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Attitudes toward Digital Educational Technologies and Academic Motivation: Age Differences among University Students



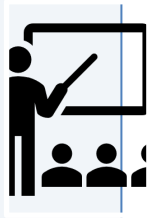
**РЕБЕНОК
В ЦИФРОВОМ
МИРЕ**

*Irina A. Novikova, Polina A. Bychkova,
Alexey L. Novikov*

"Digital Generation" and Attitudes towards Digital Technologies



Research on attitudes towards digital technologies is important in the study on the features of "digital generation"



Digital Educational Technologies (DET)

We consider DET in a broad sense, which includes:

digital (electronic) educational materials (*electronic textbooks, presentations, assignments, etc.*)

digital educational resources (*electronic databases, libraries, search systems, etc.*)

digital educational systems (*LMS, Moodle, etc.*)

digital platforms used for training (*ZOOM, MS Teams, etc.*)

digital (virtual) educational environment and the use of artificial intelligence in education



Attitudes toward DET and Academic Motivation



❖ A number of studies have been devoted to the study of motivational characteristics of students in the context of attitudes towards the DET (*Audet et al., 2021; Gustiani, 2020; Rasskazova, Soldatova, 2022*)

Present Research

Purpose



To compare attitudes towards DET in relation to academic motivation among students who have just entered the university and those who have been studying at the university for 2.5 - 3.5 years



Participants

**Total 605
students**

*The research was conducted
in May 2022 – April 2024 via
Google forms*

**338
first-year students**

(the mean is 17.84 ± 0.39 years)

**41
males**

**297
females**

**267
third- and fourth-year students**

(the mean is 20.85 ± 0.85 years)

**91
males**

**176
females**

The Attitudes towards DETs Scale for University Students

- ❑ The items are rated on a 5-point Likert scale (from 1 = strongly disagree to 5 = strongly agree)

- ❑ The sum of points for each subscale can vary from 12 to 60 points, and for the ATDETS-US – from 36 to 180 points

The Attitudes towards DETs Scale for University Students (ATDETS-US)

36 items (direct and reverse) and 3 subscales

Emotional Subscale (ES)

aimed at determining the emotions and feelings of students in relation to digital technologies in higher education

Cognitive Subscale (CS)

aimed at determining the perceptions and knowledge of students regarding the possibilities of digital technologies in higher education

Behavioral Subscale (BS)

aimed at assessing how students master digital devices and technologies in the process of studying at a university

Psychometric Testing

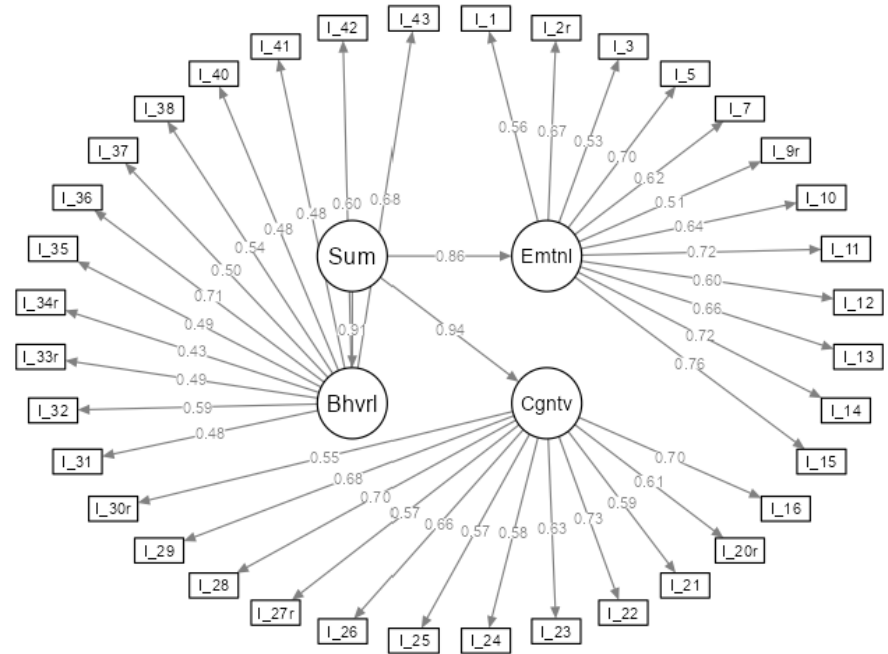
- The descriptive statistics methods

- Coefficients Cronbach' α and McDonald's ω

- Hierarchical factor analysis

- The confirmatory factor analysis (CFA) with the WLSM estimator (weighted least squares method)

