

# Adéla Hladká (née Drabinová)

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**Date of birth:** 23.05.1990

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## Education

Faculty of Mathematics and Physics, Charles University	PRAGUE, CZECH REPUBLIC
<b>PhD in Probability and Statistics, Econometrics and Financial Mathematics</b>	2016 – 2021
Specialized in Mathematical Statistics	
Thesis: Statistical models for detection of differential item functioning (defended 2021)	
Supervisor: RNDr. Patrícia Martinková, Ph.D.	
Consultant: doc. Mgr. Michal Kulich, Ph.D.	
<b>Master of Science in Probability, Mathematical Statistics and Econometrics</b>	2013 – 2016
Specialized in Statistics in Natural Sciences	
Thesis: Cure rate models (defended 2016)	
Supervisor: doc. Mgr. Michal Kulich, Ph.D.	
<b>Bachelor of General Mathematics</b>	2009 – 2013
Specialized in Stochastics	
Thesis: Chebyshev inequality and some its modifications (defended 2013)	
Supervisor: prof. RNDr. Jiří Anděl, DrSc.	
Faculty of Sciences, Universiteit Hasselt	HASSELT, BELGIUM
<b>Erasmus+ Exchange Programme</b>	2015
Specialized in Biostatistics	

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## Experience

Institute of Computer Science, The Czech Academy of Sciences	
<i>Department of Statistical Modelling</i>	PRAGUE, CZECH REPUBLIC
<b>Postdoc Fellow</b>	Since Mar 2021
On maternity leave since Mar 2021	
<b>ICS PhD Fellow</b>	Oct 2017 – Mar 2021
Fellowship for a promising PhD student	
<b>Research Assistant</b>	Oct 2015 – Sep 2017
Faculty of Education, Charles University	
<i>Institute for Research and Development of Education</i>	PRAGUE, CZECH REPUBLIC
<b>Research Assistant</b>	Jan 2018 – Dec 2020

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## Grants

Theoretical Foundations of Computational Psychometrics	GAČR 21-03658S
<b>Team member</b>	Since Jan 2021
Advances in educational assessment: Analytical support for educational test development	TAČR TL05000008
<b>Co-investigator</b>	Since Jan 2021
Air quality Research, Assessment and Monitoring Integrated System	TAČR SS02030031
<b>Team member</b>	Jul 2020–Jun 2022
Center for Educational Measurement and Psychometrics	CHARLES UNIVERSITY, PRIMUS
<b>Team member</b>	Jan 2018 – Dec 2020
Cognitive Predictors of Neurodegeneration	GAČR 16-01781S
<b>Consultant</b>	Apr 2016 – Dec 2019
Estimation of Psychometric Measures as Part of Admission Test	GAČR 15-15856Y
<b>Consultant</b>	Oct 2015 – Dec 2017

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## Awards

Josef Hlávka Award For the best students and graduates	LUŽANY U PŘEŠTIC, CZECH REPUBLIC 2022
Travel Award International Meeting of Psychometric Society	ASHEVILLE, NC, USA 2016
The Second Award Robust Conference	REJHOTICE, CZECH REPUBLIC 2016

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## Teaching and Workshops

Selected Topics in Psychometrics (NMST570, lab session) Faculty of Mathematics and Physics, Charles University	PRAGUE, CZECH REPUBLIC 2018–2020
Introduction to DIF analysis with R and ShinyItemAnalysis Full-day workshop, AEA Europe Conference	LISBON, PORTUGAL Nov 2019

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## Committee member, reviewer of dissertation thesis

Adéla Fendrych Mazancová Cognitive screening tests and their potential to detect cognitive impairment in neurodegenerative diseases	FIRST FACULTY OF MEDICINE, CHARLES UNIVERSITY Nov 2021
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## Professional Activities

International Meeting of Psychometric Society Local organizing committee	PRAGUE, CZECH REPUBLIC Since 2022, planned for Jul 2024
Psychoco - International Workshop on Psychometric Computing Local organizing committee	PRAGUE, CZECH REPUBLIC Feb 21 <sup>st</sup> –22 <sup>nd</sup> , 2019
Doctoral days of the Institute of Computer Science, CAS Organizing committee	KOLÍN, CZECH REPUBLIC, Apr 16 <sup>th</sup> –18 <sup>th</sup> , 2019 KUTNÁ HORA, CZECH REPUBLIC, Mar 26 <sup>th</sup> –28 <sup>th</sup> , 2018
International Society for Clinical Biostatistics	MEMBER
Psychometric Society	MEMBER
Czech Statistical Society	MEMBER

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## Published papers

Note: Quartiles (Q1–Q4) calculated from WoS AIS based on year of publication. D1 means the first decile.

