

# Measuring Teacher Students' Psychological Readiness for Professional Life

A. N. Samoderzhenkov, E. Yu. Kardanova, A. K. Satova,  
E. A. Orel, A. A. Kulikova, G. A. Mombiyeva, G. I. Kazakhbaeva,  
A. O. Duisenbayeva

Received in January  
2021

**Andrey Samoderzhenkov**, Master of Psychology, Analyst, Center for Psychometrics and Measurements in Education, National Research University Higher School of Economics. Address: 20 Myasnitskaya St, 101000 Moscow, Russian Federation. Email: [asa-moderzhenkov@hse.ru](mailto:asa-moderzhenkov@hse.ru) (corresponding author)

**Elena Kardanova**, Candidate of Sciences in Mathematical Physics, Director of the Center for Psychometrics and Measurements in Education, National Research University Higher School of Economics. Address: 20 Myasnitskaya St, 101000 Moscow, Russian Federation. Email: [ekardanova@hse.ru](mailto:ekardanova@hse.ru)

**Akmaral Satova**, Doctor of Sciences in Psychology, Professor, Head of the Department of General and Applied Psychology, Abai Kazakh National Pedagogical University. Address: 050010, Republic of Kazakhstan, Almaty, Dostyk ave., 13. Email: [satova57@mail.ru](mailto:satova57@mail.ru)

**Ekaterina Orel**, Candidate of Sciences in Psychology, Senior Research Fellow, Center for Psychometrics and Measurements in Education, National Research University Higher School of Economics. Address: 20 Myasnitskaya St, 101000 Moscow, Russian Federation. Email: [eorel@hse.ru](mailto:eorel@hse.ru)

**Alena Kulikova**, Candidate of Sciences in Education, Junior Research Fellow, Center for Psychometrics and Measurements in Education, National Research University Higher School of Economics. Address: 20 Myasnitskaya St, 101000 Moscow, Russian Federation. Email: [aponomareva@hse.ru](mailto:aponomareva@hse.ru)

**Gulmira Mombiyeva**, Master of Psychology, Assistant Professor, Department of General and Applied Psychology, Abai Kazakh National Pedagogical University. Address: 13 Dostyk Ave, 050010 Almaty, Republic of Kazakhstan. Email: [gumi-74@mail.ru](mailto:gumi-74@mail.ru)

**Gulnur Kazakhbaeva**, Master of Psychology, Teacher, Department of General and Applied Psychology, Abai Kazakh National Pedagogical University. Address: 13 Dostyk Ave, 050010 Almaty, Republic of Kazakhstan. Email: [emovea\\_kz@mail.ru](mailto:emovea_kz@mail.ru)

**Ainur Duisenbayeva**, Master of Psychology, Assistant Professor, Department of General and Applied Psychology, Abai Kazakh National Pedagogical University. Address: 13 Dostyk Ave, 050010 Almaty, Republic of Kazakhstan. Email: [aikoke81@mail.ru](mailto:aikoke81@mail.ru)

**Abstract** In this paper, psychological readiness of teacher students for professional life is understood as a set of personal characteristics such as personality traits, motivation, attitudes and values that contribute to successful teaching. This operational definition does not include teacher's subject knowledge or teaching skills.

The study explores a number of unique evaluation methods to diagnose components of students' psychological readiness for teaching. The selected methods were localized for Russia and Kazakhstan and tested on national samples from both countries. Psychometric characteristics of these methods were analyzed using classical test theo-

ry and item response theory (IRT). A procedure was developed for calculating an integrated index reflecting student's psychological readiness for starting a teaching career.

**Keywords** motivation, personality traits, professional development, psychological readiness for professional life, psychological testing, teacher students.

**For citing** Samoderzhenkov A., Kardanova E., Satova A., Orel E., Kulikova A., Mombiyeva G., Kazakhbaeva G., Duisenbayeva A. (2021) Otsenka psikhologicheskoy gotovnosti studentov pedagogicheskikh vuzov k professional'noy deyatel'nosti [Measuring Teacher Students' Psychological Readiness for Professional Life]. *Voprosy obrazovaniya/Educational Studies Moscow*, no 3, pp. 114–137. <https://doi.org/10.17323/1814-9545-2021-3-114-137>

One of the challenges faced today by education systems across the globe is the flight of teachers from educational institutions of all types. Teacher burnout—caused by a variety of factors, including emotional exhaustion, intrinsic motivation crisis, lack of support from fellow teachers and administrators, and work overload to name just a few—nearly always leads to lower productivity and often results in departure from the profession.

Exodus from the teaching profession has been reported by a number of studies [Darling-Hammond 2003; Feiman-Nemser et al. 1999; Howard, Johnson 2004; Ingersoll, Smith 2003]. Many countries may face teacher shortage in the foreseeable future, while according to some researchers the shortage is already here [Flores 2001].

The problem of job burnout and quitting affects all categories of teachers, but the greatest concerns are caused by its high prevalence among new teachers. As reported by the Teaching and Learning International Survey (TALIS), only 10% of teachers in Russia are aged under 30 [OECD2014]. New teachers at risk of leaving the profession express dissatisfaction with the amount and nature of their assignments and concern about the lack of resources and support from colleagues [McIntyre 2003]. The optimism that beginning teachers have at the very start of their career may turn into pessimism already within the first year of teaching [Brock, Grady 2007; Darling-Hammond 1997; Gold, Roth 1999; Hargreaves, Fullan 1998; Moir 1999].

