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To cite this article: F Valieva 2020 *IOP Conf. Ser.: Mater. Sci. Eng.* **940** 012146

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The Higher School Community Resilience as a Predictor of Efficient System of Education

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Abstract. Over the last two decades, terms connected with efficient functioning emerged within the education paradigm. The scientific research is aimed at investigating the education community's resilience as a predictor of efficient educational system. Resilience may be defined as the power or ability to recover readily from adversity, stresses or the like to the original form or elasticity. The study included short theoretical analysis of different schools of thought, self-assessment of students and teachers abilities to discern and identify the constructs of resilience phenomenon. The survey sample included about 150 participants. The set of questionnaires the respondents were asked to complete consisted of three sections, including assessment, discerning the resilient behaviour and respondents' personal information. The empirical study findings included the description of the sample in terms of resilience level; correlation analysis identifying the relationships between factors stated and resilience subscales as well as among all variables; factor analysis reducing the number of variables and extracting principal factors associated with resilience, personal data. Comparison of the results of the three groups identified differences not only on the level of resilience, but also on the characteristics the research project participants endued with teachers and students.

1. Introduction

Efficiency in education is a topic of intense debate among teachers, lecturers, psychologists and other educational stakeholders. Efficiency (meaning doing things right) in education and effectiveness (meaning doing the right things) should not be considered separately. The results of the education process, as well as the higher education process are social constructs; there is always an acceptable level of the desired outcomes, which may be realized.

A large number of papers on the themes of efficiency and education, and 'efficiency of education' was observed for last years [1-6]. Many schools of thought provide a review of studies on school efficiency and effectiveness in over 150 countries [7-9]. As stated in scientific papers, school effectiveness research looks at all the variables within education institutions in particular, and the educational system in general.

The social sensitivity of education system predisposes the necessity of taking care of the balance between the dimensions of efficiency and effectiveness in creating education policy. Here the great importance lies in the sector of individual characteristics for both, teachers and students, necessary to adjust to new requirements and reforms.

The job of educator today is both demanding and challenging. Teachers draw upon physical, emotional and intellectual resources in order to be more effective in the classroom. Nowadays

statistical data indicate that teachers abandon the profession in increasing numbers and are three times more likely to quit jobs than similarly trained professionals. Greater demands, complex responsibilities, and an expanding knowledge base that is continually being upgraded, became challenges of a new type for the higher school community.

In today's education system, all participants, including both students and teachers, must possess certain character and ability sets. Self-mastery and the ability to adapt quickly to changing realities can lead to better learning outcomes and allow all educational process participants to recover quickly from the long, complex periods often associated with modern teaching and learning. The ability to use productively the internal energy to move forward in difficult life and professional circumstances within modern stress-coping paradigm is called resilience.

Resilience is often defined as the ability to withstand the effects of stressors. In modern psychological and pedagogical science, several areas can already be identified in the study of resilience among representatives of different age groups, in different social contexts. Having systematized the currently existing conceptual theories and approaches, it should be noted that there is the diversity in the methodological interpretation of the phenomenon of resilience, both at the level of an individual and at the level of social groups and institutions. Among the authors of theoretical and methodological interpretations of this phenomenon should be mentioned such well-known scientists and researchers as B. Leipold, W. Greve, S. Luttar, G. Richardson, M. Rutter, M. Ungar, E. Werner, R. Smith, and others [10-15].

J. Block introduced the term «resilient personality». The resilient personality was characterized by a set of properties and abilities reflecting the basic resources and functional flexibility much needed in various life circumstances [16]. Individuals with a high level of resilience were characterized by a high energy level, a sense of optimism, curiosity, the ability to identify and comprehend problems.

There are two clear but broad theoretical schools in the area of resilience research. A smaller volume of literature defines resilience as an integral aspect of the individual, attributing good results to a person, character trait or personal strength [17, 18]. The larger body of work describes resilience as an interactive process that relies on aspects of both the individual and the environment [19]. Although S. Luthar, D. Cicchetti and B. Becker [20] proposed to distinguish between the two theoretical schools using the terms "resiliency" (to reflect definitions focused on characteristics located within the individual) and "resilience" (for definitions reflecting an interactive and ecological understanding of the concept), both terms continue to be used interchangeably. The difference, which has become more prevalent over the past 12 years, is the use of the terms "trait resilience" (reflecting solely individual assets and resiliency) and "process resilience" (reflecting interactive sustainability processes that include individual assets and contextual resources) [21].