- The jamovi, version 2.3.21, R-package psych by W. Revelle



The standardized parameters of the scale
ATDETS-US factor model (N = 317)

The Academic Motivation Scales

(T.O. Gordeeva, O.A. Sychev, E.N. Osin)

Intrinsic motivation

- Intrinsic cognition motivation
- Achievement motivation
- Motivation for personal growth

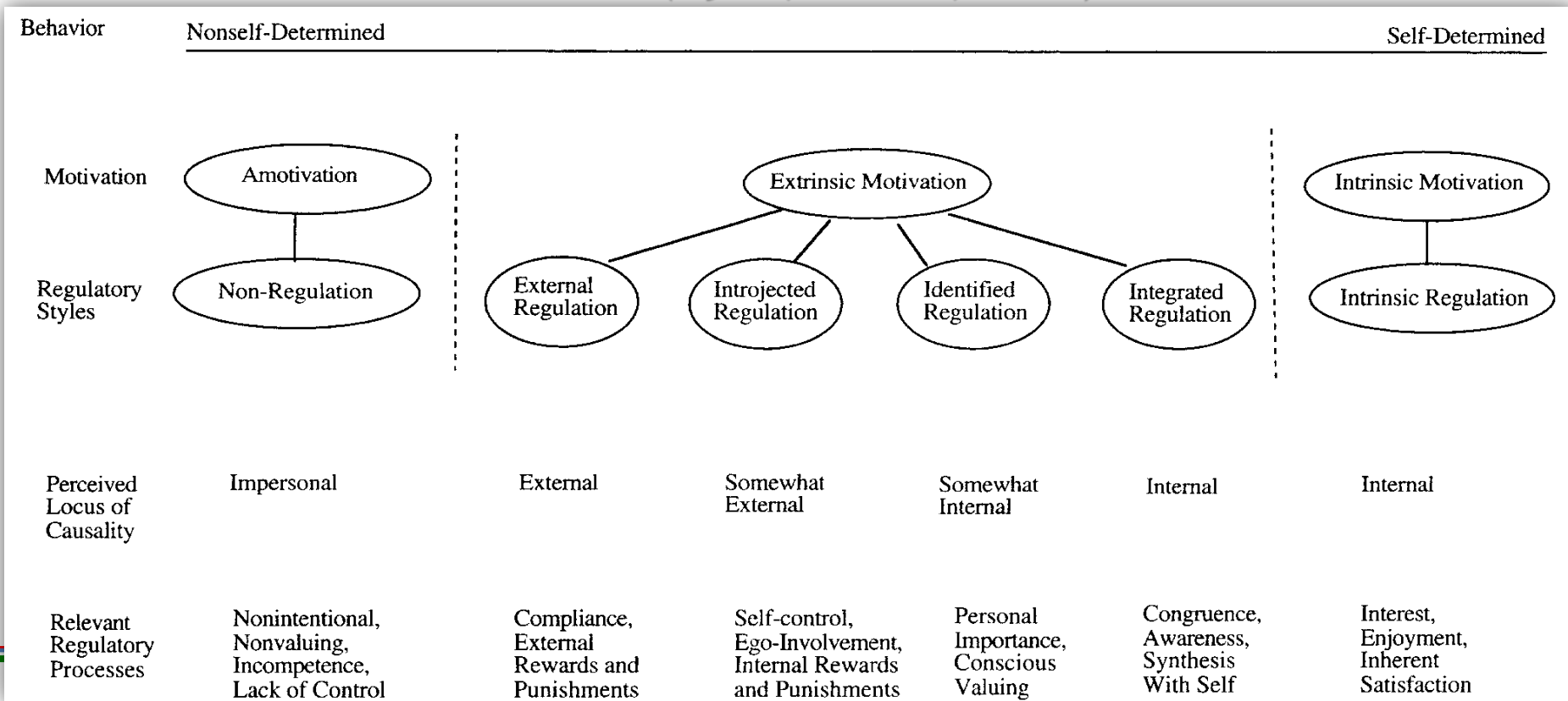
Extrinsic motivation

- Motivation for self-respect
- Introjected motivation