The flight of teachers from schools has to do with the objective conditions of education system functioning as well as the subjective characteristics of individuals in that system. Many new teachers struggle to adapt in the classroom, develop burnout, and eventually leave the profession early, but many others manage to adapt and build a successful teaching career in the same challenging circumstances. A critical difference between these two groups of beginning teachers is the level of their psychological readiness for professional life (PRPL), which becomes an important factor of career success for recent teacher education graduates [Kucheryavenko 2011; Satova 2015].

This article explores PRPL among teacher students in Russia and Kazakhstan. Although new teacher support programs have been in

place in both countries at national as well as regional levels [Pinskaya, Ponomareva, Kosaretsky 2016], researchers keep reporting problems with retaining young teachers in schools [Kovaleva, Denishcheva, Sheveleva 2011; Kroer et al. 2016]. Teacher shortages are observed today in both countries. For example, over one million job openings were posted by Kazakhstan's Public Employment Agency in 2020, the highest demand being observed for preschool, elementary school, and middle school teachers, according to the Human Resources Development Center.<sup>1</sup>

Psychological readiness should be shaped in the course of robust teacher preparation at the stage of teacher identity development. Studies involving teacher students in Kazakhstan colleges revealed a trend towards a decrease in their career motivation, which is a component of PRPL that embraces professionally significant needs, motives for professional work, positive attitude toward professional work, interest in it, and other quite strong motives [Satova 2015].

Another study found that low readiness for teaching is a risk factor for professional deformation of the personality in teachers. Of the 2,988 teachers surveyed in one of Kazakhstan's regions, 10% displayed various types of professional deformation [Satova, Yadgarova, Ignatenko 2000].

Empirical research on readiness for teaching is dramatically scarce. Given the high percentages of population employed as education workers in both Russia and Kazakhstan, it appears useful to examine teacher students' readiness for professional life and the ways to measure it.

Development of psychological readiness for professional life in students, especially prospective teachers, is a prerequisite for quality professional training. However, the traditional approach to education and educational assessments is largely focused on subject knowledge, often leaving the self-regulation component of professional work in the background.

The present study aims at constructing a model and an instrument for measuring teacher students' PRPL. Its findings may contribute to the development of a system to facilitate teacher induction and promote teacher commitment as well as become an important source of information for teacher education reforms.

## **1. Operationalizing the Concept of Psychological Readiness for Teaching**

Psychological readiness for professional life is a category of Russian psychology that was actively elaborated as part of activity theory [Leontyev 1975], so it cannot be analyzed outside of its conceptual framework. The concept of PRPL was introduced to reflect the gap between professional requirements and training: there is no point in measuring

---

<sup>1</sup> <https://ism.kz/kakie-specialisty-budut-vostrebovany-v-2020-godu>

readiness if students are trained by being immersed in professional environments. The very existence of PRPL is only possible in a system where professional education and training is isolated from practice and where there is a clear transition from study to work. Therefore, analysis of psychological readiness has a particular relevance for students of colleges and vocational schools.

In the Russian literature, psychological readiness has been studied most often as a person's self-perception as being able, ready, and willing to engage in particular professional activities [Subbotina 2011], or as a quality of being determined to act on particular professional situations in specific ways, i.e. a premise for professional life [Shavir 1981]. In the present study, PRPL is approached from a somewhat broader perspective as the set of characteristics (personality traits and attitudes in the first place) of an individual who is determined and motivated to engage in professional work.

In Russian psychological and educational research, teaching and teacher requirements were brought to the focus of attention in the second half of the 20th century by Nina Kuzmina [1989] and Vitaly Slastenin [1976]. Proceeding from the understanding of teacher functions, researchers developed a teacher job profile diagram consisting of four components: personal traits and characteristics; requirements for psychological and pedagogical preparedness; level and content of specialized training; and content of teaching methodology training. Russian researchers discriminate among motivational, volitional, and organizational elements of teaching, in addition to teaching skills as such and beliefs about teaching. All together, these elements shape psychological readiness for teaching.

Western researchers do not study PRPL as an independent concept, focusing instead on such personal and professional teacher characteristics as professional development [Hofman, Dijkstra 2010], attitudes and practices [Lester 2007], collective work [Wei et al. 2009], self-efficacy and job satisfaction [Klassen, Chiu 2010], and feedback [Santiago, Benavides 2009]. Studies on beginning teachers pay particular attention to teachers' adaptation [Calderhead, Shorrock 1997; Flores 2001; Hauge 2000], personality traits [Hamman et al. 2010], and professional competencies [Pill 2005].

Based on the above, teacher students' psychological readiness for professional work is understood here as a set of personal characteristics—such as personality traits, motivation, attitudes, and values—that contribute to successful teaching. This operational definition does not include teacher's subject knowledge or teaching skills. It is the psychological aspect of readiness for teaching that is the focus of the present study.

## **2. Measuring Students' Psychological Readiness for Teaching**

Psychological readiness is a complex, multicomponent construct that requires psychodiagnostic methods to measure its components: per-

sonality traits, motivation, and satisfaction of basic psychological needs.

Personality traits can be measured using any self-report instrument based on the Big Five traits of extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience [Fiske 1949]. A great advantage of this approach is that the Big Five traits are stable and reproducible across different linguistic and cultural contexts, which makes it indispensable in cross-country studies of personality traits [John et al. 1999].

