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Study of Political Preferences and Type 2 Errors in the Traditional Correlation Approach

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***Abstract* – The complex nature of the subject of research was shown using the example of the study political preferences of young people, and the problem of "significant" correlations. An approach to errors that completely change the researcher's worldview was considered. The specific results were shown demonstrating type 2 errors, when many researchers (psychologists and sociologists) present a weak but "significant" correlation as real linear model of a phenomenon or process under study, but in fact, a real strong simple non-linear relation is hidden behind it, which completely changes the picture of this phenomenon or process. Correlation analysis gives the result accepted in the research community as noteworthy when the correlation is "significant" (more than a critical value, "saving" asterisks SPSS). It is from this set of dependencies that we select only those for which the correlations are very weak (no more than 0.3), and the author's relation coefficient shows that there is a strong, simplest non-linear relation. All dependencies are presented in the form of tables (the strength of relation coefficients of 0.6 and more, 26 dependencies) and the inverted distributions for dependencies with the greatest strength of relation coefficients (of 0.8 and more – 13 dependencies; of 0.7 to 0.8 – 5 dependencies; of 0.6 to 0.7 – 8 dependencies). Finally, we consider the sufficiently strong linear relation with a correlation coefficient of 0.6 or more (9 dependencies).**

Keywords – simple nonlinear dependences, significant correlation; political preferences, system errors

I. INTRODUCTION

The psychologists and sociologists keep speaking about the complex nature of their subject of research, i.e. psyche (mind), but in doing so they very seldom (except, for instance, in case of psycho-physiology) consider in their studies the interpretations based on results of the correlation analysis and hence the mechanistic approach, the methodology of the late 18th century. Under such circumstances, the sciences that study "simpler" (as psychologists assert) subjects, such as physics, have passed in their methodological development the non-classical (the early 20th century) and post-non-classical (the late 20th century) stages of development.

In order to find a way out of this methodological deadlock, must accept the fact that in their research the psychologists (sociologists), along with linear relations, must also consider the simplest non-linear relations [1] that have a psychological (social) meaning and explain many phenomena being studied by psychology (sociology).

Postnonclassical ideas [2, 3], synergetics, and non-linearity do not constitute any methodological basis for research for most psychologists (sociologists). The best way to contribute to this is the traditionally imposed approach with the preliminary formulation of hypotheses, because a researcher's traditional logic (natural human way of thinking) promotes formulation of linear hypotheses, which should be mainly confirmed in future.

As a result, the psychologists (sociologists) have developed a research stereotype. On the one hand, it means not understanding and rejection of non-linearity [4] as a basis of methodology (which is aggravated by the lack of accessible instruments for analyzing experimental data). On the other hand, an attempt to cling to linear models and, not finding in them a solution to the problem (except just trivial results) make – knowingly or unknowingly – a substitution. This allows presenting very weak correlations (0.11-0.3) as meaningful ones, which makes it possible to speak about results supplied by a large set of detected relations between the parameters being studied.

In 1970s and 1980s such relation was simply interpreted as very weak correlations, which were of no interest to the researcher.

This can be explained by lack of strong linear relations in the analysis, when mainly non-linear objects are studied, and a tool set representing some linear models is still used. In addition, the researchers do not want to realize that it is time for another analysis of experimental data in the context of synergetic paradigm and non-linear models. Although different theses often discuss synergetics at a philosophical and methodological level. But then synergetics is deliberately forgotten when the real research results are described, and a classical interpretation (linearity, the principle of superposition, etc.) is often offered.

There is a usual paradoxical picture. In case of a sufficient sample of about 100 respondents more, the critical value will be about 0.2. Thus, a very weak correlation (0.2-0.3), called a "significant" one, is often interpreted as strong. Otherwise, what is the point to describe and interpret an unlikely event, to find out reasons thereof, and at the same time to ignore the opposite event, the probability of which is much greater? The authors in such situation describe the cause-and-effect relations, which are actually very weak, but since they are "significant", they are "the only" possible for them. At the same time, many authors do not care what the correlation is, 0.2 or 0.9, and in

both cases it is “significant” according to their rules, and the difference between these cases is of no interest.

