent[1], Martins Gatavins[1], Anne Park[1], Ursula Tooley[1], Austin Boroshok[1], Cassidy McDermott[1], Lourdes Reyes[1], Allyson Mackey[1]

[1]*University of Pennsylvania*

BACKGROUND AND AIM: Early life stress is associated with structural and functional brain development. However, most studies have relied on a sole environmental measure (e.g., family socioeconomic status, SES). Moreover, associations are often calculated with canonical statistical analyses (e.g., correlations). In this study, we expand previous approaches by estimating network models that integrate environmental data (family SES, neighborhood SES, neighborhood crime) with structural data (cortical thickness in the 7 Yeo networks) in children (n = 75, ages 4--10 years). METHODS: We estimated partial correlations with a graphical lasso approach, which creates sparse network structures by setting weak edges to 0 to minimize false positives, and used the Walktrap algorithm to determine node communities (e.g., brain vs environment). RESULTS: Most neighborhood variables clustered together or were disconnected from the multilayer network along with perceived stress. Adverse childhood experience, neighborhood sexual assault (rape) index, and variables related to family SES (parent education and income) were assigned to the same topological community as cortical thickness. As we have seen previously (Leonard et al., DCN, 2019), age was associated with cortical thickness in the visual system, but not in other systems. Consistent with the theory that environmental associations emerge as systems develop, family income was positively associated with cortical thickness only in the visual system. Correlations among cortical thickness values in other systems followed a sensory-association gradient. CONCLUSIONS: Our results suggest that proximal, family-level measures of children's experiences are more associated with structural brain development than neighborhood measures. We next will integrate resting-state functional data to examine how environmental measures, brain structure, and functional architecture relate to each other.

Understanding and breaking legacies of stress

Brian Dias, *USC Keck School of Medicine/Children's Hospital Los Angeles*

BACKGROUND AND AIM: Intergenerational influences of salient parental environments have the potential to either shape adaptations or constrain biology in offspring. For example, exposure of parental populations to stressors exert strong influences on physiology and behavior of offspring. Despite such far-reaching impact, there are gaps in our knowledge about the mechanisms via which information about salient parental environments is passed to offspring, and the ensuing consequence(s) for offspring. METHODS: We leverage the accessibility and organizational principles of the olfactory system in mice to gain insights into cause, consequence and reversibility of intergenerational legacies of stress. Doing so allows us to follow structural (visualize olfactory neurons), functional (behavior after detecting specific odors) and genetic (examine loci encoding specific odorant receptors) influences of parental experience, across generations. RESULTS: We find that (a) tagging an odor as stressful in one generation of mice results in behavioral sensitivity to that odor in the next generation and an enhanced neuronal representation for that odor in the offspring's nervous system, (b) this intergenerational legacy of stress can be halted by exposing the parental generation to behavioral interventions, (c) RNA in sperm are carriers of such an intergenerational legacy of stress, (d) and contrary to legacies of stress solely being detrimental to offspring, we find adaptive consequences for the offspring. CONCLUSIONS: Our data suggest that the olfactory system presents a tractable biological system to study the phenomenon of legacies of stress being bequeathed across generations, that these legacies can be biological inherited yet halted by intervening in parental populations, and are accompanied by adaptive consequences for descendants.

Towards mechanistic understanding of memory development

Noa Ofen, *Wayne State University*

Episodic memory - the ability to encode, maintain and retrieve information, critical for everyday functioning undergoes robust changes between childhood to young adulthood. Advancement in the application of non-invasive neuroimaging methods fuels efforts to identify the neural correlates of memory development. Central findings using functional MRI point to the contribution of the prefrontal cortex (PFC) that appears to be more strongly recruited in adolescents and young adults compared to children and to patterns of functional interactions between the medial temporal lobes (MTL) and the PFC in supporting memory development. Non-invasive methods are limited in providing both spatial and temporal resolution to investigate neuronal activity and interregional interactions. I will present findings from recent studies using intracranial EEG that provide unique insights about age differences in information flow between the MTL and the PFC that support the formation of memory for scenes. Pediatric intracranial EEG data is an invaluable tool to investigate the neural basis of memory and to yield novel insights into how information is coordinated in the brain to produce memory.

Flux Congress Oral Presentations

Oral Session 6 - Pandemic-related stress in utero: child brain maturation and developmental outcomes

Prenatal maternal distress during the COVID-19 pandemic and associations with infant brain connectivity

Kathryn Manning[1], Xiangyu Long[1], Dana Watts[1], Lianne Tomfohr-Madsen[1], Gerald Giesbrecht[1], Catherine Lebel[1]

[1]University of Calgary

BACKGROUND AND AIM: The COVID-19 pandemic has increased symptoms of anxiety and depression in pregnant individuals, and this may impact the developing infant brain in utero. Here, we aimed to understand how prenatal distress was related to infant brain microstructure and function at 3-months of age, and whether social support moderated any associations. METHODS: We collected Patient Reported Outcomes Measurement Information System anxiety, Edinburgh Depression Scale measures from a population-based sample of pregnant individuals living in Canada (N=8602) through the Pregnancy during the COVID-19 Pandemic Study online surveys and examined any relationships with self-reported Social Support Effectiveness Questionnaire measures. For a sub-sample of participants, their infants (N=75) took part in an MRI including diffusion and functional sequences. We used general linear models to examine if prenatal maternal distress was associated with amygdala-prefrontal functional connectivity or microstructural (fractional anisotropy (FA) or mean diffusivity (MD)) measures, including the role of social support as a potential mediating factor and covariates like postnatal distress, household income and sex. RESULTS: 33.4% participants in the survey sample demonstrating clinically elevated depression symptoms and 47.1% of participants demonstrating clinically elevated anxiety symptoms. Social support measures significantly related to prenatal maternal distress ($T = -29.5$, $p < 0.001$). After image quality control, we retained 58 image datasets (38M/20F, 92+/-14 days old). Prenatal maternal distress was significantly related to FA in the right uncinate fasciculus ($T = 2.7$, $p = 0.0009$) and MD in the right amygdala-prefrontal white matter tract ($T = -2.3$, $p = 0.02$). The average amygdala functional connectivity map is shown in Figure 1A and was used to identify regions of interest. Prenatal maternal distress was significantly related to right amygdala-superior orbitofrontal cortex ($T = -2.9$, $p = 0.007$) and right amygdala-inferior frontal gyrus ($T = -3.1$, $p = 0.004$) functional connectivity, with a significant interaction between social support and prenatal distress. Post-hoc tests revealed that pregnant individuals who reported lower quality social support (< 60) had a significant negative correlation between prenatal distress and functional connectivity ($R > -0.5$, $p < 0.05$), and those who reported higher social support did not. CONCLUSIONS: Our findings suggest an association between heightened prenatal distress during the COVID-19 pandemic and the infant brain. We also found for the first time that social support acts as a possible mediator in this relationship, where only pregnant individuals who reported lower social support demonstrated a relationship between infant amygdala functional connectivity and prenatal distress. These findings provide timely evidence to inform clinical policy surrounding the care of families and highlight the importance of social support.

Brain development in infants with a family history of neurodevelopmental conditions born before versus during the pandemic

Jannath Begum-Ali[1], Rebecca Holman[1], Emily Jones[1], The STAARS Team[1]

[1]Birkbeck, University of London

BACKGROUND AND AIM: Stress during pregnancy has been hypothesised to impact prenatal and postnatal brain development. The Covid pandemic resulted in significant stress for pregnant parents and increased social isolation for young infants. Preliminary studies have reported significant impacts on infant behavioral development, but very little is known about brain development in infants exposed to the pandemic during pregnancy or early infancy. These effects may be particularly significant in infants who have risk factors for other conditions, such as those with a family history of autism or ADHD. Here, we compare pre and post pandemic brain development in infants participating in a longitudinal study of infants with a family history of neurodevelopmental conditions, a group who may be more sensitive to the effects of pandemic stress or isolation. METHODS: Infants with and without older siblings with autism and/or ADHD are tested at 5, 10 and 14 months on a comprehensive EEG and eyetracking battery, in addition to measures of adaptive function and cognitive development. Measures of parental stress and mental health, and social experiences during the pandemic were also collected. EEG recorded during naturalistic social and nonsocial videos is preprocessed and decomposed using fast fourier transform to yield metrics of alpha and theta power, and the 1/f slope of the power spectral density. Eyetracking measures of memory, attention-shifting and social interest will also be examined. Data from babies born during the pandemic will be compared to infants born prior to the pandemic using normative modelling techniques. RESULTS: Data is currently available from 47 visits from infants born during the pandemic (March 2020-December 2021), with an estimated total of 60 by the time of presentation. Behavioral questionnaires reveal that parents experienced significant challenges in caring for their children during the pandemic, and that social environments were significantly impacted. EEG and eyetracking responses will be compared to trajectories of brain development from 166 infants born prior to the pandemic. CONCLUSIONS: Data will illuminate the potential changes in infant brain development associated with pandemic impacts; the importance of careful interpretation will be discussed.

Maternal uncertainty stress as a risk factor for delayed child neurocognitive development: data from the COVID-19 pandemic

Moriah Thomason[1], Kaelyn Kohlasch[1], Brooke Kohn[1], Cassandra Hendrix[1], Amyn Majbri[1], Max Fu[1], Natalie Brito[1]

[1]New York University

Background: Uncertainty is a bioenergetically expensive affective state. Intolerance of uncertainty (IU) is an individual difference factor that reflects difficulty tolerating emotional distress in the context of uncertainty. Here, we evaluate whether a mother's IU in the peripartum period is reflected in individual differences observed in her infant's neural or cognitive development. We address this in the context of the COVID-19 pandemic, which introduced financial and health uncertainty at a broad scale. Methods: More than 1,200 mother-infant dyads comprise the NYU COVID-19 Perinatal Experiences (COPE) cohort. The subset of 140 women and infants that

completed COPE baseline and infant follow up measures are included in the present analysis. Here, we test whether increased maternal IU, measured using the Intolerance of Uncertainty Scale (Buhr and Dugas, 2002), is predictive of delayed infant brain maturation, indexed by strength of cross-hemispheric Resting-State Functional Connectivity (RSFC). We also test associations between maternal IU and infant development at 6 months, assessed using the Ages Stages Questionnaire (ASQ). Results: Decreased homotopic connectivity was observed in infant hippocampus and striatum, in mothers reporting higher IU (n=45, p <0.001, unc). Notably, this significant effect was present both in the newborn and in 12 month MRI cases, suggesting this may be a reproducible and stable effect. We also observed that maternal IU was negatively correlated with all ASQ subscales (p's < 0.05, n=103). Conclusions: Results of this study support our hypothesis that maternal IU has relevance for infant neurocognitive development. Next steps are to increase the sample size and to evaluate whether effects observed are unique to IU or reflective of a more general syndrome of stress and negative affect, and to examine effect variation by specific experiences during the pandemic. It will also be important to identify candidate biological systems that may explain these associations, including endocrine and inflammatory systems. Such work would constitute a substantial advance in our understanding of the longitudinal effects of uncertainty stress, the underlying mechanistic pathways, and the origins of child neurobehavioral disorders.

Neuroimaging Infants in Low and Middle income Settings: Challenges and Opportunities in a time of COVID

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Brain structure and function are shaped in antenatal and early in postnatal life and are influenced by infectious and chemical exposures, pre- and postnatal maternal stress, sleep and nutrition, amongst many other factors. Neurodevelopment has been linked to child brain structure, and neuroimaging may be used to characterise the impact of factors affecting brain development. Although there is limited neuroimaging research in sub-Saharan Africa, the region with the highest proportion of children at risk of developmental delay world-wide, new studies are emerging. Data from quantitative neuroimaging studies have started to describe the impact of antenatal exposure to antenatal maternal stress and mental health disorders on the very young developing brain. Traditionally, MRI is performed using systems with high main magnetic fields (1.5Tesla, T, or higher), which are costly and require significant infrastructure, including a magnetically shielded room, continuous electricity supply and specialized staff. These requirements have limited the use of MRI to only a handful of LMIC settings. Recently, Hyperfine Research, Inc. has taken advantage of technological advances and developed a low-magnetic field system (i.e., 64 milliTesla, mT) which is mobile as well as more cost-effective and accessible. Understanding pathways through which factors such as infectious and other environmental exposures influence development, accessible at scale, has global importance. In this session, we will showcase novel neuroimaging work in infants in the context of the COVID pandemic, the challenges and opportunities, in a high-risk environment.

Oral Session 7 - Approaches and Considerations for Measuring Brain Maturation

Identifying the midpoint of cortical thinning using nonlinear mixed models

Delia Fuhrmann, *King's College London*

BACKGROUND AND AIM: Over recent years, a wealth of complex longitudinal data has been accrued in cognitive developmental neuroscience. These data present opportunities for describing developmental processes such as brain maturation at the level of the individual. Several such developmental processes are s-shaped, making nonlinear functions plausible. Using the example of cortical thinning in adolescence, we here show how high-level temporal data, combined with nonlinear modelling, can be used to capture brain maturation in adolescence and extract indices of brain maturation that can be compared across individuals and brain regions. METHODS: Using high-temporal resolution neuroimaging data of up to 12-waves in the HUBU cohort (N = 90, aged 7-21 years) we investigate changes in apparent cortical thickness between childhood and adulthood. Fitting a four-parameter logistic nonlinear mixed-effects mixed model, we quantified the characteristic, s-shaped, trajectory of cortical thinning in adolescence. This function has parameters that control its shape and provide a new index of brain maturation: the midpoint of cortical thinning (MCT). RESULTS: We show that on average, cortical thickness was high and stable in childhood at initial levels of 2.95 mm, followed by decreases in early adolescence, that accelerate and culminate at 14.72 years, the MCT. The reduction in cortical thickness then decelerates to level off in late adolescence with a lower limit of apparent cortical thickness of 2.54 mm. Developmental patterns differed between cortical regions, with frontal regions such as the rostral middle frontal gyrus showing the earliest MCTs, around 14 years, and cingulate regions, showing some of the latest MCTs, around 17 years. We found evidence for pronounced individual differences, with MCTs differing by several years between individuals. CONCLUSIONS: These results show that, given suitable data and models, cortical maturation can be quantified with precision and compared between individuals and brain regions.

Brain age prediction as a method for measuring brain maturation

Dani Beck[1], Ann-Marie de Lange[2], Ole Andreassen[1], Lars Westlye[1]

[1]*University of Oslo,* [2]*University of Lausanne*

Despite magnetic resonance imaging (MRI) retaining the ability to provide detailed information on the human brain, this information is multi-dimensional and complex. Machine learning tools have helped reduce this complexity by enabling us to build predictive statistical models of the brain based on MRI datasets. Brain age prediction - the estimation of the 'biological' age of a brain based on neuroimaging data - is an example of such a tool, helping reduce brain characteristics to a summary score, thereby providing a proxy for normative brain health and integrity. Predicting the age of a brain, and subsequently looking at the disparity between predicted

and chronological age (brain age gap [BAG]), can be used to assess deviations from expected age trajectories related to a range of life events and health and lifestyle factors, in addition to identifying important individualised markers of brain integrity that may reveal risk of neurological and/or neuropsychiatric disorders. Higher brain age has been associated with poorer cognitive functioning in healthy individuals and people with cognitive impairment and dementia. Moreover, larger BAGs have been reported among patients with psychiatric and neurological disorders, including schizophrenia, bipolar disorder, multiple sclerosis, and depression. Estimations of brain age thus have clinical implications, and identifying factors associated with higher BAG and accelerated ageing represents a window of opportunity for detecting targets for intervention strategies. However, the majority of existing studies are cross-sectional in design and have focused on adult samples. Existing neurodevelopmental applications of brain age have predominantly investigated associations with psychopathology. Of these, reports have varied in directionality, with studies reporting higher symptom burden to be associated with both lower estimated brain age and higher BAGs. In other cohorts, no association has also been reported. In this talk, I will focus on a general overview of brain age prediction as a reliable biomarker of ageing and proxy for brain health and integrity. This will be covered using several papers part of the wealth of existing literature utilising brain age prediction, including studies where we 1) mapped normative ageing trajectories in 18-95-year-olds, 2) investigated deviations from normative ageing trajectories associated with health and lifestyle factors, and various psychiatric disorders. Further, I will discuss brain age prediction's potential for detecting both normal and abnormal brain maturation in early childhood and adolescence, including challenges for its application in neurodevelopmental research.

Towards a more inclusive and equitable developmental cognitive neuroscience

Jazlyn Nketia[1], Dima Amso[2], Natalie Brito[3]
[1]Brown University, [2]Columbia University, [3]New York University

Brain and cognitive development is a burgeoning area of scientific inquiry, with tremendous potential to better the lives of children. Large scale longitudinal neuroimaging studies offer opportunities for significant scientific advances in our understanding of developing brain structure and function. This talk will focus on the scientific potential of the HEALthy Brain and Cognitive Development (HBCD) Study, highlighting what questions these data can and what they cannot answer about child development, as well as considerations for the developmental community at large. Specifically, we caution against the misuse of these and other data for advancing de-contextualized and scientifically questionable narratives about the development of children from marginalized communities. We will focus on building and organizing a framework for interpreting data through the lens of sampling, cultural context, measurement, and developmental science theory. Our goal is to thoughtfully offer the scientific community opportunities to use the large scale and collaborative nature of HBCD to collectively revise practices in developmental science that to-date have not carefully considered their own role in perpetuating narratives that support systemic injustice.

Applying Precision Functional Mapping Techniques to Quantify Age-Related Changes in Network Topography

Robert Hermosillo[1], Lucille Moore[1], Sanju Koirala[1], Eric Feczko[1], Anita Randolph[1], Óscar Miranda-Domínguez[1], Damien Fair[1]
[1]University of Minnesota

While the cortical functional topography of neural networks are somewhat similar between healthy individuals, recent evidence suggests that precise topography is highly variable across participants. Precision functional mapping techniques have improved our understanding of the spatial and organizational uniqueness of the human brain by capturing an individual's unique network map. These individual differences between maps are often lost in population studies due to group averaging of functional connectivity which presumes an identical spatial arrangement of networks on the cortex across the population. Accordingly, any age-related changes in network topography are misrepresented in studies that use a group-averaged parcellation. Few studies have examined age-related changes in measures of topography such as network surface area, compactness, and fragmentedness. Using resting-state fMRI data from 6,106 9-10 year-olds from the ABCD study, we generated single subject precision networks with a supervised (template matching) and unsupervised community detection (Infomap). In addition, we implemented this procedure in infants (N=40, mean age 23.9 days, 23 female). We demonstrate not only a difference in relative proportion of the cerebral cortex devoted to each network, but also decreased fragmentedness, and increased compactness during infancy. Infants also demonstrated reduced topographic variability compared to adolescents. We suggest that these features of neonatal network morphology may represent the physiologically uncertain nature of each brain region's potential network during development. Lastly, using probabilistic maps from an adult cohort (N=69, 20.2 yrs), we quantify the spatial changes in network probabilistic maps in order to characterize group-level topography changes into adulthood. Taken together, these results showcase how precision functional mapping provides an important tool for understanding how the shape of brain maps evolve with age.

Oral Session 8 - Evidence for and against a stable middle childhood

The age of reason: Functional brain network development during childhood

Ursula Tooley[1], Anne Park[2], Julia Leonard[3], Austin Boroshok[2], Cassidy McDermott[2], M Dylan Tisdall[2], Dani Bassett[2], Allyson Mackey[2]
[1]Washington University in St. Louis, [2]University of Pennsylvania, [3]Yale University

Anthropologists have called the transition from early to middle childhood the "age of reason," when children across cultures become more independent. This developmental period is characterized by dramatic changes in the mind and brain, however, little is known about the large-scale intrinsic cortical network changes that occur at this age due to methodological challenges in scanning young children. Here, we overcome this barrier by using sophisticated acquisition and analysis tools to investigate functional network

development in children between the ages of 4 and 10 years (n = 92). At multiple spatial scales, age was positively associated with brain network segregation. At the system level, age was associated with segregation of systems involved in attention from those involved in abstract cognition, and with integration among attentional and perceptual systems. Associations between age and functional connectivity were most pronounced in visual and medial prefrontal cortex, at the two ends of a gradient from perceptual, externally oriented cortex to abstract, internally oriented cortex. These findings suggest that both ends of the sensory-association gradient may develop early, in contrast to the classical theories that cortical maturation proceeds from back to front, with sensory areas developing first and association areas developing last. More mature patterns of brain network architecture, controlling for age, were associated with better visuospatial reasoning abilities. Our results suggest that as cortical architecture becomes more specialized, children become more able to reason about the world and their place in it. These results open new directions for research into how brains reorganize to support rapid gains in cognitive and socioemotional skills as children reach the age of reason.