Motivation can be measured within the framework of self-determination theory (SDT), the most popular theory in psychological research due to the large amount of accumulated evidence confirming its feasibility [Deci, Ryan 2000]. This theory discriminates among intrinsic motivation (engagement out of interest), extrinsic motivation (or external regulation, i. e. engagement driven by external rewards, whether it be high grades or financial incentives), and amotivation (lack of any motivation, where neither interest nor external incentives cannot drive engagement). Amotivation has a negative impact on readiness for professional life, so it should be analyzed with the opposite sign, meaning that lack of amotivation should be considered an indicator of readiness for teaching.

Basic psychological needs are another component of readiness. The present study examines the needs for autonomy (independent decision-making), competence (the value of experiencing confidence in one's professional performance), and relatedness (social support and interaction with others). Furthermore, we suggest measuring teacher students' perceived difficulty of job assignments and expected level of workload in their future professional life, assuming that these two factors will have negative effects on readiness for teaching.

Measuring instruments were selected based on the following principles. First, a method should be well-known, published, and widely applied. Second, it should be theoretically substantiated. Third, its psychometric quality and validity should be confirmed by publications. Finally, availability of a Russian version of an instrument is desirable. Upon analyzing a number of methods, four psychodiagnostic instruments were selected, all of which represent standardized personality questionnaires measuring respondents' agreement with various statements on a Likert scale.

Motivation was measured using the UPLOCK Inventory [Deci, Ryan 2004] based on SDT [Deci, Ryan 2012]. The instrument had already been localized into Russian and validated on a Russian sample [Sheldon et al. 2017]. The questionnaire consists of 24 statements that form six scales representing intrinsic motivation, four types of extrinsic motivation, and amotivation.

Basic psychological needs were measured using the Basic Needs Inventory [Deci, Ryan 2000] which is also based on SDT. This study uses an adapted and validated Russian version of the instrument [Osin

et al. 2015], which includes 21 statements grouped into three scales: the need for autonomy (self-determination), i.e. the desire to feel volition and choice; the need for competence, understood as a desire to achieve certain personal and work outcomes and to be effective; and need for relatedness, i.e. the desire to establish strong relationships based on attachment and belongingness.

Personality traits of the respondents were measured using an adapted version of the Big Five Inventory-2 (BFI-2) [Shchebetenko et al. 2020]. The instrument is based on a five-factor model of personality [John et al. 1999]. The original version of BFI-2 is comprised of 61 statements that form the classical scales of the Big Five personality traits: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience.

Environmental factors were measured using the Learning Environment Demands-Resources (LEDR) Inventory consisting of 25 items and six scales: Workload, Role Clarity, Choice Availability, Adequate Job Complexity, Tutor Support, and Peer Support. This instrument was developed by a Russian researcher [Osin 2015] on the basis of the job demands-resources model [Bakker, Demerouti 2007].

The measuring instruments listed above were tried out in a pilot study to test their psychometric properties and select the scales to be included in the integrated index of psychological readiness.

### **3. Trying Out the Instrument for Measuring Teacher Students' Psychological Readiness for Professional Life**

#### **3.1. Sample**

The empirical tryout involved 569 teacher students (3rd-4th years of Bachelor's degree and 3rd-5th years of Specialist's degree) representing colleges of Kazakhstan (Abai Kazakh National Pedagogical University, 276 respondents) and Russia (Novosibirsk State Pedagogical University, 293 respondents). The gender composition of the sample reflects the larger share of female students in teacher education programs in both countries: 57 men and 512 women. The age of the respondents varied from 18 to 47 years.

To administer the tests in the Kazakh language, all the instruments were localized from Russian into Kazakh by faculty members from the Department of General and Applied Psychology of Abai Kazakh National Pedagogical University with due regard to the International Test Commission (ITC) Guidelines [Bartram, Hambleton 2016]. The procedure involved two independent translations and a final "reconciliatory" translation by bilingual experts. As a result, 329 respondents in the sample were tested in Russian, and 240 were tested in Kazakh.

#### **3.2. Procedure**

The pilot study was carried out in the form of computerized testing using the 1KA survey tool.<sup>2</sup> The tests were adapted for all kinds of devices (computer, tablet, and smartphone). Respondents were given unique

<sup>2</sup> <https://www.1ka.si>

IDs to maintain their confidentiality. Language was selected automatically as a function of user preferences.

**3.3. Data Analysis** Psychometric properties of the selected inventories were assessed using Classical Test Theory (CTT) and Item Response Theory (IRT).<sup>3</sup> Within the framework of IRT, we used the Rating Scale Model (RSM) [Wright, Masters 1982] designed specifically for analysis of Likert scales. The following psychometric characteristics of the instruments were analyzed: dimensionality (empirical factor structure), individual item quality, response option functioning, and the overall quality (reliability and measurement error) of the scales. Psychometric data analysis was performed in Winsteps 3.73.

Instrument dimensionality was examined using Principal Component Analysis (PCA) on standardized model residuals, which represent standard deviations of true response from response predicted by the model [Linacre 1998; Smith 2002]. Item fit was assessed using unweighted and weighted mean-square fit statistics [Wright, Masters 1990], which are also based on PCA on standardized residuals [Wright, Masters 1990] and have an expected value of 1. The range of fit statistics from 0.7 to 1.4, which is believed to be the most productive range for measurements in RSM, were used in the present study as the tolerance interval [Wright, Masters 1982]. Response option functioning was tested for compliance with the following criteria [Linacre 2002]: (a) all categories should be selected by respondents; (b) all categories should demonstrate good model fit; (c) choice difficulty should increase monotonically from Strongly Disagree to Strongly Agree; (d) correlations between the measured construct and response options should increase monotonically from Strongly Disagree to Strongly Agree. Finally, psychometric quality of test scores was assessed by measuring the tests' reliability and measurement error.