Thus, a massive descending trend (intentional or unconscious) to the low values of correlation coefficient is traced, when “non-zero correlation” (hypothesis of zero correlation coefficient) becomes sufficient to describe the relation as strong. This may be attributed to a lack of strong linear relations in the analysis that have an absolute value more than 0.6, when any predominantly non-linear objects are studied. And the tools set is still being used representing the linear model, and the researchers do not want or do not realize that it is time for another analysis of experimental data in the context of synergetic paradigm and non-linear models.

II. Results

We’ll look at the case study of political preferences of young people. It shows that ignoring the complex nature of the political realities perception and seeking to restrict the results of such studies by any mechanistic views lead to the loss of a large amount of information (represented by simple non-linear relations) and a lot of system errors in the results interpretation.

Using the example of studying the political preferences of students, we consider the problem of very weak, but “non-zero”, correlations (type 2 error).

In an earlier article [5], we considered at the problem of zero linear correlations (type 1 error) in the presence of a strong non-linear relation.

190 respondents were interviewed as a part of sociological survey.

24 interval (ordinal) parameters were selected or constructed for the further relations study (linear and simplest non-linear):

1. Attitude towards civil marriage.

2. Acceptability of civil marriage as a form of relationship.

3. Possibility of childbirth in civil marriage.

4. The need to register a marriage in case of bearing children.

5. Interest in politics.

6. Participation in the discussion of political issues in their environment.

7. Attitude to the United Russia party.

8. Attitude to the Fair Russia party.

9. Attitude to the LDPR party.

10. Attitude to the CPRF party.

11. Attitude to the Yabloko party.

12. Attitude to V.V. Putin.

13. Attitude to D.A. Medvedev.

14. Attitude to V.V. Zhirinovsky.

15. Attitude to G.A. Zyuganov.

16. Attitude to M.D. Prokhorov.

17. Attitude to S.M. Mironov.

18. Attitude to A.A. Navalny.

19. Satisfaction with the voting results in the elections to the State Duma of the Russian Federation.

20. Satisfaction with the voting results in the elections of RF President.

21. Satisfaction with the work of Russian President Vladimir Putin.

22. Satisfaction with the work of the State Duma of the Russian Federation.

23. Age.

24. Subjective assessment of their financial situation.

In this article we consider the results for one of the two solved problems (for triads, independent variable quarters) to identify the relations (author’s statistical method [6]) between the variables under study, namely the problem for independent variable quarters.

Let us show the identifications, which will be used in the offered tables:

SV - factor of the connection strength determining the dependence of the parameter of the number N2 (**parameter)** from the parameter for the number N1 (**quarters)**;

SV' - factor of the connection strength determining reverse (in relation to SV) dependence of the parameter with number N1 (**quarters)** from the parameter with number N2 (**parameter)**;

R - the coefficient of linear correlation between parameters with numbers N1 (**quarters)** and N2 (**parameter)**;

N1 - number of the parameter, for which we made splitting on **quarters**;

N2 - number of the parameter, which values are determined for the distinguished **quarter** of the **parameter** with number N1.

The **first** sample of dependencies (**Table I**) contains the strongest simplest non-linear dependencies with the strength of relation coefficient **SV>0.8**, which simultaneously have very weak (from 0.14 to 0.3) but non-zero (“significant”) linear correlations.

Value **0.14** is that Rubicon after which (for a sample of 190) the correlation in the research community is considered significant and noteworthy when interpreting its results in traditional linear models. Sociologists and psychologists (see numerous articles) too often make no difference in the correlation coefficient value: 0.14, 0.6 or even 1, it is “significant” for them and that is more than enough.

