Psychological predictors of self-efficacy of the teacher of higher education

Predictores psicológicos de la autoeficacia del profesor de educación superior

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ABSTRACT:
A study of the predictors of the self-efficacy of university teachers is presented in the article. Predictors of self-efficacy in the article are personalization and its psychological means: subjective activity, attitude to the professional system and personal significance. The randomization strategy was used to form a sample. Means of personalization for the study of predictors of self-efficacy was chosen diagnostic tools: a scale of self-efficacy and a specially made author’s questionnaire. Statistical processing of the data was carried out using the methods of descriptive statistics, the Pearson correlation coefficient, the variance analysis, and a posteriori Scheffe test. The results of the research showed the influence of personalization on the level of self-efficacy of university teachers. It is established that the strongest prediction in relation to the level of self-efficacy is the resource-activity attitude of teachers to the professional system. The article discusses the results of the study, summarizes some of the results, and identifies areas for further research in this area.

Keywords: self-efficacy, university teacher, professional system, personalization, subjective activity, resource-activity relation, personal

RESUMEN:
En el artículo se presenta un estudio de los predictores de la autoeficacia de los profesores universitarios. Los predictores de la autoeficacia en el artículo son la personalización y sus medios psicológicos: actividad subjetiva, actitud hacia el sistema profesional y significado personal. La estrategia de aleatorización se usó para formar una muestra. Los medios de personalización para el estudio de los predictores de autoeficacia fueron herramientas de diagnóstico elegidas: una escala de autoeficacia y un cuestionario de autor especialmente creado. El procesamiento estadístico de los datos se llevó a cabo utilizando los métodos de estadística descriptiva, el coeficiente de correlación de Pearson, el análisis de varianza y la prueba de Scheffe a posteriori. Los resultados de la investigación mostraron la influencia de la personalización en el nivel de autoeficacia de los profesores universitarios. Se establece que la predicción más fuerte en relación con el nivel de autoeficacia es la actitud hacia la actividad de recursos de los docentes hacia el sistema profesional. El artículo analiza los resultados del estudio, resume algunos de los resultados e identifica áreas para futuras investigaciones en esta área.

Palabras clave: autoeficacia, docente universitario,
1. Introduction


Self-efficacy is a key factor in pedagogical activity (Percy, B., 2012). Therefore, it is necessary to investigate the conditions and mechanisms for the professional success of teachers in higher education, especially the development of self-efficacy of students and teachers. Although many studies (Arendachuk I. V., 2007, 2010; Burtovaya N. B., 2015; Gaydar M.I., 2007; Dinther, M., Dochy. F., & Segersc, M., 2011; Chaplin A.V., Shatskaya S.S., 2015; Carson, J. A., Gilham, M. B., Kirk, L. M., Reddy, S. T., & Battles, J. B., 2002; Ghanizadeh, A, & Moafian, F., 2014; Kola A.J., Sunday O.S., 2015; Bray-Clark, N., & Bates R., 2003; Nielsen, Tine, Makransky, Guido, Vang, Maria Louison & Dammeyer, Jesper, 2017) disclose this subject, however, psychological factors in the development of self-efficacy of university teachers not studied deeply and comprehensively. It is important to investigate not only the role of the teacher's self-efficacy in developing motivation, and the successful teaching of students, but also the process of self-efficacy in teachers and factors that ensure high self-efficacy.

2. Review of literature.

The study of the determinants of effective human functioning is one of the topical problems of modern psychology. Personality variables that influence the effectiveness of human behavior and activity are self-efficacy and personalization. The study of self-efficacy and the mechanisms of its influence on the success of activities in the Russian sociocultural context in recent years is one of the promising directions in scientific and practical psychology. There is a process of theoretical comprehension of this phenomenon and its theoretical development (Gaydar M.I., 2008; Selezneva E.V., 2016; Vasil'eva T.I., 2008; Shepeleva E.V., 2008; Kobets V.N., 2013). Self-efficacy is the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations (Bandura, A. 1997. p.2). It is known that self-efficacy influences learning and success in three ways (Bandura A., 1994): human goals, efforts made to achieve goals and perseverance to solve new and complex tasks.