Maturation of cortical microstructure and relations to cognition and parental socioeconomic status in childhood and adolescence: Two T1w/T2w ratio studies

Linn Norbom[1], Jaroslav Rokicki, Dag Alnæs[1], Jamie Hanson, Dennis van der Meer, Lia Ferschmann, Ingrid Agartz, Ole Andreassen, Lars Westlye, Christian Tamnes

[1]*University of Oslo*

BACKGROUND AND AIM: The restructuring and optimization of the cerebral cortex from early childhood and through adolescence is an essential feature of human brain development, underlying immense cognitive improvements. Beyond established morphometric cortical assessments, the signal intensity measure T1w/T2w ratio quantifies partly separate biological processes, and has been used as a proxy for intracortical myelination. The T1w/T2w ratio might thus offer a microstructural correlate and inform models of typical neurocognitive development and developmental psychopathology. METHODS: In my talk I will focus on two papers, where we in both computed vertex-wise T1w/T2w ratio across the cortical surface in ≈600 youths aged 3-21 years provided by the Pediatric Imaging, Neurocognition, and Genetics (PING) study. In the first study we tested for associations with individual differences in age, sex, and both general and specific cognitive abilities. In the second, we computed a parental socioeconomic status (SES) score from family income, parental education and parental occupation, before assessing relations to T1w/T2w ratio. RESULTS: We found a near global linear age-related increase in T1w/T2w ratio across the brain surface, with a general posterior to anterior increasing gradient in association strength. Moreover, results indicated that boys in late adolescence had relatively higher T1w/T2w ratio as compared to girls in the frontal lobe and parts of parietal lobe. Surprisingly we found that across individuals and after controlling for age, T1w/T2w ratio was negatively associated with general and several specific cognitive abilities, mainly within anterior cortical regions. Similarly, we found that youths from lower SES families have higher ratio in widespread frontal, temporal, medial parietal and occipital regions. Effect sizes for our SES finding were small, but larger than for conventional morphometric properties i.e., cortical surface area and thickness, which were not significantly associated with parental SES in our study. CONCLUSION: Our findings indicate age-related differences in T1w/T2w ratio throughout childhood, adolescence, and young adulthood, in line with the known protracted myelination of the cortex. Moreover, our findings support T1w/T2w ratio as sensitive marker for cognition and as a fruitful measure for further exploring the association between parental SES and child brain development.

The dynamic interplay between white matter plasticity and learning throughout childhood

Jason Yeatman, *Stanford University*

Educational interventions offer a powerful tool to understand how changing a child's environment sculpts the development of specialized brain circuits for new cognitive functions such as literacy. I will first present a series of intervention studies that reveal a surprising capacity for rapid and widespread plasticity in the brain's white matter connections. Next, I will ask whether there is a sensitive period for experience-dependent white matter plasticity and literacy learning. Finally, I will discuss new approaches that combine longitudinal diffusion MRI data with biophysical modeling to better understand the neurobiological underpinnings of rapid white matter plasticity. In conclusion, we find that educational interventions induce large-scale changes in the white matter throughout childhood, though these changes may reflect proliferation of glial cells as opposed to myelination per se.

Region-specific myelin changes along the mouse lifespan

Ragnhildur Karadottir[1], Sebastian Timmler[1], Claudia Pama[1], Cagla Kaya[1], Hendrik Miessner[1], Rana Eser[1]

[1]*University of Cambridge*

Myelination is a protracted and plastic process, ongoing throughout adulthood, and myelin is emerging as a potential modulator of neuronal networks. New evidence from animal and human studies have highlighted myelin as a major player in shaping behaviour and learning. To better understand how myelin develops in different brain regions during life, we analysed the myelin content in corpus callosum, motor cortex and somatosensory cortex of mice at key timepoints throughout life. We found that myelination progresses differently in different brain regions and cortical layers, indicating that they might suppress, permit or promote myelination at different points in time. We found that variability of myelin sheath length increases with age, indicating an age-dependent shift in sheath length. Using conditional reporter lines, we compared sheaths that were added during development (opalin-cre) versus sheaths added during adulthood (PDGFRA-cre). Indeed, in somatosensory cortex, later-formed sheaths are shorter than early-formed, indicating functional significance beyond maintenance, e.g., in circuit modulation or learning and memory. Complementary to human data, we show that region-specific myelination is not a feature of primate brains and can be further studied in mouse models. Furthermore, this longitudinal view on myelination serves as an important benchmark for research on regulators of myelin plasticity (e.g., environmental factors, diet, genes or compounds), myelination deficiencies, degeneration and potential treatments.

Flux Congress Poster Author Index

Poster Session 1
Wednesday, September 7 5:45pm - 7:15pm

Poster Session 2
Thursday, September 8 9:30am - 11:00am

Poster Session 3
Virtual only – no assigned time

Poster board numbers are indicated as follows: Poster Session – Theme – Board Number (Example: 2-A-10)

Poster presenters will be at their poster booth during their assigned poster time but the posters are available to review throughout the congress.

Themes

A Executive Functioning
B Socioemotional Processing
C Learning
D Rewards/Motivation
E Education
F Memory
G Environment (Stress, SES)
H Brain Structure
I Networks
J Mechanisms (hormones, neurotransmitters, physiology)
K Methods
L Clinical Populations
M Attention
N Language
O Brain Function
P Brain Connectivity
Q Other

For a complete list of poster abstracts please visit **www.fluxsociety.org**

Author	Poster No.
A. G. Lum, Jarrad	2-C-273
Aatsinki, Anna	1-B-45
Abaryan, Zvart	3-P-416
Abramson, Lior	2-B-262
Achterberg, Michelle	1-B-63, 2-B-244
Adams, Faith	2-D-290
Adebimpe, Azeez	1-G-15
Adhami, Nikki	2-B-260, 2-G-312
Adibpour, Parvaneh	1-I-162
Adolphs, Ralph	1-L-187
Agartz, Ingrid	1-M-194
Ahmad, Jumana	2-K-367
Ahmed, Saz P	1-B-60
Aïte, Ania	2-A-222, 2-A-227
Akbar, Saima	1-B-53
Aksnes, Eira	1-B-55
Alam, Md Ashad	2-D-290
Albouy, Philippe	2-M-384
Alexander-Bloch, Aaron F	1-P-207, 2-A-214, 2-H-332, 2-H-332
Alexopoulos, Dimitrios	1-G-119, 2-K-368
Allard, Tamara L	1-F-117
Allen, Nicholas B	1-B-43, 2-G-317, 2-L-382
Alnæs, Dag	1-B-55, 1-M-194
Alschuler, Vanessa R	1-A-22, 1-D-104
Altikulaç, Sibel	2-D-422
Alvarez, Gabriella M	2-A-234
Alves Filho, José Osmar	2-L-377
Ambrosi, Claudia	3-G-415
Ammar, Zeena	2-H-340
Anandarajah, Hari	3-I-351
Anderson, Tess	2-L-211
Anderson, Vicki	2-A-221
Andreassen, Ole A	1-B-55, 1-M-194
Andrews, Jack L	1-B-43, 1-F-112
Angerer, Monika	1-C-92
Anquetil, Marie	1-M-192, 2-L-371, 2-Q-399
Antezana, Ligia D	1-A-28, 1-A-28
Anzelini, Michelle	2-B-268
Aponik-Gremillion, Lyndsey	1-H-155
Apter, Alan	1-A-41
Aragón-Daud, Agustina	3-M-404, 3-M-408
Arnaud, Cachia	2-G-326
Arora, Jyoti	1-G-120
Arora, Manish	1-G-140, 1-H-153
Ashourvan, Arian	1-K-177
Assaf, Roxane	1-L-186, 2-H-336
Astle, Duncan E	1-G-129, 2-G-315
Auerbach, Randy P	1-J-173
Aupperle, Robin L	1-G-137
Austin, Christine	1-G-140, 1-H-153
Auzias, Guillaume	2-H-341
Aviv, Elizabeth C	1-A-33, 2-G-310, 2-J-359
Azarmehr, Rabeeh	1-I-167
Aziz-Zadeh, Lisa	3-B-58
Bachrach, Rachel L	3-D-101
Bagonis, Maria	2-H-348
Baker, Amanda E	1-L-189
Baldassarri, Alessandro	1-B-48
Baller, Erica	1-G-14
Ballestero-Duperón, M. Ángeles	1-A-35
Bambardekar, Sydney	1-C-82
Banchik, Megan	2-N-389, 3-L-375
Barack, David	2-C-276
Baram, Tallie Z	1-I-163, 2-D-288
Barazzani, Daniel	1-A-41
Barbour, Dennis L	3-I-351
Barbu, Miruna C	1-G-127
Barbu-Roth, Marianne	1-I-162
Barch, Deanna M	1-G-119, 1-G-120, 1-G-130, 1-G-141, 1-L-19, 2-K-369, 3-L-401
Barendse, Marjolein	1-B-62, 1-B-65, 1-H-160, 1-J-171, 2-J-360
Barhoun, Pam	2-H-333
Barhoun, Pamela	2-C-273, 2-H-333
Barr, Jesse	2-B-266
Barrett, Ann-Marie	2-H-339, 2-H-339
Barzilay, Ran	2-A-214
Basgoze, Zeynep	1-G-126
Baskin-Sommers, Arielle	2-L-381, 3-A-236
Bassett, Dani S	1-A-25, 1-G-15
Batalle, Dafnis	1-H-151
Bates, Kathryn	1-H-156, 1-P-206, 2-G-307
Bateup, Helen	2-A-235
Bauer, Ilena	1-B-44
Baum, Graham L	1-A-25, 2-A-229
Bautista, Luis	1-G-140, 1-H-153
Bayat, Mohammadreza	1-A-29, 1-A-30, 1-A-38
Beare, Richard	3-L-372
Becht, Andrik I	1-B-69, 2-B-267
Beck, Ann-Kathrin	2-F-295
Beck, Dani	1-B-55, 1-M-194
Becker, Hannah C	2-L-378
Begum-Ali, Jannath	1-A-34
Beijers, Roseriet	2-G-306
Bein, Oded	2-F-297
Bekinschtein, Pedro	1-C-95

Flux Congress Poster Author Index

Flux Congress Poster Author Index

Flux Congress Poster Author Index

Flux Congress Poster Author Index

Flux Congress Poster Author Index

Flux Congress Poster Author Index

Flux Congress Poster Author Index

Flux Congress Poster Author Index

Flux Congress Poster Author Index

Flux Congress Poster Author Index

Flux Congress Poster Author Index

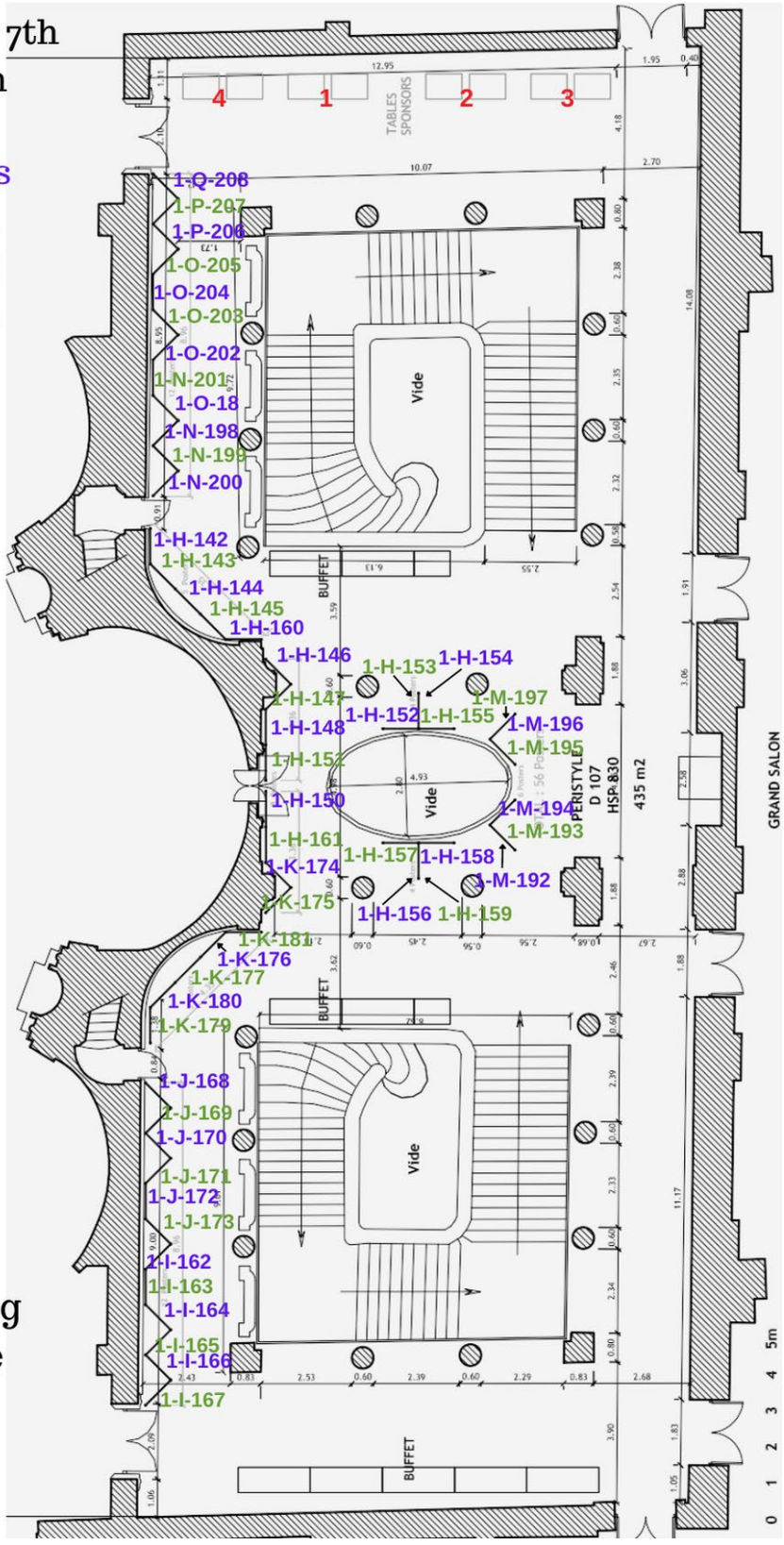
Flux Congress Poster Author Index

Flux Congress Floor Plan at the Sorbonne

2nd Floor Peristyle (Poster Session #1)-
between Grand Salon & Grand Amphitheatre

Wednesday, Sept 7th
5:45pm - 7:15pm

EVEN Numbers
- 5:45 - 6:30pm
ODD Numbers
- 6:30 - 7:15pm



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Flux Congress Floor Plan at the Sorbonne

2nd Floor Grand Salon

Poster Locations (Poster Session #1)

Wednesday, Sept 7th

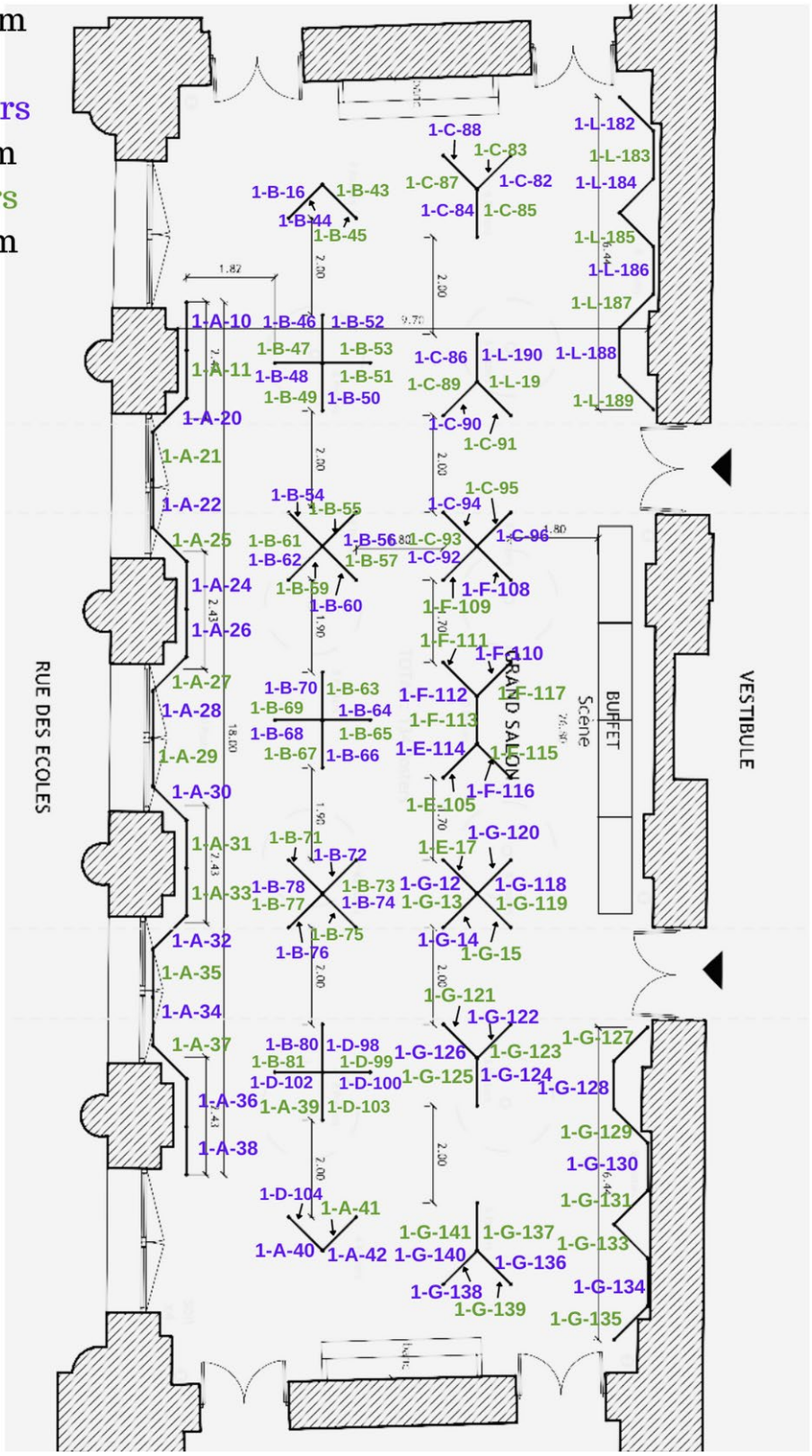
5:45pm - 7:15pm

EVEN Numbers

- 5:45 - 6:30pm

ODD Numbers

- 6:30 - 7:15pm



POSTER SESSION 1
Wednesday, September 7, 2022
5:45pm - 7:15pm

A – Executive functioning

1-A-10 Probing striatal tissue iron as a sensitive index of brain maturation and function in infancy

Laura Cabral[1], Finn Calabro[1], Jerod Rasmussen[2], Will Foran[1], Ashok Panigrahy[1], Bea Luna[1]

[1]University of Pittsburgh, [2]University of California, Irvine

1-A-11 Do neuroplasticity and genetic factors contribute to cognitive training? An imaging-genetics study in healthy children.

Iris Menu[1], Qin He[1], Julie Victor[1], Gabriela Rezende[1], Lorna Le Stanc[1], Julie Vidal[1], Catherine Oppenheim[1], Edouard Duchesnay[1], Boris Chaumette[1], Olivier Houdé[2], Grégoire Borst[2], Arnaud Cachia[1]

[1]Université Paris Cité, [2]Institut Universitaire de France

1-A-20 Lateralization of inhibition network from children to adolescent: cognitive training in children as a developmental speed-up?

Sixtine Omont[1], Iris Menu[1], Emilie Salvia[1], Arnaud Cachia[1], Grégoire Borst[1]

[1]Université Paris Cité

1-A-21 Child inhibitory control in toddlerhood: Associations with child interaction quality and preliminary neural structural correlates

Pauliina Juntunen[1], Riikka Korja[1], Eeva Eskola[1], Hetti Hakanen[1], Eeva Holmberg[1], Anniina Karonen[1], Marika Otranen[1], David Bridgett[2], Elmo Pulli[1], Jetro Tuulari[1], Hasse Karlsson[1], Linnea Karlsson[1], Saara Nolvi[1]

[1]University of Turku, [2]Northern Illinois University

1-A-22 Testing the dual-systems model of adolescent development through behavioral measures and white matter microstructure

Vanessa Alschuler[1], Paul Collins[1], Samuel Klein[1], Monica Luciana[1]

[1]University of Minnesota

1-A-24 The behavioral relevance of functional network connectivity during working memory in children

Mackenzie Mitchell[1], Tehila Nugiel[1], Eric Feczko[2], Damien Fair[2], Jessica Cohen[1]

[1]University of North Carolina at Chapel Hill, [2]University of Minnesota

1-A-25 Network fidelity improves with brain network maturation and executive function

Dale Zhou[1], Christopher Lynn[2], Zaixu Cui[1], Rastko Ciric[3], Graham Baum[4], Tyler Moore[1], David Roalf[1], John Detre[1], Ruben Gur[1], Raquel Gur[1], Theodore Satterthwaite[1], Dani Bassett[1]

[1]University of Pennsylvania, [2]Princeton University, [3]Stanford University, [4]Harvard University

1-A-26 Variation in striatal dopamine-related neurophysiology supports age-related changes in glutamate through human adolescence

Ashley Parr[1], Maria Perica[1], Finnegan Calabro[1], Brenden Tervo-Clemmens[2], Will Foran[1], Victor Yushmanov[1], Hoby Hetherington[3], Beatriz Luna[1]

[1]University of Pittsburgh, [2]Harvard University, [3]University of Missouri Columbia

1-A-27 Executive functioning and emotion regulation among young children with Attention-Deficit/ Hyperactivity Disorder (ADHD): The role of cardiac autonomic balance

Melissa Hernandez[1], Madeline Curzon[1], Jamie Spiegel[1], Carlos Sanchez[2], Anthony Dick[1], Paulo Graziano[1]

[1]Florida International University, [2]Texas Tech University

1-A-28 The predictive role of neural markers of impulse control on nonsuicidal self-injury in youth

Ligia Antezana[1], John Richey[1]

[1]Virginia Tech

1-A-29 Using profiles of emotion regulation and executive functioning to predict growth in academics across time in children with and without ADHD

Jamie Spiegel[1], Melissa Hernandez[1], Madeline Curzon[1], Mohammadreza Bayat[1], Anthony Dick[1], Paulo Graziano[1]

[1]Florida International University

1-A-30 No evidence for risk for Parkinson's Disease in young children with attention deficit hyperactivity disorder (ADHD): An examination using Neurite Orientation Dispersion and Density Imaging (NODDI)

Anthony Dick[1], Mohammadreza Bayat[1], Melissa Hernandez[1], Madeline Curzon[1], Anthony Sanchez[1], Nathalia Garcia[1], Wilfredo Renderos[1], Amanda Ramos[1], Larissa Ma[1], Chelsea Thompson[1], Juan Londoño[1], Paulo Graziano[1]

[1]Florida International University

1-A-31 Relations between executive functioning and internalizing symptoms vary as a function of frontoparietal-amygdala resting state connectivity

Kelley Gunther[1], Daniel Petrie[2], Charles Geier[2], Koraly Pérez-Edgar[2]

[1]Yale University, [2]The Pennsylvania State University

1-A-32 Inhibitory control and the neural correlates of science and maths counterintuitive reasoning in primary school children

Lucy Palmer[1], Iroise Dumontheil[1], Hannah Wilkinson[1], Dilini Sumanapala[1], Emily Farran[2], Michael Thomas[1], Denis Mareschal[1]

[1]Birkbeck, University of London, [2]University of Surrey

1-A-33 How do new fathers regulate in the presence of aversive infant stimuli?

