# Final research paper

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## Research question and thesis statement

While working on the idea of the final work and analyzing various databases, I decided to conduct a study in accordance with the group of my research interests. My research question is as follows: *How is the influence of personal political affiliation and participation in national level voting reflected (if it exists) on the level of trust in the educational system in Russia?* I have the following hypotheses:

- **H0**: There is no relationship between political affiliation, participation in national level voting and trust in the educational system.
- **H1**: There is relationship between political affiliation, participation in national level voting and trust in the educational system.

If, after conducting preliminary tests, it turns out that an alternative hypothesis should be accepted, then the thesis for verification will be the following: *People who define themselves as "right-wing" and votes for such parties tend to trust the educational system less*. This thesis can be confirmed or refuted within the framework of the study.

## Literature review

The topic of trust in the educational system is not the newest. Thus, in many works, it was noted that, depending on the level of trust, the academic performance of students, the involvement of teachers and cooperation within the team increases or decreases, while education, in turn, helps to develop trusting relationships in society (Goddard et al., 2001; Bryk & Schneider, 2003; Bormann et al., 2021). However, at present, many scientists note a crisis of trust, which is only increasing in society on the basis of social inequality, feelings of helplessness and frustration with the government and big business (Hosking, 2019). In such a situation, it is very difficult to imagine the work of reflexive trust (Bormann et al., 2021). Their own beliefs do not least influence people and their ability to trust. These are, for example, political orientation. Verification of the relationship was carried out by different specialists. Thus, it was found during an experiment in Germany that there was a relationship between confidence levels and party affiliation, but not with ideology (Fehr et al., 2003). However, a more recent study in 2022 in the same country, on the contrary, reflected the

picture that in the games of trust and cooperative work, participants with more centre-right views and determination to vote for such a party were less involved than the centre-left (Grünhage & Reuter, 2022).

The situation in Russia remains not as researched as in other European countries (as in Germany, for example). The situation is complicated by the fact that the Russian system (education, in particular) is still undergoing a painful transformation since the collapse of the Soviet Union and the perception of the existing (neo)liberal order. Many authors note the dichotomy between Soviet and neoliberal views in education in Russia (Smolentseva, 2017; Minina, 2017; Minina, 2018). Here there is the already mentioned crisis of confidence, reinforced by disappointment from the failure of the "Soviet project". Debates continue to take place in society. There is a concept in a society that spiritual and material are different, therefore education (in culture it is assigned the role of moral education) cannot be commercialized. In contrast, there is the term "educational service", which defines education as a market system (Minina, 2018).

Thus, in Russian society, there is a dichotomous attitude to the existing education system (trust and denial), and the lack of recent research on the relationship between political beliefs, affiliations and trust in the education system makes my research relevant and in demand for the development of debates in this research field.


## Data description

For my research, I have chosen the European Values Study 2017 database. The data I selected relates to a study in Russia conducted by the Laboratory for Comparative Social Research National Research University Higher School of Economics in Moscow through interviewing. The paper presents the following concepts and their definitions:

- **Political affiliation** - how do people relate to politically significant symbols, values, and beliefs, whether cognitive, evaluative, or affective and the state of belonging to or endorsing any political party. Measured by *v102 variable*. Answer to the question "In political matters, people talk of 'the left' and 'the right'. How would you place your views on this scale, generally speaking?", where 1 stands for "the left" and 10 - for "the right". Also it is measured by *v174_LR variable*. Answer to the question: "Which (political) party appeals to you most?", where 1 stands for left parties (KPRF) and 10 - for right parties (PARNAS) These are two Independent Variables.

- **Voting** - a method by which an electorate can convene together for the purpose of making a collective decision or expressing an opinion usually following discussions, debates or election campaigns. Measured by *v172 variable*. Answer to the question: "When elections take place on a national level, do you vote always, usually or never?", where 1 stands for "always", 2 - for "usually", 3 - for "never" and 7 - for "not allowed to vote".

- **Educational system** - refers to the structure of all institutions and the opportunities for obtaining education within a country. It includes all preschool institutions, from early childhood education to kindergarten, primary, secondary, and tertiary schools.