Self-efficacy of the teacher is the central concept of social cognitive theory. The teacher's self-efficacy is a variable that influences the motivation and performance of students in numerous studies (Boyd, D., Landford, H., Loeb, S., Rockoff, J., & Wyckoff, J., 2008; Pajares, F., 1996, Pajares, F., & Schunk, DH, 2001; Rockoff, J., 2004; Schunk, 1995; Schunk, DH, & Pajares, F., 2005). It is proved that self-efficacy plays a huge role in the effectiveness of
pedagogical activity. Self-efficacy is the attribute of effective teachers who are characterized by positive behaviors and high learning outcomes (Tschanne-Moran, M., Hoy, A. W., & Hoy, W. K., 1998). Effective teachers bravely experiment with teaching methods and choose methods that are more conducive to meeting the needs of students (Guskey, T.R., 1988; Stein, M.K., & Wang, M.C., 1988).

The problem of self-efficacy as a personal cognitive construct has been thoroughly understood and practically developed. In this context, self-efficacy is a belief that positively influences cognitive, motivational, affective and physiological processes that affect the behavior and effectiveness of human activity (Lowe R., Cockshott Z., Greenwood R., Kirwan J. R., Almeida C., Richards P., Hewlett S., 2008; Vodopyanova N.E., Gustaleva A.N., 2013). The main resources (factors) of self-efficacy are recognized as personal experience, social experience, social conviction and emotional recovery (A. Bandura, 1977). Psychological conditions of high self-efficacy are an optimistic style of thinking, mastery of skills, cognitive skills to build behavior, a desire for dominance, a willingness to take risks, subjective activity (Caprara, G. V., Vecchione, M., Alessandri, G., Gerbino, M., & Barbaranelli, C., 2011; Dinther M. V., Dochy F. & Segers M.R., 2011; Gonchar S.N., 2012; Graur M.V., 2017; Jex S. M., Bliese P. D., Buzzell S., Primeau J., 2001; Chaplin A.V., Shatskaya S.S., 2015; Seligman M., 2013). It is proven that high communicative self-efficacy is provided by a high level of psychodynamic activity and adaptability, personal self-regulation, flexibility and a decrease in the level of emotionality, tolerance to uncertain situations in the interpersonal sphere (Belykh T.V., Mayramyan A.M., 2016).

The consideration of self-efficacy affects the relationship between the subject and the professional environment (system). Two processes are analyzed in the studies on the regulation of human and world relations: the process of privacy (Altman I., 1975; Goffman E., 1984; Westin A., 1970; Wolfe M., 1978;) and the process of personalization (Petrovskiy A.V., Petrovskiy V.A., 1982; Petrovskiy V.A., 1996, 2010; Petrovskiy A.V., 2007; Kheydmet M., 1988; Etko E.A., 2015). Privacy meets adaptation goals and growth needs, personalization responds to existential needs. Personalization is the basic form of structuring the environment around a person and it includes subjective relation and identification with the environment (Kheydmet M., 1988). The main sense of personalization is the "expansion" of the subject into the environment, the transformation of the elements of the environment into the organs of the functioning of the personality. There is an identification of a person with objects of the environment, which is ranked into different zones and spheres depending on the relevance to the needs of the person. However, expansion is not the goal of human existence. It also serves to expand the domain of subjectivity and represents the form of its social self-exposure "(Nartova-Bochaver S.K., 2008, p. 92).

The basis for the development of the author's questionnaire, the formulation of the hypothesis of research and the interpretation of the results, comprised three basic concepts of Petrovskiy A.V. and Petrovskiy V.A.: 1) the essence of personalization lies in the effective transformation of the intellectual and affective needs of the personality of the other person, 2) the person through his activities translates his individuality to others and 3) personalization occurs under the condition of a person's importance for another, referentiality and attraction.

3. Method

108 teachers from four universities of Belgorod in the Russian Federation took part in the study. The average age of participants is 37.34 years (mean deviation is 9.17). The average work experience in the university is 11.46 years. 15 teachers were excluded from the 108 teachers participating in the first phase of the self-efficacy study, since 15 teachers did not answer questions in the questionnaires. At the stage of studying the features of personalization, another 10 teachers were excluded, who did not give answers to individual elements or gave two answers instead of one. 83 questionnaires were subjected to statistical processing. Based on the results of the questionnaire, the teachers were divided into three groups according to the level of self-efficacy: the first group consisted of teachers with a high level of self-efficacy (26.23%), the second group included teachers with a low level of
self-efficacy (21.86%) and the third group - with an average level of self-efficacy (51.91%).

