Personality Traits of Students in Resilient and Struggling Schools: Different Children or Different Schools?

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Abstract   One of the most important facets of educational inequality is the globally observed wide socioeconomic gap in academic outcomes across schools and individual students. However, there are resilient schools that manage to be effective in adverse circumstances. In order to find out what may stand behind resilience of disadvantaged schools, personality traits of their students are compared to those of students attending schools that perform low in equally challenging contexts. Empirical data for this study was collected in Leningrad Oblast in 2019 and includes information about schools' academic outcomes and socioeconomic status (SES) as well as students' personality traits that have been traditionally associated with psychological resilience. Personality traits are assessed using the Academic Resilience Scale (ARS-30), the Academic Motivation Subscale, the Grit Scale, and the Self-Regulation Scale. Factor structure of the questionnaires is verified using confirmatory factor analysis.

No differences are revealed in personality traits of students between resilient and non-resilient low-SES schools, which confirms the previous findings that academic resilience is built through managerial strategies of school principals, school and state educational policies, and practices to improve school effectiveness.

Studies devoted to academic resilience occupy a special niche in research on educational inequality [Crosnoe 2005]. Academic resilience is the ability of an individual or organization to show good academic performance in adverse circumstances. Two relatively autonomous approaches have emerged that use different criteria to define this phe-

nomenon. One of them uses characteristics of academic performance and socioeconomic status (SES) distributions (and/or relative and context-dependent thresholds) and obviously boasts a high level of validity: good performance in adverse circumstances is a direct indicator of academic resilience [Longobardi, Agasisti 2014]. The other approach is based on construct validity [Cronbach, Meehl 1955] and assessment of characteristics of individuals and social groups [Masten, Monn 2015], seeking to find out what can (or, rather, should) stand behind the behaviors observed.

The present article offers a comparison of the two approaches in analyzing the characteristics of students in resilient vs. non-resilient schools. Do we know why resilient schools are so effective? Two possible explanations are offered in this study:

- Resilient schools manage to select children with specific personality traits despite the social contexts that are equally challenging as those in which struggling low-SES schools operate;
- While working with the same children and families as any other low-SES school, resilient schools implement some different strategies.

Arguments supporting the idea that resilient schools apply specific policies have already been provided in Russian as well as international publications [Lupton 2004; Pinskaya et al. 2018]. The present study aims at finding out whether students' personality traits — resilience, perseverance of effort, academic motivation, and self-regulation — differ between schools with different academic performance and SES. An answer to this question will allow making more well-founded conclusions about the reasons behind the success of resilient schools. No comparative studies of this kind have been carried out on a Russian sample so far.

1. Review of Literature

In a broad sense, resilience theory emerged within the field of developmental psychology as a description of individuals' characteristics explaining the difference in how they handled difficulties in the process of development. The first studies of resilience were performed nearly concurrently by different authors and in different contexts [Cicchetti et al. 1993; Cicchetti, Garmezy 1993; Masten 1989]. An understanding of mechanisms underlying successful adaptation in adverse circumstances is absolutely indispensable for identifying the causes and ways of preventing and managing various personality development and adaptation problems. Knowing the mechanisms makes it easier to explain why, under the same stressful conditions, some individuals cope with the situation successfully and others do not [Rutter 1987; Werner 1997; Anthony, Cohler 1987; Rutter 1985]. Resilience research has had a considerable impact on theories and models of developmental psychology

and psychopathology, breaking new ground for prevention and management of developmental disorders [Rutter 2013; Panter-Brick, Leckman 2013; Masten 2014; 2011; Cicchetti 2010; 2013].

Over time, resilience research developed a specific range of methods and techniques. In addition to observations, experimental studies came into use, in particular the ones attempting to promote positive adaptation of an individual in the face of adversity [Cicchetti 2010; Luthar 2006]. The concept of resilience has become dynamic and multidimensional. Resilience theory is getting increasingly interdisciplinary, as research is enhanced by neurosciences, genetics, etc. Progressively complex models work in multicultural contexts and employ the methods of developmental systems theory [Ungar, Ghazinour, Richter 2013; Southwick et al. 2014; Ungar 2012].

In different periods of resilience theory evolution, researchers would suggest widely differing definitions of resilience. A good definition should pursue a few ends at once: consider all the (or as many as possible) recent changes in resilience research and practice while remaining invariable across different levels of analysis, and make allowance for interdisciplinary use. The following definition appears to be the most adequate given the current state of resilience research: "Resilience is the potential or manifested capacity of an individual to adapt successfully through multiple processes to challenges that threaten the function, survival, or positive development." [Masten, Cicchetti 2016] This definition can be applied not only to individuals but also to any kind of developing system. Many systems are involved in the processes leading to successful adaptation in an individual, family, or community. Moreover, systems that are interconnected across levels will influence the resilience of each other. In other words, the resilience of an individual that is manifested and observable at the level of behavior depends on the operation and interactions of many other systems, both within the individual (immune system, stress response system, etc.) and in their environments (family, social group, and other social systems).