Yael Waizman[1], Ellen Herschel[1], Pia Sellery[1], Sofia Cardenas[1], Elizabeth Aviv[1], Bailey Graves[1], Jonas Kaplan[1], Darby Saxbe[1]

[1]University of Southern California

1-A-34 Infant Excitation/Inhibition Balance Interacts with Executive Attention to Predict Autistic Traits in Childhood

Virginia Carter Leno[1], Jannath Begum-Ali[2], Amy Goodwin[2], Luke Mason[2], Greg Pasco[1], Andrew Pickles[1], Shruti Garg[3], Jonathan Green[3], Tony Charman[1], Mark Johnson[4], Emily Jones[2]

[1]King's College London, [2]Birkbeck, University of London, [3]University of Manchester, [4]University of Cambridge

1-A-35 Oscillatory brain activity predicts the development of inhibitory control from infancy to toddlerhood

Josué Rico-Picó[1], M. Carmen García de Soria[1], Ángela Conejero[1], Sebastián Moyano[1], Ángela Hoyo[1], M. Ángeles Ballestero-Duperón[1], Karla Holmböe[2], M. Rosario Rueda[1]

[1]University of Granada, [2]University of Bristol

1-A-36 Validating a virtual reality inhibitory control paradigm for capturing naturalistic neurocognitive developmental differences in children and adults using fNIRS

Larisa Dinu[1], Paola Pinti[2], Ilias Tachtsidis[3], Tim Smith[2]

[1]Birkbeck/University College London, [2]Birkbeck, [3]University College London

1-A-37 Training-induced plasticity of frontoparietal activation and connectivity during task switching in children

Sina Schwarze[1], Neda Khosravani[1], Silvia Bunge[2], Ulman Lindenberger[1], Yana Fandakova[1]

[1]Max Planck Institute for Human Development, [2]University of California, Berkeley

1-A-38 Neurobiological differences in executive function in preschool-aged typically-developing children and children with ADHD assessed by a continuous performance task

Mohammadreza Bayat[1], Paulo Graziano[1], Melissa Hernandez[1], Madeline Curzon[1], Anthony Sanchez[1], Nathalia Garcia[1], Wilfredo Renderos[1], Amanda Ramos[1], Larissa Ma[1], Chelsea Thompson[1], Juan Londoño[1], Anthony Dick[1]

[1]Florida International University

1-A-39 Neural processes supporting the development of inhibitory control in early childhood: A fMRI study

Lucy Lurie[1], Sarah Furlong[1], Kathryn Garrisi[1], Meredith Gruhn[1], Laura Machlin[1], Amanda Mitchell[2], Summer Motton[1], Maresa Taté[1], Katie McLaughlin[3], Sheridan Margaret[1]

[1]University of North Carolina at Chapel Hill, [2]Columbia University, [3]Harvard University

1-A-40 Development of Hippocampal-vmPFC functional connectivity at 7T is associated with increased use of model-based learning strategies

Finnegan Calabro[1], Brenden Tervo-Clemmens[2], Vanessa Brown[1], Vishnu Murty[3], Beatriz Luna[1]

[1]University of Pittsburgh, [2]Harvard University, [3]Temple University

1-A-41 Parent-child relationship is associated with unique neural synchrony while listening to stories: An fMRI study

Nir Habouba[1], Raya Meri[1], Alan Apter[2], Dror Kraus[2], Tamar Steinberg[2], Rupa Radhakrishnan[3], Daniel Barazzani[4], Rola Farah[1], Ronen Talmon[1], Tzipi Horowitz-Kraus[1]

[1]Technion- Israel Institute of Technology, [2]Schneider Children's Medical Center of Israel, [3]Indiana University School of Medicine, [4]Tel Aviv University

1-A-42 Exploring associations between socioeconomic status and executive functioning in UK adolescents: A cross-sectional and longitudinal analysis of data from the Study of Cognition, Adolescents and Mobile Phones (SCAMP)

Roisin Perry[1], Elizabeth Booth[2], Michael Thomas[2], Andrew Tolmie[1], Martin Röösli[3], Mireille Toledano[4], Iroise Dumontheil[1]

[1]University College London, [2]Birkbeck, University of London, [3]Swiss Tropical- and Public Health Institute/University of Basel, [4]Imperial College London

B – Socioemotional processing

1-B-16 The changing role of testosterone and prefrontal emotion control: From adolescence to young adulthood

Anna Tyborowska[1], Inge Volman[2], Hannah Niermann[1], Anna Dapprich[1], Sanny Smeekens[3], Antonius Cillessen[1], Ivan Toni[1], Karin Roelofs[1]

[1]Radboud University Nijmegen, [2]University of Oxford, [3]Pro Persona

1-B-43 Neurobiological reactivity to a self-referential, social-evaluative stressor in adolescent girls and LGBTIQA+ youth: The SOS task in the Transitions in Adolescent Girls (TAG) and Diverse Genders and Sexualities (DGS) Studies

Michelle Byrne[1], Nicholas Allen[2], Jack Andrews[3], Samantha Chavez[2], Theresa Cheng[4], Sarah Donaldson[2], John Flournoy[5], Tori Gaunson[1], Grace Mackie[1], Lefteris Palamazoglou[1], Hannah Savage[6], Roberto Tamayo[1], William Warton[1], Jennifer Pfeifer[2]

[1]Monash University, [2]University of Oregon, [3]University of New South Wales, Sydney, [4]Massachusetts General Hospital, [5]Harvard University, [6]Radboud University Nijmegen

1-B-44 Impact of maternal emotional state during pregnancy on fetal heart-rate variability

Lorenzo Semeia[1], Ilena Bauer[1], Julia Hartkopf[1], Nora Schaal[2], Hubert Preissl[1]

[1]University of Tuebingen, [2]Heinrich-Heine-University

1-B-45 Infant gut microbiota composition associates with negative reactivity and fear in sex-specific manner

Venla Huovinen, Anna Aatsinki, Eeva-Leena Kataja[1], Eveliina Munukka, Anniina Keskitalo, Santosh Lamicchane, Peppi Raunioniemi, David Bridgett[2], Leo Lahti, Siobhain O'Mahony, Alex Dickens, Riikka Korja[1], Hasse Karlsson[1], Saara Nolvi[1], Linnea Karlsson[1]

[1]University of Turku, [2]Northern Illinois University

1-B-46 The Intestinal Microbiome, the Japanese Diet, and Physical and Psychological Resilience in Postpartum Women in Japan

Michiko Matsunaga[1], Mariko Takeuchi[2], Satoshi Watanabe[3], Aya Takeda[3], Takefumi Kikusui[4], Kazutaka Mogi[4], Miho Nagasawa[4], Keisuke Hagihara[2], Masako Myowa[1]

[1]Kyoto University, [2]Osaka University, [3]Cykinso, Inc., [4]Azabu University

1-B-47 Effectiveness of online emotion recognition training in adolescents with Autistic Spectrum Disorder: Pilot results

Lorena Leuenberger[1], Evelyn Herbrecht[1], Christina Stadler[1], Isabel Dziobek[2], Gudrun Seeger-Schneider[3], Bettina Jenny[3], Susanne Walitza[3], Ana Cubillo[1]

[1]University Psychiatric Clinics Basel, [2]Humboldt Universitaet Berlin, [3]Psychiatric University Clinic Zurich

1-B-48 Shared and disorder-specific neural correlates of emotion and cognitive processing deficits in adolescents with conduct disorder and adolescents with autism

Antonia Tkalcec[1], Vithusan Somasundaram[1], Alessandro Baldassarri[1], Nora Raschle[2], Evelyn Herbrecht[1], Christina Stadler[1], Ana Cubillo[1]

[1]University Psychiatric Clinics Basel, [2]University of Zurich

1-B-49 Llearning about safety: Neural correlates of conditioned inhibition in typical development

Paola Odriozola[1], Sahana Kribakaran[1], Stephanie DeCross[2], Emily Cohodes[1], Jason Haberman[1], Katie McLaughlin[2], Dylan Gee[1]

[1]Yale University, [2]Harvard University

1-B-50 Anticipation and receipt of rewards and losses for self and friends in adolescents with attention-deficit/ hyperactivity disorder

Iris Koele[1], Jorien van Hoorn[1], Tycho Dekkers[2], Carlos Zevallos[1], Yehuda Pollak[3], Arne Popma[2], Hilde Huizenga[2], Berna Güroglu[1], Anna van Duijvenvoorde[1]

[1]Leiden University, [2]University of Amsterdam, [3]Hebrew University of Jerusalem

1-B-51 Self-reported social enjoyment predicts neural response to social reward for autistic and neurotypical youth

Kathryn McNaughton[1], Laura Kirby[1], Katherine Warnell[2], Junaid Merchant[1], Dustin Moraczewski[3], Heather Yarger[1], Elizabeth Redcay[1]

[1]University of Maryland, [2]Texas State University, [3]National Institute of Mental Health

1-B-52 Testing the association between pediatric anxiety and amygdala-prefrontal functional connectivity during emotion processing

Dana Glenn[1], Kalina Michalska[1]

[1]University of California, Riverside

1-B-53 Anxiety severity is associated with restless rapid eye movement sleep in early adolescence

Aaron Mattfeld[1], M. Vanessa Rivera N.[1], Nathan Sollenberger[1], Adam Kimbler[1], Logan Cummings[1], Saima Akbar[1], Liga Eihentale[1], Dana McMakin[1]

[1]Florida International University

1-B-54 Social rejection sensitivity predicts social media use

Susanne Schweizer[1], Savannah Minihan[1], Amy Orben[2], Annabel Songco[1], Elaine Fox[3], Cecile Ladouceur[4], Louise Mewton[1], Michelle Moulds[1], Jennifer Pfeifer[5], Anne-Laura van Harmelen[6]

[1]University of New South Wales, Sydney, [2]University of Cambridge, [3]University of Adelaide, [4]University of Pittsburgh, [5]University of Oregon, [6]Leiden University

1-B-55 The role of functional emotion circuits in psychopathology in youth

Valerie Karl[1], Haakon Engen[1], Dani Beck[2], Linn Norbom[2], Lia Ferschmann[1], Eira Aksnes[2], Rikka Kjelkenes[1], Ole Andreassen[3], Dag Alnæs[3], Cecile Ladouceur[4], Lars Westlye[1], Christian Tamnes[1]

[1]University of Oslo, [2]Diakonhjemmet Hospital, [3]Oslo University Hospital, [4]University of Pittsburgh

1-B-56 The effect of relative pubertal timing on depression and social anxiety in adolescent boys and girls

Rebecca van Rijn[1], Nikki Lee[1], Miriam Hollarek[1], Hester Sijtsma[1], Reubs Walsh[1], Mariet van Buuren[1], Barbara Braams[1], Lydia Krabbendam[1]

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1-B-57 Emotion recognition and social anxiety in children with Autism Spectrum Disorders and Specific Learning Disorders: differences in social rejection and performance fears.

Rachele Lievore[1], Silvia Lanfranchi[1], Irene Mammarella[1]

[1]University of Padova (Italy)

1-B-59 Neural correlates of affective reactivity and risk for depression in the ABCD study

Maria Granros[1], Michelle Sheena[1], James Glazer[1], Katie Burkhouse[1]

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1-B-60 Investigating the role of social- and self-cognitive processes in the relationship between puberty and mental health in British girls

Saz Ahmed[1], Blanca Piera Pi-Sunyer[2], Madeleine Moses-Payne[3], Anne-Lise Goddings[3], Willem Kuyken[4], J. Marc Williams[4], Tim Dalgleish[2], Sarah-Jayne Blakemore[2]

[1]Wellcome, [2]University of Cambridge, [3]University College London, [4]University of Oxford

1-B-61 Unfolding the negative expectancy bias in social anxiety: A neurocomputational assessment of social feedback-based learning from adolescence into young adulthood

Elise Kortink[1], Selin Topel[1], Ili Ma[1], Melle van der Molen[1]

[1]Leiden University

1-B-62 A longitudinal model of self-evaluation and depression in adolescent girls

Victoria Guazzelli Williamson[1], Samantha Chavez[1], Marjolein Barendse[1], Jennifer Pfeifer[1]

[1]University of Oregon

1-B-63 Differential susceptibility of associations between parenting and the development of social behavioral control: a longitudinal fMRI design

Simone Dobbelaar[1], Michelle Achterberg[2], Anna van Duijvenvoorde[1], Marinus van IJzendoorn[2], Eveline Crone[2]

[1]Leiden University, [2]Erasmus University Rotterdam

1-B-64 Can inter-individual differences in facial-emotion recognition speed and neural facial-emotion processing in late childhood be explained by age, sex and social competence?

Elizabeth Buimer[1], Rachel Brouwer[2], Carlijn van den Boomen[1], Pascal Pas[1], Hilleke Hulshoff Pol[1]

[1]Utrecht University, [2]Vrije Universiteit Amsterdam

1-B-65 Understanding the contribution of sex and pubertal development to frontal-limbic mediated implicit cognitive control of emotion in the transition to adolescence

Marjolein Barendse[1], Sandra Taylor[1], Jeffrey Fine[1], Johnna Swartz[1], Elizabeth Shirtcliff[1], Amanda Guyer[1], Laura Tully[1]

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1-B-66 Developmental changes in adolescent girls' medial frontal gyrus social reward responsivity and depressive symptoms are linked with social media addiction 2 years later

Jessica Flannery[1], Seh-Joo Kwon[1], Nathan Jorgensen[1], Mitch Prinstein[1], Kristen Lindquist[1], Eva Telzer[1]

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1-B-67 Behavioral and neural responses to processing facial expressions and their links with peer victimization

Sanne Kellij[1], Gerine Lodder[2], René Veenstra[3], Berna Güroğlu[4]

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1-B-68 Neural mechanisms of negative memory bias for social interactions in young adults with childhood maltreatment

Camille Johnston[1], David Smith[1], Chelsea Helion[1], Vishnu Murty[1], Johanna Jarcho[1]

[1]Temple University

1-B-69 Adolescence as a period of increased self-conflict?

Renske van der Cruijsen[1], Andrik Becht[2], Eveline Crone[1]

[1]Erasmus University Rotterdam, [2]Utrecht University

1-B-70 Neurological and behavioral mechanisms of Black youths racial discrimination-related risk for internalizing problems in the Adolescent Brain Cognitive Development (ABCD) study.

Jason Bendezu[1], Andrea Wiglesworth[1], Bonnie Klimes-Dougan[1], Monica Luciana[1]

[1]University of Minnesota

1-B-71 The causal impact of parental emotion socialization on adolescent emotion regulation neurobiology and internalizing outcomes

Sylvia Lin[1], Elena Pozzi[1], Christiane Kehoe[1], Sarah Whittle[1]

[1]University of Melbourne

1-B-72 The role of neural reactivity to affective images in predicting adolescents social network centrality

Adrienne Bonar[1], Mallory Feldman[1], Jimmy Capella[1], Elizabeth Nick[1], Nathan Field[1], Tehya Drummond[1], Mitchell Prinstein[1], Eva Telzer[1], Kristen Lindquist[1]

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1-B-73 Neural mechanisms of social rejection elicited aggression in adolescence

Megan Quarmley[1], Tessa Clarkson[1], Camille Johnston[1], R James Blair[2], Stephen Leff[3], Vishnu Murty[1], Johanna Jarcho[1]

[1]Temple University, [2]BoysTown National Research Hospital, [3]Children's Hospital of Philadelphia

1-B-74 Intergenerational similarity of functional brain correlates during mentalizing in mother-child dyads

Réka Borbás[1], Plamina Dimanova[1], Amira Beya[1], Nora Raschle[1]

[1]University of Zurich

1-B-75 Exploring associations between emotionally valenced parent statements and parent-adolescent dyadic coactivation during an fMRI hyperscanning conversation paradigm

Erin Ratliff[1], Masaya Misaki[2], Kara Kerr[1], Kelly Cosgrove[3], W. Kyle Simmons[1], Amanda Sheffield Morris[1]

[1]Oklahoma State University, [2]Laureate Institute for Brain Research, [3]The University of Tulsa

1-B-76 Empathy development and associated neural processing in adolescence

Maira Karan[1], Lee Lazar[1], Naomi Eisenberger[1], Adriana Galván[1], Andrew Fuligni[1]

[1]University of California, Los Angeles

1-B-77 Relation of experience and EEG connectivity during action observation in infancy

Haerin Chung[1], Marc Colomer[1], Virginia Salo[2], Marlene Meyer[3], Nathan Fox[4], Amanda Woodward[1]

[1]University of Chicago, [2]Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), [3]Radboud University Nijmegen, [4]University of Maryland

1-B-78 Aggression in toddlers is related to inter-individual variation in prefrontal-limbic circuitry prior to birth

Cassandra Hendrix[1], Lanxin Ji[1], Denise Werchan[1], Amyn Majbri[1], Christopher Trentacosta[2], Alexandra Burt[3], Moriah Thomason[1]

[1]New York University Langone Health, [2]Wayne State University, [3]Michigan State University

1-B-80 Characterizing fronto-amygdala circuitry development during adolescence: implications for internalizing symptoms

Amar Ojha[1], Finnegan Calabro[1], William Foran[1], Maria Perica[1], Beatriz Luna[1]

[1]University of Pittsburgh

1-B-81 Does how you self-reflect on your well-being predict your actual well-being?

Danielle Cosme[1], Arian Mobasser[2], Garrett Ross[3], Emily Falk[1], Jennifer Pfeifer[2]

[1]University of Pennsylvania, [2]University of Oregon, [3]University of Florida

C – Learning

1-C-82 How adolescents use conceptual knowledge to learn and infer value

Catherine Insel[1], Natalie Biderman[1], Zarrar Shehzad[1], Sydney Bambardekar[1], Lauren Conner[1], Daphna Shohamy[1]

[1]Columbia University

1-C-83 You do not have to become fearless, in order to fear less The FearLess study: Unravelling the neural correlates of social extinction learning in adolescents

Lineke Ouwerkerk[1], Marieke Bos[2], Armita Golkar[3]

[1]PhD student at Stockholm University / Leiden University, [2]Leiden University, [3]Stockholm University

1-C-84 The effects of social isolation on fear learning in adolescents

Emily Towner[1], Livia Tomova[1], Kirsten Thomas[1], Sarah-Jayne Blakemore[1]

[1]University of Cambridge

1-C-85 Investigating the effect of online social evaluative threat on well-being in young people

Karina Grunewald[1], Jessica Deng[1], Jasmin Wertz[2], Susanne Schweizer[1]

[1]University of New South Wales, Sydney, [2]Duke University

1-C-86 Neural effects of stakes and cognitive load on learning across adolescent development

Anne-Wil Kramer[1], Lydia Krabbendam[2], Hilde Huizenga[1], Anna van Duijvenvoorde[3]

[1]University of Amsterdam, [2]Vrije Universiteit Amsterdam, [3]Leiden University

1-C-87 Social rewards and social media engagement of teenagers: a computational account

Ana Pinho[1], Björn Lindström[2], Wouter van den Bos[1]

[1]University of Amsterdam, [2]Vrije Universiteit Amsterdam

1-C-88 How do adolescents use choice to learn about themselves?

Madeleine Moses-Payne[1], Douglas Lee[2], Jonathan Roiser[1]

[1]University College London, [2]National Research Council of Italy

1-C-89 Williams syndrome: social rewards promote optimal decision making

Johan Lundin Kleberg[1], Ann Nordgren[2], Claes Strannegård[3]

[1]Karolinska Institute, [2]University of Gothenburg, [3]Chalmers University

1-C-90 Reading instruction causes changes in category-selective visual cortex

Jason Yeatman[1], Sendy Caffarra[2], Suzanne Ender, Liesbeth Gijbels[1], Emily Kubota[1], Patricia Kuhl[1], Megumi Takada[1], Samu Taulu, Daniel McCloy

[1]Stanford University, [2]Stanford University and University of Modena and Reggio Emilia

1-C-91 White matter and reading: Longitudinal changes, not individual differences, predict reading development

Ethan Roy[1], Adam Richie-Halford[1], John Kruper[2], Manjari Narayan[1], David Bloom[2], Timothy Brown[3], Terry Jernigan[3], Bruce McCandliss[1], Ariel Rokem[2], Jason Yeatman[1]

[1]Stanford University, [2]University of Washington, [3]University of California, San Diego

1-C-92 Newborns' sleep during auditory stimulation: The role of perinatal memory and stimulus familiarity

Manuel Schabus[1], Adelheid Lang[1], Monika Angerer[1], Peter Ott[1], Renata DelGiudice[1]

[1]University of Salzburg

1-C-93 Statistical learning in the child brain

Tess Allegra Forest[1], Margaret Schlichting[1], Amy Finn[1]

[1]University of Toronto

1-C-94 Surprise, surprise! Will generating predictions enhance surprise and declarative learning in adolescents and adults?