In addition, item functioning across different groups of respondents, e. g. between Russian- and Kazakh-speaking students, was examined using Differential Item Functioning (DIF) analysis [Dorans, Holland 1992] with regard to variables that might affect item functioning by increasing or decreasing the probability of choosing a stronger-agreement response option by respondents depending on the group to which they belonged. In our study, such variables include the language of testing (Russian or Kazakh) and the country of respondent's residence (Russia or Kazakhstan). If an item functions differently, for instance, between two languages, it cannot be used as a common item for samples speaking different languages and should be either removed or treated as unique for each of the samples. DIF analysis is

---

<sup>3</sup> Kroker L., Algina D. (2010) *Vvedenie v klassicheskuyu i sovremennuyu teoriyu testov. Uchebnik* [Introduction into Classical Test Theory and Item Response Theory. Textbook], Moscow: Logos.

indispensable for comparing students who live in different countries or speak different languages by measurable indicators.

The Mantel-Haenszel procedure [Holland, Thayer 1986] in Linacre's modification [Badia, Prieto, Linacre 2002] was applied as the most popular technique of DIF analysis to detect and measure differences in item functioning.

Development of scaling techniques and statistical analysis of the test results were carried out using mathematical statistics of Confirmatory Factor Analysis (CFA), correlation analysis, and regression analysis. Analysis was performed with the use of Microsoft Excel 2010, Mplus 8, and R statistics packages.

### 3.4. Psychometric Evaluation Results

#### 3.4.1. UPLOCK Inventory

To<sup>4</sup> begin with, the six-factor structure of the instrument was confirmed: Intrinsic Motivation, Identification, Positive Introjection, Negative Introjection, External Regulation, and Amotivation. Next, each scale was analyzed as an independent measuring instrument. All the scales were found to be unidimensional and reliable (from 0.7 to 0.88), their psychometric characteristics being within the normal ranges, and all of their response options functioning properly.

Two statements, "I currently attend college because I decided (chose) to do so" and "I currently attend college because I find it meaningful", demonstrate differences in the functioning of the "language of testing" variable in opposite directions: the former, in favor of Russian-speaking respondents; and the latter, in favor of students who took the tests in Kazakh. Both statements belong to the Identification scale. The same statements function differently between the samples from Russia and Kazakhstan. Further on, only one scale relating to extrinsic motivation will be used in analysis: External Regulation. This type of motivation is the most contingent on external factors, basically working as the exact opposite of intrinsic motivation.

Therefore, three scales from the UPLOCK Inventory will be used in further analysis: Intrinsic Motivation, External Regulation, and Amotivation.

#### 3.4.2. Basic Needs Inventory

A similar evaluation procedure was performed for the Basic Needs Inventory consisting of three scales: Autonomy, Competence, and Relatedness. The results confirmed the factor structure of the instrument and the good psychometric quality of all the three scales. Classical reliability of the scales is satisfactory (from 0.66 to 0.73) given the small numbers of items. No DIF for the "language of testing" or "country of residence" variable was detected in this inventory. Therefore, it can be recognized as a quality measuring instrument even for cross-cultural assessments.

<sup>4</sup> A brief summary of psychometric evaluation results is presented in this section. Detailed results can be emailed upon request.



3.4.3. BFI-2 The Big Five Inventory-2 includes five scales: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience. Analysis confirmed the factor structure of the instrument and the acceptable psychometric quality of all the scales. Classical reliability is fairly high—ranging from 0.78 to 0.84—for all the scales except Openness to Experience, which is somewhat less reliable (0.7) but still within the acceptable range. DIF analysis revealed only four statements (out of 61) that functioned differently among respondents speaking different languages or residing in different countries. Therefore, the BFI-2 also has fairly good psychometric properties and can be used in the present study.

3.4.4. Learning Environment Demands-Resources Inventory The same procedure was applied to evaluate the LEDR Inventory. The original version included six scales: Workload, Role Clarity, Choice Availability, Adequate Job Complexity, Tutor Support, and Peer Support. Psychometric evaluation showed that not all the scales were of acceptable quality, so only three were selected for further analysis: Workload, Adequate Job Complexity, and Peer Support. Classical reliability of these scales was found to be satisfactory (from 0.65 to 0.83) given their small size. No DIF for the “language of testing” or “country of residence” variable was detected in any of the scales. On the whole, the selected scales of the LEDR Inventory proved to have good psychometric properties and therefore can be used further in the present study.

To summarize the above, psychometric evaluation established that the selected scales of the UPLOCK, Basic Needs, BFI-2, and LEDR Inventories have sound psychometric properties and can be recognized as quality and reliable instruments to measure the purported constructs. That is to say, they are suitable for constructing the index of psychological readiness.

#### **4. Constructing the Index of Psychological Readiness**

Fourteen scales from the UPLOCK, Basic Needs, BFI-2, and LEDR Inventories were selected based on theoretical assumptions and psychometric evaluation data to construct the index of teacher students' readiness for professional life (Table 1).

All respondents' scores on all the scales were standardized by dividing the basic (raw) scores by the maximum possible score for the scale. Standardization produced uniform scores on all the scales, removing dependence of test scores on the number of items in a scale or the number of response options.