1.1. Research on School and Student Resilience

Academic resilience is part of resilience theory. OECD's Program for International Student Assessment (PISA) has used the term "resilient" since 2009 to refer to students who display high levels of academic achievement despite coming from disadvantaged socioeconomic backgrounds [OECD2011], which is automatically regarded as a manifestation of academic resilience. In practice, resilient students are identified as follows:

- Students are considered "disadvantaged" if their economic, social, and cultural status (ESCS)[1] index ranks among the bottom 25% in their country. Therefore, all countries have an equal share of disadvantaged students;
- "Good education outcomes" by contrast are defined using international performance standards; however, the international standard applied to each student varies according to his or her SES relative to their country [Longobardi, Agasisti 2014; OECD2010; 2011]. Students ranked among the top quarter of students internationally are identified, controlling for their SES;
- Students who display high academic achievement despite being ranked among the 25% most socioeconomically disadvantaged students in their country are considered resilient.

It is not only students but also entire schools that can be resilient. Researchers believe that education policies and school practices can greatly reduce the vulnerability of disadvantaged students and enable resilience as a result [Longobardi et al. 2018]. Resilient schools are socioeconomically disadvantaged schools (the bottom quartile of SES) that show good education outcomes (the top quartile of academic performance) [Pinskaya et al. 2019].

Highly resilient schools are identified using the same principles as those that are used for identifying resilient students. However, different studies may use different methods to measure both SES and academic achievement. In Russia, for instance, measurement of SES considers schools' human and non-human resources and composition, while academic performance of schools is measured through their mean Unified State Exam (USE) or Basic State Examination (BSE) scores. Other countries may use other indicators such as percentage of students eligible for free school meals or average scores on national educational assessments.[2] Resilient schools are also referred to as "schools performing beyond expectation" [Hargreaves, Harris 2011], "high-performing, high-poverty schools", [Kannapel, Clements 2005; Parret, Budge 2020], and "high flying schools" [Harris 2007].

In effect, resilient students and resilient schools are identified in similar ways, but the mechanisms behind such statistical identification are left unattended, although there are studies showing which of the school factors and student characteristics are related to resilience [Barber, Oostveen van, Childs 2019; Agasisti, Soncin, Valenti 2016; PinskaSya et al. 2017].

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[1] The ECSC is used in a number of international student assessments. In PISA, it has traditionally included the highest level of education of the student's parents, their occupational status, family wealth, home educational resources, etc. This index is designed to reflect social, economic, and cultural capital of the student's family.

[2] See, for example, https://edopportunity.org/

1.2. Academic Resilience as a Construct

There is an ongoing debate in academia as to whether resilience can be treated as a construct, i. e. a measurable trait of an individual's personality. Several attempts have been made to create a reliable and valid instrument to measure student resilience: Resilience Scale [Wagnild, Young 1993], Connor-Davidson Resilience Scale [Connor, Davidson 2003], New Rating Scale for Adult Resilience [Friborg et al. 2003], and Brief Resilience Scale [Smith et al. 2008]. All those survey scales assess individual characteristics that are traditionally associated with resilient behavior: personal and social competence, positive self-concept, acceptance of self and life, action orientation, adaptability to change, complex problem solving skills, family cohesion, sense of humor, endurance, optimism, dispositional attributes, and external support systems [Hoge, Austin, Pollack 2007]. A number of researchers demonstrate that the existing operationalization and structure of such scales cannot be considered absolutely consistent and correct [Campbell-Sills, Stein 2007; Green et al. 2014; Lamond et al. 2008]. Additional challenges for academics and scale developers arise from the lack of consensus on the definition of "resilience". A number of authors hold that the key characteristic of resilience is the interplay of personal attributes and environmental factors [Hoge, Austin, Pollack 2007; Masten, Cicchetti 2016]. However, this characteristic is not necessarily a feature of academic resilience [Cassidy 2015].

Few studies have measured academic resilience as a psychological construct or examined predictors of academic resilience [Martin 2002; Martin et al. 2010]. The small range of standardized measures is explained by the lack of theoretical studies aimed at understanding the psychological components of student resilience [Cassidy 2015].