Dietsje Jolles[1], Vibeke Nielsen[1], Linda Van Leijenhorst[1], Elena Galeano-Keiner[2], Garvin Brod[2]

[1]Leiden University, [2]DIPF | Leibniz Institute for Research and Information in Education

1-C-95 Development and variability of fronto-limbic connections: Impact of vulnerability conditions on habit formation.

Laura Alethia de la Fuente[1], Shane McKeon[2], Finn Calabro[2], Will Foran[2], Pedro Bekinschtein[1], Beatriz Luna[2]

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1-C-96 Social influence on adolescent exploration in uncertain environments

Andrea Gradassi[1], Wouter van den Bos[1], Simon Ciranka[2]

[1]University of Amsterdam, [2]Max Planck Institute for Human Development

D – Rewards/Motivation

1-D-98 Neural reward responsiveness moderates the relationship between internalizing symptoms and problematic media use in early adolescence

Lucía Magis-Weinberg[1], Daniela Muñoz Lopez[1], Elizabeth McNeilly[2]

[1]University of Washington, [2]University of Oregon

1-D-99 Representational similarity of decision making for self and peer in nucleus accumbens predicts adolescents risk taking and susceptibility to peer influence

Junqiang Dai[1], Seh-Joo Kwon[1], Mitchell Prinstein[1], Kristen Lindquist[1], Eva Telzer[1]

[1]University of North Carolina at Chapel Hill

1-D-100 Do neurodevelopmental trajectories of emotional reactivity across adolescence predict wellbeing during adulthood?

Kayla Green[1], Suzanne van de Groep[1], Renske van der Cruijsen[1], Eveline Crone[1]

[1]Erasmus University Rotterdam

1-D-102 Associations of distinct dimensions of childhood adversity with neurobehavioral indices of reward processing and longitudinal psychopathology

Steven Kasparek[1], Aria Gastón-Panthaki[1], Lindsay Hanford[1], Liliana Lengua[2], Margaret Sheridan[3], Katie McLaughlin[1]

[1]Harvard University, [2]University of Washington, Seattle, [3]University of North Carolina at Chapel Hill

1-D-103 Self-report, physiological and behavioral measures of reward processing and their relation to brain functional connectivity in adults and adolescents

Zsófia Karlócai[1], Ebba Widegren[1], Johan Kleberg[2], Johan Vegelius[1], Barry Karlsson[1], David Fällmar[1], Johanna Mårtensson[1], Karin Brocki[1], Malin Gingell[1], Andreas Frick[1]

[1]Uppsala University, [2]Karolinska Institute & Stockholm Health Care Services

1-D-104 Development of corticostriatal connectivity during adolescence supports a dorsal-ventral gradient of the human striatum

Samuel Klein[1], Paul Collins[1], Vanessa Alschuler[1], Peter Grund[1], Monica Luciana[1]

[1]University of Minnesota

E – Education

1-E-17 The relation between kindergartener's home math environment and neural representations of number

Andrew Lynn[1], Gavin Price[1]

[1]Vanderbilt University

1-E-105 Development of Fake news detection during adolescence

Marine Lemaire[1], Mathieu Cassotti[1], Gregoire Borst[1]

[1]Université Paris Cité

1-E-106 Predicting Developmental Consequences: a new methodology for policy-focused research

Ethan McCormick[1]

[1]Radboud UMC

F – Memory

1-F-108 Relationships between apparent cortical thickness and working memory during development and across the lifespan - effects of genetics and socioeconomic status

Stine Krogsrud[1]

[1]University of Oslo

1-F-109 Representational similarity in the toddler hippocampus

Lindsey Mooney[1], Alireza Kazemi[1], Simona Ghetti[1]

[1]UC Davis

1-F-110 Reliability of cortical signal processing is driven by glutamate maturation, and supports working memory development

Shane McKeon[1], Finnegan Calabro[1], Maria Perica[1], Beatriz Luna[1]

[1]University of Pittsburgh

1-F-111 Can we decode school-aged children's working memory contents? Our proof-of-concept study suggests so.

Nora Turoman[1], Prosper Fiave[1], Clélia Zahnd[1], Megan DeBettencourt[2], Evie Vergauwe[1]

[1]University of Geneva, [2]University of Chicago

1-F-112 Age related differences in the effect of depressive symptoms on working memory for social and non-social relationships

Jack Andrews[1], Karina Grunewald[1], Susanne Schweizer[1]

[1]University of New South Wales, Sydney

1-F-113 Functional interactions during consolidation of memories in newborns

Silvia Benavides-Varela[1], Roma Siugzdaite[2]

[1]University of Padova, [2]Department of Experimental Psychology, University of Ghent; MRC Cognition and Brain Sciences Unit, C

1-F-114 The Temple Tour: Neural coding of episodic and spatial representations in children and adults

Kim Nguyen[1], Elliott Johnson[1], Iva Brunec[1], Ingrid Olson[1], Nora Newcombe[1]

[1]Temple University

1-F-115 Developing a child-friendly paradigm to explore neural mechanisms underlying pattern separation

Jade Dunstan[1], Angela Ji[1], Tracy Riggins[1]

[1]University of Maryland

1-F-116 To remember and reinstate: How neural reinstatement of memory representations differentially evolves over time in children and young adults

Iryna Schommartz[1], Philip Lembcke[2], Angela Kaindl[2], Claudia Buss[3], Yee Lee Shing[1]

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1-F-117 Is hippocampal connectivity related to nap status?

Tamara Allard[1], Morgan Botdorf[2], Jade Dunstan[1], Sanna Lokhandwala[3], Rebbeca Spencer[3], Tracy Riggins[1]

[1]University of Maryland, [2]University of Pennsylvania, [3]University of Massachusetts Amherst

G – Environment (Stress, SES)

1-G-12 Maternal neglect is associated with delayed development of functional connectivity in late childhood

Elena Pozzi[1], Divyangana Rakesh[1], Zeus Gracia-Tabuenca[2], Sarah Whittle[1]

[1]University of Melbourne, [2]McGill University

1-G-13 Early childhood household instability, adolescent structural neural network architecture, and young adulthood depression: a 21-year longitudinal study

Felicia Hardi[1], Leigh Goetschius[2], Scott Tillem[1], Vonnie McLoyd[1], Nestor Lopez-Duran[1], Colter Mitchell[1], Luke Hyde[1], Christopher Monk[1]

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1-G-14 The development of iron status during youth: implications for adolescent neurocognition

Bart Larsen[1], Erica Baller[1], Michael Georgieff[2], Monica Calkins[1], Nina Laney[1], Tyler Moore[1], David Roalf[1], Kosha Ruparel[1], Ruben Gur[1], Raquel Gur[1], Theodore Satterthwaite[1]

[1]University of Pennsylvania, [2]University of Minnesota

1-G-15 Spontaneous activity development unfolds along the sensorimotor-association axis through adolescence

Valerie Sydnor[1], Bart Larsen[1], Azeez Adebimpe[1], Maxwell Bertolero[1], Matthew Cieslak[1], Sydney Covitz[1], Yong Fan[1], Raquel Gur[1], Ruben Gur[1], David Roalf[1], Russell Shinohara[1], Dani Bassett[1], Theodore Satterthwaite[1]

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1-G-118 Childhood emotional abuse is associated with delayed brain age in depressed adolescents

Vanessa Lopez[1], Jonas Miller[2], Ian Gotlib[2], Tiffany Ho[3]

[1]University College London, [2]Stanford University, [3]University of California, San Francisco

1-G-119 Adversity before birth alters but does not accelerate infant functional networks

Ashley Nielsen[1], Regina Triplett[1], Lourdes Bernardez[1], Rachel Lean[1], Sydney Kaplan[1], Dimitrios Alexopoulos[1], Jeanette Kenley[1], Dominique Meyer[1], Tara Smyser[1], Joshua Shimony[1], Barbara Warner[1], Deanna Barch[1], Joan Luby[1], Cynthia Rogers[1], Chad Sylvester[1], Christopher Smyser[1]

[1]Washington University in St. Louis

1-G-120 Prenatal maternal cortisol predicts network-level functional connectivity in neonatal offspring

Max Herzberg[1], Muriah Wheelock[1], Ronald McCarthy[1], Sydney Kaplan[1], Jyoti Arora[1], J. Philip Miller[1], Tara Smyser[1], Erik Herzog[1], Sarah England[1], Peinan Zhao[1], Cynthia Rogers[1], Barbara Warner[1], Christopher Smyser[1], Joan Luby[1], Deanna Barch[1]

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1-G-121 Associations between functional brain network organization in youth and multi-domain resilience to neighborhood disadvantage

Jessica Bezek[1], Scott Tillem[1], Gabriela Suarez[1], S. Alex Burt[2], Alexandra Vazquez[2], Kelly Klump[2], Luke Hyde[1]

[1]University of Michigan, [2]Michigan State University

1-G-122 The developmental effects of neighborhood disadvantage on functional brain network organization in youth

Cleanthis Michael[1], Scott Tillem[1], S. Alexandra Burt[2], Kelly Klump[2], Luke Hyde[1]

[1]University of Michigan, [2]Michigan State University

1-G-123 Is pubertal status in the early teens a risk factor for later internalizing symptoms in LatinX populations?

Ailan Kalledat[1], Alexis Silvera[1], Stephen Rauch[1], Katherine Kogut[1], Kim Harley[1], Linda Wilbrecht[1], Brenda Eskenazi[1], Julianna Deardorff[1]

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1-G-124 Neighborhood disadvantage moderates the association of systemic inflammation with neural activation during receipt of reward in adolescents

Justin Yuan[1], Saché Coury[1], Tiffany Ho[2], Jessica Buthmann[1], Rajpreet Chahal[1], Jonas Miller[1], Ian Gotlib[1]

[1]Stanford University, [2]University of California, San Francisco

1-G-125 Neural correlates of cortisol regulation: Examining associations among markers of stress reactivity in adolescent females

Meredith Gruhn[1], Adam Miller[1], Matteo Giletta[2], Paul Hastings[3], Matthew Nock[4], Karen Rudolph[5], George Slavich[6], Mitchell Prinstein[1], Margaret Sheridan[1]

[1]University of North Carolina at Chapel Hill, [2]Ghent University, [3]University of California, Davis, [4]Harvard University, [5]University of Illinois Urbana-Champaign, [6]University of California, Los Angeles

1-G-126 Neural and neuroendocrine predictors of maladaptive emotion regulation in adolescents during the Covid-19 Pandemic

Katherine Carosella[1], Salahudeen Mizra[1], Zeynep Basgoze[1], Kathryn Cullen[1], Bonnie Klimes-Dougan[1]

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1-G-127 A data-driven, biopsychosocial approach towards an environmental risk score (ERS) of depression in late childhood and early adolescence

Eileen Xu[1], Miruna Barbu[1], Stephen Lawrie[1], Heather Whalley[1]

[1]The University of Edinburgh

1-G-128 Impact of Socio-Economic Status on electrophysiological response to acoustic stimulus change in infants

Annika Wienke[1], Julia Ruge[1], Birgit Mathes[1]

[1]University of Bremen

1-G-129 Specific cognitive skills are weakly associated with socioeconomic deprivation: Evidence from three large-scale cohorts

Giacomo Bignardi[1], Silvana Mareva[1], Duncan Astle[1]

[1]University of Cambridge

1-G-130 Poverty, sleep, and childhood brain function

Scott Marek[1], Meghan Donohue[1], Caroline Hoyniak[1], Ashley Sanders[1], Brenden Tervo-Clemmens[2], Nico Dosenbach[1], Joan Luby[1], Deanna Barch[1]

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1-G-131 Socioeconomic factors and resting state functional connectivity in children and adolescents

Jordan Strack[1], Melissa Hansen[1], Michael Thomas[1], Katrina Simon[2], Emily Merz[1]

[1]Colorado State University, [2]Columbia University

1-G-133 What's the harm?: Examining the role of police contact and amygdala function among Black adolescents

Deaweh Benson[1], Vonnie McLoyd[1], Jared Burton[1], Nestor Lopez-Duran[1], Colter Mitchell[1], Christopher Monk[1], Luke Hyde[1]

[1]University of Michigan

1-G-134 The importance of friendships in reducing brain responses to stress in adolescents exposed to childhood adversity: a preregistered systematic review

Maximilian Scheuplein[1], Anne-Laura van Harmelen[1]

[1]Leiden University

1-G-135 Exposure to community violence as a mechanism linking socioeconomic disadvantage and neural responses to reward

Heidi Westerman[1], S. Alexandra Burt[2], Leah Richmond-Rakerd[1], Gabriela Suarez[1], Kelly Klump[2], Luke Hyde[1]

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1-G-136 Early stressful experiences are associated with reduced neural responses to naturalistic socioemotional content in children

Anne Park[1], Hilary Richardson[2], Ursula Tooley[1], Cassidy McDermott[1], Austin Boroshok[1], Adrian Ke[1], Julia Leonard[3], M. Dylan Tisdall[1], Kirby Deater-Deckard[4], J. Christopher Edgar[5], Allyson Mackey[1]

[1]University of Pennsylvania, [2]University of Edinburgh, [3]Yale University, [4]University of Massachusetts Amherst, [5]Children's Hospital of Philadelphia

1-G-137 Impact of rs-fMRI motion thresholding on sociodemographic characteristics and functional connectivity in the ABCD Study®

Kelly Cosgrove[1], Tianna Truby[2], Timothy McDermott[1], Evan White[3], Carlos Cardenas-Iniguez[4], Martin Paulus[3], Wesley Thompson[2], Robin Aupperle[3]

[1]The University of Tulsa, [2]University of California San Diego, [3]Laureate Institute for Brain Research, [4]University of Southern California

1-G-138 Neurobiological and early environmental correlates of locus of control and post-traumatic stress symptom profiles: a latent profile analysis

Jordan Foster[1], Emily Cohodes[1], Sarah McCauley[1], Jasmyne Pierre[1], Paola Odriozola[1], Jason Haberman[1], Sadie Zacharek[1], Sahana Kribakaran[1], H.R. Hodges[1], Camila Caballero[1], Bailey Holt-Gosselin[1], Isabel Santiuste[1], Dylan Gee[1]

[1]Yale University

1-G-139 Identifying developmental sensitive windows related to dimensions of childhood adversity exposure and cortico-limbic circuitry

Alexis Brieant[1], Lucinda Sisk[1], Emily Cohodes[1], Jordan Foster[1], Bailey Holt-Gosselin[1], Sarah McCauley[1], Jasmyne Pierre[1], Paola Odriozola[1], Jason Haberman[1], Sahana Kribakaran[1], Sadie Zacharek[1], H.R. Hodges[1], Camila Caballero[1], Dylan Gee[1]

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1-G-140 Resting-state functional connectivity patterns are associated with metal mixture exposure in young adolescents

Megan Horton[1], Elza Rechtman[1], Christine Austin[1], Paul Curtin[1], Azzurra Invernizzi[1], Esmeralda Navarro[1], Demetrios Papazaharias[1], Libni Torres-Olascoaga[2], Luis Bautista[2], Sandra Martínez-Medina[3], Rafael Lara-Estrada[4], Erika Proal[2], Vivianca Villicana[2], Cheuk Tang[1]

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1-G-141 Associations between socioeconomic disadvantage, trajectories of default mode network resting state functional connectivity, familial cohesion and ADHD

Nourhan Elsayed[1], Deanna Barch[1]

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H – Brain Structure

1-H-142 Sex-specific, age-varying impacts of puberty on cortical thickness and associations with adolescent suicidal ideation

Andrea Wiglesworth[1], Meng Xu[1], Laura Padilla[1], Katherine Carosella[1], Aidan Neher[1], Bryon Mueller[1], Monica Luciana[1], Bonnie Klimes-Dougan[1], Kathryn Cullen[1], Mark Fiecas[1]

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1-H-143 Structural brain correlates of non-verbal intelligence in 5-year-old children: findings from the FinnBrain Birth Cohort study

Elmo Pulli[1], Saara Nolvi[1], Eeva Eskola[1], Elisabeth Nordenswan[1], Eeva Holmberg[1], Anni Copeland[1], Venla Kumpulainen[1], Eero Silver[1], Harri Merisaari[1], Jani Saunavaara[1], Riitta Parkkola[1], Tuire Lähdesmäki[1], Ekaterina Saukko[1], Eeva-Leena Kataja[1], Riikka Korja[1]

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1-H-144 The developing prenatal brain, family history of psychiatric illness, and postnatal functional outcome

Sonja de Zwarte[1], Ruud van Sloun[2], Roel de Heus[3], Chantal Kemner[4], Mireille Bekker[1], Hilleke Hulshoff Pol[5]

[1]University Medical Center Utrecht, [2]Eindhoven University of Technology, [3]St Antonius Hospital, [4]Helmholtz Institute, Utrecht University, [5]Utrecht University

1-H-145 Childhood white matter morphology mediates the prospective relationship between motor function and internalizing symptoms among youth with and without ADHD

Ian Fuelscher[1], Christian Hyde[1], Keri Rosch[2], Deana Crocetti[2], Philip Duvall[2], Mervyn Singh[1], Karen Seymour[3], Stewart Mostofsky[2]

[1]Deakin University, [2]Kennedy Krieger Institute, [3]National Institutes of Health

1-H-146 Early amygdala volume trajectories are associated with elevations in school-age anxiety in a sample enriched for familial likelihood for ASD

Carolyn Lasch[1], Catherine Burrows[1], Julia Gross[2], Jessica Girault[2], Jason Wolff[1], Meghan Swanson[3], Chimei Lee[1], Tanya St. John[4], Juhi Padney[5], Stephen Dager[4], Martin Styner[6], Kelly Botteron[7], Annette Estes[4], Heather Hazlett[2], John Pruett Jr.[7], Robert Schultz[8], Lonnie Zwaigenbaum[7], Joseph Piven[2], Jed T Elison[1], Mark Shen[2]

[1]University of Minnesota, [2]University of North Carolina, Chapel Hill, [3]University of Texas, Dallas, [4]University of Washington, [5]University of Pennsylvania, [6]University of North Carolina at Chapel Hill, [7]Washington University, [8]University of Alberta

1-H-147 Mood fluctuations during development and their relation to sleep and brain development

Yara Toenders[1], Renske van der Cruijsen[2], Jana Runze[3], Suzanne van de Groep[2], Lara Wierenga[1], Eveline Crone[2]

[1]Leiden University, [2]Erasmus University Rotterdam, [3]VU University Amsterdam

1-H-148 Assessing the validity of a novel cortical marker of delay discounting in two independent samples of early adolescents: Links with externalizing pathology

Nadia Bounoua[1], Leah Church[1], Melanie Matyi[1], Jeremy Rudoler[1], Kaleigh Wieand[1], Jeffrey Spielberg[1]

[1]University of Delaware

1-H-150 Structural brain correlates of resilience among youth exposed to neighborhood disadvantage

Gabriela Suarez[1], S. Alexandra Burt[2], Heidi Westerman[1], Jessica Bezek[1], Kelly Klump[2], Luke Hyde[1]

[1]University of Michigan, [2]Michigan State University

1-H-151 Neonatal cerebellar brain volume differences in subgroups of very preterm children with elevated autism traits

Laila Hadaya[1], Lucy Vanes[1], Vyacheslav Karolis[1], Dana Kanel[1], Marguerite Leoni[1], Francesca Happe[1], A David Edwards[1], Serena J Counsell[1], Dafnis Batalle[1], Chiara Nosarti[1]

[1]King's College London

1-H-152 Tertiary sulcal morphology and cognition in autism spectrum disorder

Javier Ramos Benitez[1], Sandhya Kannan[1], William Hastings[2], Benjamin Parker[2], Ethan Willbrand[2], Kevin Weiner[2]

[1]Stanford University, [2]University of California, Berkeley

1-H-153 Early life metal exposure is associated with reduced fractional anisotropy in the corpus callosum in children

Elza Rechtman[1], Christine Austin[1], Paul Curtin[1], Azzurra Invernizzi[1], Demetrios Papazaharias[1], Michelle Rodriguez[1], Libni Torres-Olascoaga[2], Luis Bautista[2], Sandra Martínez-Medina[3], Rafael Lara-Estrada[4], Erika Proal[2], Viviana Villicaña-Muñoz[2], Chris Gennings

[1]Icahn School of Medicine at Mount Sinai, [2]National Institute of Public Health, [3]National Institute of Perinatology, [4]National Research Laboratory in Imaging and Medical Instrumentation

1-H-154 Independent contributions of polygenic risk scores for externalizing behaviors and brain structures to parent-reported externalizing behavior in late childhood

Jalmar Teeuw[1], Nina Mota[2], Marieke Klein[3], Neeltje Blankenstein[4], Jorim Tielbeek[4], Lucres Jansen[4], Barbara Franke[2], Hilleke Hulshoff Pol[5]

[1]University Medical Center Utrecht, [2]Radboud University Medical Center, [3]University of California, San Diego, [4]University of Amsterdam, [5]Utrecht University

1-H-155 A new tripartite landmark in posterior cingulate cortex: implications for brain network development

Ethan Willbrand[1], Benjamin Parker[1], Willa Voorhies[1], Jacob Miller[1], Ilwoo Lyu[2], Tyler Hallock[1], Lyndsey Aponik-Gremillion[3], Silvia Bunge[1], Brett Foster[4], Kevin Weiner[1]

[1]University of California, Berkeley, [2]Ulsan National Institute of Science and Technology, [3]Baylor College of Medicine, [4]Perelman School of Medicine