- External regulation

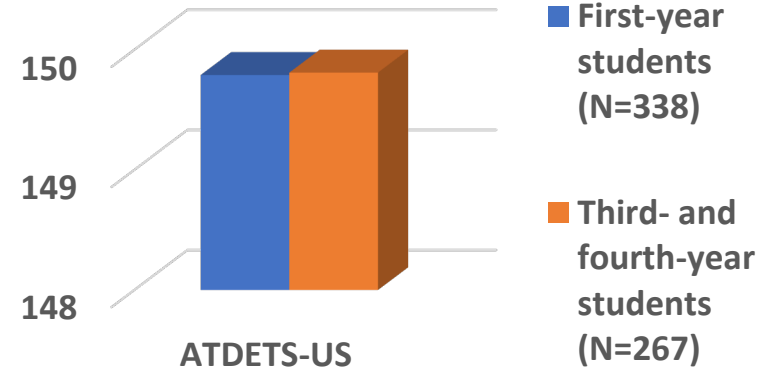
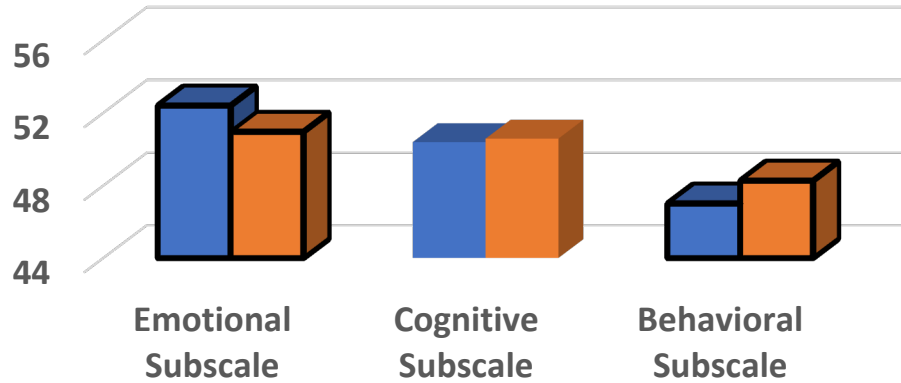
Amotivation

- ❑ 28 direct statements
- ❑ 7 scales
- ❑ The statements are rated on a 5-point Likert scale (from 1 – “strongly disagree” to 5 – “strongly agree”)

The Self-Determination Continuum Showing Types of Motivation With Their Regulatory Styles, Loci of Causality, and Corresponding Processes (Ryan, & Deci, 2000)



