

Specialisations and Research Topics in Cognitive Sciences at **ELTE Budapest**

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X-mas Meeting 2021

Mei:CogSci at ELTE University

Our students can choose to complete the MeiCogSci joint degree.



ELTE

A collaborative Masters Program with the contribution of several Faculties and disciplines.

It offers research specialisations from diverse fields of scientific Research:

Cognitive Neuroscience

Human Electrophysiology

Comparative Ethology

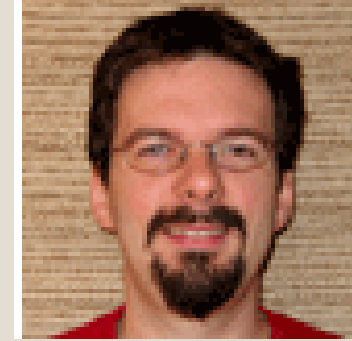
Cognitive Psychology (*sleep reserach, human interactions, executive functioning, social cognition*)

Decision Making

Open Science

Research Group of Neurocognitive Development, Hungarian Academy Sciences

Ferenc Honbolygó - honbolygo.ferenc@ttk.mta.hu
and Attila Keresztes - keresztes.attila.akk@ttk.hu



Investigating the neurocognitive mechanisms of ***speech perception, reading, music, implicit learning and cognitive control in adults, children and infants***, with a special focus on clinical and developmental aspects, using the latest techniques of brain imaging (EEG, fMRI).

Human Electrophysiology Group

Zoltán Nádasdy - nadasdy.zoltan@ppk.elte.hu



- Studying the role of **oscillations** in perceptual processes using **EEG**
- Visual consciousness
- Development of **spatial cognition** and its relationship to the theory of mind
- **Time perception** and cognitive representation of time

Stationary and mobile EEG, VR environments

Family dog project

Ádám Miklósi - amiklosi62@gmail.com

Department of Ethology, ELTE

<http://familydogproject.elte.hu/>



Comparative analysis of social cognition in dogs and humans: Interdisciplinary approach

Studying cognitive aging in dogs (Eniko Kubinyi)

- The development of cognitive test battery to study the emergence of cognitive decline and use it to validate the effect of various treatments on cognitive performance in old subjects

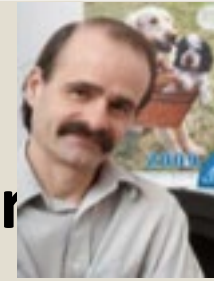
Activation of social behaviour in dogs during interaction with autonomous agents (Judit Abdai)

- Are dogs able to engage in social interaction with an agent?
- Do these interaction resemble human-dog relationship?
- Do dogs remember these agents based on embodiment and behaviour?

Comparative Behavioural Research Group

József Topál

Institute of Cognitive Neuroscience and Psychology, Hungarian
Academy Sciences



1. Neglect syndrome in dogs: Anna Kiss vargane.kis.anna@ttk.mta.hu

- Description of the neglect syndrome in dogs (using the side preference phenomenon known from cognitive tests as a starting point)
- Behavioural and neuro-physiological (EEG) characterisation of the affected dog population
- Comparision with human populations (neglect patients and healthy controls)

II. Infant directed speech in dogs: Gergely Anna - anna.gergely66@yahoo.com

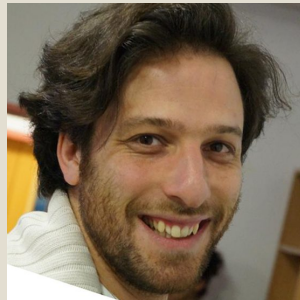
- Dogs also prefer infant directed speech?

Social Minds Research Group + Baby Lab

<http://babalabor.elte.hu>



Dr. Ildikó Király
lab leader



Dr. Bálint Forgács
post-doc researcher



Dr. Márton Nagy
adjunct lecturer



Dr. Katalin Oláh
post-doc researcher



Réka Pető
PhD student



Andrea Hegedűs
PhD student



Krisztina András
PhD student



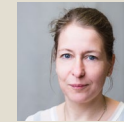
Krisztina Peres
PhD student



The main focus of our studies is on different aspects of social cognition and episodic memory. Although our name indicates that we mostly do developmental work, in reality, we investigate most of the topics both in children and adults. Moreover, we are especially interested in the interaction of different social cognitive functions.