TABLE I. **INTERVALS OF RELATION COEFFICIENTS: 0.14 < ABS(R) <= 0.3 0.8 < SV**

	SV	SV'	R	quarters	parameter
1	**1.02**	0.51	**-0.29**	X04	X02
2	**1.18**	0.94	**0.29**	X06	X14
3	**0.80**	0.38	**0.17**	X09	X08
4	**0.97**	0.29	**0.22**	X10	X18
5	**0.84**	1.33	**0.29**	X11	X15
6	**0.94**	1.18	**0.29**	X14	X06
7	**0.95**	0.48	**0.15**	X15	X06
8	**1.33**	0.84	**0.29**	X15	X11
9	**1.32**	0.32	**0.17**	X16	X11
10	**0.85**	0.47	**-0.16**	X18	X24
11	**1.05**	0.58	**-0.22**	X19	X06
12	**0.81**	0.55	**-0.26**	X23	X24
13	**0.81**	0.56	**-0.27**	X24	X02

Thus, we find **13** (**0.8<SV**) strong, simplest non-linear relations, which are defined in the correlation analysis (with the currently popular interpretation) as "significant" correlations, suitable for interpreting the results of research in linear models.

Next, we give these **13** dependencies (**Table II-XIV**) without description and interpretation in order to visualize the number of pseudoscientific results. They can appear in any study, when they rely on "significant" correlations, going into linear models in interpreting the results, ignoring the real non-linear nature of sociological (psychological) information, including political preferences, and these are primarily the dependencies with the maximum or minimum.

TABLE II. DEPENDENCE OF THE PARAMETER "**ACCEPTABILITY OF CIVIL MARRIAGE AS A FORM OF RELATIONSHIP**" (X02) ON THE PARAMETER "**THE NEED TO REGISTER A MARRIAGE IN CASE OF BEARING CHILDREN**" (X04) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X02 FOR QUARTERS ON A SCALE X04

Quarters on the scale X04	Comparative weightiness of the parameter X02 for quarters
X04-4	**-562**
X04-3	**+1314**
X04-2	**+318**
X04-1	**+2112**
Factor of the connection strength = 1.02 (0.51) Coefficient of correlation = -0.29	

TABLE III. DEPENDENCE OF THE PARAMETER "**ATTITUDE TO V.V. ZHIRINOVSKY**" (X14) ON THE PARAMETER "**PARTICIPATION IN THE DISCUSSION OF POLITICAL ISSUES IN THEIR ENVIRONMENT**" (X06) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X14 FOR QUARTERS ON A SCALE X06

Quarters on the scale X06	Comparative weightiness of the parameter X14 for quarters
X06-4	**+846**
X06-3	**-1482**
X06-2	**+27**
X06-1	**-1553**
Factor of the connection strength = 1.18 (0.94) Coefficient of correlation = 0.29	

TABLE IV. DEPENDENCE OF THE PARAMETER "**ATTITUDE TO THE FAIR RUSSIA PARTY**" (X08) ON THE PARAMETER "**ATTITUDE TO THE LDPR PARTY**" (X09) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X08 FOR QUARTERS ON A SCALE X09

Quarters on the scale X09	Comparative weightiness of the parameter X08 for quarters
X09-4	**-23**
X09-3	**+1040**
X09-2	**-2**
X09-1	**-1584**
Factor of the connection strength = 0.80 (0.38) Coefficient of correlation = 0.17	

TABLE V. DEPENDENCE OF THE PARAMETER "**ATTITUDE TO A.A. NAVALNY**" (X18) ON THE PARAMETER "**ATTITUDE TO THE CPRF PARTY**" (X10) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X18 FOR QUARTERS ON A SCALE X10

Quarters on the scale X10	Comparative weightiness of the parameter X18 for quarters
X10-4	**-114**
X10-3	**+1420**
X10-2	**-183**
X10-1	**-1527**
Factor of the connection strength = 0.97 (0.29) Coefficient of correlation = 0.22	