The index was constructed using PCA, which involved applying real and simulated data to standardized scores. The method of PCA was chosen because it allows integrating all the scales and constructing the index instead of identifying a common factor for all the scales like, for instance, in exploratory factor analysis [Wilson & Gochyev 2020]. Parallel factor analysis based on simulating random data with descriptive statistics yields one principal component, analysis of the

**Table 1. Scales selected to construct the index of psychological readiness.**

| Inventory                              | Scale                   |
|--|-------------------------|
| UPLOCK                                 | Intrinsic Motivation    |
|  | External Regulation     |
|  | Amotivation             |
| Basic Needs                            | Autonomy                |
|  | Competence              |
|  | Relatedness             |
| BFI-2                                  | Extraversion            |
|  | Agreeableness           |
|  | Conscientiousness       |
|  | Neuroticism             |
|  | Openness to Experience  |
| Learning Environment Demands-Resources | Workload                |
|  | Adequate Job Complexity |
|  | Peer Support            |

**Table 2. Factor loadings on the selected scales in PCA.**

| Scale                   | Factor loading in PCA (PC1) |
|-------------------------|-----------------------------|
| Intrinsic Motivation    | 0.57                        |
| External Regulation     | -0.23                       |
| Amotivation             | -0.59                       |
| Extraversion            | 0.71                        |
| Agreeableness           | 0.70                        |
| Conscientiousness       | 0.72                        |
| Neuroticism             | -0.63                       |
| Openness to Experience  | 0.46                        |
| Autonomy                | 0.73                        |
| Competence              | 0.81                        |
| Relatedness             | 0.65                        |
| Workload                | -0.38                       |
| Adequate Job Complexity | -0.71                       |
| Peer Support            | 0.57                        |

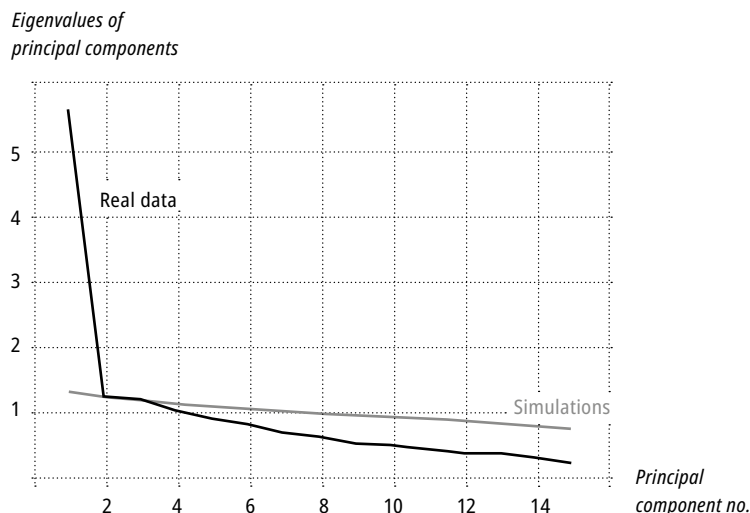
scree plot clearly showing one dominant factor (Figure 1). Total variation explained by this factor is 38%.

Table 2 shows factor loadings for all the scales determined using PCA. Five scales—External Regulation, Amotivation, Neuroticism, Workload, and Adequate Job Complexity—have predictably negative factor loadings. To include these scales in the index, they need to be reverse scored so that correlations with the dependent variable and factor loadings on these scales are all positive within the factor.

The index can be calculated as the arithmetic mean of standardized raw scores on all the selected scales weighted by factor loadings obtained by PCA. Therefore, for each individual respondent, the index will be calculated by multiplying their standardized scores on all the scales by the respective weights, adding the products together, and dividing the sum by the sum of all the weights. The resulting index takes values from 0 to 1, higher values corresponding to higher levels of psychological readiness.

Therefore, the procedure of constructing the index of teacher students' psychological readiness for professional life based on the selected self-report instruments consists of the following steps:

Figure 1. Results of applying PCA to real and simulated data.



- 1) (1) Standardize respondents' basic (raw) scores on all the selected scales by dividing them by the maximum possible score for the relevant scale;
- 2) Reverse score the scales with negative factor loadings in PCA (Table 2) by multiplying the standardized scores on these scales by (-1) and adding 1 to the products;
- 3) Change the signs of negative factors loadings by multiplying them by (-1);
- 4) For every respondent, multiply the standardized scores on every scale by the respective factor loadings (weights) and add the products together;
- 5) Divide the sum (4) by the sum of all factor loadings (weights).

Distribution of the index of psychological readiness for teaching is presented in Table 3 and Figure 2.

Therefore, the index of psychological readiness represents the student's degree of preparedness for starting a teaching career.

## 5. Conclusion

Criteria for assessing the quality of teacher preparation are critically important for building college educational processes as well as effective secondary school performance. A lot of recent teacher education graduates do not work as teachers for social as well as economic reasons referred to as job dissatisfaction. In addition, a large proportion of new teachers leave the profession soon after they start their teach-