Individual assets are mainly related to internal protective factors such as competence, self-efficacy and sense of humor. Non-personal resources include family, peer groups, other relevant people such as teachers, while contextual resources include, for example, health and education systems, recreational resources and community cohesion. These three elements of resilience as a process form a cycle in which internal transformations are supported. Resources in an individual environment contribute to the development of individual assets.

As individual assets increase, individuals gain greater access to external resources [22]. In addition, these changes are occurring exponentially: since success enhances success, events are occurring more rapidly and with greater impact. Similarly, as competence bears fruit, a higher level of competence is achieved [23]. These gradually increasing processes are now called "development cascades" [24]. Thus, studies highlight the importance of underlying experiences where the resources and risks one faces in the early stages of one's life affect not only the life skills used at a given time, but also one's ability to cope with and cope with stressors [25-28].

Resilience helps avoid or bounce back from negative consequences of life circumstances, which in its absence would inevitably lead to negative vectors in development. However, the authors of the concept of resilience as a personality trait or a characterological combination [8] deny the fact that this phenomenon should be considered as a kind of sustainable resource that provides a favorable outcome

under stress. According to J. Block [16], ego-resilience is based more on a flexible response to situational demands under stressful conditions. Other conceptions suggest that a certain set of dispositions affects the variability of coping and overcoming reactions. Other conceptions suggest that a certain set of dispositions affects the variability of coping and overcoming reactions. S. Maddi and S. Kobasa proposed the concept of *hardiness* to designate a special set of traits that ensure stress resistance of an individual [29, 30].

Resilient personality is characterized by a stable set of qualities and abilities. According to the researchers, an individually stable personality should have the following qualities: to be emotionally stable and spiritually developed; to have a good sense of humor; to have the problem solving and conflict resolution skills; to be able to set clear and realistic goals; to have an adequate self-esteem; to be able to perceive the problem as an opportunity to grow and develop; to respect oneself and other people, etc. [31, 32].

In developed Western countries, adaptive abilities, individualism and self-confidence are usually put first. In other cultures, where relation and belonging to a family, society, social group, religion or spirituality are most highly valued, the balance between individual and collective resources and efficiency may differ significantly in defining the phenomenon [32].There is no doubt that a resilient person is confident in his or her ability to cope effectively with life challenges and situations. Self-reliance is a kind of prerequisite for the development of resilience. Emotionally stable people have a so-called internal locus of control; it promotes the belief that problems can be solved through their own efforts.

Another important and very often overlooked aspect of positive adaptation is the sociocultural context in which a person lives and works [14]. Unfortunately, most definitions and approaches do not take into account such an important component of resistance as success/sustainable result. Although it is a stable positive result with respect to a particular life or professional scenario that is the most significant concept in the structure of the phenomenon.

Conceptually authorized theory, which includes emotional, social and cognitive flexibility, as well as contextual aspects of personality identification that starts with the societal level up to the individual, was used in our project. It was developed as a result of extensive literature review on models and approaches to resilience, and based on resiliency constructs identified by M. Unger, S. Luthar, S. Masten and others [11, 25, 14].

The goal of the research was to confirm the validity of the resilience model and identify similarities and differences in groups of people, studying and working in one educational community and belonging to different levels of society, age groups and cultures in terms of resilience. We were also set to reveal the conformity of internal functioning and redistribution of resilience components in order to find new approaches and forms to advance individual sustainability in the higher education system.

2. Methods

2.1. Theoretical model

The research was carried out in several stages. We designed a model of resilience, with a certain set of constructs at the structural and functional levels; then we specified the basic constructs, such as cognitive, emotional and social types of flexibility. In the author's interpretation, the concept of resilience is focused on the contextual aspect, including socio-cultural, spiritual and educational levels. Each of these constituents has its own substructure and elements. This combination of constituents formed the basis of the scale of the same name.