TABLE VI. DEPENDENCE OF THE PARAMETER "**ATTITUDE TO G.A. ZYUGANOV**" (X15) ON THE PARAMETER "**ATTITUDE TO THE YABLOKO PARTY**" (X11) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X15 FOR QUARTERS ON A SCALE X11

Quarters on the scale X11	Comparative weightiness of the parameter X15 for quarters
X11-4	**+991**
X11-3	**+367**
X11-2	**-1569**
X11-1	**-250**
Factor of the connection strength = 0.84 (1.33) Coefficient of correlation = 0.29	

TABLE VII. DEPENDENCE OF THE PARAMETER "**PARTICIPATION IN THE DISCUSSION OF POLITICAL ISSUES IN THEIR ENVIRONMENT**" (X06) ON THE PARAMETER "**ATTITUDE TO V.V. ZHIRINOVSKY**" (X14) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X06 FOR QUARTERS ON A SCALE X14

Quarters on the scale X14	Comparative weightiness of the parameter X06 for quarters
X14-4	**+332**
X14-3	**+1715**
X14-2	**-37**
X14-1	**-1242**
Factor of the connection strength = 0.94 (1.18) Coefficient of correlation = 0.29	

TABLE VIII. DEPENDENCE OF THE PARAMETER "**PARTICIPATION IN THE DISCUSSION OF POLITICAL ISSUES IN THEIR ENVIRONMENT**" (X06) ON THE PARAMETER "**ATTITUDE TO G.A. ZYUGANOV**" (X15) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X06 FOR QUARTERS ON A SCALE X15

Quarters on the scale X15	Comparative weightiness of the parameter X06 for quarters
X15-4	+1255
X15-3	-112
X15-2	+1204
X15-1	-482
Factor of the connection strength = 0.95 (0.48) Coefficient of correlation = 0.15	

TABLE IX. DEPENDENCE OF THE PARAMETER "**ATTITUDE TO THE YABLOKO PARTY**" (X11) ON THE PARAMETER "**ATTITUDE TO G.A. ZYUGANOV**" (X15) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X11 FOR QUARTERS ON A SCALE X15

Quarters on the scale X15	Comparative weightiness of the parameter X11 for quarters
X15-4	+536
X15-3	-7
X15-2	+1925
X15-1	-1699
Factor of the connection strength = 1.33 (0.84) Coefficient of correlation = 0.29	

TABLE X. DEPENDENCE OF THE PARAMETER "**ATTITUDE TO THE YABLOKO PARTY**" (X11) ON THE PARAMETER "**ATTITUDE TO M.D. PROKHOROV**" (X16) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X11 FOR QUARTERS ON A SCALE X16

Quarters on the scale X16	Comparative weightiness of the parameter X11 for quarters
X16-4	+853
X16-3	-298
X16-2	+1853
X16-1	-905
Factor of the connection strength = 1.32 (0.32) Coefficient of correlation = 0.17	

TABLE XI. DEPENDENCE OF THE PARAMETER "**SUBJECTIVE ASSESSMENT OF THEIR FINANCIAL SITUATION**" (X24) ON THE PARAMETER "**ATTITUDE TO A.A. NAVALNY**" (X18) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X24 FOR QUARTERS ON A SCALE X18

Quarters on the scale X18	Comparative weightiness of the parameter X24 for quarters
X18-4	+273
X18-3	-555
X18-2	+1471
X18-1	+410
Factor of the connection strength = 0.85 (0.47) Coefficient of correlation = -0.16	

TABLE XII. DEPENDENCE OF THE PARAMETER "**PARTICIPATION IN THE DISCUSSION OF POLITICAL ISSUES IN THEIR ENVIRONMENT**" (X06) ON THE PARAMETER "**SATISFACTION WITH THE VOTING RESULTS IN THE ELECTIONS TO THE STATE DUMA OF THE RUSSIAN FEDERATION**" (X19) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X06 FOR QUARTERS ON A SCALE X19