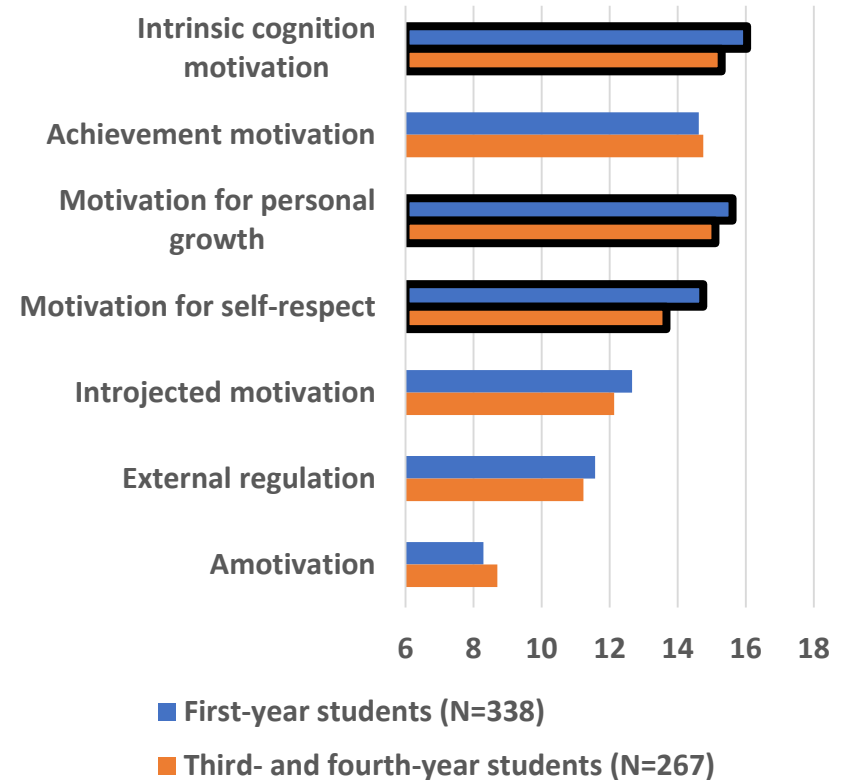
Means and Mann-Whitney U test for indicators of attitudes toward DET among first-year students and third- and fourth-year students



Scale	Means \pm SD		Mann-Whitney U Test	<i>p</i> -Value
	First-year students	Third- and fourth-year students		
Emotional Subscale	52.40 \pm 7.79	50.96 \pm 9.00	41009.0	0.053
Cognitive Subscale	50.39 \pm 7.16	50.58 \pm 7.36	44192.0	0.662
Behavioral Subscale	47.01 \pm 7.54	48.27 \pm 7.61	40483.0	0.030
ATDETS-US	149.79 \pm 20.05	149.81 \pm 21.18	44297.5	0.699

Means and Mann-Whitney U test for indicators of academic motivation scales among first-year students and third- and fourth-year students

Scale	Means \pm SD		Mann–Whitney U Test	<i>p</i> -Value
	First-year students	Third- and fourth-year students		
Intrinsic cognition motivation	16.04 \pm 3.32	15.29 \pm 3.29	38635.0	0.002
Achievement motivation	14.62 \pm 3.63	14.75 \pm 3.39	44698.5	0.842
Motivation for personal growth	15.61 \pm 3.46	15.11 \pm 3.30	40161.5	0.019
Motivation for self-respect	14.75 \pm 3.74	13.67 \pm 4.06	37948.5	< .001
Introjected motivation	12.66 \pm 3.71	12.13 \pm 3.69	41883.5	0.128
External regulation	11.57 \pm 3.69	11.23 \pm 3.75	43300.5	0.392
Amotivation	8.29 \pm 3.79	8.70 \pm 3.63	41412.0	0.080



Spearman's correlations between the variables studied in the total sample of students ($N = 605$)

Scale	Intrinsic cognition motivation	Achievement motivation	Motivation for personal growth	Motivation for self-respect	Introjected motivation	External regulation	Amotivation
Emotional Subscale	0.219***	0.127**	0.234***	0.114**	0.006	-0.040	-0.239***
Cognitive Subscale	0.322***	0.264***	0.355***	0.175***	-0.030	-0.086*	-0.307***
Behavioral Subscale	0.270***	0.229***	0.277***	0.155***	-0.010	-0.083*	-0.260***
ATDETS-US	0.288***	0.219***	0.309***	0.163***	-0.014	-0.078	-0.293***

* $p < .05$, ** $p < .01$, *** $p < .001$

Spearman's correlations between the variables studied in the sample of first-year students ($N = 338$)

Scale	Intrinsic cognition motivation	Achievement motivation	Motivation for personal growth	Motivation for self-respect	Introjected motivation	External regulation	Amotivation
Emotional Subscale	0.207***	0.131*	0.231***	0.094	-0.060	-0.057	-0.207***
Cognitive Subscale	0.305***	0.242***	0.331***	0.184***	-0.067	-0.104	-0.271***
Behavioral Subscale	0.279***	0.233***	0.318***	0.194***	-0.059	-0.107*	-0.237***
ATDETS-US	0.283***	0.213***	0.317***	0.176**	-0.066	-0.096	-0.257***