- **The level of trust in the educational system** - is measured by *v117c variable*. Answer to the question "Please look at this card and tell me, how much confidence you have in the education system, is it a great deal, quite a lot, not very much or none at all?", where 1 stands for "a great deal", 2 - for "quite a lot", 3 - "not very much", 4 - "none at all". It is Dependent Variable.

## Model setup

I have chosen a linear model for my research. This model suits me because I want to track some changes and build a theory that could predict such changes.

As part of the conceptualization of the topic, I came across a couple of assumptions that require my explanation:

- *Why is the term "trust" present in the research question when the term "confidence" is in the question?* - The research in each country is conducted in the local state language, so the questionnaire was translated into Russian, where the question sounded like this: "Скажите, насколько Вы доверяете системе образования - полностью доверяете, в некоторой степени доверяете, не очень доверяете или совсем не доверяете?" The word "доверяете" can be translated as "to trust", so the research question itself is correct.

- *How appropriate is it to apply the "left-right" scale to Russia, which is characterized by an authoritarian regime?* - Firstly, the questionnaire was checked for the correctness of the questions and the HSE scholars did not find any problems in this issue from the point of view of the socio-political situation in the country. Secondly, the question implies the respondent's personal conviction, which may differ from the existing situation in the country. Thirdly, v172 variable presents the distribution of

political parties in Russia in accordance with the political spectrum, that is, there is a conditional division into left and right.

## Results

First of all, at the very beginning of the data study, after filtering them and allocating the necessary variables into one table (Data_Rus), I conducted a series of Shapiro-Wilk's and F tests to check the parametricity of the data (see Figure 1). Tests have shown that the data are not parametric due to low p-value values. Further, taking into account the non parametricity of the data, I conducted a Spearman's rank correlation to find out the strength and direction of the correlation (see Figure 2). The next stage was the construction of a linear regression model, where v117_edsys is a dependent variable, and v102_polor, v174_LR_party and v172vote are independent, as described above (see Figure 3). v102_polor variable was not important enough due to p-value>0.05, Predictive capability of the model relative to Multiple R-squared: 0.03207 is low (~3%), but it at least exists according to F-statistic: 9.707 on 3 and 879 DF, p-value: 2.633e-06, where p-value<0.05. The summary confirmed the results of correlation tests (two variables have a negative direction, one is positive and all three are weak in strength). Looking at Estimate, I can formulate the following interpretations: increase in political orientation (change from leftist to rightist) by 1 p.p. will be associated with average decrease in 0.00017 p.p. of trust to educational system under other conditions being equal; increase in support for party (change from leftist to rightist) by 1 p.p. will be associated with average decrease in 0.00348 p.p. of trust to educational system under other conditions being equal; increase in taking participation in national level voting (change from never to always) by 1 p.p. will be associated with an average increase in 0.00132 p.p. of trust to the educational system under other conditions being equal.

After that, I conducted a Breusch-Pagan test, which showed that the residuals are homoscedastic (see Figure 4), built a histogram that showed that the data is distributed not normally (see Figure 5) and checked the variables for multicollinearity using vif(), which showed that there are no issues in multicollinearity (see Figure 6). Next, to diagnose the correctness of the model, I used the plot() function. In the last graph, the residuals do not cross Cook's distance (see Figure 10). The rest show that the constructed regression model has problems with distribution (see Figure 7), following the theoretical line (see Figure 8) and horizontal fixation of points (see Figure 9).

