Research Assistant: Early Brain Development in Autism Spectrum Disorder

**Semester & Location:** Spring/Fall – DIS Stockholm

**Type & Credits:** Elective Course - 3 credits

**Major Disciplines:** Psychology, Neuroscience

**Faculty Members:** Elodie Cauvet

**Program Director:** Tina Mangieri, tma@disstockholm.se

**Coordinator:** Kenzie Zimmer, mz@dis.dk

**Time & Place:** Will be decided in consultation with research mentor

**About the Research:**
Autism Spectrum Disorder (ASD) is a heterogeneous neurodevelopmental condition characterized by impairment in social interaction and communication alongside stereotypic, restricted, and repetitive behaviors and interests, causing functional impairment in everyday life. Reliable diagnosis can be given from the age of 2 to 3 years, but relies solely on behavioral symptoms with no biomarkers available so far.

Early brain development disruption is thought to underlie the development of ASD, even before clinical signs are visible. Over the past couple of years, research is starting to point at prodromes, i.e. early symptoms of ASD, being potentially detectable during the first two years of life. For instance, early over-expansion of several cortical regions and especially the visual cortex has been revealed in high-risk children who will develop ASD.

This research project consists in a systematic review and a potential meta-analysis of the existing neuroanatomical findings related to early autism, used ultimately to write an article providing a better understanding of the literature and giving new insights into this recent field of research. More concretely, you learn about neuroimaging techniques, neuroanatomy and the autism research field. You also learn systematic review.
techniques, which include article screening, extracting and compiling data, and writing a systematic review using a very specific, scientific format. A meta-analysis complements the systematic review using the extracted data. An interest in neuroimaging, neuroanatomy, or statistics is a plus.

**Researcher Bio:**
Obtained her PhD in Cognitive Neuroscience, from Pierre & Marie Curie University in Paris (France). Her research interest started with language acquisition in infants leading to the study of the cerebral processing of language and music in adults. She became interested in neurodevelopmental disorders starting with developmental dyslexia then expending into autism spectrum disorders as well as ADHD. She is using techniques from psychology as well as neuroimaging in her research, this includes MRI (anatomical and functional) as well as EEG and eye tracking. She has been conducting her latest research at Karolinska Institutet Center for Neuro-developmental Disorders (KIND). Her interests include social cognitive skills, empathy and emotion processing within the whole spectrum of functioning from typicality till disorders such as ASD. She has been with DIS since 2016.

**Description of role and responsibilities of the Research Assistant**

You are expected to spend a minimum of 10 hrs per week on the project. The workload may vary over the semester. If you are travelling to do field research in a different location, additional time may be required.

As research assistant you will:

1. Participate in weekly meetings with your research mentor at a time set collectively at the beginning of the semester.
2. Participate in a research orientation at the beginning of the semester with your fellow Research Assistant students from other projects
3. Participate in two workshops during the semester:
   1. A workshop at beginning of the semester: orientation and strategies for successful international research work
   2. A workshop discussing strategies and best practices for effective communication of research, especially to those not in the field
4. Write an assessment of your own strengths and weaknesses in the research process at the beginning of the semester. Revisit at the end of the semester as part of an evaluation of your own participation in, and learning from, the research project.
5. Keep a research journal and submit it in person or via email every week (or another specified interval) to your research mentor, describing the activities of the week, and outlining goals for the following week.
6. Conduct literature reviews.
7. Participate in carrying out the research project. These may include: data compilation, article screening, literature review, statistical analysis. The specific responsibilities in a given semester vary depending on the phase of the project and
will be set by the research mentor at the beginning of the semester. Be prepared to contribute to tasks that may come up during the semester. Research processes are not always predictable.

8. Present the relevance of the research and/or findings to peer(s) from other disciplines at the End of Semester Showcase.

9. Make a final oral and/or written presentation of the research you are involved in, depending on what is agreed with your research mentor.

Learning Objectives

The primary objective is for you to experience the world of research and gain experience that will prepare you for any future career you choose to pursue. By the end of the semester you will grasp the complexities of the research project, and have made your own contribution to the project. You will also have learned to communicate ideas and findings, both orally and in writing, to members from your particular discipline as well as peers from other disciplines.

Additional objectives include:

- Learn about neuroimaging techniques, neuroanatomy and the autism research field
- Develop and apply systematic review techniques, which include article screening, extracting and compiling data
- Contribute to writing a systematic review using a very specific, scientific format
- Assist with a meta-analysis that complements the systematic review using the extracted data

Readings

The readings will be agreed on with the mentor at the beginning of the semester, and the exact content will differ depending on your background. You will receive guidance concerning the basics of relevant concepts, study designs, methods of analysis, etc.

Field research (optional)

Some research projects include field research. Expenses related to field work will be covered by a DIS travel grant. The field work will be planned with the research mentor at the beginning of the semester.

Approach to Mentoring

All DIS research mentors have been trained in mentoring students but their approach to mentoring may differ. Mentoring is about engaging at a different - and often deeper - level than what is typical in the classroom. However, mentoring also comes with some degree of ambiguity, which is important for you to be prepared for. The research mentor will work closely with you throughout the semester but part of the training is also
for you to use your own judgement, to make assessments and decisions. As part of planning your tasks and responsibilities for the semester together, the research mentor will talk to you about her/his approach to mentoring.

**Expectations of the Research Assistant**

The specific expectations of the individual research assistant are agreed upon at the beginning of the semester. In general, a research assistant is expected to take initiative, take ownership of the project and work independently. You must also be prepared for meetings and be willing to part take in relevant discussions. In cases where more research assistants are involved in the same project, you will be expected to engage in some teamwork. Carrying out a research project is not a straight forward and predictable process. This is part of what makes it exciting. It also means that communication is crucial. You are expected to take responsibility for communicating about problems or issues that arise.

**Data**

Analyses will be based on already published data from the literature (systematic review and meta-analysis).

**Evaluation and grading**

All research assistants are assessed on their participation in the seminar on responsible research practices, weekly status reports to the research mentor, self-evaluation and presentation to peers from other disciplines. Additional evaluation and grading depends on the individual research project and project phase and is outlined by the research mentor at semester start. It may include literature reviews, a poster presentation for an expert panel, a working paper, etc.

**Disability and Resource Statement**

Any student who has a need for accommodation based on the impact of a disability should contact the Office of Academic Support (acadsupp@dis.dk) to coordinate this. In order to receive accommodations, students should inform the instructor of approved DIS accommodations within the first two weeks of classes.

**Policies**

**Attendance**

It is crucial for your learning that you stay on task and hand in assignments on or before the due date. All work— including in-class projects — have to be completed in order to pass the class. Late papers or projects will be marked down with 1/3 of a grade for each day it is late.
Academic Honesty

Plagiarism and Violating the Rules of an Assignment

DIS expects that students abide by the highest standards of intellectual honesty in all academic work. DIS assumes that all students do their own work and credit all work or thought taken from others. Academic dishonesty will result in a final course grade of “F” and can result in dismissal. The students’ home universities will be notified. DIS reserves the right to request that written student assignments be turned in electronic form for submission to plagiarism detection software. See the Academic Handbook for more information, or ask your instructor if you have questions.

Academic Regulations

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