* $p < .05$, ** $p < .01$, *** $p < .001$

Spearman's correlations between the variables studied in the sample of third- and fourth-year students ($N = 267$)

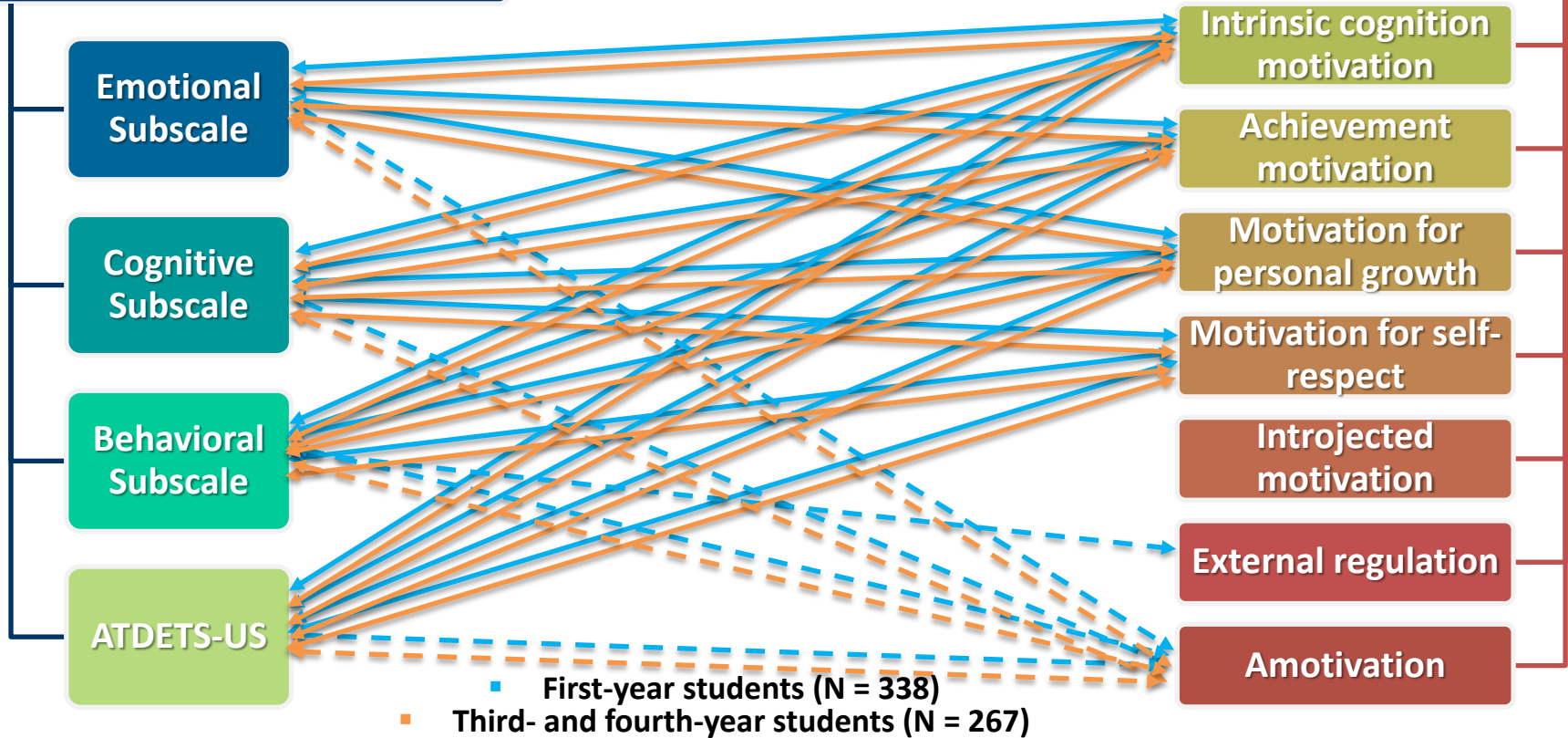
Scale	Intrinsic cognition motivation	Achievement motivation	Motivation for personal growth	Motivation for self-respect	Introjected motivation	External regulation	Amotivation
Emotional Subscale	0.207***	0.124*	0.222***	0.117	0.079	-0.024	-0.268***
Cognitive Subscale	0.347***	0.288***	0.390***	0.166**	0.019	-0.061	-0.359***
Behavioral Subscale	0.291***	0.231***	0.257***	0.141*	0.069	-0.045	-0.315***
ATDETS-US	0.300***	0.228***	0.309***	0.154*	0.053	-0.054	-0.348***