The present study uses an adaptation of the Academic Resilience Scale (ARS-30) [Cassidy 2016] for Russian samples. In ARS-30, academic resilience is operationalized through measurement of adaptive and non-adaptive cognitive-affective and behavioral responses of students to academic adversity. The scale is structured by analogy with similar scales measuring resilience in other spheres of life [Hardy, Concato, Gill 2004].

My research objectives include critical analysis of the nomological network in which the construct is embedded, and assessment of convergent validity of resilience [Martin, Marsh 2009]. For these purposes, other constructs potentially associated with student resilience should be analyzed as well. A few Russia-based and international studies show that constructs conceptually similar to academic resilience — such as adaptability, engagement, and self-regulation — are associated with academic achievement [Collie, Holliman, Martin 2017; Gordeeva et al. 2016]. Academic success in online learning is mediated by a few constructs at once: resilience, grit, and growth mindset [Barber, Oostveen van, Childs 2019]. In 2016, an entire issue of *Educational Psychology* was dedicated to associations between motivation, engagement, self-regulation, and other constructs, on the one hand, and academic

resilience of school students, on the other [Moore 2016]. Self-regulation and engagement were found to be related to academic resilience [Cheung 2017], and pedagogical practices for empowering momentary engagement of students were found to promote academically resilient behaviors [Torsney, Symonds 2019].

The following three scales were added to evaluate the relationship between the constructs described and the adapted version of ARS-30:

- The Cognitive Academic Motivation Subscale from the AMS-S (Academic Motivation Scale for School Students) methodology [Gordeeva et al. 2017];
- The Perseverance of Effort Subscale of the Russian version of the Grit Scale [Tyumeneva, Kardanova, Kuzmina 2019];
- The Self-Regulation Scale [Gordeeva et al. 2016].

Our research thus has a subgoal of adapting the ARS-30 for the Russian sample, testing its convergent (or construct, in Cronbach and Meehl's terminology) and structural validity in the Russian context, and constructing a nomological network of related constructs. This subgoal is required to achieve the main goal of comparing students' personality traits—resilience, perseverance of effort, academic motivation, and self-regulation—between resilient and non-resilient schools (grouped using the available statistical tools) in order to find the "roots" of differences between the two types of schools.

2. Methods

2.1. Research Design and Sample

The study was conducted in Leningrad Oblast in 2019 as part of an intervention administered by the Institute of Education (National Research University Higher School of Economics). To achieve the research goals, it was necessary to collect data on students' academic performance and biographical data so that the two sets of data would be linked at the level of schools. Simply put, the school's average academic performance had to be collated with the biographical data of its students. Additionally, information about the SES of schools was obtained to classify them [Pinskaya et al. 2019].

Data was collected in a few steps:

- Information on students' academic performance over the past three years, pegged to schools, was obtained via the Regional Center for Educational Assessments (RCEA). All the data was anonymized: students were assigned unique identification numbers, while databases with their names were only available within relevant regions;
- Students who were in high school at that time, i. e. those whose BSE scores were available in the RCEA datasets, were sent online questionnaires in which they were asked to enter their IDs. The

IDs with matching last names had been given to school coordinators so that they could communicate the information to students;

- After all the data was collected, students' academic performance was collated with their biographical data at the level of schools. The use of IDs allows identifying the students who changed schools after middle school and ascribing them to the schools which they attended before high school and which are therefore "responsible" for their BSE scores;

- To collect data on schools' SES, contextualized questionnaires with items on school's resources and student composition were sent to every school [Yastrebov, Pinskaya, Kosaretsky 2014].

At the stage of biographical data collection, the sample was comprised of 7,058 students. After removing duplicate responses, responses with incorrect IDs or with no ID at all, inappropriate and incomplete responses, the final sample that was used for analysis consisted of 4,159 high school students from 237 schools of Leningrad Oblast. Such a shrinkage of the sample occurred largely due to missing responses.

2.2. Variables Used for School Grouping

The schools were grouped using a method based on two variables, the index of academic performance and school SES, which had been adapted for Russian samples [Pinskaya et al. 2019].

To calculate the index of a school's academic performance, student scores in all BSE and USE tests (USE scores from the diploma and raw BSE scores) for 2017–2019 were standardized to the highest possible score (yielding the test success rate as a fraction) and multiplied by 100, the product being rounded to the nearest two decimal places (yielding the success rate as a percent of the highest score possible for this type of exam). After that, the school's test success rates were estimated for each year. The final indicator is the average percentage, i. e. the school's average performance on state examinations between 2017 and 2019. Using metrics from a few years makes it possible to increase stability of the indicator over time — and thus achieve a more reliable classification of schools.

