

## Denis Federiakin

### Profile

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<i>Affiliation</i>	Centre for Psychometrics and Educational Measurement at Institute of Education at National Research University Higher School of Economics (CPEM IE NRU HSE)
<i>Address</i>	101000, Potapovsky lane 16/10, room 4.10, Moscow, Russia
<i>Languages/Tools</i>	R, Mplus, Stan, Stata, SPSS, Winsteps
<i>Core research interests</i>	Psychometrics, Computational Psychometrics, Bayesian Networks, Multidimensional Item Response Theory, Mixture modeling, Growth and Change modeling, Rasch modeling, Cognitive Diagnostic Modelling, Bayesian Knowledge Tracing

### Employment History

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2020 - 2021	<i>Autonomous Non-Profit Organization "Russia – Country of Opportunities"</i> Chief Researcher, Senior Psychometrician
2019 – 2021	<i>Centre for Monitoring the Quality in Education at Russian Academy of Education –</i> Research Fellow, Senior Psychometrician
2017 – present	<i>Master Program "Science of Learning and Assessment", HSE – Teacher, the courses "Psychometrics", "Advanced Psychometrics", "Advanced Statistics: Mixed-Effects Non-Linear and Generalized Linear Modelling", and "Computerized Adaptive Testing"</i>

2017 – 2019	<i>Bachelor Program “Psychology”, HSE – Teacher, the course “Psychodiagnostics and the Basics of Psychometrics”</i>
2017 – 2018	<i>ECOPSY Consulting, Special Consultant in assessment</i>
2015 – present	<i>Centre for Psychometrics and Educational Measurement, HSE – Research Fellow, Senior Psychometrician, Vice Head of the CPEM IE NRU HSE</i>

### Selected Projects

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2020 – present	<i>Using context information and information from the digital assessment environment to measure individual progress of primary school students with digital technologies – Russian Foundation for Basic Research grant – Head of the Project</i> <ul style="list-style-type: none"> <li>• Attracted approximately \$50,000/Year</li> <li>• Suggested classification of sources of collateral information</li> <li>• Built the psychometric core for Computerized Adaptive Test “Start-Progress”</li> </ul>
2019 – present	<i>Measuring Civic Online Reasoning in Digital Environment, HSE – Leading Psychometrician</i> <ul style="list-style-type: none"> <li>• Developing an appropriate measurement model</li> <li>• Developing the backend infrastructure</li> </ul>
2020 - 2021	<i>Developing Proprietary Computerized Testing Platform</i> <i>“Russia – Country of Opportunities” project – Leading Psychometrician</i> <ul style="list-style-type: none"> <li>• Developed a roadmap for the implementation of automated scoring and feedback system</li> <li>• Developed proprietary algorithms for the automated IRT-scoring of item responses</li> </ul>
2019 – 2021	<i>Monitoring Secondary School Students’ Skill Gains using PISA-like items – Russian Academy of Education project – Leading Psychometrician</i> <ul style="list-style-type: none"> <li>• Built the system for tracking the students’ educational progress from 5<sup>th</sup> to 9<sup>th</sup> grades</li> <li>• Defined the methodology of the project</li> </ul>
2015 – 2019	<i>Study for Undergraduate Performance, HSE – the project aimed to internationally assesses the skill levels and gains among engineering students across multiple countries and to identify the contextual factors that impact student learning – Leading Psychometrician</i>

- Served as a national coordinator of the project
- Defined the methodology of the project
- Developed the psychometric models for item response times
- Developed numerical algorithms for person parameter estimation using item response times and item responses
- Suggested a new class of oblique bifactor IRT models

### Academic Qualifications, Internships, and Education

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2020	<i>Ph.D. internship</i> – Graduate School of Education, University of California, Berkeley
2017 – present	<i>Ph.D. student</i> – National Research University Higher School of Economics, Moscow
2017	<i>Item Response Theory and Computerized Adaptive Testing using Concerto Platform</i> – Cambridge University, Cambridge Judge Business School, The Psychometrics Centre
2017	<i>M.A. in Psychometrics</i> – National Research University Higher School of Economics, Moscow
2015	<i>Specialty in Psychology and Pedagogical Psychology</i> – Smolensk State University, Smolensk