The study used two questionnaires:

Self-efficacy. It was measured using the Self-Efficiency Scale, developed by Schwarzer, R. & Jerusalem, M. (1996). A 10-point psychometric scale was used to assess the strength of teachers' belief that their professional actions will lead to successful results. The answer for each item was assessed on a 4-point scale: 1 - absolutely wrong, 2 - hardly true, 3 - most likely true, and 4 - quite right. Currently, the questionnaire is available in 32 languages. The Russian version of the scale of general self-efficacy was used in this study, which according to the basic psychometric indicators corresponds to the original German version.

The statistical characteristics of individual statements and the Scales of self-efficacy indicate the reliability of the results obtained. In particular, the Cronbach alpha coefficient for each individual item is greater than .823 and in general the questionnaire is equal to .847, which is an acceptable indicator of its reliability. Elements were averaged, higher indicators indicated a higher level of self-efficacy.

Personalization by a professional system. The authors developed a 10-point scale for measuring this design. Samples of the elements are "My goals coincide with the goals of students and colleagues," "My decisions affect the activities of the department and students," "I feel its importance," "I do not feel autonomous and independent." The Likert type of response with four categories was used: from "completely disagree" - 1 to "completely agree - 4. The Cronbach alpha coefficient was calculated to measure the internal consistency of characteristics describing personalization, and to exclude a system error in developing the questionnaire. The questionnaire indicates the objectivity of the data obtained and the elimination of ambiguity in their interpretation (alpha Cronbach .866, based on standardized elements 0.871). The elements were averaged. High points indicate more predictors. It characterizes personalization as a professional competence, as a teacher's willingness to show his personality in teaching and communication.

Initially, the sample was tested for the suitability of applying factor analysis to it. The value of the Kaiser-Meyer-Olkin criterion (KMO), Bartlett's sphericity criterion, Chi-square indicates that the data are perfectly acceptable for carrying out factor analysis. Table 3.1 presents the results of a preliminary tests of factorability of data.

<table>
<thead>
<tr>
<th>Kaiser Meyer Olkin criterion</th>
<th>.823</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bartlett's sphericity criterion</td>
<td>373.814</td>
</tr>
<tr>
<td>Chi-square</td>
<td>66</td>
</tr>
<tr>
<td>Significance Bartlett</td>
<td>.000</td>
</tr>
</tbody>
</table>

According to the data given in the table, the value of the Kaiser-Mayer-Olkin criterion, equal to .823 and exceeding the recommended value .6, indicates a sufficiently high adequacy of the analysis. The Bartlett sphericity criterion, the p-level value of which is less than .005, indicates that the data are perfectly acceptable for factor analysis.

The principal component method was used to reduce the dimension of the personalization model. This method makes it possible to divide the investigated variables into main and secondary (random) ones. The main variables predict the level of personalization of the teacher. Random variables determine the specific and individual characteristics of each teacher. The authors believe that the main predictors are necessary, typical, determining the regularity of increasing the level of personalization of the university teacher, while random ones, characterizing the deviations from the revealed regularity, accompany self-efficacy.

The result of applying the principal component method and varimax rotation method indicates that 10 input variables can be replaced by three variables (main components). Table 3.2 shows the elements of personalization, which formed the three main components.

| TABLE 3.2 |
| VARIMAX ROTATION OF THREE FACTOR SOLUTION |

<table>
<thead>
<tr>
<th>Kaiser Meyer Olkin criterion</th>
<th>.823</th>
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<tbody>
<tr>
<td>Bartlett's sphericity criterion</td>
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<td>Chi-square</td>
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</tr>
<tr>
<td>Significance Bartlett</td>
<td>.000</td>
</tr>
</tbody>
</table>
The first component is marked by high loads on variables related to the desire to independently solve professional problems. The second component is related to the need to be included in the professional system. The third component is related to the need to be meaningful to others as a semantic component of one's own decisions and actions. The collection of empirical data was carried out in April-May 2017. Data was analyzed using the SPSS program.