Quarters on the scale X19	Comparative weightiness of the parameter X06 for quarters
X19-4	-225
X19-3	-1202
X19-2	+1828
X19-1	+1006
Factor of the connection strength = 1.05 (0.58) Coefficient of correlation = -0.22	

TABLE XIII. DEPENDENCE OF THE PARAMETER "**SUBJECTIVE ASSESSMENT OF THEIR FINANCIAL SITUATION**" (X24) ON THE PARAMETER "**AGE**" (X23) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X24 FOR QUARTERS ON A SCALE X23

Quarters on the scale X23	Comparative weightiness of the parameter X24 for quarters
X23-4	-1642
X23-3	+145
X23-2	+113
X23-1	+2010
Factor of the connection strength = 0.81 (0.55) Coefficient of correlation = -0.26	

TABLE XIV. DEPENDENCE OF THE PARAMETER "**ACCEPTABILITY OF CIVIL MARRIAGE AS A FORM OF RELATIONSHIP**" (X02) ON THE PARAMETER "**SUBJECTIVE ASSESSMENT OF THEIR FINANCIAL SITUATION**" (X24) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X02 FOR QUARTERS ON A SCALE X24

Quarters on the scale X24	Comparative weightiness of the parameter X02 for quarters
X24-4	-1514
X24-3	-154
X24-2	+290
X24-1	+2231
Factor of the connection strength = 0.81 (0.56) Coefficient of correlation = -0.27	

The **second** sample of dependencies (**Table XV**) already contains less strong simplest non-linear dependencies with the strength of relation coefficient of **0.7<SV<=0.8**, which are also simultaneously characterized by non-zero ("significant") linear correlations that are also very weak with the values from 0.14 to 0.3. There were **5** such relations found in this study.

Thus, we find **5** (**0.7<SV<=0.8**) strong, simplest non-linear relations, which are defined in the correlation analysis (with the currently popular interpretation) as "significant" correlations, suitable for interpreting the results of research in linear models.

TABLE XV. **INTERVALS OF RELATION COEFFICIENTS: 0.14 < ABS(R) <= 0.3 0.7 < SV <= 0.8**

	SV	SV'	R	quarters	parameter
1	**0.78**	0.42	**0.16**	X13	X17
2	**0.74**	0.69	**-0.15**	X14	X19
3	**0.78**	0.54	**0.28**	X15	X18
4	**0.76**	0.45	**0.24**	X16	X15
5	**0.71**	0.34	**-0.16**	X22	X06

Next, we give these **5** dependencies (**Table XVI-XX**) without description and interpretation in order to visualize the number of pseudoscientific results. They can appear in any study, when they rely on "significant" correlations, going into linear models in interpreting the results, ignoring the real non-linear nature of sociological (psychological) information, including political preferences, and these are primarily the dependencies with the maximum or minimum.

TABLE XVI. DEPENDENCE OF THE PARAMETER "**ATTITUDE TO S.M. MIRONOV**" (X17) ON THE PARAMETER "**ATTITUDE TO D.A. MEDVEDEV**" (X13) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X17 FOR QUARTERS ON A SCALE X13

Quarters on the scale X13	Comparative weightiness of the parameter X17 for quarters
X13-4	**-10**
X13-3	**+968**
X13-2	**+190**
X13-1	**-1645**
Factor of the connection strength = 0.78 (0.42) Coefficient of correlation = 0.16	

TABLE XVII. DEPENDENCE OF THE PARAMETER "**SATISFACTION WITH THE VOTING RESULTS IN THE ELECTIONS TO THE STATE DUMA OF THE RUSSIAN FEDERATION**" (X19) ON THE PARAMETER "**ATTITUDE TO V.V. ZHIRINOVSKY**" (X14) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X19 FOR QUARTERS ON A SCALE X14

Quarters on the scale X14	Comparative weightiness of the parameter X19 for quarters
X14-4	**+190**
X14-3	**-1246**
X14-2	**-60**
X14-1	**+707**
Factor of the connection strength = 0.74 (0.69) Coefficient of correlation = -0.15	