One of the cores in our conception of resilience is cognitive flexibility. The following skills were included in the resilience structure of its most important components: to live with the unfolding events (focus on real events), to set a goal and take appropriate actions, to assess and reassess what is going on. Emotional flexibility presupposes highly evolved ability to recognize, understand and use emotional information at the behavioral level, ability to orientate oneself towards the effective

transformation of both the process and the object of activity, taking into account one's own attitude. The phenomenon under consideration develops as a personal structure and has a pronounced social character. It is closely connected with change, movement, circulation of meanings and values in the society, assimilation and acceptance of cultural forms and images in the personal space.

2.2. Sample and Procedure
The participants of the study were about 62 teachers and more than 90 graduates (including 22 foreign students) of linguistics departments of Saint-Petersburg universities. The set of questionnaires consisted of three sections.

The first section captured the specificities of individual sustainability through the authorized Resilience Scale. The Cronbach's Alpha reliability testing on resilience scale displayed p =0,920. The first part of the questionnaire consists of 32 statements, which form eight clusters. Respondents were asked to assess according to how the statements are characteristic of them, ranging from 5 (very characteristic) to 1 (absolutely uncharacteristic). 5 of the statements must be reverse coded, i.e. "1" becomes a "5", "2" becomes a "4", "3" becomes a "3", etc. The average score for each cluster of competencies were calculated by adding the scores and dividing the total score by number of questions comprising each competency cluster.

The second section was devoted to discerning the resilient behavior of all groups of the higher education community through finding corresponding adjectives. The last comprised respondents' personal information.

The set of questionnaires was spread among students and teachers of Peter the Great St-Petersburg Polytechnic University. The questionnaires were self-administered, complete instructions were provided for the respondents. To avoid response biases certain procedure conditions were met. The respondents were tested individually to ensure privacy; however, it was allowed to take questionnaires home. Because of the sensitive nature of some items, questionnaires were completed anonymously, each being given a code number. The first questionnaire section was labelled different to their original name to minimize the reactive effect of participants' personal beliefs and expectations about some concepts.

The return rate for questionnaires was 89%. Of the 165 survey forms returned, 13 were unusable because of missing data. Thus, the survey results are based on the sample of 152 participants. It is notable that some teachers after looking through the questions refused to complete the forms because they found the questions "too private" or they doubted the purposes for which the data would be used.

3. Results and Discussion

3.1. Statistical analysis
The research sample revealed four groups of respondents: resilient (32%), moderately resilient (35%), non-resilient (20%) and fluctuant (13%).

The diagram clearly shows that the lowest scores for all groups of respondents are concentrated in the field of emotional flexibility, which indicates the likelihood of emotional exhaustion of both teachers and students. The strongest resource for Russian students is family. However, this group of respondents revealed very low indicators in the field of socio-cultural resources, which may be a prerequisite for significant discrepancies between their own system of values and beliefs and the surrounding socio-cultural reality (Diagram 1).
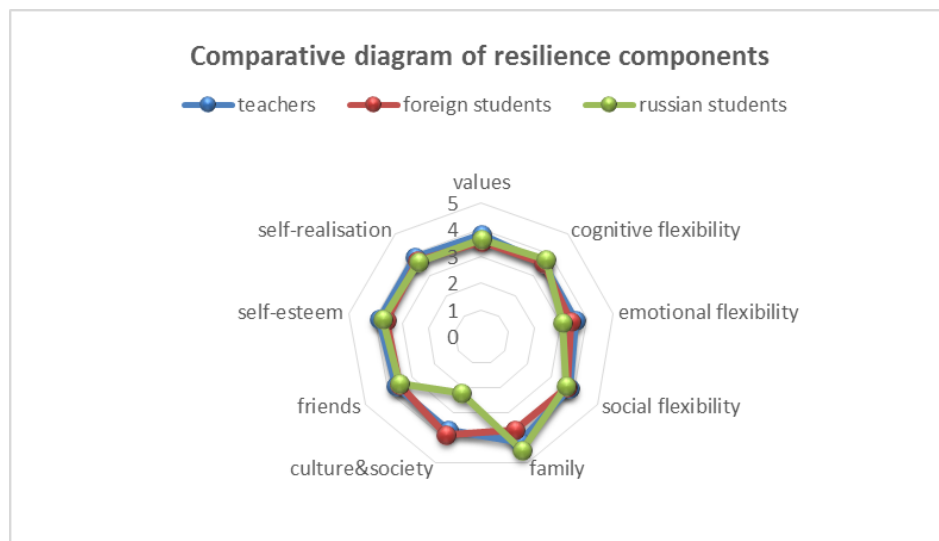
Diagram 1. Comparative diagram of resilience components.