4. Results
Statistical study of the correlation between self-efficacy and personalization of the university teacher was carried out using the parametric method of Pearson's correlation criterion (Table 4.1). The same method was also used to study the relationship between the variable self-efficacy with each personalization component.

TABLE 4.1
CORRELATION BETWEEN THE SELF-EFFICIENCY AND PERSONALIZATION OF THE UNIVERSITY TEACHER

<table>
<thead>
<tr>
<th></th>
<th>Self-efficacy</th>
<th>Personalization</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pearson Correlation</strong></td>
<td>1</td>
<td>.554(***)</td>
</tr>
<tr>
<td><strong>Significance (bilateral)</strong></td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>66</td>
<td>66</td>
</tr>
</tbody>
</table>

** Correlation at 0.01 (bilateral)

As can be seen from the table, a statistically significant correlation coefficient emphasizes the connection between self-efficacy and personalization of the university teacher. The authors concluded that a higher level of self-efficacy corresponds to a higher level of personalization.

Table 4.2 presents the statistical relationship between self-efficacy and certain aspects of the...
There is a statistically significant positive correlation between self-efficacy and the investigated aspects of personalization. The results of the relationship of self-efficacy with behavioral patterns suggest that when the ability of teachers to engage in activity and to study professional situations is higher, then the level of their assessment of behavioral competence is higher. At the same time, the inability to predict its results during the search activity confirms the essential characteristic of self-efficacy as a person's confidence in the ability and ability to carry out certain concrete actions (Bandura, 1978).

An analysis of variance was conducted to study the impact of personalization on the level of self-efficacy (Table 4.3).

A statistically significant indicator \( F \) was detected. It indicates a varying degree of need to be a person in the conditions of a professional system in separate groups of teachers allocated at the level of self-efficacy.

After obtaining a statistically reliable result of the variance analysis, the procedure of pairwise multiple comparisons of the mean values of the variable personalization in groups of teachers with different levels of self-efficacy was carried out. To obtain a more accurate result, a posteriori Scheffe test was used, which allowed to determine in which groups of teachers the differences in personalization are the most significant (Table 4.4).
Group A significantly differs from B (.000) and C (.038), and group C differs from group B (.002).

Univariate analysis of variance and retrospective analysis (Post-hoc) was also used to establish intergroup differences in mean values of variables subjective activity, resource attitude to the professional system and personal significance for others as the main components of personalization. The single-factor ANOVA established the significance of the differences in the level of all variables in the compared groups (by subjectivity - $F = 20.583$ for $p \leq 0.05$, with respect to the professional system $F = 14.956$ for $p \leq 0.05$ and for importance for others $F = 27.746$ p$\leq 0.05$). As a result of multiple pairwise comparisons using the Scheffe criterion, the authors found that there are statistically significant differences between the following groups of teachers (Table 4.5).

### Table 4.5.
RESULTS OF MULTIPLE PAIRWISE COMPARISONS OF GROUPS ON THE AVERAGE DIFFERENCE OF VARIABLES

<table>
<thead>
<tr>
<th>(I) GROUP</th>
<th>(J) GROUP</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Significance</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>Group A</td>
<td>Group B</td>
<td>7.66667*</td>
<td>1.17793</td>
<td>.000</td>
<td>4.6774</td>
</tr>
<tr>
<td>Group A</td>
<td>Group C</td>
<td>3.13333*</td>
<td>1.17793</td>
<td>.038</td>
<td>.1441</td>
</tr>
<tr>
<td>Group B</td>
<td>Group A</td>
<td>-7.66667*</td>
<td>1.17793</td>
<td>.000</td>
<td>-10.6559</td>
</tr>
<tr>
<td>Group B</td>
<td>Group C</td>
<td>-4.53333*</td>
<td>1.17793</td>
<td>.002</td>
<td>-7.5226</td>
</tr>
<tr>
<td>Group C</td>
<td>Group A</td>
<td>-3.13333*</td>
<td>1.17793</td>
<td>.038</td>
<td>-6.1226</td>
</tr>
<tr>
<td>Group C</td>
<td>Group B</td>
<td>4.53333*</td>
<td>1.17793</td>
<td>.002</td>
<td>1.5441</td>
</tr>
</tbody>
</table>