Figure 2. **Distribution of the index of psychological readiness for teaching.**

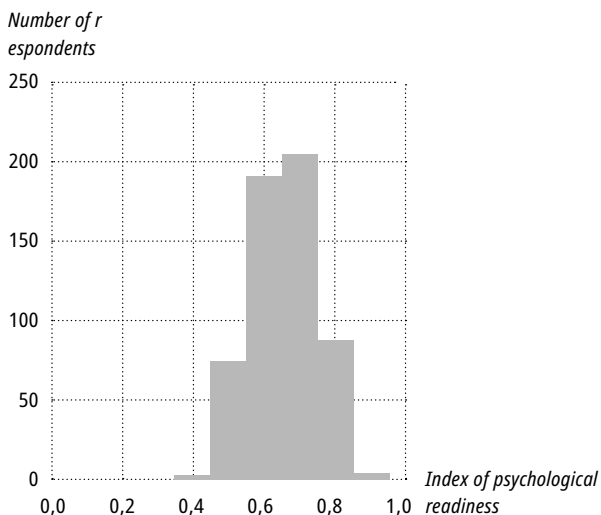


Table 3. **Descriptive statistics for the index of psychological readiness for teaching.**

|   | Mean | SD   | Min | Max |
|---|------|------|-----|-----|
| Index of psychological readiness for teaching | 0.66 | 0.09 | 0.4 | 0.9 |

ing career. Therefore, teacher education colleges and the education system as a whole would benefit from having an instrument for identifying vulnerable groups of recent graduates and beginning teachers who flee from the profession for whatever reasons. Development of such an instrument involves research on the measures of students' preparedness for teaching—not only their level of professional skills but also their psychological readiness. The present study was aimed at constructing a model and an instrument for measuring teacher students' psychological readiness for professional life.

Key personality and motivational components of teacher work served the basis for formulating the operational definition of psychological readiness for teaching. Proceeding from this definition, a set of instruments was selected to measure elements of psychological readiness. Further on, those instruments were tried out on a sample of teacher students from Russia and Kazakhstan.

The selected instruments displayed good psychometric properties in both CTT and IRT, allowing us to construct the index of psychological readiness for teaching.

Psychological readiness assessment results can be used “on both sides” of teacher preparation: in teacher education as well as in teaching practice. When preparing teachers, it appears important to pay attention not only to the knowledge component of learning but also to the development of students' personality, motivation, and positive attitudes—these qualities may become part of the universal cultural competence as an outcome of higher education. Induction of new teachers is critical to their further career trajectories, so they need support from more experienced colleagues during this period. In some countries, beginning teachers are required to engage in induction and mentoring programs [Kulikova 2018]. In Russia and Kazakhstan, some measures to support new teachers, such as mentoring, financial incentives, and professional development, are also implemented at different managerial levels [Pinskaya, Ponomareva, Kosaretsky 2016]. The set of psychological readiness measuring instruments selected and tried out in this study may also serve as a tool for examining the transition from learning to practice as well as new teachers' early adaptation in the classroom. Importantly, low psychological readiness is not a reason for repelling students from the profession but a possible springboard for choosing areas of further professional development.

*This study was conducted with the financial support from Abai Kazakh National Pedagogical University.*

## References

- Badia X., Prieto L., Linacre J.M. (2002) Differential Item and Test Functioning (DIF & DTF). *Rasch Measurement Transactions*, vol. 16, no 3, pp. 889. Available at: <https://www.rasch.org/rmt/rmt163g.htm> (accessed 24 July 2021).
- Bakker A.B., Demerouti E. (2007) The Job Demands-Resources Model: State of the Art. *Journal of Managerial Psychology*, vol. 22, no 3, pp. 309–328. doi:10.1108/02683940710733115.
- Bartram D., Hambleton R.K. (2016) The ITC Guidelines: International Standards and Guidelines Relating to Tests and Testing. *The ITC International Handbook of Testing and Assessment* (eds F.T.L. Leong, D. Bartram, F. Cheung, K. F. Geisinger, D. Iliescu), Oxford: Oxford University, pp. 35–46. doi:10.1093/med:psych/9780199356942.003.0004
- Brock B. L., Grady M. L. (2007) *From First-Year to First-Rate: Principals Guiding Beginning Teachers*. Thousand Oaks, CA: Corwin.
- Calderhead J., Shorrock S. B. (1997) *Understanding Teacher Education: Case Studies in the Professional Development of Beginning Teachers*. London, Washington, D.C.: Falmer.
- Darling-Hammond L. (2003) Keeping Good Teachers: Why It Matters, What Leaders Can Do. *Educational Leadership*, vol. 60, no 8, pp. 6–13.
- Darling-Hammond L. (1997) *The Right to Learn: A Blueprint for Creating Schools that Work*. San Francisco, CA: Jossey-Bass.
- Deci E., Ryan R. (2012) Self-Determination Theory. *Handbook of Theories of Social Psychology* (eds P.A.M. van Lange, A. W. Kruglanski, E. T. Higgins), Thousand Oaks, CA: Sage, vol. 1, pp. 416–437. doi: 10.4135/9781446201022.
- Deci E. L., Ryan R. M. (2004) *Handbook of Self-Determination Research*. Rochester, NY: University of Rochester.