1-H-156 Testing developmental cascades: the relationship between pubertal timing, social support, and cortical development in early adolescence

Kathryn Bates[1], Ayla Pollmann[1], Rogier Kievit[2], Delia Fuhrmann[1]

[1]King's College London, [2]Radboud University Nijmegen

1-H-157 Dissociable and shared associations between puberty, body mass index and brain microstructure

Diliana Pecheva[1], Clare Palmer[1], Megan Herting[2], Donald Hagler[1], John Iversen[1], Terry Jernigan[1], Anders Dale[1]

[1]University of California, San Diego, [2]University of Southern California

1-H-158 Left hippocampus changes among first-time fathers are associated with family adversity, hormones, and adjustment to parenthood

Darby Saxbe[1], Magdalena Martinez Garcia[2], Sofia Cardenas[1], Yael Waizman[1]

[1]University of Southern California, [2]Hospital Gregorio Marañón

1-H-159 Associations Between Cortical Myelination and Chronological Age in Early Childhood

Austin Boroshok[1], Cassidy McDermott[1], Anne Park[1], Ursula Tooley[1], Martins Gatavins[1], Allyson Mackey[1]

[1]University of Pennsylvania

1-H-160 Puberty and Structural Brain Development: It's About Time

Clare F. McCann[1,2], Kathryn L. Mills[1,3], Marjolein E.A. Barendse[1,4], Jennifer H. Pfeifer[1]

[1]University of Oregon, [2]University of California, Los Angeles, [3]University of Oslo, [4]University of California, Davis

1-H-161 Linked development of diffusion and NODDI white matter measures throughout early childhood

Kathryn Manning[1], Jess Reynolds[2], Bryce Geeraert[1], Alberto Llera[3], Catherine Lebel[1]

[1]University of Calgary, [2]Telethon Kids Institute, [3]Donders Institute for Brain, Cognition and Behaviour

I – Networks

1-I-162 Investigating the temporal dynamics and maturation of the brain resting-state functional networks in premature infants using EEG

Parvaneh Adibpour[1], Laurie Devisscher[2], Hala Nasser[3], Amandine Pedoux[4], Anna Kaminska[5], Elodie Hinnekens[6], Sara Neumane[1], Aline Lefebvre[4], Lucie Hertz-Pannier[1], Catherine Delanoë[3], Richard Delorme[4], Marianne Barbu-Roth[7], Valérie Biran[8], Jessica Dubois[1]

[1]NeuroDiderot - Neurospin, [2]NeuroDiderot - Neurospin - University of Paris, [3]Robert-Debré Hospital- Assistance Publique-Hôpitaux de Paris, [4]Robert Debré Hospital, Assistance Publique-Hôpitaux de Paris, [5]Necker Hospital, Assistance Publique-Hôpitaux de Par

1-I-163 Functional connectivity of the paraventricular nucleus of the thalamus in children and adolescents

Bianca Leonard[1], Sarah Kark[1], Lea Stith[1], Steven Small[2], Curt Sandman[1], Elysia Davis[3], Laura Glynn[4], Tallie Baram[1], Michael Yassa[1]

[1]University of California, Irvine, [2]University of Texas at Dallas, [3]University of Denver, [4]Chapman University

1-I-164 Developmental trajectories of functional connectivity reveal distinct patterns of age effects across the first two years of life

Janelle Liu, Haitao Chen[1], Emil Cornea, Rebecca Stephens[2], John Gilmore[2], Wei Gao[1]

[1]Cedars Sinai Medical Center, [2]University of North Carolina at Chapel Hill

1-I-165 Progressive Voxelwise Homotopic Connectivity (VMHC) from childhood to adulthood: age-related asymmetry in Resting-State fMRI

Livio Tarchi[1], Andreas Frick[1], Stefano Damiani[2], Paolo La Torraca Vittori[2], Giovanni Castellini[3], Pierluigi Politi[2], Paolo Fusar-Poli[2], Valdo Ricca[3]

[1]Uppsala University, [2]University of Pavia, [3]University of Florence

1-I-166 Altered developmental trajectory of dorsal DMN connectivity in youths with subclinical depression and PTSD symptoms

Jake Son[1], Mikki Schantell[1], Brittany Taylor[1], Giorgia Picci[1], Yu-Ping Wang[2], Julia Stephen[3], Vince Calhoun[4], Gaelle Doucet[1], Tony Wilson[1]

[1]Boys Town Institute for Human Neuroscience, [2]Tulane University, [3]Mind Research Network, [4]Georgia State University

1-I-167 Latent typologies of sleep patterns: associations with resting-state functional connectivity, internalizing and externalizing problems

Linhao Zhang[1], Cory Carvalho[1], Rabeeh Azarmehr[1], Zehua Cui[1], Cullin Howard[1], Assaf Oshri[1]

[1]University of Georgia

J – Mechanisms (hormones, neurotransmitters, physiology)

1-J-168 The Maternal Tryptophan-Kynurenine Pathway Mediates the Association between Maternal Adiposity and Child Risk for Psychopathology

Elinor Sullivan[1], Joel Nigg[1], Sarah Karalunas[2], Hanna Gustafsson[1]

[1]Oregon Health & Science University, [2]Purdue University

1-J-169 Longitudinal changes in Glutamate and GABA balance through adolescence

Maria Perica[1], Finnegan Calabro[1], Will Foran[1], Victor Yushmanov[1], Hoby Hetherington[2], Beatriz Luna[1]

[1]University of Pittsburgh, [2]University of Missouri Columbia

1-J-170 The role of anterior cingulate GABA and glutamate concentrations in emotion regulation in adolescents and adults

Ebba Widegren[1], Jan Weis[1], Matilda Frick[1], Johanna Hoppe[1], David Fällmar[1], Johanna Mårtensson[1], Karin Brocki[1], Malin Gingnell[1], Andreas Frick[1]

[1]Uppsala University

1-J-171 Navigating the Multiverse in Longitudal Neuroscience

Marjolein Barendse[1], Michelle Byrne[2], Danielle Cosme[3], John Flournoy[4], Jennifer Pfeifer[5]

[1]University of California, Davis, [2]Monash University, [3]University of Pennsylvania, [4]Harvard University, [5]University of Oregon

1-J-172 Hormonal Development in Rhesus Macaques Can Inform Human Models of Pubertal Effects on Neurocognitive Development

Orma Ravindranath, Finnegan Calabro[1], William Foran[1], Junda Zhu[2], Elizabeth Shirtcliff[3], Christos Constantinidis[2], Beatriz Luna[1]

[1]University of Pittsburgh, [2]Vanderbilt University, [3]University of Oregon

1-J-173 Probing Dopaminergic Deficits in Adolescent Depression

David Pagliaccio[1], Elisa Xu[1], Emily Zhang[1], Alma Bitran[1], Randy Auerbach[1]

[1]New York State Psychiatric Institute

K – Methods

1-K-174 A method to deliver individualized rTMS in youth with Tourette Syndrome

Cristian Morales-Carrasco[1], Timothy Hendrickson[1], Oscar Miranda Dominguez[1], Robert Hermosillo[1], Mo Chen[1], Steve Nelson[1], Damien Fair[1], Christine Conelea[1]

[1]University of Minnesota

1-K-175 The role of body movement for the development of visual attention in infancy - investigation with automatic movement quantification methods

Przemyslaw Tomalski[1]

[1]Polish Academy of Sciences

1-K-176 Individual neural signatures of infants' preference for social auditory stimuli: towards real-time infant fMRI

Elena Throm[1], Pedro da Costa[1], Franti'ek Vá'a[1], Evelyne Mercure[1], Anna Blasi[1], Declan Murphy[1], Emily Jones[1], Robert Leech[1], Anna Gui[1]

[1]Birkbeck, University of London

1-K-177 Optical flow reveals the development of top-down propagations across the neocortex

Adam Pines[1], Arielle Keller[1], Maxwell Bertolero[1], Bart Larsen[1], Arian Ashourvan[1], Sydney Covitz[1], Matthew Cieslak[1], Sarah Weinstein[1], Tinashe Tapera[1], Audrey Houghton[2], Jonathan Power[3], Yong Fan[1], Russell Shinohara[1], Eric Feczko[2], Damien Fair[2], Theodore Satterthwaite[1]

[1]University of Pennsylvania, [2]University of Minnesota, [3]Weill Cornell Medicine

1-K-179 Precision mapping of functional networks in newborns - a pilot investigation

Julia Moser[1], Sanju Koirala[1], Thomas Madison[1], Lucille Moore[1], Eric Feczko[1], Damien Fair[1], Chad Sylvester[2]

[1]University of Minnesota, [2]Washington University in St. Louis

1-K-180 Examining the influence of training on the balance between goal-directed and habitual control using time-varying GAM models in adolescents and young adults

Daniel Petrie[1], Zachary Fisher[1], Charles Geier[1]

[1]The Pennsylvania State University

1-K-181 Utilizing functional connectivity to identify neuropsychological subgroups in typically developing and ADHD-diagnosed youth

Nora Byington[1], Gracie Grimsrud[1], Eric Feczko[1], Joel Nigg[2], Steven Nelson[1], Damien Fair[1], Oscar Miranda Dominguez[1]

[1]University of Minnesota, [2]Oregon Health & Science University

L – Clinical Populations

1-L-19 Sensory over-responsivity in childhood is common, has robust neural correlates, and indicates diverse psychiatric risk

Rebecca Schwarzlose[1], Rebecca Tillman[1], Caroline Hoyniak[1], Joan Luby[1], Deanna Barch[1]

[1]Washington University in St. Louis

1-L-182 Changes in emotional and behavior problems, and brain morphometry following mild traumatic brain injury in early adolescence: A pre-post study design

Fanny Degeilh[1], Tilmann von Soest, Lia Ferschmann[2], Christian Tamnes[2]

[1]Inria, [2]University of Oslo

1-L-183 Testing and assessing for multiple dyslexias, cases of double-dissocitations

Cassandra Potier Watkins[1], Marie Lubineau[2], Stanislas Dehaene[1], Naama Friedman[3]

[1]College de France, [2]CERENE, [3]University of Tel Aviv

1-L-184 Impact of cannabis use on brain maturation in a Canadian longitudinal cohort

Jeremy Watts[1], Xavier Navarri[1], Patricia Conrod[1]

[1]Université de Montreal

1-L-185 Examining Prosocial Choice and Effort in Adolescents with Conduct Problems and Varying Levels of Callous-Unemotional Traits

Anne Gaule[1]

[1]UCL

1-L-186 Clinical and neural profiles of youths on atypical developmental trajectories of psychotic experiences

Roxane Assaf[1], Julien Ouellet[1], Josiane Bourque[2], Emmanuel Stip[1], Marco Leyton[3], Patricia Conrod[1], Stephane Potvin[1]

[1]Université de Montréal, [2]University of Pennsylvania, [3]McGill University

1-L-187 Probing individual differences in visual attention and autism traits: A large-scale online eye-tracking study

Na Yeon Kim[1], Qianying Wu[1], Ralph Adolphs[1]

[1]California Institute of Technology

1-L-188 Through the looking glass: the neural basis of self-concept in young adults with varying levels of psychopathic traits

Ilse van de Groep[1], Marieke Bos[2], Lucres Jansen[3], Arne Popma[3], Eveline Crone[1]

[1]Erasmus University Rotterdam, [2]Leiden University, [3]University of Amsterdam

1-L-189 Shared neural mechanisms underlie the development of risk-taking and anxiety in adolescents

Amanda Baker[1], Namita Padgaonkar[1], Tara Peris[1], Adriana Galván[1]

[1]University of California, Los Angeles

1-L-190 Altered development of the Hurst Exponent in medial prefrontal cortex in young children with autism spectrum disorders

Annika Linke[1], Bosi Chen[1], Lindsay Olson[1], Stephanie Peña[1], Adriana Rios[1], Madison Salmina[1], Zoe Damon[1], Ralph-Axel Müller[1], Inna Fishmann[1]

[1]San Diego State University

M – Attention

1-M-192 Sensory Prediction and Repetition Suppression in the tactile modality as early markers of executive attention development at preschool age

Marie Anquetil[1], Victoria Dumont[1], Anne-Lise Marais[1], Nadège Roche-Labarbe[1], Sandrine Rossi[1]

[1]University of Caen Normandy

1-M-193 Exploring the developmental trajectories of voluntary and involuntary auditory attention

Ursula Schöllkopf[1], Andreas Widmann[2], Aurélie Bidet-Caulet[3], Nicole Wetzel[1]

[1]Leibniz Institute for Neurobiology, [2]Leipzig University, [3]Institute of System Neurosciences

1-M-194 Associations Between Intraindividual Reaction Time Variability, Psychopathology, and White Matter Microstructure

Thea Wiker[1], Linn Norbom[2], Dani Beck[2], Ingrid Agartz[2], Ole Andreassen[3], Dag Alnæs[3], Andreas Dahl[1], Espen Eilertsen[1], Torgeir Moberget[3], Eivind Ystrom[1], Lars Westlye[1], Catherine Lebel[4], René Huster[1], Christian Tamnes[1]

[1]University of Oslo, [2]Diakonhjemmet Hospital, [3]Oslo University Hospital, [4]University of Calgary

1-M-195 Enhanced processing of task-irrelevant information during tablet PC interaction

Nicole Wetzel[1], Dunja Kunke[1], Andreas Widmann[1]

[1]Leibniz Institute for Neurobiology

1-M-196 Framing the area for avoiding visual interference and optimizing visual search in adolescents and adults

Sabrina Bouhassoun[1], Christian Gerlach[2], Grégoire Borst[1], Nicolas Poirel[1]

[1]Université Paris Cité, [2]University of Southern Denmark

1-M-197 Neural mechanisms underlying paying attention to external versus internal representations

Ivette Planell-Mendez[1], Sabine Kastner[1]

[1]Princeton University

N – Language

1-N-198 Neural adaptation in children with varying reading skills

Sarah Di Pietro[1], Alexandra Brem[1], David Tanner[1], Silvia Brem[1]

[1]University of Zurich

1-N-199 Functional-connectivity language laterality reliably predicts a greater proportion of the variance in task performance as the linguistic skills needed for the task increase

Trevor Day[1], Robert Hermosillo[1], Gregory Conan[1], Anita Randolph[1], Anders Perrone[1], Eric Earl[2], Nora Byington[1], Timothy Hendrickson[1], Jed Elison[1], Damien Fair[1], Eric Feczko[1]

[1]University of Minnesota, [2]National Institute of Mental Health

1-N-200 From vision to language: Subregions of the visual word form area show distinct patterns of functional connectivity

Maya Yablonski[1], Iliana Karipidis[2], Jason Yeatman[1]

[1]Stanford University, [2]University Hospital of Psychiatry Zurich, University of Zurich

1-N-201 The relation between home language environment and structural neural connectivity in infants with and without an elevated risk for oral language disorders

Camille Bonnet[1], Arnaud Szmalec[1], Marie Van Reybroeck[1], Jolijn Vanderauwera[1]

[1]UCLouvain

O – Brain Function

1-O-18 Cortical responses to music and speech measured with fMRI in one-month-old infants

Heather Kosakowski[1], Samuel Norman-Haignere[2], Anna Mynick[3], Atsushi Takahashi[1], Rebecca Saxe[1], Nancy Kanwisher[1]

[1]Massachusetts Institute of Technology, [2]University of Rochester Medical Center, [3]Dartmouth

1-O-202 Action-related sound perception and prediction in children

Tjerk Dercksen[1], Andreas Widmann[1], Paula López[1], Florian Scharf[2], Reinhard König[1], Nicole Wetzel[1]

[1]Leibniz Institute for Neurobiology, [2]University of Kassel

1-O-203 Examining frontomedial theta in fear conditioning and extinction during adolescence

Kubra Ulusoy[1], Sam Linton[2], Liat Levita[1]

[1]University of Sheffield, [2]McLean Hospital/Harvard Medical School

1-O-204 White matter organization predicts subtle motor signs in children with ADHD

Christian Hyde[1], Ian Fuelshcer[1], Keri Rosch[2], Deana Crocetti[2], Merv Singh[1], Tim Silk[1], Stewart Mostofsky[2]

[1]Deakin University, [2]Kennedy Krieger Institute

1-O-205 Neurobiological markers of familial risk for depression among healthy youth in the Adolescent Brain Cognitive Development (ABCD) Study

Bailey Holt-Gosselin[1], Rhayna Poulin[1], Alexis Brieant[1], Jutta Joormann[1], Dylan Gee[1]

[1]Yale University

P – Brain Connectivity

1-P-206 Neurodevelopmetal changes after adverse experiences in adolescence

Ayla Pollmann[1], Kathryn Bates[1], Delia Fuhrmann[1]

[1]King's College London

1-P-207 Refinement of Functional Connectivity in Development Aligns with the Sensorimotor to Association Axis

Audrey Luo[1], Valerie Sydnor[1], Adam Pine[1], Aaron Alexander-Bloch[1], Max Bertolero[1], Matthew Cieslak[1], Sydney Covitz[1], Eric Feczko[2], Alexandre Franco[3], Raquel Gur[1], Ruben Gur[1], Audrey Houghton[2], Arielle Keller[1], Gregory Kiar[4], Bart Larsen[1], Michael Milham[4],

[1]University of Pennsylvania, [2]University of Minnesota, [3]Nathan Kline Institute, [4]Child Mind Institute

Q – Other

1-Q-208 Do verbal and mathematical skills rely on similar neuroanatomical systems?

Nurit Viesel-Nordmeyer[1], Jérôme Prado[2]

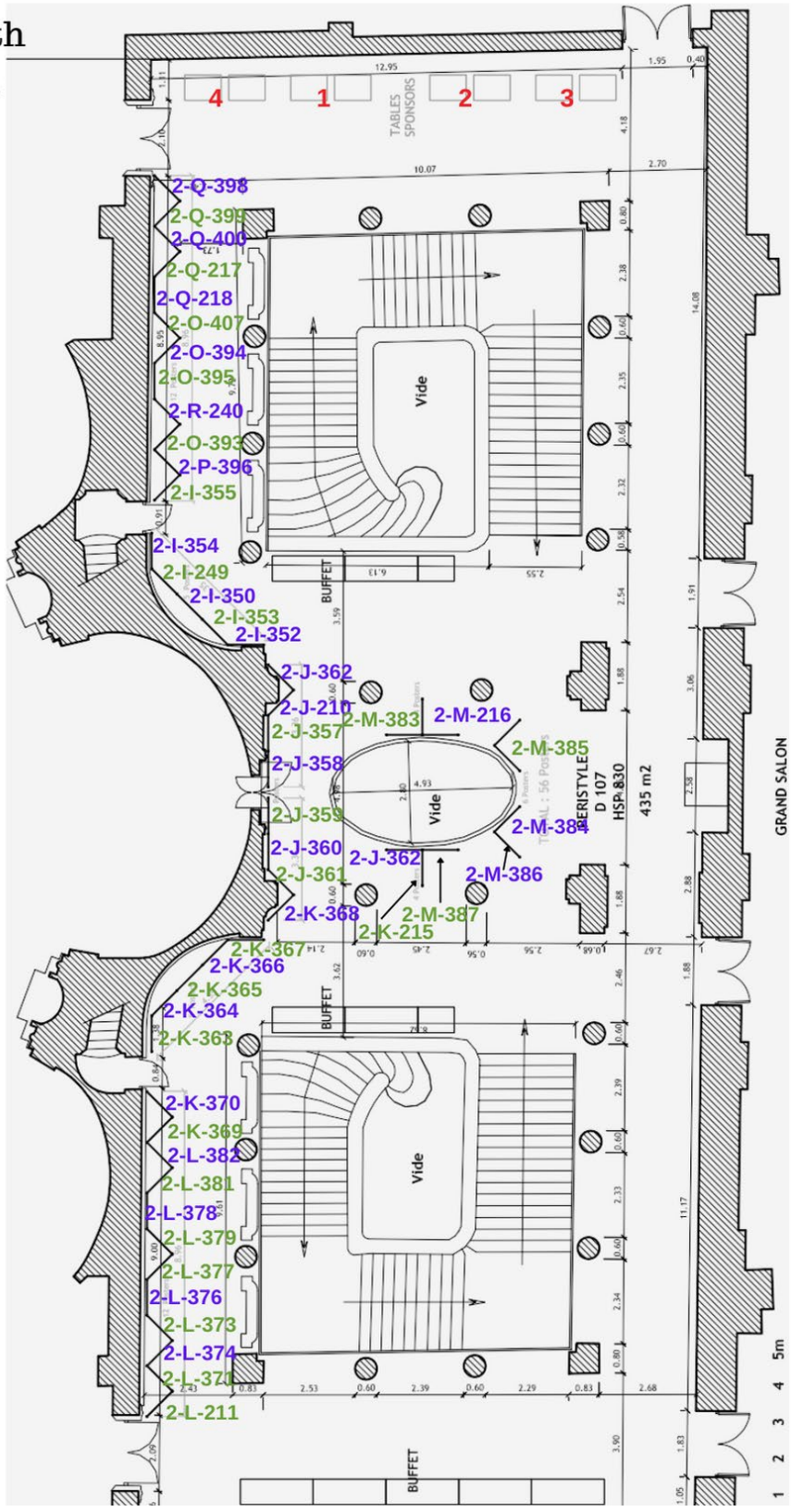
[1]Tu Dortmund University, [2]CRNL

Flux Congress Floor Plan at the Sorbonne

2nd Floor Peristyle (Poster Session #2)-
between Grand Salon & Grand Amphitheatre

Thursday, Sept 8th
9:30am - 11:00am

EVEN Numbers
- 9:30- 10:15am
ODD Numbers
- 10:15 - 11:00am



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1-Babilou
2- YOUth
3- Nous Imaging
4- Flux Trainee Committee