To sum up, based on the results of the research, I built several scatterplots that reflect how the dependent variable changes under the influence of independent variables (see Figure 11). Summing up all the above, I came to the conclusion that the constructed model allows me to reject the initial null hypothesis (There is no relationship between political affiliation, participation in national level voting and trust in the educational system), but the model has a disadvantage in predictive capability and the distributions do not look quite correct.

```
        Shapiro-Wilk normality test

data:  v102_polor
W = 0.95606, p-value = 1.335e-15

        Shapiro-Wilk normality test

data:  v117_edsys
W = 0.85392, p-value < 2.2e-16

        Shapiro-Wilk normality test

data:  v174_LR_party
W = 0.64813, p-value < 2.2e-16

        Shapiro-Wilk normality test

data:  v172vote
W = 0.63129, p-value < 2.2e-16

        F test to compare two variances

data:  v117_edsys and v102_polor
F = 0.15363, num df = 882, denom df = 882, p-value < 2.2e-16
alternative hypothesis: true ratio of variances is not equal to 1
95 percent confidence interval:
 0.1346189 0.1753178
sample estimates:
ratio of variances
        0.1536265

        F test to compare two variances

data:  v117_edsys and v174_LR_party
F = 0.15671, num df = 882, denom df = 882, p-value < 2.2e-16
alternative hypothesis: true ratio of variances is not equal to 1
95 percent confidence interval:
 0.1373246 0.1788415
sample estimates:
ratio of variances
        0.1567142

        F test to compare two variances

data:  v117_edsys and v172vote
F = 0.87608, num df = 882, denom df = 882, p-value = 0.04962
alternative hypothesis: true ratio of variances is not equal to 1
95 percent confidence interval:
 0.7676880 0.9997806
sample estimates:
ratio of variances
        0.876082
```

Figure 1.

```
Предупреждение: Есть совпадающие значения: не могу высчитать точное p-значение
        Spearman's rank correlation rho

data:  v117_edsys and v102_polor
S = 120589212, p-value = 0.1304
alternative hypothesis: true rho is not equal to 0
sample estimates:
       rho
-0.05094056

Предупреждение: Есть совпадающие значения: не могу высчитать точное p-значение
        Spearman's rank correlation rho

data:  v117_edsys and v174_LR_party
S = 129093917, p-value = 0.0001949
alternative hypothesis: true rho is not equal to 0
sample estimates:
      rho
-0.1250595

Предупреждение: Есть совпадающие значения: не могу высчитать точное p-значение
        Spearman's rank correlation rho

data:  v117_edsys and v172vote
S = 92324198, p-value = 4.788e-09
alternative hypothesis: true rho is not equal to 0
sample estimates:
     rho
0.1953903
```

Figure 2.

```
Call:
lm(formula = v117_edsys ~ v102_polor + v174_LR_party + v172vote)

Residuals:
    Min      1Q  Median      3Q     Max
-1.7322 -0.3507 -0.1193  0.7208  2.0651

Coefficients:
               Estimate Std. Error t value Pr(>|t|)
(Intercept)     2.21778    0.12040  18.420  < 2e-16 ***
v102_polor     -0.01717    0.01307  -1.314  0.18923
v174_LR_party  -0.03487    0.01322  -2.638  0.00848 **
v172vote        0.13288    0.03111   4.272 2.15e-05 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.8208 on 879 degrees of freedom
Multiple R-squared:  0.03207,   Adjusted R-squared:  0.02876
F-statistic: 9.707 on 3 and 879 DF,  p-value: 2.633e-06
```

Figure 3.

```
        Breusch-Pagan test

data:  Regr_Rus
BP = 2.9229, df = 3, p-value = 0.4037
```
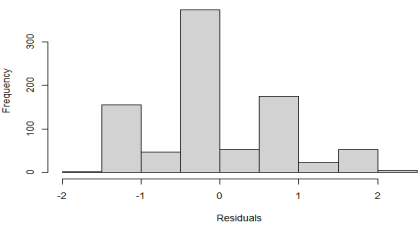
Figure 4.



