

Evaluation “Methods and Challenges in Developmental Neuroimaging” Amsterdam, May 18th-20th 2009

Organisers: Eveline Crone & Sarah Durston

The meeting

Background: Neuroimaging methods are increasingly being applied to the study of brain development. Whereas early work in this area sufficed with simple comparisons between children and adults, investigators are now using state-of-the-art methods to investigate the developing brain, including longitudinal measurements in developing children and analysis pathways that are designed specifically for non-adult brains. Although this work has provided valuable new insights, the application of brain imaging techniques in developing and clinical populations is raising new challenges. These include issues such as: How can molecular and genetic models be combined with information from structural and functional brain development? How does brain development inform us about developmental changes in cognition and affect? How can we combine the advances in molecular, genetic, brain imaging and cognitive science to explain changes and differences in normal and deviate developing children? Research groups around the world are beginning to address these challenges in their work. However, to date there is currently no international platform where these issues can be outlined and discussed amongst experts. The main aim of this meeting was to establish a platform for a first international discussion of these challenges.



The organisers: Sarah Durston (L) & Eveline Crone (R)

The event: The meeting took place in the KNAW Trippenhuis, in May 2009. The goal of international cross talk was easily met: Twelve international experts in developmental neuroimaging presented their work and participated actively in the meeting. There were eighty places available for international students and other researchers working in the field. We had to close the online within two months of announcing the meeting, as all the places had been filled. The program was centred on the four major themes in developmental neuroimaging: 1) brain development, 2) methodological issues, 3) methods for studying plasticity in the developing brain, and 4) clinical applications. There were three/four presentations within each theme and each session was ended with a Discussion Session. These were the highlight of the meeting, as both experts and the audience participated in a lively discussion of the issues. Many of the experts commented on the open atmosphere and the willingness of attendees to discuss issues openly or ‘air their dirty laundry’ as one presenter phrased it. On the first day, there was a poster session to allow junior scientists to present their work and discuss it with experts in the field. This was well attended and was a lively affair. The best student abstracts were selected for short oral presentations during the meeting. On the second day, there was a closed session for invited speakers and organisers only. This was a three-hour event, where issues in the field were discussed in more depth. Other topics were the Special Issue coming out in an imaging journal as a follow-up to this event and the possibility of turning this meeting into a recurring event. Finally, possibilities for international

collaboration and funding were discussed. Professor Crone has put in the first application resulting from this meeting. Furthermore, lunches were provided at the venue and there were informal drinks sessions and two dinners, to allow for plenty of informal discussions between attendees.



Postersession

The four themes of the meeting:

Theme Brain Development

The presenters gave an overview of current knowledge with respect to structural and functional brain development. They covered the latest advances in the field of intellectual development, memory and learning, and emotional control and will describe both challenges and possibilities in their research domain.

Theme Methods

The authors highlighted methodological challenges in imaging a child's brain. They discussed how performance differences may influence our interpretation of differences in brain activation, and covered conceptual challenges in interpreting developmental brain imaging data.

Theme Plasticity

The authors highlighted the potential and limitations of imaging brain changes across development within the areas of working memory, reading and intellectual functions more generally. This theme focused on single time point versus longitudinal measurements and the interpretation of brain activation in both scenarios.

Theme Applications in clinical populations In the last theme, “Applications in clinical populations”, experts in brain imaging of deviant brain development discussed the possibilities and challenges of brain imaging in atypical populations. The presenters discussed how the methodological challenges in typical brain development researchers are relevant to the interpretation of brain imaging in atypical development.

Program: Monday May 18, 2009

10:00 welcome, registration and coffee Session I: Brain Development
10:40 Opening
11:00 Jay Giedd
11:50 BJ Casey
12:40 Lunch break
14:00 Kathleen Thomas
14:30 Discussion Session
15:00-18:00 Poster session 18:30-Speakers dinner

Tuesday May 19, 2009

9:00-Welcome and coffee Session II: Methods
10:00-Brad Schlaggar 10:30-student presentation
10:45-Beatriz Luna
11:15-Coffee break
11:45-student presentation
12:00-Russ Poldrack
12:30-Lunch break
14:00-Bruce McCandliss
14:30-student presentation
14:45-student presentation
Output
15:00-Discussion Session 15:30- Closed session 18:30-Conference dinner

Wednesday May 20, 2009

9:00-Welcome and coffee Session III: Plasticity/Training
10:00-Torkel Klingberg
10:30-student presentation 10:45-Tomáš Paus
11:15-Coffee break
11:45-Silvia Bunge
12:15-Discussion Session
12:45-Lunch break
Session IV: Child Psychiatry
14:00-Kerstin Konrad
14:30-student presentation
14:45-Sarah-Jayne Blakemore
5:15-Coffee break
15:45-student presentation
16:00-Philip Shaw
16:30-Discussion Session
17:15-Closing
17:30: Farewell & Drinks

Special Issue in the international, peer-reviewed journal Human Brain Mapping (end 2009/early 2010). HBM is an excellent outlet for such an exposition, as this journal is well known for publishing papers that represent significant advancements in imaging methods. Series of biannual meetings of the Developmental Imaging field. Several of the invited speakers have already offered to host the next meeting, to take place in 2011. First grant application for a project resulting from the meeting: Professor Crone has applied to NWO Brain & Cognition 433-09-204.