- Deci E. L., Ryan R. M. (2000) The "What" and "Why" of Goal Pursuits: Human Needs and the Self-Determination of Behavior. *Psychological Inquiry*, vol. 11, no 4, pp. 227–268. doi:10.1207/S15327965PLI1104\_01.
- Dorans N.J., Holland P.W. (1992) *DIF Detection and Description: Mantel-Haenszel and Standardization*. Educational Testing Service Research Report. Available at: <https://onlinelibrary.wiley.com/doi/epdf/10.1002/j.2333-8504.1992.tb01440.x> (accessed 24 July 2021).
- Feiman-Nemser S., Carver C., Schwille S., Yusko B. (1999) Beyond Support: Taking New Teachers Seriously as Learners. *A Better Beginning: Supporting and Mentoring New Teachers* (ed. M. A. Scherer), Alexandria, VA.: Association for Supervision and Curriculum, pp. 3–12.
- Fiske D.W. (1949) Consistency of the Factorial Structures of Personality Ratings from Different Sources. *The Journal of Abnormal and Social Psychology*, vol. 44, no 3, pp. 329–344. doi: 10.1037/h0057198.
- Flores M.A. (2001) Person and Context in Becoming a New Teacher. *Journal of Education for Teaching*, vol. 27, no 2, pp. 135–148. doi:10.1080/02607470120067882.
- Gold Y., Roth R.A. (1999) *The Transformational Helping Professional: A New Vision*. Boston: Allyn and Bacon.
- Hamman D., Gosselin K., Romano J., Bunuan R. (2010) Using Possible-Selves Theory to Understand the Identity Development of New Teachers. *Teaching and Teacher Education*, vol. 26, no 7, pp. 1349–1361. doi:10.1016/j.tate.2010.03.005.
- Hargreaves A., Fullan M. (1998) *What's Worth Fighting for Out There?* New York, NY: Teachers College.
- Hauge T. E. (2000) Student Teachers' Struggle in Becoming Professionals. *The Life and Work of Teachers: International Perspectives in Changing Times* (eds Ch. Day, A. Fernandez, T. E. Hauge, J. Moller), Florence, KY: Taylor & Francis, pp. 159–172.
- Hofman R. H., Dijkstra B.J. (2010) Effective Teacher Professionalization in Networks? *Teaching and Teacher Education*, vol. 26, no 4, pp. 1031–1040. doi:10.1016/j.tate.2009.10.046.
- Holland P.W., Thayer D.T. (1986) *Differential Item Functioning and the Mantel-Haenszel Procedure*. Program Statistics Research Technical Report no 86–69. Available at: <https://onlinelibrary.wiley.com/doi/pdf/10.1002/j.2330-8516.1986.tb00186.x> (accessed 24 July 2021).
- Howard S., Johnson B. (2004) Resilient Teachers: Resisting Stress and Burnout. *Social Psychology of Education*, vol. 7, no 4, pp. 399–420. doi:10.1007/s11218-004-0975-0.
- Ingersoll R. M., Smith T. M. (2003) The Wrong Solution to the Teacher Shortage. *Educational Leadership*, vol. 60, no 8, pp. 30–33.
- John O. P., Srivastava S. et al. (1999) The Big Five Trait Taxonomy: History, Measurement, and Theoretical Perspectives. *Handbook of Personality: Theory and Research* (eds L. A. Pervin, O. P. John), New York, NY: Guilford, pp. 102–138.
- Klassen R. M., Chiu M. M. (2010) Effects on Teachers' Self-Efficacy and Job Satisfaction: Teacher Gender, Years of Experience, and Job Stress. *Journal of Educational Psychology*, vol. 102, no 3, pp. 741–756. doi:10.1037/a0019237.
- Kovaleva G., Denishheva L., Sheveleva N. (2011) Pedvuzny dayut vysokoe kachestvo matematicheskogo obrazovaniya, noikh vypuskniki ne speshat v shkolu (po rezultatam TEDS-M) [Teacher Training Colleges Provide High Quality Mathematics Education, but Their Graduates Are in Nohurry to Work at School (Based on TEDS-M)]. *Voprosy obrazovaniya/Educational Studies Moscow*, no 4, pp. 124–147. doi: 10.17323/1814-9545-2011-4-124-147.
- Kroer E. et al. (2016) *Voprosy adaptatsii i professional'nogo razvitiya molodykh pedagogov. Sbornik nauchno-prakticheskikh materialov* [Issues of Adaptation and Professional Development of Young Teachers. Collection of Scientific and Practical Materials]. Moscow: Pero.
- Kucheryavenko I.A. (2011) Problema psikhologicheskoy gotovnosti k professional'noy deyatel'nosti [The Problem of Psychological Readiness for Professional Activity]. *Moloday ucheny*, no 12(35), pp. 60–62.

