Master (MSc) in Clinical Neuropsychology

Huub A.M. Middelkoop, Professor of clinical neuropsychology

LUMC Neurology & Neuropsychology
UL Neuropsychology

https://twitter.com/huubmiddelkoop
http://www.fsw.leidenuniv.nl/psychologie/organisatie/gmn/

Clinical neuropsychologists are experts in psychology as applied to neurological conditions, i.e. brain illness, neurodevelopmental disorder, neurodegeneration or brain injury.
Why study **clinical neuropsychology**?

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**You are interested in:**
- brain/behavior relationships: how does the healthy and impaired brain function? (neurobiology, modelling, development and implementation of methods/instruments)
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**and you want to be professionally active in:**
- University medical centres (UMCs) and general hospitals
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- Mental health services (GGZ, Psychiatry)
- Pediatric and Geriatric health care facilities
- Research centres, e.g. university, TNO, RIVM
- Forensic setting
- Pharmaceutical industry: CNS division
- Profit and non-profit sector: assessment centres, government, commercial enterprises, etc.
- Private practice, ????

**3 major career tracks**
1. Health care: BA > Msc CNP (1y) > GZ-Psychologist (2y) > Clinical (neuro)psychologist (4y)
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3. Other: BA > Msc CNP (1y)>

Brain lesions $< >$ functional lesions

No association between fibrosis on magnetic resonance imaging at return to play and hamstring reinjury risk. Am J Sports Med. 2015 May;43(5):1228-34. Reurink G1 et al.
CNP: behavioral consequences of (organic/functional) brain dysfunction: assessment, diagnosis, treatment and rehabilitation

**Organic brain disorders**
- Genetic and neurodevelopmental disorders
  - mental retardation, ADHD, dyslexia, Angelman, Prader-Willie syndrome
- Cerebrovasculopathy / CVA
- Traumatic brain injury
- Neurotoxicity
  - alcohol, solvents, drugs
- Psychiatric disorders
  - depression, anxiety, schizophrenia
- Neurodegeneration
  - Lewy body disease, Parkinson’s, Huntington’s, Alzheimer’s disease
- Other
  - HIV, tumor cerebri, epilepsy, (metabolic) encephalopathy, brain infection, hydrocephalus, radiation

**Functional brain disorders**
- Psychopathology

Clinical relevance: 1 out of 5 people will suffer from brain disease!

(Neuro)psychological impairments
- cognition
  - attention and concentration problems
  - amnesia
  - aphasia
  - agnosia, apraxia
  - executive dysfunction
- emotional status
  - anxiety, depression
- behavior
  - apathy, disinhibition
  - delusion, hallucinations
  - personality change
  - sensory, motor and autonomic nervous system disturbances
NEUROPATHOLOGY <> PSYCHOPATHOLOGY

Discover the world at Leiden University
Role and value of clinical neuropsychology

Fundamental (clinical) research of normal and pathological brain/behavior relationships

Selection and description of (patient) study populations (cognitive genetics, fenotyping)

Research, development and evaluation of (clinical) research instruments (validation, reliability, applicability, normative data)

Contribution to medical diagnostic work-up: assessment of neuropsychological dysfunction indicative for organic brain disease

(Neuro)psychological function analysis: description of neuropsychological impairments and their consequences for daily functioning

(Neuro)psychological interventions: treatment of patients with cognitive and/or behavioral disorders as result of (organic) brain disease (cognitive rehabilitation)

Quantitative evaluation of (non)pharmacological interventions
NEW EARLY ALERT

Alzheimer’s Home Screening Test

Early detection can lead to early treatment and improved quality of life.

- Self-administered
- Painless and non-invasive
- Simple and easy to use
- Results in 5 minutes

Have you ever wondered?™

Discover the world at Leiden University
CNP program (60 EC)

>>> entry requirement: BA Psychology with Kolb & Wishaw Neuropsychology

- Courses (20 EC):
  - Adult and old-age Clinical Neuropsychology: theory (5 EC) & practice (5 EC)
  - Child Clinical Neuropsychology: theory (5 EC) & practice (5 EC)

  And

  - Clinical neuropsychological interventions: theory (5 EC) & practice (5 EC)

- Thesis (20 EC)

- Internship (20 EC) or 10 ECTS internship and 10 ECTS elective courses (e.g. A&O or Child Clinical neuropsychology theory
Course content (60 EC)

Key issues

*Brain/behavior relationships*: how does the healthy and impaired brain function? (neuro(patho)(physio)logy, modelling, development and implementation of methods/instruments)

Classification (diagnostics), prediction (prognostics) and/or modification (therapy, training, rehabilitation) of normal / disturbed behavior.