The gap between the positive identification of oneself, one's family, friends and society is a sign of a break in the development cascade among students. This, on the one hand, may indicate a certain immaturity of young people, on the other hand, makes it impossible to use such important resources for human evolvement as society and culture. The teachers' group has also showed positive identification at the individual and family levels. The socio-cultural resource in comparison was slightly lower that could indicate latent emotional exhaustion. In addition, this, as modern researches show, can have a prolonged negative effect.

3.2. Correlation analysis
For correlation analysis we identified 8 variables: (1) system of values, (2) social flexibility, (3) emotional flexibility, (4) cognitive flexibility, corresponding to the individual subscales of resilience scale, (5) self-evaluation, (6) family, (7) social context, (8) cultural context corresponding to the four contextual clusters. The correlation matrix for research variables was first constructed using SPSS software to examine the associations among all variables as well as their relationship to the main individual subscales of resilience with correlations being significant at the 0.01 level (2-tailed) - ** and 0.05 level (2-tailed) - *. Later we used R-studio for constructing scree plots.

Most significant correlations are represented and logically analyzed. As a result of correlation analysis a rather strong positive correlation (,730**) was found between resilience itself and flexibility subscales, which is in accord with theoretical expectations that these are separate, but related, aspects of resilience. Students scoring high on the social dimension usually score high on the cognitive. Thus, the social and cognitive flexibility often develop almost simultaneously. Emotional flexibility, in contrast, is independent of the other subscales, no significant correlations were found with the components. Emotional flexibility cluster and components within were found to be strongly intercorrelated, with Pearson product-moment coefficient ranging from 0,371 to 0,717. The implications of the associations found are that the clusters appear to form a strong unity. Emotional flexibility appeared to be negatively correlated with social one. Competencies within clusters operate in an integrated fashion, forming a meaningful pattern of abilities that facilitates successful performance on resilience.

Other clusters within a model may have a developmental relationship. For example, the social flexibility cluster of competences is needed for sustainable positive social identification, or more specifically for the competences in the societal cluster to be demonstrated in sustained ways. Emotional awareness correlates positively with both adaptability (,472**) and optimism (,512**).

Teachers who demonstrate emotional awareness competence seem to be generally more positive about themselves and others. Recognizing their own feelings helps teachers to easily adapt in new situations and take control of their emotions. A negative correlation, though moderate (-,312), was found between cognitive flexibility subscale and empathy.

Data classification based on Russian students' answers showed the following results. The largest number of correlations was found between society component and surrounding community. The adoption of the environment at the societal level and one's positive self-identification in it positively correlated with human values (,407**), social (,405**) and emotional flexibility (,307**). On the first place on the total weight and quantity of meaningful relationships is such a resilience characteristic as community circle. Positive self-identification within one's own family revealed correlation with human values (,583**) and social environment (,386**). The system of values in the frame of the Russian sample found an interesting relationship with the adoption of the cultural environment (,344**).

Data obtained on the basis of the responses of foreign students are partially similar to the above mentioned data. So, the most significant relationships were obtained between cognitive and social flexibility (,908**), cognitive flexibility and value system (,885**).

3.3. Factor analysis

To reduce the number of variables and detect the structure in the relationships among variables factor analysis was held using R-studio. Extraction method of Principal Components Analysis was applied, using Varimax rotation method with Kaiser normalization. We identified three factors with Eigenvalues over 1.0. Different samples identified different plots, not less than factors. Results are presented below.