The index of school SES was calculated using Principal Component Analysis (PCA) and the following variables: percentage of teachers with the highest qualifications (loading: 0.43; unexplained variation: 0.60); percentage of students in specialized classes (0.55; 0.37); percentage of students attending advanced courses (0.54; 0.39); percentage of students from academic families + percentage of students with both parents unemployed (0.47; 0.53); total explained variation (Rho): 0.52. The higher the index, the higher the school's SES and the less adverse its circumstances relative to other schools in the region. Variables describing school composition are used in the same way as in earlier studies on this topic in Russia [Pinskaya et al. 2019; Yastrebov, Pinskaya, Kosaretsky 2014].

2.3. Student-Level Variables Used in Scale Analysis

Personality traits of students in different types of schools were compared using data obtained from personality questionnaires based on four scales, of which three have already been tried out and used in Russia, and adaptation of the fourth one was part of the present study:

- An adapted version of ARS-30 for Russian samples, only 23 items being left in the final version;
- The four-item Cognitive Academic Motivation Subscale;
- The five-item Perseverance of Effort Subscale of the Russian version of the Grit Scale;
- The 12-item Self-Regulation Scale.

Analysis of these scales was performed within the framework of Confirmatory Factor Analysis (CFA) and involved testing the factor structure of ARS-30 and the convergent validity of its final version with the other three scales in the model. The process of scale adaptation and subsequent data analysis is described in detail below.

2.4. Adaptation of the Academic Resilience Scale (ARS-30)

The English version of ARS-30 [Cassidy 2016] was translated into Russian in almost full compliance with the established principles of test adaptation [Vijver van de, Hambleton 1996]. Complete translation of the scale, performed by an external expert, is available in Appendix. The introduction and the vast majority of items were translated almost literally, as there were no cultural biases that could affect the perception of items by Russian-speaking students. Only one item (item 29: "I would start to self-impose rewards and punishments depending on my performance") was basically replaced in the Russian version for a different one because we (the invited expert and the author of this article) found it barely realistic that such a statement, if translated literally, would "work" on Russian 6th-11th-graders. Response options were translated literally without sacrificing their number or order: a five-point continuum from Strongly Agree to Strongly Disagree.

After translation, a pilot validation study of the scale was conducted as part of an intervention administered by the Institute of Education in Kaliningrad Oblast.[3] The sample was comprised of 5,690 randomly selected students of grades 6–11. Upon completing the pilot study and discussing its findings with the respondents, the scale items and response options were adjusted. First, it turned out that respondents did not perceive the neutral response option as neutral but rather used it as a Don't Know option, so the latter was added in the next version of the scale as a separate column on the right, and the number of response options was reduced to four (exclusive of Don't Know). Second, items 1, 10, and 25 were removed from subsequent versions of the scale as they were perceived quite controversially by many participants of the

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[3] https://ioe.hse.ru/ds/news/283631628.html

pilot study. Item 1 was largely perceived as provocative, and items 10 and 25 invoked no associations with the situation described.

2.5. Data Analysis Methods

Data was analyzed in two stages. First, validity of the scales was tested using the methods and algorithms described, for instance, in [Sychev et al. 2018]. The factor structure of the scale was tested using CFA in R-Studio[4] and the package 'lavaan' (0.6–5) [Rosseel 2012]. Model parameters were estimated using the WLSMV algorithm, the most suitable tool for ordered categorical data [Sass, Schmitt, Marsh 2014]. CFA was performed on the complete final sample of the study. The goal of this stage was to assess the quality of the scales, test the possibility of using them in the study, and measure the levels of the described constructs for every respondent to use them at the second stage.

The second stage consisted in grouping the schools based on the index of academic performance and school SES and comparing them with one another. Schools were grouped by dividing them into quartiles and focusing on the extremes of both distributions, as in the previous similar study [Pinskaya et al. 2019]. Schools in the bottom quartile on both SES and academic performance were classified as struggling; those in the bottom quartile on SES and in the top one on academic achievement, as resilient; schools in the top quartile on SES and in the bottom quartile on test scores, as unsuccessful, and those in the top quartile on both SES and test scores, as successful. The rest of the schools are of no interest in this study as they are not "prominent" manifestations of the phenomena analyzed. Students attending schools of different types were compared by their personality traits (using all the four scales described above). The goal of this stage was to find out whether students' personal characteristics differed as a function of school type.

3. Results
3.1. Testing the Validity of ARS-30

In the course of analysis, a number of various models were tested (first-order, second-order, and bifactor models), but the best fit was obtained for the second-order model in all the variants, which is not uncommon for composite constructs in psychological testing [Byrne 2005]. This model implies that the construct of student resilience has a few subconstructs. A similar suggestion was made by Cassidy [Cassidy 2016], but his factor structure is not confirmed by my analysis. Instead, I detect a different structure of student resilience at the level of items that is supported by model validity. Item-level similarities were the main basis for attributing statements to certain subconstructs for testing. The final model is presented in Figure 1. Table 1 shows the distribution of items among the subscales that are given meaningful names to reflect the sets of statements that they capture.