Flux Congress Floor Plan at the Sorbonne

2nd Floor Grand Salon

Poster Locations (Poster Session #2)

Thursday, Sept 8th
9:30am - 11:00am

EVEN Numbers
- 9:30- 10:15am

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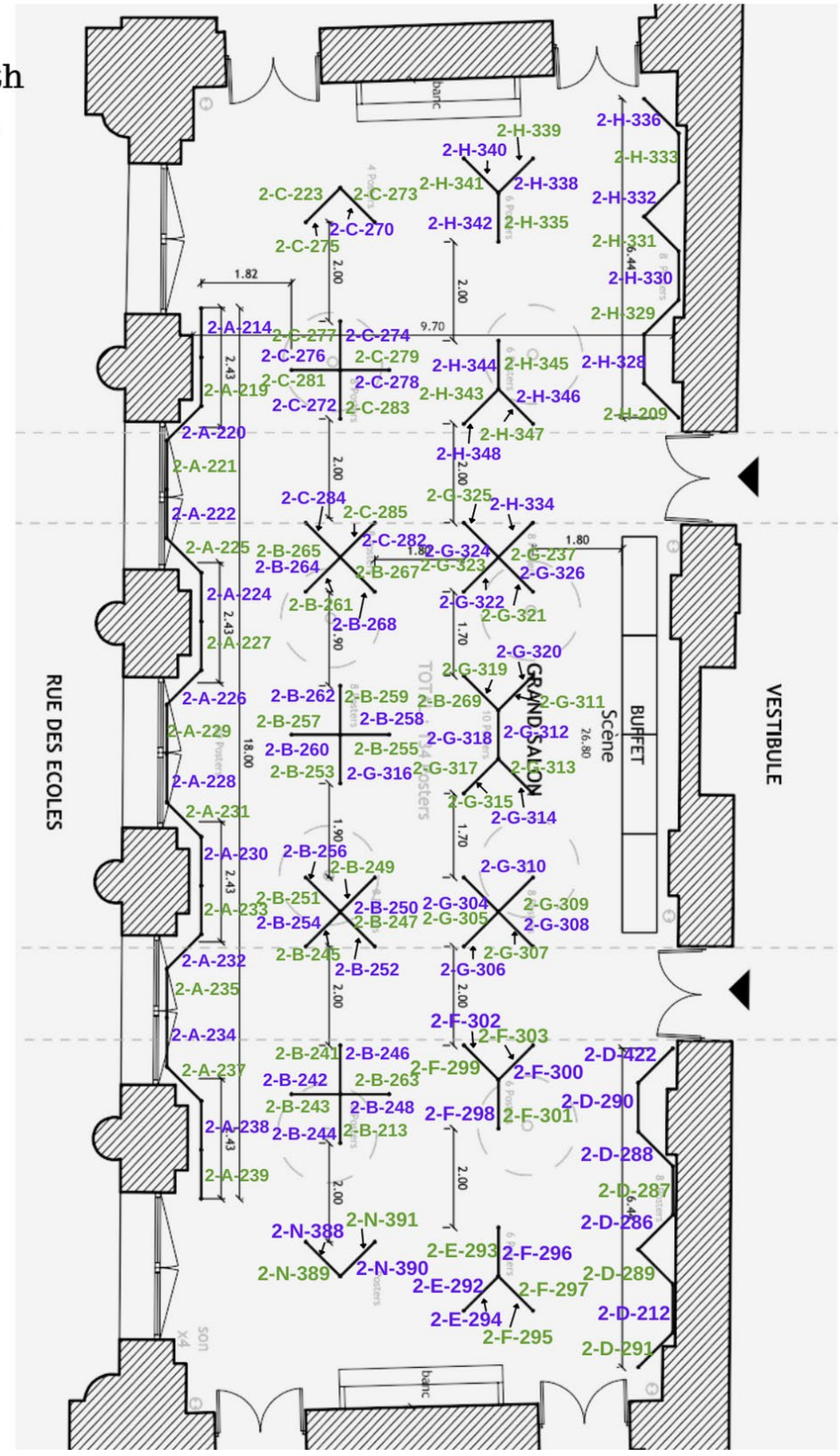

POSTER SESSION 2

Thursday, September 8, 2022
9:30am – 11:00am PST

A – Executive functioning

2-A-214 Personalized functional brain network topography is associated with multiple domains of cognition in the ABCD study: A replication and extension of Cui et al. 2020

Arielle Keller[1], Adam Pines[1], Maxwell Bertolero[1], Ran Barzilay[1], Aaron Alexander-Bloch[1], Nora Byington[2], Gregory Conan[2], Zaixu Cui[3], Yong Fan[1], Eric Feczko[2], Timothy Hendrickson[2], Audrey Houghton[2], Bart Larsen[1], Hongming Li[1], Oscar Miranda-Dominguez[2], David Roalf[1]

[1]University of Pennsylvania, [2]University of Minnesota, [3]Chinese Institute for Brain Research

2-A-219 Examining reciprocal associations between interpersonal functioning and executive functioning during early adolescence: Disaggregating between- and within-person effects

Katie Paige[1], Craig Colder[1]

[1]SUNY Buffalo

2-A-220 Distinct developmental trajectories in the cognitive components of complex planning

Ili Ma[1], Camille Phaneuf[2], Bas van Opheusden[3], Wei Ji Ma[4], Catherine Hartley[4]

[1]Leiden University, [2]Harvard University, [3]Princeton University, [4]New York University

2-A-221 Longitudinal developmental trajectories of inhibition and white-matter maturation of the fronto-basal-ganglia circuits

Mervyn Singh[1], Patrick Skippen[2], Jason He[3], Phoebe Thomson[4], Ian Fuelscher[1], Karen Caeyenberghs[1], Vicki Anderson[5], Jan Nicholson[6], Christian Hyde[1], Timothy Silk[1]

[1]Deakin University, [2]Neuroscience Research Australia, [3]King's College London, [4]Murdoch Children's Research Institute; University of Melbourne, [5]Murdoch Children's Research Institute; University of Melbourne; The Royal Children's Hospital, [6]La Trobe Univer

2-A-222 Differential effects of mindfulness meditation and cognitive training on cool and hot inhibitory control in children and adolescents

Gabriela Rezende[1], Lorna Le Stanc[1], Iris Menu[1], Ania Aïte[1], Mathieu Cassotti[1], Olivier Houdé[1], Grégoire Borst[1], Arnaud Cachia[1]

[1]Université Paris Cité

2-A-224 Near- and far-transfer effects of cognitive control training in middle childhood

Keertana Ganesan[1], Roser Cañigueral[1], Abigail Thompson[1], Claire Smid[1], Vanessa Puetz[1], Rogier Kievit[2], Nikolaus Steinbeis[1]

[1]University College London, [2]Radboud University Nijmegen

2-A-225 Longitudinal change in the engagement in positive and maladaptive risk-taking and associations with risk-related factors in adolescence

Corinna Lorenz[1], Barbara Kreis[2], Lena Müller[3], Jutta Kray[3]

[1]University of Wuppertal, [2]University of Mannheim, [3]Saarland University

2-A-226 Neural sensitivity to peer feedback and depressive symptoms: Moderation by executive function

Megan Davis[1], Haina Modi[2], Haley Skymba[2], Eva Telzer[1], Karen Rudolph[2]

[1]University of North Carolina at Chapel Hill, [2]University of Illinois Urbana-Champaign

2-A-227 Emotional inhibitory control development from childhood to adulthood: a behavioral and electrophysiological study

Emilie Salvia[1], Ania Aïte[1], Julie Vidal[1], Grégoire Borst[1]

[1]Université Paris Cité

2-A-228 Examining the influence of reward and efficacy in development of the expected value of control

Theresa McKim[1], Romy Frömer[2], Mahalia Prater Fahey[2], Amitai Shenhav[2], Benjamin Eppinger[3], Andrea Reiter[1]

[1]University Hospital Würzburg / Technische Universität Dresden, [2]Brown University, [3]Technische Universität Dresden

2-A-229 Cognitive mechanisms underpinning age-related change in delay discounting behavior

Camille Phaneuf[1], Melanie Grad-Freilich[1], Patrick Mair[1], Graham Baum[1], Leah Somerville[1]

[1]Harvard University

2-A-230 Dissociable effects of positive feedback on the capture and inhibition of impulsive behaviour in adolescents with ADHD versus typically developing adolescents

Aurélie Grandjean[1], Isabel Suarez[1], David Da Fonseca[1], Laurence Casini[1]

[1]Laboratoire de neurosciences cognitives

2-A-231 Effects of physical activity on cognition, meta-cognition and academic achievement during development: a multi-level meta-analysis

Fotini Vasilopoulos[1]

[1]University of London

2-A-232 Multilevel modeling of exercise frequency and four measures of cognition in 3800 adolescents from age 12 to 17

Philippe Pétrin-Pomerleau[1], Elizabeth Hatzis[1], Albino Nikolla[1], Patricia Conrod[1]

[1]Université de Montreal

2-A-233 Beyond the boundaries: Event representation across childhood

Erika Wharton-Shukster[1], Katherine Duncan[1], Amy Finn[1]

[1]University of Toronto

2-A-234 Familism moderates the effect of discrimination on self-regulation via brain connectivity

Natasha Duell[1], Erin Bender[1], Gabriella Alvarez[1], Eva Telzer[1], Keely Muscatell[1]

[1]University of North Carolina at Chapel Hill

2-A-235 Transient food insecurity during the juvenile-adolescent period in mice affects adult weight, cognitive flexibility, and dopamine neurobiology

Wan Chen Lin[1], Christine Liu[1], Polina Kosillo[1], Ezequiel Galarce[1], Helen Bateup[1], Stephan Lammel[1], Linda Wilbrecht[1]

[1]UC Berkeley

2-A-237 Developmental pathways to self-regulation at 6 years: The role of parent-child relations in infancy and "hot" and "cool" executive function in toddlerhood.

Lilja Jónsdóttir[1], Tommie Forslund[2], Matilda Frick[1], Emma Heeman[1], Andreas Frick[1], Karin Brocki[1]

[1]Uppsala University, [2]Stockholm University

2-A-238 Variable folding of the lateral prefrontal cortex supports reasoning in children and adolescents

Willa Voorhies[1], Ethan Willbrand[1], Jewelia Yao[2], Kevin Weiner[1], Silva Bunge[1]

[1]University of California, Berkeley, [2]Princeton University

2-A-239 Grey and white matter microstructure play complementary roles supporting cognitive performance in adolescence

Léa Michel[1], Rogier Kievit[1]

[1]Radboud University Nijmegen

B – Socioemotional processing

2-B-213 Intergenerational transfer effects on corticolimbic gray matter volume of mother-child dyads

Plamina Dimanova[1], Réka Borbás[1], Lynn Fehlbaum[1], Nora Raschle[1]

[1]University of Zurich

2-B-241 Contribution of cognitive abilities in predicting altruistic behavior in childhood

Lucie Rose[1], Florent Caetta[2], Elisa Mosse[3], Klara Kovarski[2], Sylvie Chokron[1]

[1]Université de Paris, [2]Hôpital Fondation Rothschild, [3]Ecole Normale Supérieure

2-B-242 Task Design Confounds our Inferences about the Neural Substrates of Self-Referential Processing

Samantha Chavez[1], Theresa Cheng[2], Danielle Cosme[3], Jennifer Pfeifer[1], Michelle Byrne[4]

[1]University of Oregon, [2]Massachusetts General Hospital, [3]University of Pennsylvania, [4]Monash University

2-B-243 Developmental differences in neural representations of affect

William Mitchell[1], Lindsey Tepfer[2], Nicole Henninger[3], Susan Perlman[4], Vishnu Murty[1], Chelsea Helion[1]

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2-B-244 Oh Behave! Individual differences in developmental trajectories of social emotion regulation

Michelle Achterberg[1], Jeroen Mulder[2], Simone Dobbelaar[3], Eveline Crone[1]

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2-B-245 Fear conditioning and generalization in underrepresented preadolescent youth: A replication study

Matthew Kersting[1], Dana Glenn[1], Jordan Mullins[1], Kalina Michalska[1]

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2-B-246 Identifying a biomarker of adolescent psychosocial adjustment across peer environments in the ABCD study

Franchesca Kuhney[1], Vijay Mittal[2]

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2-B-247 A cross-sectional fMRI study on societal trust in adolescence

Sophie Sweijen[1], Suzanne van de Groep[1], Lysanne te Brinke[1], Eveline Crone[1]

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2-B-248 Neurodevelopmental changes in friendship stability and adaptive risk taking for best friend in adolescence

Seh-Joo Kwon[1], Mitchell Prinstein[1], Kristen Lindquist[1], Eva Telzer[1]

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2-B-249 Is the feeling of regret related to the adoption of protective behaviors to limit the spread of COVID-19?

Lise Xiong[1]

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2-B-250 Self-Narration, Prefrontal Cortex Functional Connectivity, and Psychopathology in Early Childhood Development

Katie Gonzalez[1], Adam Grabell[1]

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2-B-251 Assessing neural similarity for emotion processing in adolescence

Jimmy Capella[1], Mallory Feldman[1], Adrienne Bonar[1], Elizabeth Nick[1], Nathan Field[1], Tehya Drummond[1], Mitchell Prinstein[1], Kristen Lindquist[1], Eva Telzer[1]

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2-B-252 Examining the motives that alter adolescent risk preferences in social contexts

Yelina Yiyi Chen[1], Gail Rosenbaum[2], John Flournoy[1], Laura Cegarra[1], Deanna Youssoufian[1], Melanie Grad-Freilich[1], Laurel Kordyban[1], Erik Kastman[1], Patrick Mair[1], Leah Somerville[1]

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2-B-253 Characterizing within-person trajectories of negative affective experience across adolescence

Katherine Grisanzio[1], John Flournoy[1], HCP-D Consortium[1], Leah Somerville[1]

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2-B-254 Uncertainty explains social information use in risky choice across adolescence

Simon Ciranka[1], Wouter van den Bos[2]

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2-B-255 Neural feedback signals differentially guide impression updating of self and others across development

Alexandra Rodman[1], Katherine Powers[1], Leah Somerville[1]

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2-B-256 Contextual influences and cognitive mechanisms of learning in early adolescence

Meriah DeJoseph[1], Kathleen Thomas[1], Daniel Berry[1]

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2-B-257 Age-related differences in the relationship between affect and emotion regulatory processes during the covid-19 pandemic

Savannah Minihan[1], Annabel Songco[1], Elaine Fox[2], Cecile Ladouceur[3], Louise Mewton[1], Michelle Moulds[1], Jennifer Pfeifer[4], Anne-Laura Van Harmelen[5], Susanne Schweizer[1]

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2-B-258 Continuity and discontinuity in neural profiles of emotion processing and working memory during adolescence: a registered report

Landry Goodgame Huffman[1], Assaf Oshri[1]

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2-B-259 It's who you know: A rat's anxiety-like behavior and FGF2 influenced by its cagemates

Sylvia Harmon-Jones[1], Rick Richardson[1]

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2-B-260 Does parental ethnic racial socialization moderate the influence of ethnic racial discrimination on neural representation of threat in Latina girls?

Nikki Adhami[1], Jordan Mullins[1], Kalina Michalska[1]

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2-B-261 Evaluating candidate mechanisms underlying sensory over-responsivity following early caregiving adversity

Adriana Méndez Leal[1], João Guassi Moreira[1], Yael Waizman[1], Natalie Saragosa-Harris[1], Emilia Ninova[1], Jennifer Silvers[1]

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2-B-262 Preregistration: Caregiving instability, age, and performance and neural function during cognitive and affective theory of mind

Charlotte Heleniak[1], Lior Abramson[1], Anna Vannucci[1], Michelle Van Tieghem[1], Paul Bloom[1], Andrea Fields[1], Lisa Gibson[1], Syntia Hadis[1], Tricia Choy[1], Nicolas Camacho[1], Nim Tottenham[1]

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2-B-263 Adolescents exposed to early life adversity demonstrate greater similarity in neural representations of threatening and ambiguous social stimuli.

Natalie Saragosa-Harris[1], João Guassi Moreira[1], Yael Waizman[2], Anna Sedykin[1], Tara Peris[1], Jennifer Silvers[1]

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2-B-264 The association between heart rate variability, cortical thickness and self-regulation in adolescents with and without conduct disorder

Ana Cubillo[1], Antonia Tkalcec[2], Helena Oldenhof, Eva Unternaehrer[2], Nora Raschle[1], Gregor Kohls, Lucres Nauta-Jansen, Amaia Hervas, Arantza Fernández-Rivas, Kirsten Konrad, Arne Popma[3], Christine Freitag, Stephane De Brito, Graeme Fairchild, Christina Stadler[2]

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2-B-265 Long-term impact of early experiences of relational and physical peer victimization on brain structure

Sarah Salzgeber[1], Denis Ribeaud[1], Manuel Eisner[2], Michael Shanahan[1], Todd Hare[1], Ana Cubillo[1]

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2-B-266 The effects of neonatal brain volume on the association between maternal psychopathic traits and infant behavior

Jesse Barr[1], Sarah Short[2], Rebecca Stephens[1], W. Roger Mills-Koonce[1], Cathi Propper[1]

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2-B-267 How music alters brain development: A longitudinal twin study on sensorimotor synchronization and brain plasticity

Lina van Drunen[1], Rebecca Schaefer[1], Benjamin Schultz[2], Andrik Becht[3], Lara Wierenga[1]

[1]Leiden University, [2]University of Melbourne, [3]Utrecht University

2-B-268 What do we know and what can we learn from multi-brain magnetic resonance neuroimaging research?

Estrella Salmina[1], Michelle Anzelini[1], Elena Federici[1], Réka Borbás[1], Plamina Dimanova[1], Nora Raschle[1]

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2-B-269 Moment-by-moment biobehavioral flexibility in infancy: stability & change across social context

Isabella Stallworthy[1], Jed Elison[1], Daniel Berry[1]

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Flux Congress Posters | Titles, Authors and Affiliations

C – Learning

2-C-223 Using fMRI to study the neural basis of violation-of-expectation

Shari Liu[1], Kirsten Lydic[1], Rebecca Saxe[1]

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2-C-270 Safety Cue Learning as a Potential Mechanism Linking Childhood Trauma Exposure and Psychopathology in Youth

Sahana Kribakaran[1], Stephanie DeCross[2], Paola Odriozola[1], Emily Cohodes[1], Jason Haberman[1], Katie McLaughlin[2], Dylan Gee[1]

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2-C-272 Molar eruption timing is associated with cognitive development

Cassidy McDermott[1], Janet Lee[1], Anne Park[1], Ursula Tooley[1], Austin Boroshok[1], Katherine Hilton[1], Muralidhar Mupparapu[1], Allyson Mackey[1]

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2-C-273 Are individual differences in procedural learning associated with organization of fronto-basal ganglia-cerebellar white matter pathways in healthy children?

Kaila Bianco[1], Jarrad A. G. Lum[1], Ian Fuelscher[1], Pamela Barhoun[1], Dwayne Meaney[1], Mervyn Singh[1], Tim Silk[1], Peter G. Enticott[1], Karen Caeyenberghs[1], Christian Hyde[1]

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2-C-274 Impaired learning to dissociate advantageous and disadvantageous risky choices in adolescents

Marieke Jepma[1], Jessica Schaaf[1], Ingmar Visser[1], Hilde Huizenga[1]

[1]University of Amsterdam

2-C-275 Cognitive and motor adaptations across the lifespan

Johannes Falck[1], Laura Faßbender[1], Gudrun Schwarzer[1], Yee Lee Shing[2]

[1]Justus-Liebig-University Giessen, [2]Goethe University Frankfurt

2-C-276 Learning to fear social interactions: Dysregulated neural mechanisms of social learning in adolescent social anxiety

Tessa Clarkson[1], David Barack[2], Leor Hackel[3], Camille Johnston[1], Megan Quarmley[1], Johanna Jarcho[1]

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2-C-277 Balancing exploration and exploitation under cognitive constraints across typical and atypical development

Kathy Do[1], Alexandre Dombrovski[2], Michael Hallquist[1]

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2-C-278 Re-examining selective attention: Children show neural processing of and learning from distractors

Monica Ellwood-Lowe[1], Maddy Bernstein[1], Mahesh Srinivasan[1], Silvia Bunge[1]

[1]University of California, Berkeley

2-C-279 EEG Frequency Tagging of Concurrently Presented Faces and Objects in Adults and Infants

Lisa Scott[1], Andreas Keil[1]

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2-C-281 Neural correlates of predictive processes in the infant brain

Claire Kabdebon[1], Anne-Caroline Fiévet[1], Sid Kouider[1], Sharon Peperkamp[1]

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2-C-282 Brain representations of symbolic and non-symbolic quantity become estranged with education: Evidence from between-format and between-age decoding

Tomoya Nakai[1], Cléa Girard[1], Léa Longo[1], Hanna Chesnokova[1], Jérôme Prado[1]

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2-C-283 Alterations in brain connectivity during letter-speech sound learning in poorly and typically reading children

Nada Frei[1], David Willinger[2], Patrick Haller[2], Gorka Fraga-González[2], Christina Lutz[2], Seline Coraj[2], Rebecca Hefti[2], Silvia Brem[2]

[1]University of Zurich, ETH Zurich, [2]University of Zurich

2-C-284 Giving support or not? Relations between parental verbal and nonverbal support strategies and neural synchrony during parent-child spatial problem-solving.