**Hladká, A., & Martinková, P. (2020)** difNLR: Generalized logistic regression models for DIF and DDF detection. *The R Journal*, 12(1), 300–323.

IF 3.984, D1 in Statistics & Probability, Q2 in Computer Science, Interdisciplinary Applications

WoS citations: 5, Scopus citations: 5

Martinková, P., **Hladká, A.**, & Potužníková, E. (2020). Is academic tracking related to gains in learning competence? Using propensity score matching and differential item change functioning analysis for better understanding of tracking implications. *Learning and Instruction*, 66, 101286.

IF 5.146, D1 in Education & Educational Research; D1 in Psychology, Educational,

WoS citations: 11, Scopus citations: 9

Bezdicek, O., Červenková, M., Georgi, H., Schmand, B., **Hladká, A.**, Rulseh, A., & Kopecek, M. (2021) Long-term cognitive trajectory and activities of daily living in healthy aging. *Clinical Neuropsychologist*, 35(8), 1381–1394.

IF 4.373, Q1 in Psychology, Q2 in Clinical Neurology, Q2 in Psychology, Clinical,

WoS citations: 5, Scopus citations: 4

Martinková, P., & Drabinová, A. (2018) *ShinyItemAnalysis* for teaching psychometrics and to enforce routine analysis of educational tests. *The R Journal*, 10(2), 503–515.

IF 2.682, Q1 in Statistics & Probability, Q2 in Computer Science, Interdisciplinary Applications,  
WoS citations: 20, Scopus citations: 18

Martinková, P., Freeman, J., Drabinová, A., Erosheva, E., ..., Řasová, K. (2018) Physiotherapeutic interventions in multiple sclerosis across Europe: Regions and other factors that matter. *Multiple Sclerosis and Related Disorders*, 22, 59–67.

IF 2.725, Q2 in Clinical Neurology,

WoS citations: 17, Scopus citations: 18

Drabinová, A., & Martinková, P. (2017) Detection of differential item functioning with non-linear regression: Non-IRT approach accounting for guessing. *Journal of Educational Measurement*, 54(4), 498–517.

IF 0.938, Q3 in Psychology, Mathematical, Q4 in Psychology Applied, Q4 in Psychology Educational,  
WoS citations: 5, Scopus citations: 6

Martinková, P., Drabinová, A., Liaw, Y. L., Sanders E. A., McFarland, J. L., & Price, R. M. (2017) Checking equity: Why DIF analysis should be a routine part of developing conceptual assessments. *CBE-Life Sciences Education*, 16(2), rm2.

IF 2.413, Q1 in Education, Scientific Disciplines,

WoS citations: 48, Scopus citations: 58

Martinková, P., Štěpánek, L., Drabinová, A., Houdek, J., Vejražka, M., & Štuka, Č. (2017) Semi-real-time analyses of item characteristics for medical school admission tests. In *Proceedings of the 2017 Federated Conference on Computer Science and Information Systems (FedCSIS)* (pp. 189–194). New York.

WoS citations: 2, Scopus citations: 6

Martinková, P., Drabinová, A., & Houdek, J. (2017) *ShinyItemAnalysis*: Analýza přijímacích a jiných znalostních či psychologických testů. *TESTFÓRUM*, 6(9), 16–35.

Google Scholar citations: 3

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## Software

Hladká, A., & Martinková, P. (2023) difNLR: DIF and DDF detection by non-linear regression models. R package, version 1.4.2-1,

<https://CRAN.R-project.org/package=difNLR>

More than 64,000 downloads from CRAN, 641 average downloads per month from GitHub (17.5.2023),  
Evaluated as world-leading (mark 1) in M17+ methodology evaluation (<https://beta-m17.rvvi.cz/>)

Martinková, P., Hladká, A., & Netík, J. (2023) *ShinyItemAnalysis*: Test and item analysis via shiny. R package, version 1.5.0,

<http://shiny.cs.cas.cz/ShinyItemAnalysis/>

More than 60,000 downloads from CRAN and 40,000 online visits from more than 100 countries (17.5.2023),  
1,317 average downloads per month from GitHub

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## Papers – accepted, under review, in production

Hladká, A., Martinková, P., & Magis, D. (2023) Combining item purification and multiple comparison adjustment methods in detection of differential item functioning. *Multivariate Behavioral Research Journal*. Accepted.

Hladká, A., Martinková, P., & Brabec, M. Parameter estimation in generalised logistic model with application to DIF detection. *British Journal of Mathematical and Statistical Psychology*. Under review. arXiv:2302.12648

Martinková, P. & Hladká, A. (2023) *Computational aspects of psychometric methods: With R*. Chapman and Hall/CRC Press. In production.

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