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[4] https://www.r-studio.com/ru/ (R version 4.0.0 (2020–04–24) "Arbor Day")

Figure 1. **Model of the factor structure of student resilience.**
Model fit indices: CFI=0.992; TLI=0.991; RMSEA=0.051; SRMR=0.045.
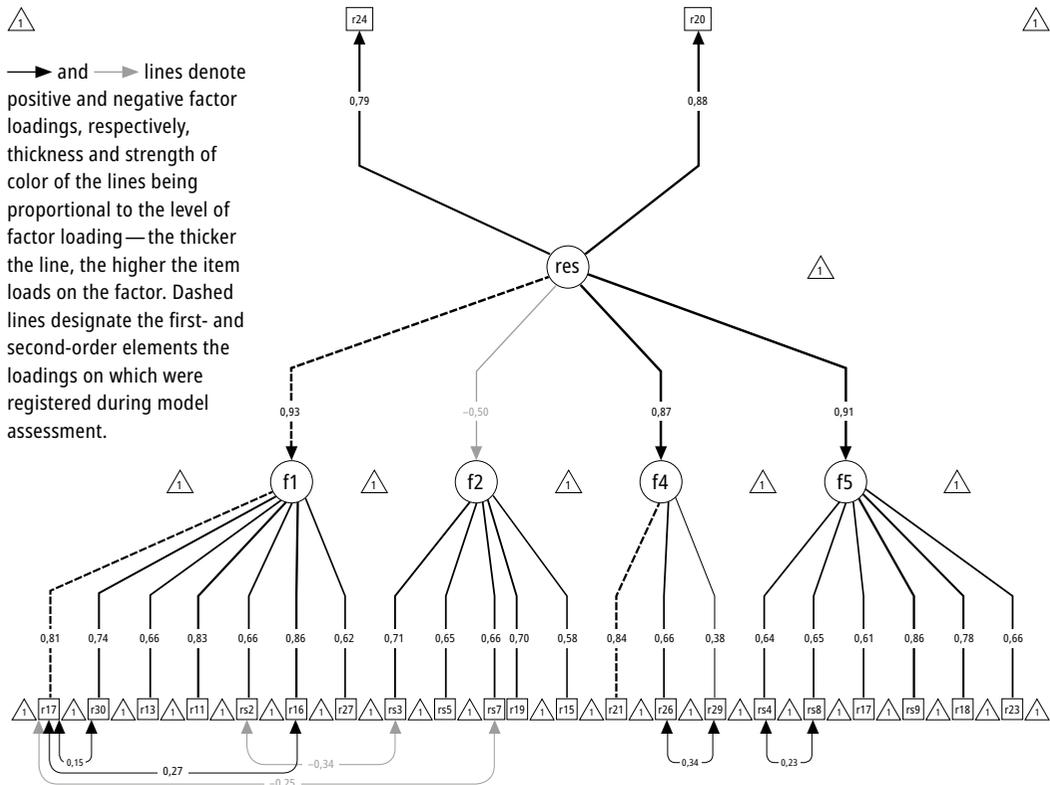
It can be seen from analysis that four more items from the original scale are missing in the final version: items 6, 12, 14, and 18. All of them pertain to negative emotional experiences, and all of them could easily make another subconstruct in any of the models tested, but that subconstruct was barely related (R= –0.24) to the construct of resilience every time. Therefore, it was decided to keep only 23 items, which are presented in Figure 1. Of them, 21 were grouped into four meaningful subconstructs, and the remaining two items, very much alike, were found to be related to overall resilience directly, without being part of any subconstruct. This model was accepted as the final version and served the basis for calculating the total scores on the resilience scale. The scale's structure was tested on two subsamples drawn randomly from the initial sample, and the model proved stable and well-fit in both cases. In addition, the model was tested with reverse-sored negatively-worded items, the factor structure remaining unchanged.