Figure 5.

```
v102_polor v174_LR_party      v172vote
  1.009277      1.012085      1.002970
```
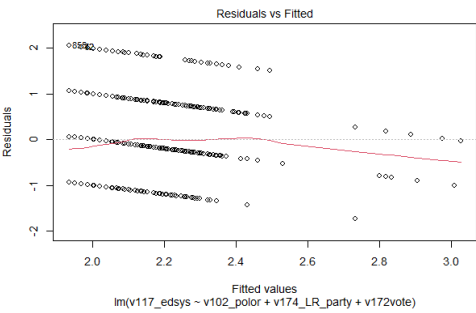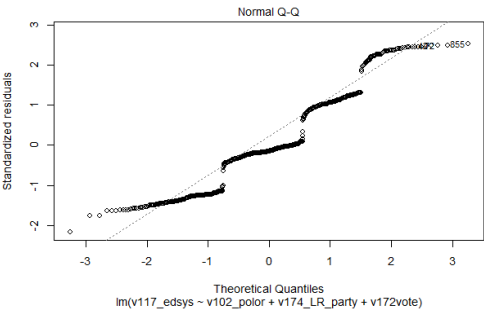
Figure 6.
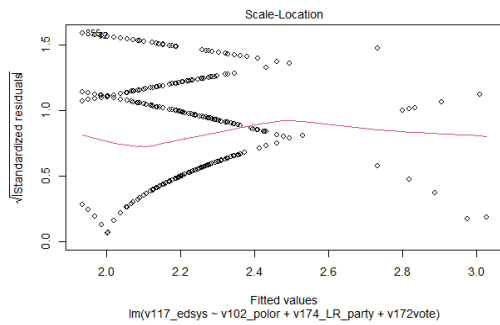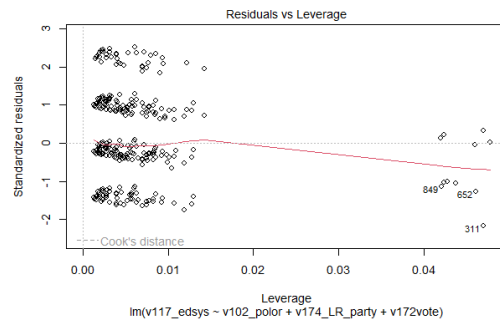


Figure 7.



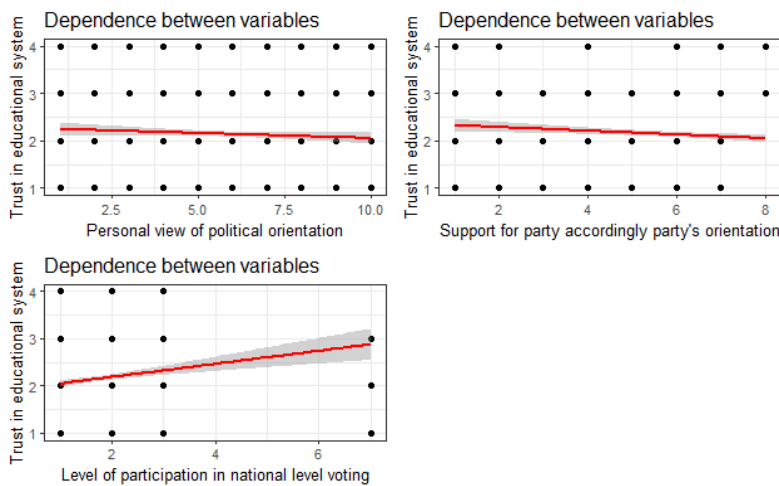Figure 8.

Figure 9.



Figure 10.



Figure 11.

## Conclusion

Based on the results described above, I came to the following conclusions. Firstly, the regression analysis showed that I can really reject the null hypothesis that the data has no correlation. However, I cannot develop an alternative hypothesis to continue the study, since the predictivity indicators of the model, such as Multiple R-squared and F-statistical, have very low and unstable results. Secondly, despite the assumption that researchers find it appropriate to use the left-right scale in Russia, in my work I came across the fact that political views and support for certain parties do not coincide by definition, which can be explained by (1) a low level of political education and understanding of political concepts and (2) authoritarian political a system where those who are not populist cannot achieve official

representation and support in society. Thirdly, I think that the distribution of data on the established scales leads to the fact that the points accumulate in one place and cannot reflect a more accurate picture of the correlation. In the end, I considered only one of the possible hypotheses that could explain the degree of trust in the state's educational system. As a revision of the initial assumption, other indicators can be considered, such as religiosity, the degree of trust in the state, the level of democracy in the country. Also, when conducting the survey initially, I would correct the question of trust itself, dividing it into different components of the system (trust in kindergartens, schools, colleges/universities), in order to clarify the details and identify which areas are more unreliable for people.

Despite the fact that my research proved the connection, but did not show sufficient linearity and correlation, I believe that this can serve as a worthy beginning for the study of the degree of trust of citizens in the field of education.

## Data

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