TABLE XVIII. DEPENDENCE OF THE PARAMETER "**ATTITUDE TO A.A. NAVALNY**" (X18) ON THE PARAMETER "**ATTITUDE TO G.A. ZYUGANOV**" (X15) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X18 FOR QUARTERS ON A SCALE X15

Quarters on the scale X15	Comparative weightiness of the parameter X18 for quarters
X15-4	**-50**
X15-3	**+932**
X15-2	**-168**
X15-1	**-1685**
Factor of the connection strength = 0.78 (0.54) Coefficient of correlation = 0.28	

TABLE XIX. DEPENDENCE OF THE PARAMETER "**ATTITUDE TO G.A. ZYUGANOV**" (X15) ON THE PARAMETER "**ATTITUDE TO M.D. PROKHOROV**" (X16) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X15 FOR QUARTERS ON A SCALE X16

Quarters on the scale X16	Comparative weightiness of the parameter X15 for quarters
X16-4	**-31**
X16-3	**+796**
X16-2	**+149**
X16-1	**-1853**
Factor of the connection strength = 0.76 (0.45) Coefficient of correlation = 0.24	

TABLE XX. DEPENDENCE OF THE PARAMETER "**PARTICIPATION IN THE DISCUSSION OF POLITICAL ISSUES IN THEIR ENVIRONMENT**" (X06) ON THE PARAMETER "**SATISFACTION WITH THE WORK OF THE STATE DUMA OF THE RUSSIAN FEDERATION**" (X22) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X06 FOR QUARTERS ON A SCALE X22

Quarters on the scale X22	Comparative weightiness of the parameter X06 for quarters
X22-4	**+47**
X22-3	**-875**
X22-2	**+35**
X22-1	**+1450**
Factor of the connection strength = 0.71 (0.34) Coefficient of correlation = -0.16	

The **third** sample of dependencies (**Table XXI**) contains even less strong simplest non-linear dependencies with the strength of relation coefficient of **0.6<SV<=0.7**, which are also simultaneously characterized by non-zero ("significant") linear correlations that are also very weak with the values from 0.14 to 0.3. There were 8 such relations found in this study.

TABLE XXI. **INTERVALS OF RELATION COEFFICIENTS: 0.14 < ABS(R) <= 0.3 0.6 < SV <= 0.7**

	SV	SV'	R	quarters	parameter
1	**0.61**	0.35	**-0.19**	X03	X12
2	**0.67**	0.37	**0.25**	X09	X06
3	**0.63**	0.66	**0.29**	X09	X10
4	**0.66**	0.63	**0.29**	X10	X09
5	**0.64**	0.34	**0.14**	X17	X14
6	**0.69**	0.74	**-0.15**	X19	X14
7	**0.61**	0.26	**-0.20**	X22	X09
8	**0.66**	0.31	**0.17**	X24	X05

Thus, we find **8** (**0.6<SV<=0.7**) strong, simplest non-linear relations, which are defined in the correlation analysis (with the currently popular interpretation) as "significant" correlations, suitable for interpreting the results of research in linear models.

Next, we give these **8** dependencies (**Table XXII-XXIX**) without description and interpretation in order to visualize the number of pseudoscientific results. They can appear in any study, when they rely on "significant" correlations, going into linear models in interpreting the results, ignoring the real non-linear nature of sociological (psychological) information,

including political preferences, and these are primarily the dependencies with the maximum or minimum.