Table 1. **The final content model of student resilience.**

F1: Revanchism	F2: Defeatism	F4: Help-Seeking	F5: Self-Motivation
2, 11, 13, 16, 17, 27, 30	3, 5, 7, 15, 19	21, 26, 29	4, 8, 9, 18, 22, 23

Table 2. **Descriptive statistics for the scales at the level of respondents.**

Variable	Observations	Mean	SD	Min	Max
Revanchism (F1)	4,159	0.0001	0.7817	-2.8410	1.8355
Defeatism (F2)	4,159	0.0026	0.6175	-1.3729	2.2074
Help-seeking (F4)	4,159	-0.0028	0.7683	-2.7318	1.8009
Self-motivation (F5)	4,159	-0.0012	0.6081	-2.2524	1.3948
Resilience (ARS-30)	4,159	-0.0020	0.7288	-2.7104	1.7066
Perseverance of effort	4,159	-0.0018	0.6408	-1.9323	1.3298
Academic motivation	4,159	-0.0058	0.6470	-1.6775	1.2853
Self-regulation	4,159	0.0030	0.4805	-1.8095	1.5633

Three other scales were added to the model to test convergent validity of the scale and check how the new scale behaved in the conceptually founded nomological network. It allows evaluating whether items from different scales converge on a single factor, whether the Perseverance of Effort, Academic Motivation, and Self-Regulation scales are correlated with the Academic Resilience Scale, and whether there are changes in the factor structure.

It was found that the factor structure of student resilience remained unchanged with a fairly high goodness of fit. Furthermore, despite rather high correlations with Academic Motivation (0.62), Perseverance of Effort (0.62), and Self-Regulation, resilience remains an independent construct (explaining its own part of the variation, separate from the three subconstructs) because items do not converge on consolidated factors or overlap among different constructs, which ultimately serves as evidence for convergent and discriminant validity of the scale [Campbell, Fiske 1959]. Goodness of fit of the final model embracing all the four constructs described was also found to be high enough: CFI=0.971; TLI=0.969; RMSEA=0.070; SRMR=0.061. A schematic diagram of the final model with four constructs is shown in Figure 2. The results allow asserting that student resilience is not equivalent to perseverance, motivation, or self-regulation, yet it is "correctly" correlated with conceptually related constructs and is positioned well in the nomological network, which is evidence of the scale's construct validity, using the terminology of Cronbach and Meehl [Cronbach, Mee-

Figure 2. **A CFA model for testing convergent validity of the Academic Resilience Scale.**
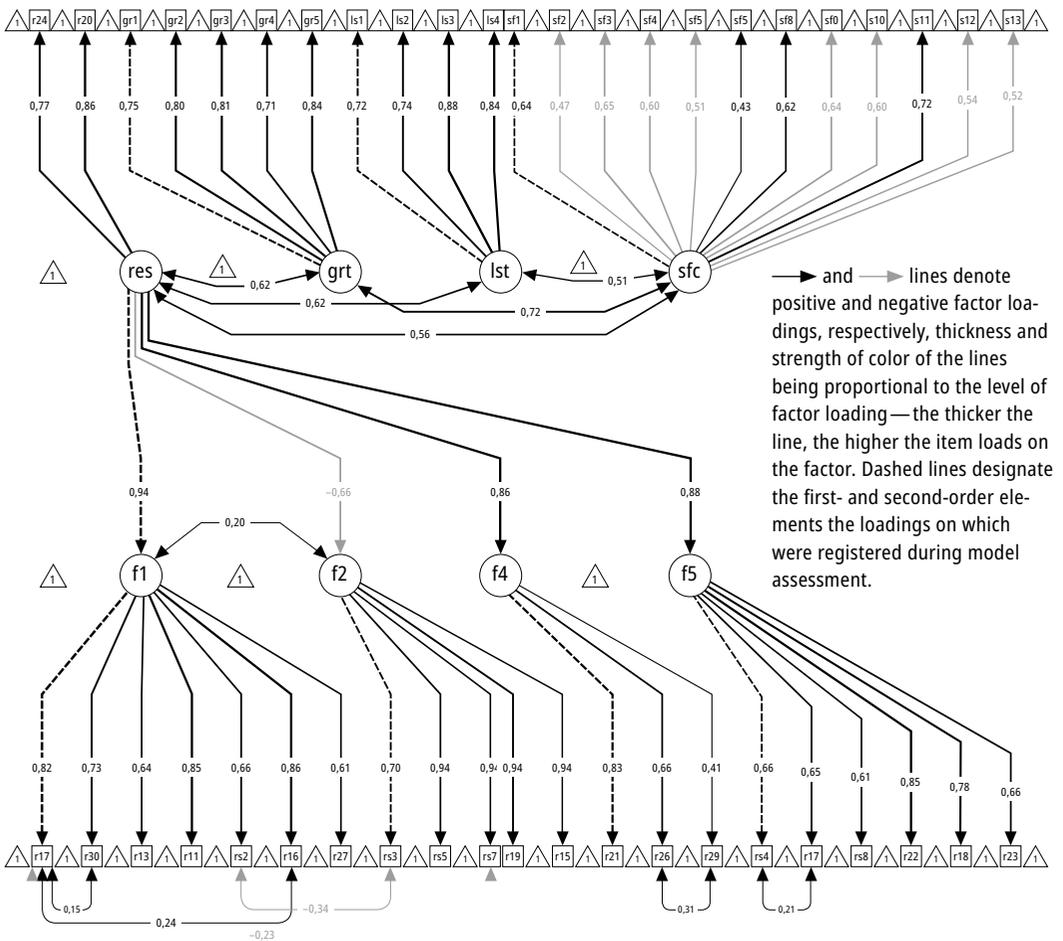
hl 1955]. Table 2 presents the descriptive statistics for all the four constructs used in analysis.

