

## Individual differences in cognition

### Aim of the course

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The course aims to provide an overview of individual differences in cognitive abilities. It integrates standard topics in individual differences, such as the nature-nurture issue, sex differences, and ageing. Besides, we will survey statistical models of the structure of abilities as well as explanations of the main findings. The emphasis will be on cognitive theories in general and the role of working memory and executive functions in particular.

#### Learning outcome, competences

knowledge:

- human cognitive abilities
- individual differences
- the basics of psychometrics and latent variable modeling
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attitude:

- interdisciplinary approach
- sensitivity toward the nature/nurture debate
- sensitivity toward gender differences kéesség:
- analytic thinking
- understanding of statistical models of the structure of abilities

Autonomy, responsibility

- Self-employed implementation of knowledge and skills according to ethical standards

### Content of the course

#### Topics of the course

- Introduction & history: Why are individual differences the „abandoned child“ of cognitive/experimental psychology
- Psychometrics
- The structure of cognitive abilities 1.: the general factor
- The structure of cognitive abilities 2.: specific abilities · The neuroscience of cognitive abilities · Theories of individual differences 1.
- Theories of individual differences 2.
- Sex differences in cognitive abilities
- The heritability of intelligence
- Environmental effects on cognitive abilities
- The Flynn effect: intergenerational gains in IQ
- Age effects on cognitive abilities

#### Learning activities, learning methods

- lectures
- group discussions
- written assignment
- student presentations (optional)

## Számonkérési és értékelési rendszere Evaluation of the course

### Learning requirements, mode of evaluation, criteria of evaluation:

requirements: kollokvium

Written exam (60%)

- Essay or applied project or research plan (40%)
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mode of evaluation:kollokvium

- aggregated score based on the above panels

criteria of evaluation

- the level of acquired knowledge
- methodological sensitivity

## Reading list

### Compulsory reading list

Selected chapters from Mackintosh, N. J. (2011). *IQ and human intelligence*. Oxford University Press.

### Recommended reading list

- Mackintosh, N. J. (2011). History of Theories and Measurement of Intelligence. In R. J. Sternberg (Ed.), *The Cambridge Handbook of Intelligence* (pp. 3–19). Cambridge University Press. <https://doi.org/10.1017/cbo9780511977244.002>
- Kovacs, K., & Conway, A. R. A. (2019). What Is IQ? Life Beyond "General Intelligence." *Current Directions in Psychological Science*, 28(2), 189–194. <https://doi.org/10.1177/0963721419827275>
- Plomin, R., & Von Stumm, S. (2018). The new genetics of intelligence. *Nature Reviews Genetics*, 19(3), 148–159. <https://doi.org/10.1038/nrg.2017.104>
- Deary, I. J., Penke, L., & Johnson, W. (2010). The neuroscience of human intelligence differences. *Nature Reviews. Neuroscience*, 11(3), 201–211. <https://doi.org/10.1038/nrn2793>
- Miller, D. I., & Halpern, D. F. (2014). The new science of cognitive sex differences. *Trends in Cognitive Sciences*, 18(1), 37–45. <https://doi.org/10.1016/j.tics.2013.10.011>
- Flynn, J. R. (2020). Secular Changes in Intelligence: The "Flynn Effect." In R. J. Sternberg (Ed.), *The Cambridge Handbook of Intelligence* (2nd ed., pp. 940–963). Cambridge University Press. <https://doi.org/DOI:10.1017/9781108770422.040>
- Conway, A. R. A., & Kovacs, K. (2020). Working Memory and Intelligence. In R. J. Sternberg (Ed.), *The Cambridge Handbook of Intelligence* (pp. 504–527). Cambridge University Press. <https://doi.org/10.1017/9781108770422.022>
- Sternberg, R. J. (2012). Intelligence. *Wiley Interdisciplinary Reviews: Cognitive Science*, 3(5), 501–511. <https://doi.org/10.1002/wcs.1193>
- Deary, I. J., Cox, S. R., & Hill, W. D. (2021). Genetic variation, brain, and intelligence differences. *Molecular Psychiatry*. <https://doi.org/10.1038/s41380-021-01027-y>
- Kamphaus, R. W., Pierce Winsor, A., Rowe, E. W., & Kim, S.

(2018). A history of intelligence test interpretation. In D. P. Flanagan & E. M. McDonough (Eds.), *Contemporary intellectual assessment: Theories, tests, and issues* (4th ed., pp. 56–72).