TABLE XXII. DEPENDENCE OF THE PARAMETER "**ATTITUDE TO V.V. PUTIN**" (X12) ON THE PARAMETER "**POSSIBILITY OF CHILDBIRTH IN CIVIL MARRIAGE**" (X03) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X12 FOR QUARTERS ON A SCALE X03

Quarters on the scale X03	Comparative weightiness of the parameter X12 for quarters
X03-4	-1706
X03-3	-110
X03-2	+592
X03-1	+92
Factor of the connection strength = 0.61 (0.35) Coefficient of correlation = -0.19	

TABLE XXIII. DEPENDENCE OF THE PARAMETER "**PARTICIPATION IN THE DISCUSSION OF POLITICAL ISSUES IN THEIR ENVIRONMENT**" (X06) ON THE PARAMETER "**ATTITUDE TO THE LDPR PARTY**" (X09) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X06 FOR QUARTERS ON A SCALE X09

Quarters on the scale X09	Comparative weightiness of the parameter X06 for quarters
X09-4	+1483
X09-3	-322
X09-2	+34
X09-1	-873
Factor of the connection strength = 0.67 (0.37) Coefficient of correlation = 0.25	

TABLE XXIV. DEPENDENCE OF THE PARAMETER "**ATTITUDE TO THE CPRF PARTY**" (X10) ON THE PARAMETER "**ATTITUDE TO THE LDPR PARTY**" (X09) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X10 FOR QUARTERS ON A SCALE X09

Quarters on the scale X09	Comparative weightiness of the parameter X10 for quarters
X09-4	+251
X09-3	+554
X09-2	+279
X09-1	-2058
Factor of the connection strength = 0.63 (0.66) Coefficient of correlation = 0.29	

TABLE XXV. DEPENDENCE OF THE PARAMETER "**ATTITUDE TO THE LDPR PARTY**" (X09) ON THE PARAMETER "**ATTITUDE TO THE CPRF PARTY**" (X10) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X09 FOR QUARTERS ON A SCALE X10

Quarters on the scale X10	Comparative weightiness of the parameter X09 for quarters
X10-4	+314
X10-3	+936
X10-2	-831
X10-1	-1483
Factor of the connection strength = 0.66 (0.63) Coefficient of correlation = 0.29	

TABLE XXVI. DEPENDENCE OF THE PARAMETER "**ATTITUDE TO V.V. ZHIRINOVSKY**" (X14) ON THE PARAMETER "**ATTITUDE TO S.M. MIRONOV**" (X17) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X14 FOR QUARTERS ON A SCALE X17

Quarters on the scale X17	Comparative weightiness of the parameter X14 for quarters
X17-4	+1635
X17-3	-62
X17-2	+347
X17-1	-478
Factor of the connection strength = 0.64 (0.34) Coefficient of correlation = 0.14	

TABLE XXVII. DEPENDENCE OF THE PARAMETER "**ATTITUDE TO V.V. ZHIRINOVSKY**" (X14) ON THE PARAMETER "**SATISFACTION WITH THE VOTING RESULTS IN THE ELECTIONS TO THE STATE DUMA OF THE RUSSIAN FEDERATION**" (X19) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X14 FOR QUARTERS ON A SCALE X19

Quarters on the scale X19	Comparative weightiness of the parameter X14 for quarters
X19-4	-595
X19-3	+39
X19-2	+1253
X19-1	-84
Factor of the connection strength = 0.69 (0.74) Coefficient of correlation = -0.15	

TABLE XXVIII. DEPENDENCE OF THE PARAMETER "**ATTITUDE TO THE LDPR PARTY**" (X09) ON THE PARAMETER" **SATISFACTION WITH THE WORK OF THE STATE DUMA OF THE RUSSIAN FEDERATION**" (X22) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X09 FOR QUARTERS ON A SCALE X22

Quarters on the scale X22	Comparative weightiness of the parameter X09 for quarters
X22-4	-1236
X22-3	+134
X22-2	-170
X22-1	+957
Factor of the connection strength = 0.61 (0.26) Coefficient of correlation = -0.20	

TABLE XXIX. DEPENDENCE OF THE PARAMETER "**INTEREST TO POLITICS**" (X05) ON THE PARAMETER "**SUBJECTIVE ASSESSMENT OF THEIR FINANCIAL SITUATION**" (X24) AS COMPARATIVE WEIGHTINESS OF THE PARAMETER X05 FOR QUARTERS ON A SCALE X24