Ying Li[1], Haley Laughlin[1], Paige Nelson[1], Ece Demir-lira[1]

[1]The University of Iowa

2-C-285 Social search strategies during adolescence: when and who to observe

Scarlett Slagter[1], Anna van Duijvenvoorde[2], Wouter van den Bos[1]

[1]University of Amsterdam, [2]Leiden University

D – Rewards/Motivation

2-D-212 Heterogeneity in Early Adolescent Reward Networks and Associations with Behavioral Outcomes

Matthew Mattoni[1], David Smith[1], Thomas Olino[1]

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2-D-286 Selective and reflective: Adolescents use context to adjust visual exploration

Celia Durkin[1], Catherine Insel[1], Camilla Van Geen[1], Ellen Tedeschi[1], Daphna Shohamy[1]

[1]Columbia University

2-D-287 Memory-guided decision-making develops alongside model-based planning

Nora Harhen[1], Catherine Hartley[2], Aaron Bornstein[1]

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2-D-288 Where and how are salient early-life experiences encoded? novel role of the thalamic paraventricular nucleus

Tallie Z Baram[1], Cassandra Kooiker[1]

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2-D-289 Population Patterns Linking Adolescent Risk-Taking and Substance Use

Brenden Tervo-Clemmens[1], Zuena Karim, Sehyr Khan, Randi Schuster, Jodi Gilman, A. Eden Evins[2]

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2-D-290 Multidimensional phenotyping of youth with high positive alcohol expectancies: a preregistered study

Faith Adams[1], Md Ashad Alam[2], Iliyan Ivanov[1], Muhammad Parvaz[1]

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2-D-291 Prevention of adolescent risk-taking behavior through early identification

Barbara Braams[1], Ilja Cornelisz[1], Chris van Klaveren[1]

[1]*Vrije Universiteit Amsterdam*

2-D-422 Neural reaction during reward and effort anticipation in first year secondary school students

Sibel Altikulaç[1], Barbara Braams[1], Smiddy Nieuwenhuis[1], Tieme Janssen[1], Eliana Vassena[1], Nienke van Atteveldt[1]

[1]*Vrije Universiteit Amsterdam*

E – Education

2-E-292 Does math intervention modify the neural correlates of numerical magnitude processing in children?

Marissa Laws[1], Anna Matejko[1], Nicole Schlosberg[1], Melanie Lozano[1], Guinevere Eden[1]

[1]*Georgetown University*

2-E-293 The overlap between precursors of reading and arithmetic in preschoolers correlates with the white matter organization of the inferior fronto-occipital fasciculus

Floor Vandecruys[1], Maaike Vandermosten[1], Bert De Smedt[1]

[1]*KU Leuven*

2-E-294 Visual training of executive functions in dyslexia: fMRI evidence for neural plasticity in the dorsal attention and cingulo-opercular networks

Nikolay Taran[1], Carmel Gashri[1], Ester Gitman[1], Rola Farah[1], Tzipi Horowitz-Kraus[1]

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F – Memory

2-F-295 Retrieving item and feature information from episodic memory following deep or shallow encoding: Complementary oscillatory and ERP evidence from young and older children as compared to young adults

Daniela Czernochowski[1], Ann-Kathrin Beck[1]

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2-F-296 Effects of semantic prediction error on episodic memory: a lifespan comparison

Javier Ortiz-Tudela[1], Gözem Turan[1], Lucia Melloni[1], Yee Lee Shing[1]

[1]*Goethe University Frankfurt*

2-F-297 The impact of mnemonic prediction error on memory over the lifespan: electrophysiological and behavioral evidence

Sophie Nolden[1], Gözem Turan[1], Oded Bein, Lila Davachi[1], Yee Lee Shing[1]

[1]*Goethe University Frankfurt*

2-F-298 Age differences in generalization, memory specificity and their overnight fate in childhood

Elisa Buchberger[1], Ann-Kathrin Joechner[1], Chi Ngo[1], Ulman Lindenberger[1], Markus Werkle-Bergner[1]

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2-F-299 Functional Manipulation of Infant Memories in Mice

Sarah Power[1], Erika Stewart[1], Clara Ortega De San Luis[1], Louisa Zielke[1], Lydia Marks[1], Tomas Ryan[1]

[1]*Trinity College Dublin*

2-F-300 Developmental change in hippocampal and prefrontal engagement during preparatory retrieval cues

Sagana Vijayarajah[1], Margaret Schlichting[1]

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2-F-301 Mechanisms of Engram Plasticity in Infantile Amnesia

Erika Stewart[1], Sarah Power[1], Louisa Zielke[1], Tomás Ryan[1]

[1]*Trinity College Dublin*

2-F-302 Developmental differences in resolving memory competition during retrieval of specific and general memories

Merron Woodbury[1], Margaret Schlichting[1]

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2-F-303 Hippocampal Neurite Density and Trace Eyeblink Conditioning in Four- to Six-Year-Olds

Shannon Pruden[1], Yvonne Ralph[1], Vanessa Vieites[2], Mandy Renfro[1], Hannah Bowly[1], Melanie Rengel[1], Timothy Hayes[1], Anthony Dick[1], Aaron Mattfeld[1]

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G – Environment (Stress, SES)

2-G-304 Adversity and the timing of childhood tooth eruption

Theresa Cheng[1], Nitasha Siddique[1], Erin Dunn[1]

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2-G-305 Chronic home radon exposure differentially impacts gray matter and white matter development in healthy youth

OgheneTejiri Smith[1], Samantha Penhale[1], Lauren Ott[1], Tony Wilson[1], Brittany Taylor[1]

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2-G-306 Within Arms' Length: Caregiving and Cognition in 8-Month-Old Infants

Sofia Scatolin[1], Francesco Poli[1], Sabine Hunnius[1], Carolina de Weerth[1], Roseriet Beijers[1]

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2-G-307 The Co-occurrence of Social Adversities in Youth and their Relationship to Cognitive Outcomes

Amber Inman[1], Kathryn Bates[1], Delia Fuhrmann[1]

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2-G-308 Associations Between Expectant Fathers? Early Family Risk and White Matter Integrity

Sofia Cardenas[1], Yael Waizman[1], Van Truong[1], Pia Sellery[1], Vidya Rajagopalan[2], Darby Saxbe[1]

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2-G-309 Predicting emotion regulation in typically developing toddlers: common and independent effects of preceding chaos in the home, maternal sensitivity, and attachment security.

Emma Heeman[1], Tommie Forslund[2], Matilda Frick[1], Andreas Frick[1], Lilja Jónsdóttir[1], Karin Brocki[1]

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2-G-310 Individual Differences in Trajectories of Postpartum Depression: The Roles of Delivery Method and Subjective Birth Stress

Elizabeth Aviv[1], Emma Preston[1], Pia Sellery[1], Yael Waizman[1], Mark Lai[1], Darby Saxbe[1]

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2-G-311 Early childhood adversity and alternations in cortical thickness and surface areas in female adolescents

Angelina Pei-Tzu Tsai[1], Kathryn Garrisi[1], Kinjal Patel[1], Anais Rodriguez-Thompson[1], Matteo Giletta[2], Paul Hastings[3], Matthew Nock[4], Karen Rudolph[5], George Slavich[6], Mitch Prinstein[1], Adam Miller[1], Margaret Sheridan[1]

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2-G-312 Ethnic racial discrimination exposure is associated with reduced amygdala volume in Latina youth

Jordan Mullins[1], Nikki Adhami[1], Kalina Michalska[1]

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2-G-313 Social threat, fronto-cingulate-limbic morphometry, and symptom course in depressed adolescents: a longitudinal investigation

Tiffany Ho[1], Amar Ojha[2], Giana Teresi[2], George Slavich[3], Ian Gotlib[4]

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2-G-314 The independent and interactive roles of parent income, educational attainment, and neighborhood disadvantage in shaping brain structure in children: findings from the ABCD Study

Divyangana Rakesh[1], Andrew Zalesky[1], Sarah Whittle[1]

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2-G-315 Genes, adversity, and connectomics: Testing the contribution of polygenic propensity and early life environment to structural brain organisation

Tess Smith[1], Varun Warrier[1], Duncan Astle[1]

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2-G-316 Pandemic-related maternal stress and the association with fetal thalamic volumes

Emily Nichols[1], Megan Mueller[1], Barbra de Vrijer[1], Roy Eagleson[1], Charles McKenzie[1], Sandrine de Ribaupierre[1], Emma Duerden[1]

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2-G-317 Neighborhood Influences on Adolescent Brain Development

Estelle Berger[1], Kathryn Mills[1], Nicholas Allen[1], Jennifer Pfeifer[1]

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2-G-318 Can cortical thinning predict mental health response to the COVID-19 pandemic? Evidence from the ABCD® Study

Florence Breslin[1], Kara Kerr[1], Zsofia Cohen[1], W Simmons[1], Julie Croff[2], Amanda Morris[1]

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2-G-319 Associations between structural inequality in neighborhood environments and neurocognitive development in youth

Ka I Ip[1], Carlos Cardenas-Iniguez[2], Megan Herting[2], Dylan Gee[1]

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2-G-320 Trajectories of gray matter volume development in children aged 2-8 years relate to maternal education

Madison Long[1], Curtis Ostertag[1], Jess Reynolds[2], Jing Zheng[1], Bennett Landman[3], Yuankai Huo[3], Catherine Lebel[1]

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2-G-321 Multivariate associations between dimensions of early-life stress and white matter microstructure

Lucinda Sisk[1], Emily Cohodes[1], Sarah McCauley[2], Jasmyne Pierre[1], Paola Odriozola[1], Jason Haberman[1], Sahana Kribakaran[1], Sadie Zacharek[3], Hopewell Hodges[4], Camila Caballero[1], Audrey Huang[1], Gillian Gold[1], Dylan Gee[1]

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2-G-322 Hippocampal subfield volumes are differentially susceptible to socioeconomic status during development

Kelsey Canada[1], Roya Homayouni[1], Qijing Yu[1], Da' Jonae Foster[1], Ana Daugherty[1], Noa Ofen[1]

[1]Wayne State University

2-G-323 Maternal Caregiving Moderates the Association of Maternal Stress with Infant White Matter Cingulum Microstructure

Lauren Costello[1], Jessica Buthmann[1], Lauren Borchers[1], Emily Dennis[2], Tiffany Ho[3], Ian Gotlib[1]

[1]Stanford University, [2]University of Utah, [3]University of California, San Francisco

2-G-324 Do structural changes in brain development mediate the relationship between parenting factors and adolescent psychopathology? Evidence from the ABCD® Study

Zsofia Cohen[1], Florence Breslin[1], Amanda Sheffield Morris[1], Kara Kerr[1]

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2-G-325 Unpredictability is associated with accelerated fronto-limbic white matter maturation in childhood

Morgan Botdorf[1], Lourdes Delgado Reyes[1], Anne Park[1], Ursula Tooley[1], Austin Boroshok[1], Cassidy McDermott[1], Allyson Mackey[1]

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2-G-326 Effects of the socioeconomic status on the neuroplasticity of the prefrontal cortex during cognitive training in children and adolescents

Julia Mathan[1], Iris Menu[1], Emilie Salvia[1], Catherine Oppenheim[1], Houdé Olivier[1], Borst Grégoire[1], Cachia Arnaud[1]

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2-G-327 Examining associations between exposure to deprivation and threat, neural structure, and psychopathology in early childhood

Esmeralda Navarro[1], Laura Machlin[1], Kathryn Garrisi[1], Kimberly L.H. Carpenter[2], William Copeland[3], Helen Egger[4], Margaret Sheridan[1]

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H – Brain Structure

2-H-209 Transdiagnostic Neural Pathways to Inattention and Hyperactivity

Natalia Zdorovtsova[1]

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2-H-328 Relationships between brainAGE and maturational metrics in early adolescence

Lucy Whitmore[1], Kathryn Mills[1]

[1]University of Oregon

2-H-329 Partitioning variation in brain structure into genetic, environmental, and subject-specific components

Diana Smith[1], Terry Jernigan[1], Clare Palmer[1], Chun Fan[2], Anders Dale[1]

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2-H-330 Understanding vulnerability through variability: a longitudinal study on heterogeneous brain development in relation to symptoms of ASD and ADHD

LM Wierenga[1]

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2-H-331 Compared brain structure underpinnings of deficits in empathy processes in children and adolescents with CD and ASD

Maria Bierlein[1], Antonia Tkalcec[1], Nora Raschle[2], Evelyn Herbrecht[1], Christina Stadler[1], Ana Cubillo[1]

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2-H-332 Retrospective analysis of growth curves for brain structure derived from clinically-acquired pediatric MRIs from age 0-22 years

Jenna Schabdach[1], Jakob Seidlitz[1], Richard Bethlehem[2], Ayan Mandal[3], Joelle Jee[3], Sydney Covitz[3], Russell Shinohara[3], J. Eric Schmitt[3], Theodore Satterthwaite[3], Arastoo Vossough[1], Raquel Gur[3], Alfredo Ortiz-Rosa[4], David Roalf[3], Aaron Alexander-Bloch[3]

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2-H-333 The relationship between cortical structure and fine manual dexterity in motor development

Pamela Barhoun[1], Ian Fuelscher[1], Hannah Portogallo[1], Kaila Bianco[1], Mervyn Singh[1], Dwayne Meaney[1], Christian Hyde[1]

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2-H-334 Behavioral, cortical morphological and microstructural correlates of eating disorders in adolescence

Carolina Makowski[1], Clare Palmer[1], Diliana Pecheva[1], Jingjing Zou[1], Kyung (Kay) Rhee[1], Terry Jernigan[1], Amanda Bischoff-Grethe[1], Christine Fennema-Notestine[1], Christina Wierenga[1], Anders Dale[1]

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2-H-335 Neuroanatomical profile of pediatric acute-onset neuropsychiatric syndrome: A voxel-based morphometry analysis on different stages of illness

Allison Vreeland[1], Matthew Marzelli[1], Emily Mendoza[1], Allan Reiss[1], Jennifer Frankovich[1]

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2-H-336 The thalamus as a mediator of the relationship between sleep and psychosis

Julien Ouellet[1], Roxane Assaf[1], Stephane Potvin[1], Patricia Conrod[1]

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2-H-338 Anxiety predicts mean kurtosis of right uncinate fasciculus in early adolescence

Melanie Matyi[1], Leah Church[1], Jeremy Rudoler[1], Nadia Bounoua[1], Kaleigh Wieand[1], Jeffrey Spielberg[1]

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2-H-339 Comparing the Multivariate Relationships of Conceptual Adversity Models and Structural Brain Development in Adolescent Girls

Ann-Marie Barrett[1], Theresa Cheng[2], Jessica Flannery[3], Kathryn Mills[1], Robert Chavez[1], Philip Fisher[1], Clare McCann[1], Jennifer Pfeifer[1]

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2-H-340 Maturation of pyramidal tracts supports the emergence of preferential attention to the eyes during infancy

Aiden Ford[1], Xiongtao Dai[2], Longchuan Li[3], Zeena Ammar[1], Ami Klin[3], Warren Jones[3], Sarah Shultz[3]

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2-H-341 Combined effects of occipito-temporal and anterior cingulate sulcal patterns on reading and writing skills in children and adults

Marieke LONGCAMP[1], Charlotte Dupont[1], Iris Menu[2], Guillaume Auzias[1], Olivier Coulon[1], Julien Sein[1], Arnaud Cachia[2]

[1]Aix-Marseille University, [2]Université Paris Cité

2-H-342 Causal interactions between the cortical structure of the fusiform gyrus and reading skills during primary school

Florence Bouhali[1], Luxi Feng[2], Emilio Ferrer[3], Timothy Brown[4], Terry Jernigan[4], Richard Wagner[5], Fumiko Hoeft[2]

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2-H-343 The contribution of familial risk for reading difficulties on early auditory predictors of literacy

Lauren Blockmans[1], Narly Golestani[2], Josué Luiz Dalboni da Rocha[3], Jan Wouters[1], Pol Ghesquière[1], Maaike Vandermosten[1]

[1]KU Leuven, [2]University of Vienna, [3]St. Jude Children's Research Hospital

2-H-344 Are Differences in Cortical Thickness between Children with and without Reading Disability Affected by a Bilingual Experience?

Alison Schug[1], Guinevere Eden[1]

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2-H-345 Development of visual white matter pathways relates to spontaneous electrophysiological activity

Sendy Caffarra[1], John Kruper[2], Adam Richie-Halford[3], Ariel Rokem[2], Jason Yeatman[3]

[1]Stanford University and University of Modena and Reggio Emilia, [2]University of Washington, [3]Stanford University

2-H-346 Individual variation in functional brain network area predicts individual differences in executive function

Sanju Koirala[1], Robert Hermosillo[1], Eric Feczko[1], Oscar Dominguez[1], Anders Perrone[1], Nora Byington[1], Amanda Rueter[1], Otiti Mayo[1], Theodore Satterthwaite[1], Jed Elison[1], Damien Fair[1]

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2-H-347 Contributions of age related changes in intracortical myelination to gamma band activity during working memory

Samuel Elliott[1], Shane Mckeon[1], Will Foran[1], Finnegan Calabro[1], Beatriz Luna[1]

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2-H-348 Longitudinal and prospective assessment of prenatal maternal sleep quality and associations to newborn hippocampal and amygdala volume

Melissa Nevarez-Brewster[1], Catherine Demers[1], Alexandara Mejia[1], Mercedes Hoeflich Haase[2], Martin Styner[2], Maria Bagonis[2], Sun Hyung Kim[2], John Gilmore[2], M Hoffman[3], Benjamin Hankin[4], Elysia Davis[1]

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I – Networks

2-I-349 Longitudinal trajectories of functional brain network integration during the first two years of life and their relation to later working memory ability at 8-12 years

Mackenzie Woodburn[1], Margaret Sheridan[1], Weiyan Yin[1], Weili Lin[1], Jessica Cohen[1]

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2-I-350 Methylphenidate changes dynamic brain organization in stimulant medication naïve children with ADHD

Tehila Nugiel[1], Margaret Sheridan[1], Peter Mucha[2], Jessica Cohen[1]

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2-I-352 Parsing the unique and shared structural connectomics of irritability, inattention, and hyperactivity in youth

Cameron McKay[1], Brooke Scheinberg[1], Ellie Xu[1], Katharina Kircanski[1], Melissa Brotman[1], Ellen Leibenluft[1], Julia Linke[1]

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2-I-353 Control energy detects discrepancies in good vs. poor readers' functional activation during rhyming task

Chenglin Lou[1], Marc Joanisse[1]

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2-I-354 Language first, cognition later: Different trajectories of sub-components of the future-reading network in processing narratives from kindergarten to adolescence

Raya Meri[1], Scott Holland[2], Rola Farah[1], Tamara Rohana[1], Narmeen Haj[1], Tzipi Horowitz-Kraus[1]

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2-I-355 Differences in functional network controllability in infants with high-likelihood for autism spectrum disorder in the first year of life

Huili Sun[1], Alexander Dufford[1], Wei Dai[1], Dustin Scheinost[1]

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J – Clinical Populations

2-J-210 Maternal Hair Cortisol Predicts Periodic and Aperiodic Infant Frontal EEG Activity Longitudinally Across Infancy

Annie Brandes-Aitken[1], Nicolo Pini[2], Natalie Brito[1]

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2-J-356 Objectively measured total sleep time predicts internalizing symptoms in adolescents: Findings from the ABCD dataset

Christina Chick[1], Grace Chen[1], Ruth O'Hara[1]

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2-J-357 Gut microbiota diversity and infant brain development

Sarah Vogel[1], Annie Brandes-Aitken[1], Tehmeena Salahin[1], Natalie Brito[1]

[1]New York University

2-J-358 Differences in neural activity in physiological and perceived stress responses during adolescence

Madison Fung[1], Zachary Miller[1], Finola Kane-Grade[1], Bonny Donzella[1], Megan Gunnar[1], Kathleen Thomas[1]

[1]University of Minnesota

2-J-359 Response inhibition in first-time fathers: neural correlates and associations with chronic stress

Pia Sellery[1], Yael Waizman[1], Ellen Herschel[1], Sofia Cardenas[1], Elizabeth Aviv[1], Bailey Graves[1], Jonas Kaplan[1], Darby Saxbe[1]

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2-J-360 Longitudinal associations between pubertal hormones and white matter microstructure

Christopher Machle[1], Marjolein Barendse[2], Samantha Chavez[1], Robert Chavez[1], Jennifer Pfeifer[1]

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2-J-361 Emotion dysregulation moderates the association between inflammation and basal ganglia network connectivity in adolescents

Saché Coury[1], Jordan Garcia[1], Jaclyn Kirshenbaum[2], Tiffany Ho[3], Ian Gotlib[1]

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2-J-362 Pubertal stage and daily sleep

Jaclyn Kirshenbaum[1], Saché Coury[2], Rachel Manber[2], Ian Gotlib[2]

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K – Methods

2-K-215 Prediction of attention profiles at age 3 and 4 years using a machine learning approach

Mariel Musso[1], Eduardo Cascallar[2], M. Rosario Rueda[1]

[1]University of Granada, [2]KUL (Leuven University)

2-K-363 Comparing analytic approaches to infant functional near-infrared Spectroscopy data

Yiyu Liu[1], Fernando Sánchez Hernández[1], Fransisca Ting[2], Daniel Hyde[1]

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2-K-364 Testing for Within x Within and Between x Within Moderation using Random Intercept Cross-Lagged Panel Models

Lydia Speyer[1], Anastasia Ushakova[2], Sarah-Jayne Blakemore[1], Aja Murray[3], Rogier Kievit[4]

[1]University of Cambridge, [2]University of Lancaster, [3]University of Edinburgh, [4]Radboud University Nijmegen

2-K-365 Measuring dimensions of adversity across the lifespan: Guidelines and an applied example

Ilana Berman[1], Katie McLaughlin[2], Margaret Sheridan[1]

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2-K-366 Infant and parent predictors of infant MRI scan success

Sally Stoyell[1], Sooyeon Sung[1], Brittany Howell[2], Essa Yacoub[1], Jed Elison[1]

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2-K-367 Developing a Biomarker Assessment tool to evaluate the performance of EEG Proxy Markers of Sensory Sensitivities in Autism Spectrum Conditions.