3.2. Comparing Students Attending Schools of Different Types

The second stage involved grouping the schools in the sample to identify the groups of interest. Table 3 presents the results of school grouping, specifically the number of schools and students to be compared. Naturally, the sample became essentially smaller as a result. Eventually, the groups to be compared on the scales above were represented by students attending schools of four different types, those from struggling and resilient schools being of the most significance for the purpose of this study. Instead of conventional paired comparisons, Table 4 shows mean values (95% confidence interval) for every group on

Table 3. **Number of schools and students compared.**

	Schools	Students (sample size)
Struggling	25	274
Resilient	3	48
Unsuccessful	4	104
Successful	33	1,684

Table 4. **Comparing students attending schools of different types by the characteristics analyzed.**

Variable	Struggling			Resilient			Unsuccessful			Successful		
	Mean	95% CI		Mean	95% CI		Mean	95% CI		Mean	95% CI	
Resilience (ARS-30)	−0.02	−0.15	0.11	0.06	−0.20	0.32	0.04	−0.12	0.19	0.02	−0.03	0.06
Perseverance of effort	−0.08	−0.16	−0.01	0.17	−0.03	0.36	0.00	−0.13	0.12	0.06	0.03	0.09
Academic motivation	−0.04	−0.12	0.04	−0.02	−0.22	0.17	0.06	−0.08	0.20	0.03	0.00	0.06
Self-regulation	0.01	−0.05	0.06	0.11	−0.03	0.26	−0.05	−0.13	0.04	0.01	−0.01	0.03

every scale. Presented like that, the results look more convincing and infer directly the interpretations that follow.

As seen from Table 4, there is no difference in any of the four constructs among high school students attending schools of different types. Overlapping confidence intervals for all the groups indicate the absence of statistically significant differences. It is especially important to point out that students from resilient and struggling schools do not differ on the Academic Resilience Scale or any other related construct.

4. Discussion   The following inferences can be made upon trying out the Academic Resilience Scale on a Russian sample. First, the scale changed a lot in the process of adaptation. Analysis revealed a clear, meaningfully interpretable structure of the construct and scale, which shows that resilience (ARS-30) has the components of Revanchism, Defeatism, Help-Seeking, and Self-Motivation. Therefore, the original factor structure proposed by Cassidy [Cassidy 2016] is not confirmed for Russian samples. The new model provides useful information regarding the factor structure of the construct and can be used on samples of Russian middle- and high-school students.

Second, the research performed in the present study continues Cassidy's work on "positioning" student resilience in the nomological network of related constructs. Student resilience shows "correct" cor-

relations with the other scales that are conceptually associated with it in literature. At the same time, there is evidence that the new scale is independent, not overlapping with the other scales and not correlating with them too much. The scale demonstrates pretty good psychometric characteristics, although its validity requires additional testing in future studies.

As for the main goal of this research, no differences have been revealed in any of the personality traits measured between students from resilient and struggling schools. The findings described above indicate that the phenomenon of school resilience — as long as we agree that it exists — derives more from structural rather than individual characteristics. The data obtained allows an assumption that academic resilience at the level of schools is conditioned by something associated with general school characteristics: teaching strategies, school climate, organizational culture, etc. Apparently, the founders of resilience theory had a point when they said that resilience is manifested through the interaction of many factors [Masten, Cicchetti 2016].

Obviously, as it has been shown by researchers from Texas and Stanford, there is little sense in "raising" students' resilience or perseverance; rather, educational interventions should be aimed at creating school environments that are conducive to searching for new learning strategies and seeking help from others, which will ultimately have positive effects on students' academic outcomes [Yeager, Dweck 2012]. A research team from New York also found that improvements in academic outcomes of students in low-income schools result primarily from multilevel interventions that target school climate and organizational culture [McCormick et al. 2015]. Such comprehensive interventions, like social impact bonds, are gaining popularity today, Russia being no exclusion.[5]

A large-scale study was carried out by Michigan sociologists in Michigan, who came up with a new concept of "student capital" to describe the cumulative effect of all typical yet difficult-to-measure factors associated with academic success: "A vast number of harder-to-measure student traits, skills, and resources affect educational success. We present a conceptual framework for the cumulative effect of all factors, which we call student capital." [Quarles, Budak, Resnick 2020:1]) The authors believe that, rather than removing barriers related to easily measured characteristics, interventions should be focused on building up the skills and resources needed to be successful in school (or, better, in life).