Quarters on the scale X24	Comparative weightiness of the parameter X05 for quarters
X24-4	+915
X24-3	-55
X24-2	-65
X24-1	-2123
Factor of the connection strength = 0.66 (0.31) Coefficient of correlation = 0.17	

To conclude, we present a table with strong enough linear relations (values of the correlation coefficient modulo more than 0.6) for a general comparison of the numbers of strong relations of various nature (linear, simplest non-linear). Such relations were deemed noteworthy for the researcher in the past until the troubled times came when complex sociological or psychological content became simplified to linear models through "significant" correlations, and any pseudoscientific information became common for a sociological and psychological science.

TABLE XXX. **INTERVAL OF CORRELATION COEFFICIENTS: 0.6 < ABS(R) <= 1**

	SV	SV'	R	quarters	parameter
1	**0.89**	**0.92**	**0.67**	**X07**	**X12**
2	**0.88**	**0.91**	**0.65**	**X07**	**X19**
3	**0.83**	**0.90**	**0.62**	**X12**	**X20**
4	**0.92**	**0.88**	**0.66**	**X12**	**X21**
5	**1.01**	**0.85**	**0.61**	**X19**	**X21**
6	**0.90**	**0.85**	**0.62**	**X20**	**X21**
	0.81	**1.01**	**0.61**	**X21**	**X22**
7	**0.95**	**0.94**	**0.79**	**X01**	**X02**
8	**0.92**	**0.95**	**0.73**	**X12**	**X13**
9	**0.95**	**0.95**	**0.77**	**X19**	**X20**

There were 10 such dependencies, with 6 of them linked by clearly related indicators, and easily predictable 4 remaining dependencies. Therefore, the obtained results suggest the mutual influence of the political preferences of young people, primarily based on non-linear dependencies.

However, the main thing highlighted at this point - this is a more dangerous problem when a very weak correlation (**0.14–0.3**), which is called "significant", is interpreted as a sufficiently strong, worthy of discussion and interpretation.

This is a **type 2 error** (in the author's notation). It may be considered as gross, because a strong relation is "identified".

But it is different in nature – the simplest non-linear, and therefore, to identify and interpret it, we need other statistical methods (not only the correlation analysis) and other (synergetic) methodology corresponding to the complex nature of social and mental phenomena and processes.

And linear models give the false idea with respect to the studied subject of research, strongly distorting the idea of the process or phenomenon under study, and, therefore, such results cannot be used in practice.

III. CONCLUSION

We have demonstrated the work of the authorial method for statistical relations analysis on the specific study data in political sociology, when emphasis is placed on studying the simplest non-linear relations (primarily these are dependencies with a maximum and minimum), and linear relations are identified as the particular type of dependencies.

This continues our research in the context of nonlinear nature with regard to social sciences (human sciences).

At the same time, the nonlinear nature of psychological and sociological data is not relevant for most researchers, although the nonlinearity of psychological and social has already been revealed in numerous studies [7–15] with the help of the authorial method.

As previously mentioned, a set of the so-called "significant" correlation coefficients is proposed to avoid the frequent statement of absence of the results in the study (except when a large number of related indicators are analyzed for relation). In the past, this mainly referred to a testing of hypothesis of zero correlation coefficient, i.e. the calculated correlation for a sample transferred to the general population with a shift of zero point to the critical value determined by the sample size.

In this case, a very weak correlation (0.14-0.3), which is called "significant" (in module it is a larger table value within the null correlation hypothesis), is often interpreted as sufficiently strong and being of clear research interest, and the study of a corresponding component is considered to have achieved a positive result. The authors describe the linear cause and effect relation in such a situation, which is actually weak or even very weak, but since it is "significant", it is "the only" possible for them.

The problem of traditional research substitutions with consideration of linear "significant" relation both for the case of actual absence of relation (linear or simplest nonlinear), and for the cases of presence of strong simplest nonlinear relation, is considered in detail in previous articles of the author.

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