Factor analysis based on the teachers' survey data identified two factors. First, the strongest, included virtually all social features with social flexibility at the top. The most significant indicator of the second factor was emotional flexibility (Diagram 2).
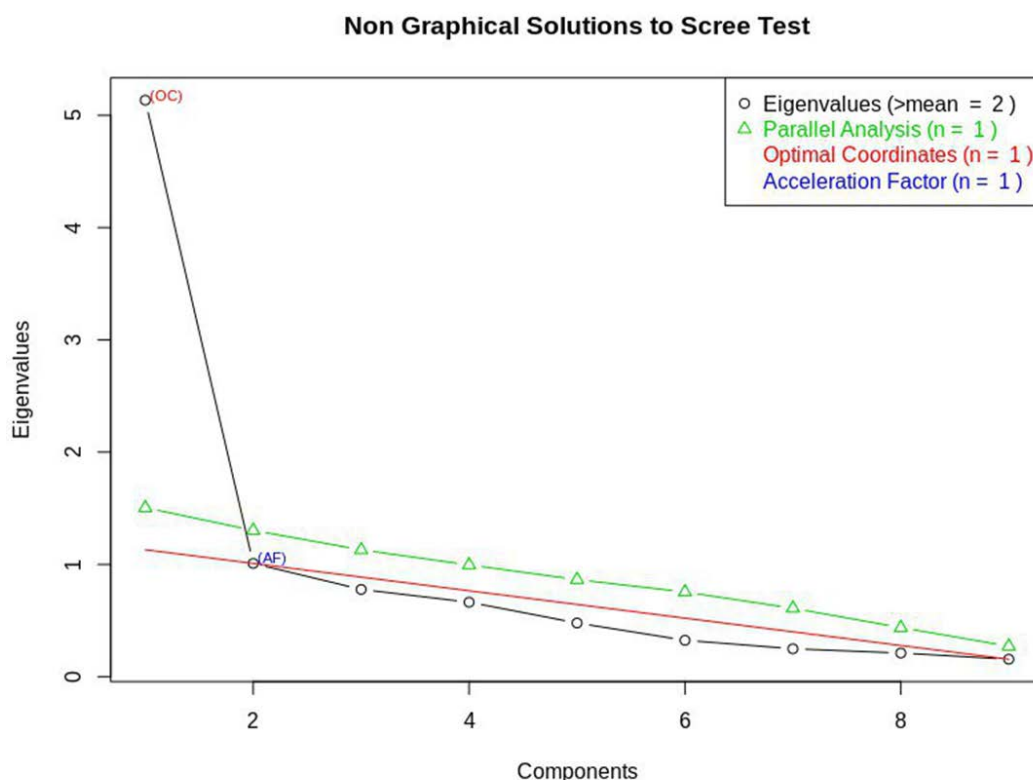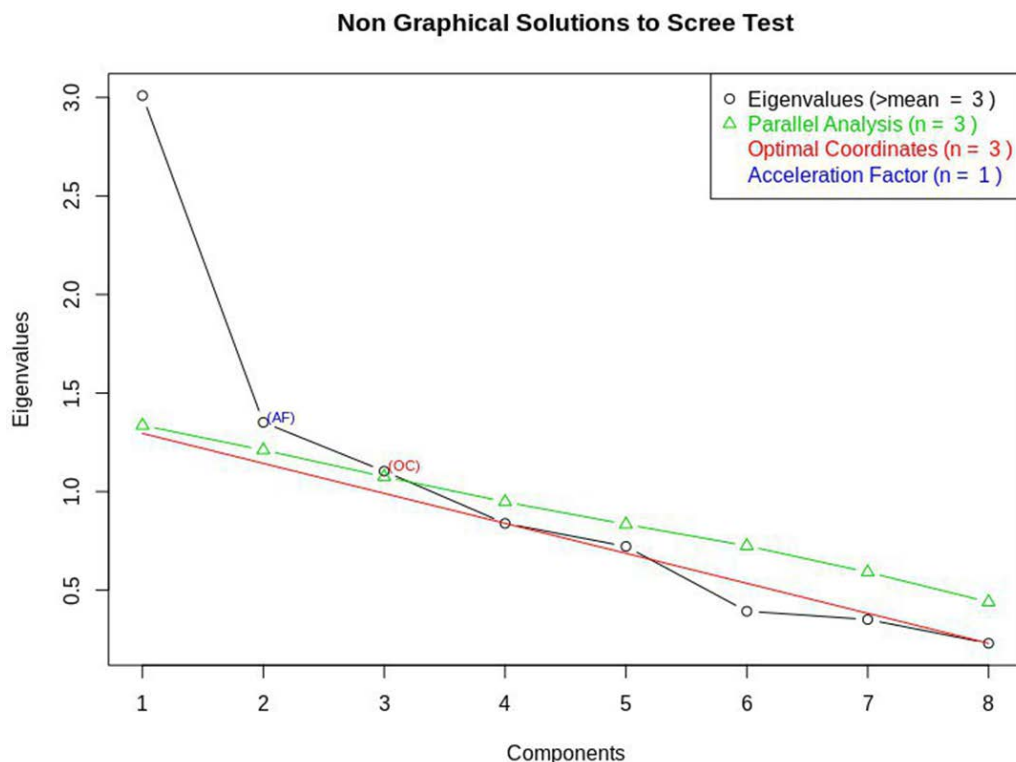