* The average difference is significant at 0.05
### 5. Discussion, conclusion, and implication

This study examined the relationship between personal variables such as self-efficacy and personalization. Pearson's correlation coefficient was used to identify the existence of a significant relationship between self-efficacy and personalization, as well as between self-efficacy and individual personalization components. The analysis showed that there is a statistically significant positive relationship between the self-efficacy and personalization of the university teacher (.554 at 0.01% significance level). Thus, it can be argued that when the level of development of self-efficacy is higher, then the level of personalization is higher and the need to be a person in the conditions of a professional system is stronger.

Correlation analysis also showed a statistically significant positive relationship of self-efficacy with individual components of personalization: with the realization of the need to be a subject (.359 for p <0.01), with the ability to act actively and to study professional situations in an objectively available professional system (environment) (.521 at p <0.01) and with a sense of self-importance for colleagues and students (.301 for p <.05).

Subjective activity, the ability to search activity, the desire to be meaningful in the conditions of a professional system are the psychological predictors of the self-efficacy of university teachers. The verification of this assumption was carried out using the unidirectional analysis of variance and a posteriori tests. The results of single-factor analysis showed the presence of statistically significant differences (F = 21.416, 000) in the level of personalization in the groups of teachers identified by the level of self-efficacy. This indicates a significant difference between groups of teachers in terms of personalization. A posteriori Scheffe test showed that the personalization of teachers of a group with high self-efficacy (group A) is much higher quantitatively and qualitatively than teachers with a low (group B) and an average (group C) self-efficacy. Thus, it is can be concluded that the level of personalization affects the level of self-efficacy. Predictor of the teacher's assessment of behavioral competence is his ability to apply adaptive strategies for coping with the depersonalizing influence of the professional system.

As a result of the use of single-factor ANOVA it was found that the average value of such indicators as subjective activity, resource attitude to the professional system and personal
significance for others in groups of teachers of different self-efficacy differ statistically. At the same time, the most significant were the differences in the group with high self-efficacy. Thus, teachers with different levels of self-efficacy have statistically significantly different levels of development of the need for subjectivity, different degrees of involvement in the professional system as a resource environment and different strengths of experiencing their own importance in solving professional problems. All three highlighted main components of personalization are psychological factors for the development of self-efficacy. This emphasizes the possibility of developing self-efficacy in the course of professional activities and communication by accumulating own experience of successful actions, monitoring the successful actions of colleagues and students, or by specially organized psychological training. The study showed that each teacher has internal resources to develop a belief in his effectiveness. The results of multiple pair comparisons of groups of teachers on the average difference of variables indicate that the resource relationship to the professional system plays the most important role in the development of self-efficacy and the sense of own importance plays a lesser role. At the same time, factor analysis has shown that the attitude of the teacher to the professional system as a resource of energy for activities, self-development, overcoming difficulties in solving professional problems is determined by the strength of the desire to be significant for others (students, colleagues, university).

The results of studying the possibilities of predicting the success and improving the effectiveness of the pedagogical activity of the university teacher are professionally and socially significant. The authors distinguish the following topics as subjects of interest for further research:

1. Study of the influence of individual and personal characteristics of university teachers on the development of their self-efficacy.
2. Study the relationship of self-efficacy with the effectiveness of various types of professional activity of university teachers (scientific, pedagogical, methodical).
3. Study the relationship between self-efficacy and job satisfaction.
4. Study of the influence of the corporate culture of the university on the development of teacher self-efficacy.
5. Study of the relationship between the self-efficacy of the university teacher and the development of students' self-efficacy in the conditions of professional training.
6. Studying the scientific self-efficacy of teachers in higher education.

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References


Petrovsky A.V., Petrovsky V.A. The individual and his need to "be a person". Voprosy filosofii [Issues of Philosophy], 1982, No 2, p. 44-53.


Petrovsky V.A. Chelovek nad situatsiy [Man over the situation]. Moscow: Sense, 2010b.


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