* $p < .05$, ** $p < .01$, *** $p < .001$

Graphical representation of the correlations between all the variables studied

Attitudes towards DETs Scale for University Students

Academic Motivation Scales



Conclusions

- 1. There are no significant differences in the AtDET total indicator between the studied groups**
- 2. First-year students have higher scores for the emotional component of AtDET and lower scores for the behavioral component of AtDET than 3-4 year students**
- 3. First-year students have higher scores on the scales of Intrinsic cognition motivation, Personal growth motivation and Motivation for self-respect**
- 4. Correlation analysis showed a similarity in the associations between the AtDET indicators and the academic motivation scales**
- 5. In both groups, positive correlations are between the AtDET indicators with all scales of intrinsic motivation (Intrinsic cognition, Achievement, and Personal growth) and one scale of extrinsic motivation (Motivation for self-respect), as well as negative correlations are between the AtDET indicators and Amotivation scale**

Prospects

The development of programs to improve the psychological support for students in the digital educational environment of universities, taking into account their age and year of study



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Contacts



Irina A. Novikova is Editorial Board member of the **RUDN Journal of Psychology and Pedagogics** since 2003.

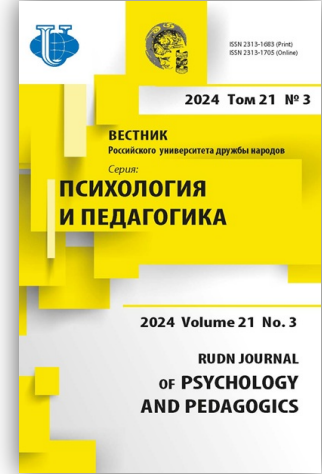
ORCID: 0000-0001-5831-1547. SPIN: 7717-2834; Scopus ID: 35766733000; Researcher ID: Q-5276-2016.

E-mail: Novikova-ia@rudn.ru

She is Corresponding Member of the **International Academy of Pedagogical Education (Russia)** and Member of **APA** and **Psi Chi**, the **International Honor Society in Psychology**.

Her research interests lie in the area of Personality, Social, and Cross-Cultural Psychology

Irina A. Novikova, Ph.D. in Psychology, is Associate Professor, Associate Professor at Psychology and Pedagogics Department of Peoples' Friendship University of Russia after Patrice Lumumba (Moscow, Russia)



Contacts



Polina A. Bychkova, Ph.D. in Psychology, is Assistant at Psychology and Pedagogics Department of Peoples' Friendship University of Russia after Patrice Lumumba (Moscow, Russia)

Her research interests lie in the area of Personality, Social, and Educational Psychology

ORCID: 0000-0002-6526-7262, Scopus ID: 57222720667, Researcher ID: ACD-4333-2022, SPIN-code: 1819-7877

E-mail: bychkova_pa@pfur.ru

Contacts



**Alexey L. Novikov, Ph.D in Philology,
is Associate Professor, Associate
Professor at General and Russian
Linguistics Department of Peoples'
Friendship University of Russia after
Patrice Lumumba (Moscow, Russia)**

ORCID: 0000-0003-3482-5070,
Scopus ID: 56005222400, Researcher
ID: Q-5419-2016, eLIBRARY SPIN-
code: 3416-1350

E-mail: Novikov_al@rudn.ru

THANK YOU FOR ATTENTION!