- Lifespan: child, adult, old-age clinical neuropsychology
- Genetics, neuropathology, functional neuroanatomy, brain (patho)physiology
- Diagnostic work-up and treatment of major neurological and psychiatric disorders (mental status examination, DNA testing, MRI, EEG, psychopharmacology etc.)
- Neuro(psycho)logical disorders: developmental, acute, reversible, degenerative
- Clinical neuropsychology: diagnostics, prognostics, treatment and rehabilitation
- Evidenced-based and multidisciplinary approach
- Professional and medical ethical issues

Assessment & Intervention skills (patient and/or care giver)

- Indicating, observation, history taking, (neuro)psychological examination > etiological, functional diagnosis and treatment options
- Neuropsychological interventions: psycho-education, cognitive-, behavioral- and system therapy, case management, neurorehabilitation (strategy and function), neuro feedback
- E–diagnostics, E-psychotherapy, E-function training, E-care giver management
Scientist-practitioner
Thesis: memory activation and EEG in Alzheimer’s disease
Master thesis topics (20 EC)

- Smaller grey matter and brainstem volumes associated with diminished cognitive performance in children with Duchenne muscular dystrophy: a pilot study
- Depression six months after aneurysmal subarachnoid haemorrhage
- Cardiovascular disease load and cerebral small vessel disease in cognitive profiles in Alzheimer patients
- Irritability and executive functioning in Huntington’s disease
- The association between prenatal cannabis use and visual spatial processes in six to eight year old children
- In vivo magnetic resonance imaging of amyloid-B deposition in patients with probable Alzheimer’s disease
- Effectiveness of the Patient Education Program for patients with manifest Huntington’s disease
- Patient satisfaction at the LUMC department of Neuro Intensive Care
- Need for psychosocial treatment of patients with Parkinson’s disease
- The effect of sleep deprivation on cognitive flexibility in rats
- Cognitive functioning in Rheumatoid Arthritis

Check PUBMED for professor Middelkoop’s clinical research projects at the Department of Neurology & Clinical Neuropsychology of the LUMC: http://www.ncbi.nlm.nih.gov/pubmed/?term=middelkoop-ha
Clinical practice: the neuropsychological examination
A students perspective...

- **Courses:**
  - Adult and old-age Clinical Neuropsychology: theory & practice
  - Clinical neuropsychological interventions: theory & practice
  - Elective: Child Clinical Neuropsychology: theory
  - Elective: Trainers Course Communication Skills (HP)

- **Thesis:**
  The association between orthostatic hypotension and cognition in a 75+ population on antihypertensive medication*
  
  *LUMC departments Neuropsychology, Neuroradiology, General Practice, Internal Medicine, Psychiatry, Neurology

- **Internship:**
  Neuro-feedback: diagnostic work-up and training
  
  *Brain Center Amsterdam
## CNP Program: 1\textsuperscript{st} semester

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<td>Adult and old-age clinical neuropsychology: CP</td>
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<td>Child neuropsychology of neurodev. disorders: T&amp;A</td>
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<td>Child neuropsychology of neurodev. disorders: CP</td>
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## 2nd semester

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### Master’s Internship
20 ECTS

### Optional: Electives

https://studiegids.leidenuniv.nl/studies/show/5977/psychology_clinical_neuropsychology?ga=2.177720486.2046970700.1520874620-874253916.1520874620

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Why study *Clinical Neuropsychology in LEIDEN*?

- Leiden Neuropsychology master is uniquely linked with patient care and clinical research
- Neuropsychology across the life-span: child, adult and old-age Neuropsychology
- Diagnostics and interventions.
- Teaching by clinically active and qualified neuropsychologists
- Outstanding facilities (LUMC <-> FSW)
- Oldest and largest Neuropsychology department in the NL
- Leiden University= research intensive and ‘intimate’ top university
Any questions?