Ayesha Javed[1], Jason He[1], Charlotte Blackmore[1], Jumana Ahmad[2], Nicolaas Puts[1], Emily Jones[3], Grainne McAlonan[1]

[1]King's College London, [2]Greenwich University, [3]Birkbeck, University of London

2-K-368 BIBSNet: a deep learning network for segmentation of infant brain MRI scans

Timothy Hendrickson[1], Paul Reiners[1], Lucille Moore[1], Anders Perrone[1], Dimitrios Alexopoulos[2], Martin Styner[3], Monica Rosenburg[4], Omid Kardan[4], Taylor Chamberlain[4], Anurima Mummaneni[4], Henry Caldas[4], Brad Bower[5], Sally Stoyell[1], Tabitha Martin[1], Sooyeon Sung[1], Amanda Rueter[1], Christopher D Smyser[2], Jed T Elison[1], Alice Graham[6], Damien A Fair[1], Eric Feczko[1]

[1]University of Minnesota, [2]Washington University in St. Louis, [3]University of North Carolina at Chapel Hill, [4]University of Chicago, [5]PrimeNeuro, [6]Oregon Health and Science University

2-K-369 Data collection strategies: Decreasing participant burden and increasing retention in neuroimaging research in typically and atypically developing pediatric populations

Kristina Hufnagle[1], Nora Byington[1], Kristen Scheidter, Julia Monk, Amanda Rueter[1], Catherine Burrows[1], Christine Conelea[1], Suma Jacob[1], Deanna Barch[2], John Constantino, Joel Nigg[3], Jed Elison[1], Nico Dosenbach[1], Damien Fair[1]

[1]University of Minnesota, [2]Washington University in St. Louis, [3]Oregon Health & Science University

2-K-370 Studying cognitive and behavioural network topology in very preterm and term children

Marguerite Leoni[1], Lucy Vanes[1], Laila Hadaya[1], Paola Dazzan[1], Emily Simonoff[1], Serena Counsell[1], A. David Edwards[1], Chiara Nosarti[1]

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L – Clinical Populations

2-L-211 Responding to Threat: Associations between Neural Reactivity to and Avoidance of Threat in Pediatric Anxiety

Elizabeth Kitt[1], Sadie Zacharek[1], Paola Odriozola[1], Cristina Nardini[1], Grace Hommel[1], Alyssa Martino[1], Tess Anderson[1], Hannah Spencer[1], Alexis Broussard[1], Carla Marin[1], Wendy Silverman[1], Eli Lebowitz[1], Dylan Gee[1]

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2-L-371 Investigating tactile processing precursors of cognitive development in the premature newborn brain

Victoria Dumont[1], Anne-Lise Marais[1], Marie Anquetil[1], Sandrine Rossi[1], Anne-Sophie Trentesaux[1], Nadège Roche-Labarbe[1]

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2-L-373 Childhood white matter morphology predicts persistence of ADHD symptoms into adolescence

Keri Rosch[1], Christian Hyde[2], Ian Fuelscher[2], Deana Crocetti[1], Philip Duvall[1], Mervyn Singh[2], Karen Seymour[3], Stewart Mostofsky[1]

[1]Kennedy Krieger Institute, [2]Deakin University, [3]National Institutes of Health

2-L-374 The associations among puberty, brain development, and internalizing symptoms in girls transitioning to adolescence: a combined multivariate pattern and brain network approach

Andrea Pelletier-Baldelli[1], Sophia Martin[1], Margaret Sheridan[1], Kathleen Gates[1], Matteo Giletta[2], Paul Hastings[3], Matthew Nock[4], George Slavich[5], Karen Rudolph[6], Mitchell Prinstein[1], Adam Bryant Miller[1]

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2-L-376 The relationship between connectivity in the EEG theta frequency and development of social skills in children with and without neurodevelopmental disorders

Manon Krol[1], Marlene Meyer[1], Rianne Haartsen[2], Emily Jones[3], Luke Mason[3], Sabine Hunnius[1], Jan Buitelaar[1]

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2-L-377 Transdiagnostic connectome-based mapping of autistic traits in children with autism and/or attention deficit/hyperactivity disorder

Patricia Segura[1], José Osmar Alves Filho[1], Anish Simhal[1], Jacob Stroud[1], Jessica Cloud[2], Somer Bishop[3], So Hyun Kim[4], Catherine Lord[5], Francisco Xavier Castellanos[6], Stanley Colcombe[2], Michael Milham[1], Adriana Di Martino[1]

[1]Child Mind Institute, [2]Nathan S. Kline Institute for Psychiatric Research, [3]University of California San Francisco, [4]Weill Cornell Medicine, [5]David Geffen School of Medicine at UCLA, [6]NYU Grossman School of Medicine

2-L-378 Treatment-related change in task control network functional connectivity is developmentally specific in OCD

Hannah Becker[1], Adriene Beltz[1], Stephan Taylor[1], Kate Fitzgerald[2]

[1]University of Michigan, [2]Columbia University

2-L-379 Understanding the neural correlates of irritability in adolescent depression: A pilot study using a novel, co-produced hybrid resting state fMRI task

Niamh MacSweeney[1], Perrine Louvet[1], Simal Zafar[1], Stella Chan[2], Alex Kwong[1], Stephen Lawrie[1], Liana Romaniuk[1], Heather Whalley[1]

[1]The University of Edinburgh, [2]University of Reading

2-L-381 Anxiety, externalizing behaviors, and exposure to violence: Investigating associations with amygdala-PAG functional connectivity in adolescents

Alexis Broussard[1], Taylor Keding[1], Amanda Rueter[2], Timothy Hendrickson[2], Anders Perrone[2], Nora Byington[2], Audrey Houghton[2], Oscar Miranda-Dominguez[2], Eric Feczko[2], Damien Fair Fair[2], Arielle Baskin-Sommers[1], Dylan Gee[1]

[1]Yale University, [2]University of Minnesota

2-L-382 Dimensions of adolescent social media use, internalizing psychopathology, and functional brain connectivity in the ABCD Study

Elizabeth McNeilly[1], Nicholas Allen[1], Kathryn Mills[1]

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M – Attention

2-M-216 Effects of the working memory load on involuntary attention capture by task-irrelevant sounds in children and adolescents

Ranjan Debnath[1], Nicole Wetzel[1]

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2-M-383 Reading in a foreign language could change auditory attention in adolescents: A pre-registered study combining EEG and pupillometry

Paula Ríos-López[1], Andreas Widmann[1], Nicole Wetzel[1]

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2-M-384 Brain markers of distractibility in children and adults: an EEG study

Aurélie Bidet-Caulet[1], Philippe Albouy[2], Roxne Hoyer[1]

[1]Lyon Neuroscience Research Center, [2]CERVO Brain Research Centre

2-M-385 Anxiety influences perceptual processing in mid childhood: elucidating the role of cortical excitability

Nicola Johnstone[1], Harriet Tenenbaum[1], Kathrin Cohen Kadosh[1]

[1]University of Surrey

2-M-386 Exploring Default Mode Network Connectivity following stimulant washout periods in individuals with Autism Spectrum Disorder (ASD)

Kelsey Harkness[1], Signe Bray[1], Kara Murias[2]

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2-M-387 Neural correlates of spatial bias and reading fluency development in school-aged children

Patricia Hoyos[1], Na Yeon Kim[2], Jesse Gomez[1], Sabine Kastner[1]

[1]Princeton University, [2]California Institute of Technology

N – Language

2-N-388 Phonological and semantic specialization in 9- to 10-year-old children during auditory word processing

Jin Wang[1], Brianna Yamasaki[1], James Booth[1]

[1]Vanderbilt University

2-N-389 Early Neural Signatures of Atypical Language Acquisition in Infants at Elevated Likelihood for Autism

Lauren Wagner[1], Megan Banchik[1], Nana Okada[2], Tawny Tsang[1], Nicole McDonald[1], Shafali Jeste[3], Susan Bookheimer[1], Shulamite Green[1], Mirella Dapretto[1]

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2-N-390 Experimentally-controlled and naturalistic neuroimaging task to study language development

Halie Olson[1], Emily Chen[1], Kirsten Lydic[1], Somaia Saba[1], Rebecca Saxe[1]

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2-N-391 Altered audiovisual congruency effect in late but not early ERP time windows for beginning typical vs poor readers

Christina Lutz[1], Silvia Brem[1], Gorka Fraga-González[1], Seline Coraj[1], Aline Kressebuch[1]

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O – Brain Function

2-O-393 Individual differences in default mode network functional topography provides a link between variability in complex cognitive and basic motor abilities

Ethan Whitman[1], Annchen Knodt[1], Ahmad Hariri[1]

[1]Duke University

2-O-394 Sex differences in intrinsic functional connectivity associated with the development of internalizing and externalizing symptoms in adolescents

Yoonji Lee[1], Rajpreet Chahal[1], Ian Gotlib[1]

[1]Stanford University

2-O-395 Exploring the neural basis of fast logic

Matthieu Raoelison[1], Emilie Salvia[1], André Knops[1], Sylvain Charron[1], Anna Fayolle[1], Macarena Cuenca-Maia[2], Grégoire Borst[1], Catherine Oppenheim[1], Arnaud Cachia[1], Wim De Neys[1]

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2-O-407 Screen time and brain functional connectivity: a random intercept cross-lagged panel analysis of a longitudinal adolescent cohort

Jasmina Wallace[1], Patricia Conrod[1]

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P – Brain Connectivity

2-P-396 Maternal sensitivity at the age of 8 months associates with the child local connectivity of the medial prefrontal cortex at 5 years of age

Anni Copeland[1], Riikka Korja[1], Saara Nolvi[1], Olli Rajasilta[1], Elmo Pulli[1], Venla Kumpulainen[1], Eero Silver[1], Ekaterina Saukko[1], Hetti Hakanen[1], Eeva Holmberg[1], Eeva-Leena Kataja[1], Suvi Häkkinen[1], Riitta Parkkola[1], Tuire Lähdesmäki[1], Linnea Karlsson[1], Hasse Karlsson[1], Jetro J Tuulari[1]

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Q – Other

2-Q-217 Sex differences in the relationship between adolescent anxiety sensitivity and brain circuits related to emotion regulation

Leah Church[1], Melanie Matyi[1], Nadia Bounoua[1], Jeremy Rudoler[1], Kaleigh Weiand[1], Jeffrey Spielberg[1]

[1]University of Delaware

2-Q-218 Listen to Us: A mixed-methods approach to understanding the psychosocial impact of COVID-19 on adolescents.

Kathryn Fradley[1], Rhianan Ellis[1], Kate Bennett[2], Liat Levita[1]

[1]University of Sheffield, [2]Institute of Population Health, University of Liverpool

2-Q-398 A Systematic Review of the Link between the Brain and Resilience in Childhood and Adolescence

Lucy Zhang[1], Sarah Whittle[1], Divyangana Rakesh[2]

[1]University of Melbourne, [2]Harvard University

2-Q-399 Somatosensory prediction among preschool children: a cross-sectional study

Anne-Lise Marais[1], Marie Anquetil[1], Victoria Dumont[1], Nadège Roche-Labarbe[1]

[1]University of Caen Normandy

2-Q-400 Transcriptomics, development, and the parcellation of the human cerebral cortex

Leana King[1], Kevin Weiner[1]

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2-R-240 Do infants and adults process others' actions differently based on others' linguistic group?

Marc Colomer[1], Hyesung Hwang[1], Amanda Woodward[1]

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POSTER SESSION 3

September 7-9, 2022
Anytime in Whova

A – Executive functioning

3-A-23 Dynamic Multi-Layer Neuronal Networks Supporting Working Memory and Emotion: Insights from Graph Theory

Alana Campbell[1], Austin Ferguson[1], Peter Mucha[2]

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3-A-236 Neural correlates of working memory moderate the association between perceived neighborhood threat and externalizing symptoms in youth

May Conley[1], Kristina Rapuano[1], Callie Benson-Williams[1], Monica Rosenberg[2], Richard Watts[1], Cassandra Bell[1], BJ Casey[1], Arielle Baskin-Sommers[1]

[1]Yale University, [2]University of Chicago

3-A-402 Error monitoring, social observation, and fear of negative evaluation in Chinese adolescents

Yanbin Niu[1], Zixuan Li[1], George Buzzell[2], Jingjing Zhao[1]

[1]Shaanxi Normal University, [2]Florida International University

3-A-405 Intergenerational Effects of Maternal Depression on Brain Structure, Function, and Child Psychopathology

Emma Millon[1], David Pagliaccio[1], Martine Fontaine[1], Sydney Taylor[1], Marisa Spann[1], Catherine Monk[1], Rachel Marsh[1]

[1]Columbia University

3-A-410 Do conversation disruptions in early childhood predict executive functioning and externalizing psychopathology?

Amy Carolus[1], Margaret Sheridan[1], Lilliana Lengua[2], Kate McLaughlin[3], Rachel Romeo[4]

[1]University of North Carolina at Chapel Hill, [2]University of Washington, [3]Harvard University, [4]University of Maryland

3-A-411 When is intra-individual variability adaptive in children? Testing effects of training on going and stopping.

Roser Cañigueral[1], Keertana Ganesan[1], Claire Smid[1], Abigail Thompson[1], Nikolaus Steinbeis[1]

[1]University College London

3-A-420 Developmental changes in cognitive control among girls and boys with ADHD: Associations with ADHD symptom progression

Alyssa DeRonda[1], Stewart Mostofsky[1], Keri Rosch[1]

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B – Socioemotional processing

3-B-403 Neural Correlates of Emotion Regulation in Racial Discrimination's Effect on Internalizing and Externalizing Symptoms in Black American Adolescents from the ABCD Sample

Ava Reck, Landry Huffman[1], Steve Kogan[1], Assaf Oshri[1]

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3-B-409 The Role of Social Anxiety and Sensitivity to Delayed Reward on Parental Accommodation Behavior

Sophia Lucente, Athena Vafiadis, Philip Kendall[1], Dominic Fareri[1], Johanna Jarcho[1]

[1]Temple University

3-B-421 Differences in the neural processing of dynamic expressions in toddlers born preterm

Xinge Li[1], Andrea Ortiz-Jimenez[1], Rebecca Lipschutz[1], Brian Biekman[1], Hana Taha[1], Dana DeMaster[1], Susan Landry[1], Johanna Bick[1]

[1]University of Houston

3-B-58 Morality and disgust in children with Autism Spectrum Disorders (ASD)

Aditya Jayashankar[1], Sofronia Ringold[1], Riley McGuire[1], Lisa Aziz-Zadeh[1]

[1]University of Southern California

D – Rewards/Motivation

3-D-10 Higher corticostriatal fractional anisotropy at 9-10 years predicts urgency at 11-12 years: Preliminary evidence

Meilin Jia-Richards[1], Frances Wang[1], Rachel Bachrach[2], Amelia Versace[1]

[1]University of Pittsburgh, [2]VA Pittsburgh Healthcare System

3-D-97 Brain-iron neurophysiology and its relationship to the effects of reward- and methylphenidate-related dopaminergic modulation on response inhibition in children with ADHD and typically developing children

Arianna Cascone[1], Finnegan Calabro[2], Will Foran[2], Bart Larsen[3], Ashley Parr[2], Brenden Tervo-Clemmens[4], Beatriz Luna[2], Jessica Cohen[1]

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G – Environment (Stress, SES)

3-G-132 Low interoceptive accuracy as a neural mechanism linking childhood trauma with adolescent psychopathology

David Weissman[1], Shafi Rubbani[1], Stephanie DeCross[1], Steven Kasparek[1], Katie McLaughlin[1]

[1]Harvard University

3-G-406 Early Parenting Intervention Effects on Amygdala Volume and Associated Internalizing Symptoms Among High-Risk Adolescents: A Randomized Clinical Trial

Marta Korom[1], Hung-Wei Bernie Chen[1], Nim Tottenham[2], Mary Dozier[1], Jeffrey Spielberg[1]

[1]University of Delaware, [2]Columbia University

3-G-412 White matter volume and multi-toxicant exposure in young children

Carina Fowler[1], Aaron Reuben[1], Nicholas Herkert[1], Heather Stapleton[1], Kate Hoffman[1], Michael Gaffrey[1]

[1]Duke University

3-G-415 Topological network properties of resting-state functional connectivity patterns are associated with metal mixture exposure in adolescents

Azzurra Invernizzi[1], Elza Rechtman[1], Demetrios Papazaharias[1], Elena Colicino[1], Stefano Renzetti[2], Claudia Ambrosi[3], Lorella Mascaro[3], Alessandra Patrono[2], Daniele Corbo[3], Giuseppa Cagna[4], Roberto Gasparotti[4], Abraham Reichenberg[1], Cheuk Tang[1], Donald Smith[5], Donatella Placidi[2], Roberto Lucchini[6], Robert Wright[1], Megan Horton[1]

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H – Brain Structure

3-H-337 Subcortical brain volumes in children of parents who attempted or died by suicide: Adolescent Brain Cognitive Development study

Salahudeen Mirza[1], Andrea Wiglesworth[1], Mark Fiecas[1], Kathryn Cullen[1], Bonnie Klimes-Dougan[1]

[1]University of Minnesota

3-H-418 The association of Brain age with pubertal timing and How they relate to psychopathology

Niousha Dehestani Kolagar[1], Nandita Vijayakumar[1], Tim Silk[1], Sarah Whittle[1]

[1]Deakin University

3-H-419 Regional specificity of structural brain alterations in autism: A pilot voxel-based morphometry meta-analysis

Emily Laltoo[1], Katherine Lawrence[1], Priya Rajagopalan[1], Sebastian Benavidez[1], Lilit Yengoian[1], Matthew Kempton, James McCracken[2], Paul Thompson[1]

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I – Networks

3-I-351 Evaluation of brain network segregation using resting state functional MRI in pediatric brain tumor patients treated with proton beam therapy

Anna Dowling[1], Benjamin Seitzman[1], Timothy Mitchell[1], Michael Olufawo[1], Donna Dierker[1], Hari Anandarajah[1], Ally Dworetsky[1], Alana McMichael[1], Rebecca Coalson[1], Catherine Jiang[1], Hongjie Gu[1], Dennis Barbour[1], Bradley Schlaggar[2], David Limbrick[1], Jennifer Strahle[1]; Joshua Rubin[1], Joshua Shimony[1], Stephanie Perkins[1]

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L – Clinical Populations

3-L-191 Neural correlates of working memory in adolescents with suicide attempt, suicidal ideation, and nonsuicidal self-injury

Shou En Chen[1], Christina Chick[1], Ruth O'Hara[1]

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3-L-372 Basal ganglia connectivity in adolescent myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS)

Hollie Byrne[1], Richard Beare[1], Stuart Oldham[1], Elisha Josev[1], Sarah Knight[1], Marc Seal[1]

[1]Murdoch Children's Research Institute

3-L-375 Atypical functional connectivity of the amygdala relates to emergent sensory symptoms in infants at an elevated likelihood of autism

Megan Banchik[1], Lauren Wagner[1], Nicole McDonald[1], Susan Bookheimer[1], Shafali Jeste[2], Mirella Dapretto[1], Shulamite Green[1]

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3-L-401 Individual-Specific Resting-State Functional Connectivity as an Important Tool for Identifying Neural Correlates of Sustained and Persistent Psychotic-Like Experiences

Nicole Karcher[1], Sridhar Kandala[1], Deanna Barch[1]

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3-L-413 Developmental Trajectories of ADHD Symptom Severity Predict Functional Connectivity of Reward and Salience Networks in Adulthood

Teague Henry[1], Neil Jones[2], Heather Joseph[2], Rachel Lindstrom[2], Elizabeth Gnagy[3], William Pelham, Jr.[3], Cecile Ladouceur[2], Brooke S.G. Molina[2]

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3-L-417 Age-related changes in neural responses to sensory stimulation in autism

Melis Cakar[1], Kaitlin Cummings[1], Susan Bookheimer[1], Mirella Dapretto[1], Shulamite Green[1]

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M – Attention

3-M-404 Neurophysiological markers of attention deficits in early use of smoked cocaine

Agustina Aragón-Daud[1], Sofía Oberti De Luca[1], Claudia Pascovich[2], Teresa Torralva[1], Laura de la Fuente[1]

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3-M-408 Neurophysiology of attention (P300) in smoked cocaine dependents with and without ADHD comorbidity

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O – Brain Function

3-O-392 Does the brain's anticipatory responses to driving hazards distinguish learner and experienced drivers?

Theresa Chirles[1], Johnathon Ehsani[1], Mary Beth Nebel[2], Laura Rice[2], Stewart Mostofsky[2], John Desmond[1]

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P – Brain Connectivity

3-P-414 Salivary microRNA molecules may help explain clinically-relevant dMRI abnormalities in 12-17-year-old adolescents presenting with anxiety symptoms following a recent concussion

Joao Paulo Lima Santos[1], Anthony Kontos[1], Cynthia Holland[1], Richelle Stiffler[1], Stephen Suss[1], Hannah Bitzer[1], Kaitlin Caviston[1], Madelyn Shaffer[1], Mary Phillips[1], Michael Collins[1], David Brent[1], Amelia Versace[1]

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3-P-416 Dimensional ADHD symptoms are associated with advanced measures of white matter microstructure in late childhood

Katherine Lawrence[1], Zvart Abaryan[1], Emily Laltoo[1], James McCracken[2], Paul Thompson[1]

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