

The Cognitive Psychology Unit of the Institute of Psychology at Leiden University and the Leiden Institute for Brain and Cognition (LIBC) are looking for a highly talented student for a

### **PhD Position (1.0 fte) in Cognitive Neuroscience**

Vacancy number 6224

#### **Research project "The impact of arousal on cognitive function and cortical state"**

The waking state is characterized by constant, sometimes large, fluctuations in arousal level. Recent research suggests that such fluctuations in arousal account for a large proportion of the variability in task performance and spontaneous patterns of cortical activity (cortical state). However, the exact ways in which arousal affects the human brain, mind and behavior are still poorly understood. The major aim of the proposed research is to characterize the computational and neural mechanisms by which moment-to-moment fluctuations in arousal affect cognitive functions and cortical state.

We will manipulate arousal level (e.g., using pharmacology) or monitor spontaneous arousal fluctuations in human subjects, during rest and during the performance of challenging cognitive tasks. We will examine whether these changes in arousal are accompanied by activity changes in the tiny human brainstem nuclei that regulate arousal. Furthermore, we will examine the impact of changes in arousal on cognitive control, learning, and global patterns of cortical brain activity, as assessed with neuroimaging methods. Finally, we will use computational models to examine the mechanisms by which arousal impacts cognitive task performance and cortical state.

The project is part of a research program funded by a Vici grant of the Netherlands Organisation for Scientific Research. The abstract described above concerns the entire research program. The PhD student will be a member of a team of six, closely collaborating researchers. The research group will participate in the Leiden Institute for Brain and Cognition (LIBC), an interfaculty center for interdisciplinary research on brain and cognition ([www.libc-leiden.nl](http://www.libc-leiden.nl)).

#### **Key Responsibilities**

- Literature study, development and execution of behavioral and neuroimaging studies;
- Report results at conferences and in international journals, leading to a PhD dissertation;
- Supervise BSc and MSc thesis projects;
- Participate in the Leiden Institute for Brain and Cognition (LIBC).

#### **Selection Criteria**

- Master degree in cognitive psychology, cognitive neuroscience or closely related field;
- Experience or affinity with neuroimaging techniques and computational modeling;
- Programming experience (e.g., Matlab);
- Excellent research and writing skills;
- Excellent command of English.

#### **Our faculty**

The Faculty of Social and Behavioural Sciences comprises four institutes: Education and Child Studies, Political Science, Psychology and Cultural Anthropology & Development Sociology. The Faculty also includes the Centre for Science and Technology Studies. The Faculty is home to 5,000 students and 600 members of staff. Our teaching and research programmes cover diverse topics varying from adoption to political behaviour. For more information, see <http://www.universiteitleiden.nl/en/social-behavioural-sciences>.

For research in our institute we offer an exciting research environment including EEG, fMRI, eye tracking, virtual reality, and brain stimulation. For more information see

<https://www.universiteitleiden.nl/en/social-behavioural-sciences/psychology/cognitive-psychology>  
and <http://www.libc-leiden.nl/>

### **Terms and conditions**

The appointment is for four years (one year plus a further three years after a positive evaluation) and should lead to a doctoral degree. The gross income is € 2325 per month in the first year, increasing to €2972 per month in the fourth year, in accordance with the Collective Labour Agreement for Dutch Universities).

Leiden University offers an attractive benefits package with additional holiday (8%) and end-of-year bonuses (8.3 %), training and career development. Our individual choices model gives you some freedom to assemble your own set of terms and conditions. Candidates from outside the Netherlands may be eligible for a substantial tax break. More at <https://www.universiteitleiden.nl/en/working-at/job-application-procedure-and-employment-conditions>.

### **Diversity**

Leiden University is strongly committed to diversity within its community and especially welcomes applications from members of underrepresented groups.

### **Information**

For inquiries, please contact professor Sander Nieuwenhuis, email [snieuwenhuis@fsw.leidenuniv.nl](mailto:snieuwenhuis@fsw.leidenuniv.nl).

### **Applications**

Please submit online your application no later than the 5<sup>th</sup> of May 2019 via the blue button of our application system (from the 23<sup>rd</sup> of April; <https://www.universiteitleiden.nl/en/working-at>). Applicants should submit online a letter of interest and a cv with a list of publications.