### Selected Publications

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Federiakina D., Zlatkin-Troitschanskaia O., Kardanova E., Kühling-Thees C., Reichert-Schlaß J., Koreshnikova Y. (2022). Cross-national structure of economic competence: Insights from a German and Russian assessment. *Research in Comparative and International Education*, 1-21. doi:

<https://doi.org/10.1177/17454999211061243>

Dremova O., Maloshonok N., Terentev E., Federiakina D. (2021). Criticism and justification of undergraduate academic dishonesty: development and validation of the domestic, market and industrial orders of worth scales. *European Journal of Higher Education*, 1-18. doi:

<https://doi.org/10.1080/21568235.2021.1987287>

Federiakina D., et al. (2021). Skill levels and gains in university STEM education in China, India, Russia and the United States. *Nature Human Behaviour*, 1-13. doi: <https://doi.org/10.1038/s41562-021-01062-3>

Federiakina D., Iarina G., Kardanova E. (2021). Measuring Basic Mathematical Literacy in Elementary School. *Educational Studies: Moscow*. doi: <https://doi.org/10.17323/1814-9545-2021-2-199-226>

Federiakina D. (2020). Calibrating the Test of Relational Reasoning: New Information from Oblique Bifactor Models. *Frontiers in Psychology*, 11, p. 1-10. doi: <https://doi.org/10.3389/fpsyg.2020.02129>

- Kanonire T., Federiakin D., Uglanova I. (2020). Multicomponent framework for students' subjective well-being in elementary school. *School Psychology Quarterly*, p. 1-11. doi: <https://doi.org/10.1037/spq0000397>
- Federiakin D. (2020). Cross-National Comparability of Assessment in Higher Education. *Educational Studies: Moscow*, 2, p. 37-59. doi: <https://doi.org/10.17323/1814-9545-2020-2-37-59>
- Kanonire, T., Uglanova, I., & Federiakin, D. (2018). Adaptation and providing validity evidence for the Satisfaction with School Subscale and Satisfaction with Friends Subscale of Multidimensional Students' Life Satisfaction Scale. *Journal of Modern Foreign Psychology*, 7(3), 64-74. doi: <https://doi.org/10.17759/jmfp.2018070306>

### Selected Presentations

2021, XII International Russian Higher Education Conference, Moscow, Russia	What Cognitive Diagnostic Models Can Provide for the Monitoring of Competencies in Higher Education?
2021, 21st Annual Meeting of the Association for Educational Assessment – Europe, Dublin, Ireland	Decomposition of the Composite: Relating Students' Abilities from Item Response and Cognitive Diagnostic Models
2021, International Meeting of Psychometric Society, Maryland, USA	On the Critique of the Oblique Bifactor Models: Conditions for Identification and Problems in Interpretation
2021, International Objective Measurement Workshop, Berkeley, USA	Rasch modelling of learning patterns: getting more from repeated measure
2020, International Meeting of Psychometric Society, Maryland, USA	Rasch Model with Time Parameters for Tests with Speediness-Items and Achievement-Items
2018, International Junior Faculty Reserach Conference of the KoKoHs Program, Berlin, Germany	Configural Comparability of Composite Constructs: A Case of Relational Reasoning
2018, 19th Annual Conference of the Association for Educational Assessment – Europe, Nijmegen, The Netherlands	Investigation of Composite Constructs Structure: Opportunities from Bi-Factor IRT Models

2018, Seventh International Conference on Probabilistic Models for Measurement, Perth, Australia	Systematically Providing Cross-National Comparability for International Assessment
2017, 18th Annual Conference of the Association for Educational Assessment, Prague, Czech Republic	Providing Validity Evidence for the Engineering Students Professional Competences Test (evidence from Russia and China)
2016, 17th Annual Conference of the Association for Educational Assessment, Limassol, Cyprus	Providing Cross-national Comparability of Test Results for International Assessment in Higher Education

### Of Note

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Languages: Russian (Native), English (Fluent, C1/C2)

Skills: Handling pressure, Problem-solving, Motivation to learn, Result-oriented