- Kulikova A. (2018) Obraz molodogo uchitelya v sovremennykh rossiyskikh i zarubezhnykh issledovaniyakh [Image of a Young Teacher in Contemporary Russian and Foreign Studies]. *Otechestvennaya i zarubezhnaya pedagogika*, vol. 1, no 1 (46), pp. 81–93.
- Kuz'mina N. (1989) *Professionalizm deyatel'nosti prepodavatelya i mastera proizvodstvennogo obucheniya proftekhuchilishcha* [Professionalism of the Activity of the Teacher and the Master of Industrial Training of the Vocational School]. Moscow: Vysshaya shkola.
- Leontiev A. N. (1975) *Deyatel'nost'. Soznanie. Lichnost'* [Activity. Conscience. Personality]. Moscow: Politizdat.
- Lester F. K. (ed.) (2007) *Second Handbook of Research on Mathematics Teaching and Learning*. Charlotte, NC: Information Age.
- Linacre J. (1998) Structure in Rasch Residuals: Why Principal Components Analysis? *Rasch Measurement Transactions*, vol. 12, no 2, pp. 636.
- Linacre J. M. (2002) Optimizing Rating Scale Category Effectiveness. *Journal of Applied Measurement*, vol. 3, no 1, pp. 85–106.
- McIntyre F. (2003) *Transition to Teaching: New Teachers of 2001 and 2002. Report of Their first two years of teaching in Ontario*. Available at: [https://www.oct.ca/-/media/PDF/Transition%20to%20Teaching%202003/EN/transitions\\_e.pdf](https://www.oct.ca/-/media/PDF/Transition%20to%20Teaching%202003/EN/transitions_e.pdf) (accessed 24 July 2021).
- Moir E. (1999) The Stages of a Teacher's First Year. *A Better Beginning: Supporting and Mentoring New Teachers* (ed. M. A. Scherer), Alexandria, VA.: Association for Supervision and Curriculum, pp. 19–23.
- OECD (2014) *TALIS2013 Technical Report*. Paris: OECD. Available at: <http://www.oecd.org/education/school/TALIS-technical-report-2013.pdf> (accessed 24 July 2021).
- Osin E. N. (2015) Otchuzhdenie ot ucheby kak prediktor vygoraniya u studentov vuzov: rol' kharakteristik obrazovatel'noy sredy [Alienation from Study as a Predictor of Burnout in University Students: The Role of the Educational Environment]. *Psychological Science and Education*, vol. 20, no. 4, pp. 57–74.
- Osin E. N., Suchkov D. D., Gordeeva T. O., Ivanova T. Yu. (2015) Udovletvorenie bazovykh psikhologicheskikh potrebnostey kak istochnik trudovoy motivatsii i sub'ektivnogo blagopoluchiya u rossiyskikh sotrudnikov [Basic Psychological Need Satisfaction as a Source of Work Motivation and Subjective Well-Being in Russian Employees]. *Psychology. Journal of the Higher School of Economics*, vol. 12, no 4, pp. 103–121.
- Pill A. (2005) Models of Professional Development in the Education and Practice of New Teachers in Higher Education. *Teaching in Higher Education*, vol. 10, no 2, pp. 175–188. doi: 10.1080/1356251042000337936.
- Pinskaya M., Ponomareva A., Kosaretsky S. (2016) Professional'noe razvitie i podgotovka molodykh uchiteley v Rossii [Professional Development and Training for Young Teachers in Russia]. *Voprosy obrazovaniya/Educational Studies Moscow*, no 2, pp. 100–124. doi: 10.17323/1814-9545-2016-2-100-124.
- Santiago P., Benavides F. (2009) *Teacher Evaluation: A Conceptual Framework and Examples of Country Practices*. Available at: <http://www.oecd.org/dataoecd/16/24/44568106.pdf> (accessed 24 July 2021).
- Satova A. K. (2015) *Issledovanie psikhologicheskoy gotovnosti studentov k budushchey professional'noy deyatel'nosti* [Research of Student's Psychological Readiness for Future Professional Activity]. Almaty.
- Satova A. K., Yadgarova N., Ignatenko L. (2000) *Nekotorye psikhologicheskie problemy organizatsii obucheniya i vospitaniya v shkole* [Some Psychological Problems of the Organization of Education and Upbringing in School]. *Daryn*, vol. 3, pp. 90–95.
- Shavir P. A. (1981) *Psikhologiya professional'nogo samoopredeleniya v ranney yunosti* [Psychology of Professional Self-Determination in Early Youth]. Moscow: Pedagogika.
- Shchebetenko S., Kalugin A. Y., Mishkevich A. M., Soto C. J., John O. P. (2020) Measurement Invariance and Sex and Age Differences of the Big Five Inventory-2: Evidence From the Russian Version. *Assessment*, vol. 27, no 3, pp. 472–486. doi:10.1177/1073191119860901.

- Sheldon K. M., Osin E. N., Gordeeva T. O., Suchkov D. D., Sychev O. A. (2017) Evaluating the Dimensionality of Self-Determination Theory's Relative Autonomy Continuum. *Personality and Social Psychology Bulletin*, vol. 43, no 9, pp. 1215–1238. doi:10.1177/0146167217711915.
- Slastenin V. (1976) *Formirovanie lichnosti uchitelya sovetskoj shkoly v protsesse professional'noy podgotovki* [Formation of the Personality of a Soviet School Teacher in the Process of Professional Training]. Moscow: Prosveshchenie.
- Smith J. E. (2002) Detecting and Evaluating the Impact of Multidimensionality Using Item Fit Statistics and Principal Component Analysis of Residuals. *Journal of Applied Measurement*, vol. 3, no 2, pp. 205–231.
- Stoel C. F., Thant T.-S. (2002) *Teachers' Professional Lives—A View from Nine Industrialized Countries*. Available at: <https://fordhaminstitute.org/national/commentary/teachers-professional-lives-view-nine-industrialized-countries> (accessed 24 July 2021).
- Subbotina L. Ju. (2011) Formirovanie professional'noy gotovnosti studentov k samostoyatel'noy deyatel'nosti [Formation of Students' Professional Readiness to Independent Activity]. *Yaroslavl Pedagogical Bulletin*, vol. 2, no 4, pp. 295–298.
- Wei R. C., Darling-Hammond L., Andree A., Richardson N., Orphanos S. (2009) *Professional Learning in the Learning Profession: A Status Report on Teacher Development in the US and Abroad*. Available at: <http://www.nsd.org/news/NSDCstudytechnicalreport2009.pdf> (accessed 24 July 2021).
- Wilson M., Gochyev P. (2020) Having Your Cake and Eating It too: Multiple Dimensions and a Composite. *Measurement*, vol. 151, no 1, Article no 107247. doi:10.1016/j.measurement.2019.107247.
- Wright B. D., Masters G. N. (1982) *Rating Scale Analysis*. Chicago: MESA.
- Wright B., Masters G. (1990) Computation of OUTFIT and INFIT Statistics. *Rasch Measurement Transactions*, vol. 3, no 4, pp. 84–85.