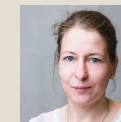
THEORY OF MIND

- Spontaneous processes in perspective taking
- How do we update belief representations?
- Do we compute the beliefs of in-group and out-group members in a different way?



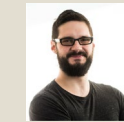
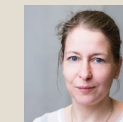
NAÏVE SOCIOLOGY

- What cues do young children use to sort the social world into categories?
- What kind of inferences does group membership warrant for them?



EPISODIC MEMORY

- Conscious and unconscious processes in relational retrieval
- Eye-movements as a measure of relational retrieval
- Episodic updating of belief representations
- Episodic memory in young children



Mathematical cognition research group

Attila Krajcsi - krajcsi.attila@ppk.elte.hu



The role of number notations in numerical processing

Negative numbers

The development of counting abilities

<https://www.thenumberworks.org/>

Automatic statistical analysis software

<https://www.cogstat.org/>



Decision Lab / Metascience Lab

Balázs Aczél - aczel.balazs@ppk.elte.hu

Barnabás Szászi – szaszi.barnabas@ppk.elte.hu



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One major focus of their research is to explore the mechanisms, **biases of human decision making** as well as **their mitigation**.

Main topics:

- Process-tracing of decision making
- Cognitive control mechanisms
- Choice architecture and nudge interventions
- Poverty and social mobility research

Executive functions in healthy functioning & specific conditions

Alexander Logemann

alexander.Logemann@ppk.elte.hu



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Elucidating the mechanism of **executive functions** [predominantly attention & inhibitory control].

- In relation to **healthy functioning**.
- In relation to conditions such as **nicotine addiction and obesity**.
- Developing and evaluating novel approaches to improve the aforementioned mechanisms (especially in relation to specific conditions).

Sleep & Cognition Lab

Péter Simor

www.budapestsleeplab.com



BUDAPEST LABORATORY OF
SLEEP & COGNITION



ELTE

Their studies investigate the mechanisms and processes of sleep and dreaming in healthy and pathological conditions.

Research topics:

- The heterogeneity of **REM sleep**
- The neurophysiology of **Nightmare Disorder**
- Sleep quality and psychotic-like experiences
- Sleep and emotional memory processing
- Chronotype, synchrony and creative problem solving
- Chronotype and dream quality

Cognitive abilities lab

Kristóf Kovács – kovacs.Kristof@ppk.elte.hu



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Research topics:

Individual differences in cognitive abilities

- process overlap theory
- structure of abilities
- the role of fluid/inductive reasoning
- ability differentiation

IQ and human intelligence

- measurement (incl. computerized adaptive testing)
- applications
- gender differences

Individual differences in working memory capacity and executive functions

- measurement
- modeling

Human Interaction Research Group & Adaptation Research Group



ELTE

Human Interaction Research Group: **Katalin Varga** - varga.katalin@ppk.elte.hu

Behavioural, emotional, phenomenological and psycho-physiological **changes occur** in the participants of **interpersonal situations**.

- hypnosis research
- The effect of suggestive communication
- clinical research in the fields of oncological, perinatal and intensive medical services

Adaptation Research Group: **Anna Veress-Szekely** - szekely.anna@ppk.elte.hu

study **resilience** using an interdisciplinary research approach, implementing multiple levels of analysis perspectives based on genetic, developmental, physiological, demographic, cultural, economic and social variables.

- developmental differences
- intervention techniques utilizing biofeedback to promote resilience

Any questions?

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Via email: cogsci@ppk.elte.hu

MSc Program details:

<https://www.elte.hu/en/computational-and-cognitive-neuroscience-msc>

INFO FOR VISITING STUDENTS FROM MEICOGSCI:

<https://pszi.ppk.elte.hu/en/content/meicogsci-info-for-incoming-students.t.8212>

Please always cc Márton Nagy (or cogsci@ppk.elte.hu) when writing directly to one of the researchers!

Thank you for your attention, hope to see you in Budapest soon!