Diagram 2. Factor analysis. Scree plots for teachers.

Another combination of factors was obtained based on the Russian students' sample. The first factor contains almost all resilience clusters, with self-evaluation and social constructs having the highest scores. The second factor contains the system of value, being the most influential component, family and social flexibility, the last scoring highest but with negative meaning. The third factor represented through emotional cluster (,870). Because of factor analysis, we can refine the structure of factors suggested to have significant influence on the resilience. All types of individual flexibility appear to form the most powerful factor associated with resilience, which is in accord with theoretical assumptions (Diagram 3).

Diagram 3. Factor analysis. Scree plots for Russian students.

3.4. The second section results
The analysis of the students' and teachers' responses to describe resilient teachers and students has revealed certain mismatches between expectations and realities in resilient high school communities.

4. Conclusions
Thus, the results of the study proved that the author's concept of resilience includes topical and working clusters. They can function across the board and separately. It should be noted that the resilience of the higher school community consists of many factors. First, it is a common understanding of goals and a similar interpretation of what is happening. Differences in perception of sustainability of the educational environments can lead to contradictions and constitute a prerequisite for the reduction of resilience.

As the statistical analysis has shown, students and teachers have a lot in common in the context of resilience. Both groups have a value system, self-esteem and self-actualization at approximately the same level. Virtually all respondents successfully identify themselves within their friends. However, there are also significant differences. First, it concerned the indicators of emotional flexibility, self-identification within their family and socio-cultural environments. The lowest indicators for teachers were recorded in terms of cognitive and emotional types of flexibility. This is a prerequisite for

professional burnout. Students, especially those in Russia, had the lowest rates of emotional flexibility and cultural identity. Differences were also found between the two groups of students. Thus, foreign students identify their socio-cultural environments in a much more positive way, which may indicate their highly evolved social flexibility and adaptability.

The results of correlation and factor analysis showed that the resilience phenomenon implies and is based on several constructs. They include cognitive, social and emotional individual characteristics, which are connected, even interwoven, but at the same time constitute independent, influential clusters. The social environment should be separately mentioned, highlighting family, immediate surroundings and sociocultural stratum. In case of the absence of positive self-identification at one of these levels, an internal dissonance occurs in an individual. Moreover, this contributes to a significant reduction of its sustainability. The same can be emphasized concerning the spiritual and moral block. A positive acceptance of socio-cultural environments, may have a not-so-brightly colored emotional impact, but, unfortunately, prolonged and destroying the human's inner strength.

The most unexpected result was the directly opposite correspondence in the data of self-identification at three levels of the cultural context: within the family, educational environment and society.

When preparing resilience orientated items and assignments for all the groups, involved in the higher education system, social and emotional blocks should be separated. Specifying the students' community, it is recommended to pay attention to the emotional flexibility advancement. As well, develop a system of tasks and cases helpful in using flexible social technologies and ways of adaptation without changing their own system of values.

Finally, it should be emphasized that the phenomenon of resilience has a strong socio-cultural core, and its in-depth examination may expose many hidden psychological patterns causing raising of the higher education system efficiency.

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