5. Limitations   There are some limitations to this study. One of them is the method of school grouping, which can be subjected to traditional criticism concerning outliers and anomalies. Indeed, there is always the possibility

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[5] https://ioe.hse.ru/sakha/

that an individual struggling student or school will show high performance. This criticism sounds even more reasonable when observing that there are not many resilient students and schools. In this study, this possibility is reduced by using data on academic performance for three consecutive years. The problem of outliers and anomalies is exacerbated by data aggregation, but the latter was critically important given that analysis was performed on the level of schools, not individuals.

Another important source of limitations is the sample itself, which consists of high school students and is therefore skewed by default because such students have already been "selected". On average, about 50% of middle school graduates proceed to high school in Russia.[6] Obviously, high-school students will manifestly differ in a variety of characteristics from those who withdraw after middle school.

Finally, the most intricate issue is that of validity: what do these scales show? There is empirical evidence for associations between the constructs described and academic outcomes, yet a number of studies (including this one) have failed to find any relation. Furthermore, there could have been systematic errors as well as social desirability bias. At the extreme, it could also be assumed that no measurement of a latent construct is possible by definition [Trendler 2009].

6. Conclusion This study offers a new perspective on the phenomenon of school resilience. Its findings indirectly support previous research on academic resilience in Russia, specifically the inference that school resilience is built through managerial strategies of school principals, educational policies, and school improvement practices (an established theoretical framework, see [Teddlie, Reynolds 2000; Pinskaya et al. 2019; Pinskaya et al. 2018]). A follow-up on this work is the transition to qualitative studies and comparison of particular strategies implemented by resilient and struggling schools; some of such studies have already been published as preprints [Mikhaylova et al. 2021]. An even more important spin on this topic is the question of how school resilience research contributes to education policies: even now, we can see in some documents that the phenomenon of school resilience is used as a justification for shifting the responsibility for performance in adverse circumstances entirely on school workers — rather than bringing systemic decisions to national education policy.[7]

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[6] https://docs.edu.gov.ru/document/c38a1f764e0c77030235de22850ae531/
[7] https://fioco.ru/Media/Default/Documents/ШНОР/Анализ%20резильентности%20российских%20школ_.pdf

Appendix   The Complete Translated Version of the ARS-30

You have received your mark for a recent assignment and it is a "C". The marks for two previous assignments were also poorer than you would want. In school, you are aiming to get as good a degree as you can because you want to receive a good high school diploma and don't want to disappoint your family. The feedback from the teacher for the assignment is quite critical, including reference to "lack of understanding" and "poor writing and expression", but it also includes ways that the work could be improved. Similar comments were made by the substitute teacher who had taught the class while the regular teacher had been ill.

How would you react if you found yourself in a situation like that? Please read the statements below and check the response which best reflects your agreement with each item.

1. I would not follow the teacher's recommendations ☐
2. I would use the teacher's feedback to improve my work ☐
3. I would do nothing ☐
4. I would use the situation to motivate myself ☐
5. I would decide that this subject was not for me ☐
6. I would probably get angry ☐
7. I would begin to think that my chances of getting a high final grade were poor ☐
8. I would regard this situation as a challenge ☐
9. I would try to get negative thoughts out of my mind ☐
10. I would perceive the situation as a temporary difficulty and not a big deal ☐
11. I would begin to spend more time studying ☐
12. I would probably get upset ☐
13. I would try to figure something out ☐
14. I would be very disappointed ☐
15. I would think that the teacher was unfair ☐
16. I would try to do my assignments better ☐
17. I would keep trying to get a high final grade ☐
18. I would think of my previous successes to cheer myself up ☐
19. I would begin to think that I could not succeed in school ☐
20. I would start paying more attention to my academic achievement ☐
21. I would seek help from the teacher ☐
22. I would try to give myself encouragement ☐
23. I would try not to panic ☐
24. I would try different ways of studying ☐
25. I would focus on achieving my own goals ☐
26. I would seek help from my family and friends ☐

27. I would start to think about what I had done wrong when preparing for the assignment ☐

28. I would think that it was horrible ☐

29. I would ask my parents to check my preparedness for classes more often ☐

30. I would start looking for ways to improve my mark ☐

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