

Two Phd research posts (AIO) in educational neuroscience of mathematic abilities (M/F)

The Helmholtz and the Freudenthal institute, Utrecht University, are looking for excellent candidates for two vacant Phd research posts m/f (AIO) in a joint research programme on the educational neuroscience of mathematic abilities.

Project information

Mathematics, both in terms of the practical skill to use numbers, data and spatial orientation and the more abstract ability to comprehend complex relationships and the reasoning about those relationships, is a central human asset and one of the core subjects in education. Unfortunately, there are large numbers of pupils who do not reach an acceptable level of proficiency. In addition, there are many cases (both children and adults) of acquired dyscalculia who require rehabilitation of their impairment. We propose to augment current diagnostic and remedial practice with new insights from cognitive and developmental neurosciences and mathematics education research.

Based on current theoretical models on math processing and development, we will identify the cognitive processes that are pre-requisites to develop mathematical skills and competencies. We suggest on the basis of additional insights from mathematical teaching science that there are core processes that are necessary to develop these skills, and that in addition there are cognitive mechanisms that facilitate or aid this development. An example of the first would be what Dehaene has termed “number sense”, and “spatial insight” and “visual mental imagery” are examples of the latter. Subsequently, we will employ the current knowledge of brain-behaviour relationships and modern neuroimaging techniques to assess the maturation, and the effect of training, of these cognitive processes in young children.

Helmholtz (HH)-AIO

We look for an enthusiastic researcher with a good Masters degree in one of the Cognitive Neurosciences with, preferably, a background in developmental studies, mathematics or related areas such as spatial abilities, and/or neuroimaging (ERP, fMRI).

Duties:

1. Investigate in collaboration the FI-AIO, through literature search and fact finding mission consulting the members of the working group, which prerequisite functions and which mathematical abilities should be included in the study.
2. Investigate in collaboration the FI-AIO which methods may be used to assess these functions/abilities in children and adults.
3. Design specific tasks that can be used in imaging studies with adults (ERP, fMRI) and children (ERP).
4. Actively develop new imaging methodologies to investigate children, such as ERP.
5. Carry out imaging studies and data analyses.
6. Written and oral presentation of results

Freudenthal (FD)-AIO

We look for an enthusiastic researcher with a Masters- or Doctoral degree in one of the educational sciences with, preferably, a background in developmental studies, mathematics or related areas. Candidates with a degree in another academic discipline but with a keen interest in either the mathematics of young children or cognitive development are encouraged to apply as well.

Duties:

1. Investigate in collaboration the HH-AIO, through literature search and fact finding mission consulting the members of the working group, which prerequisite functions and which mathematical abilities should be included in the study.
2. Investigate in collaboration the HH-AIO which methods may be used to assess these functions/abilities in children and adults.
3. Design and carrying out of cross-sectional and longitudinal studies in the age range of 3 to 10 years
4. Investigate factors that contribute to the development of dyscalculia.
5. Design, apply, and evaluate intervention procedures.
6. Written and oral presentation of results

Terms of employment

We offer a full-time position. Your gross salary starts with €1813,- per month in the first year and increases to €2394,- per month in the fourth year of employment. The salary is supplemented with a holiday bonus of 8% and an end-of-year bonus of 2% per year. In addition we offer: a pension scheme, a health insurance allowance; partially paid parental leave, facilities for child care, flexible employment conditions in which you may trade salary for vacation days or vice versa. Conditions are based on the Collective Employment Agreement of the Dutch Universities.

Further details

For information please contact: for the HH-AIO position, prof.dr Edward de Haan (tel: 030-2534281; e-mail: e.dehaan@fss.uu.nl) and for the FI-AIO position, prof.dr. Jan de Lange (030-2635511; e-mail: jan@fi.uu.nl) A copy of the grant proposal may be obtained from Liesbeth Walther (e-mail: l.walther@fi.uu.nl).

How to apply

Applications, including a curriculum can be submitted to the Personnel Department, Faculty of Physics and Astronomy, P.O. Box 80000, 3508 TA Utrecht, the Netherlands or submit by e-mail to: p&o@phys.uu.nl. **Please mention vacancy number 62412.** Deadline for applications is 10 January 2005.