

Usage Method of SPSS Software in the Processing of Psychological Data

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Annotation:

In article are stated the possibilities of the SPSS program which is widely applied in mathematics- statistical analysis and processing results of psychological research. The mechanisms and opportunities of the application of the software is discussed.

Keywords: psychological data, the SPSS programs, the version, modules, statistics, to bind, correlation, parameter, the analysis, a nominal scale, a serial scale, an interval, relative.

INTRODUCTION.

Although several programs have been created for the mathematical-statistical analysis and processing of psychological data, in particular, the results of the study, today it is widely used by the capabilities of the SPSS program. We drew attention to the history of the creation of the program, its uses, its possibilities, scale of measurements, as well as aspects related to its application in the implementation processes in practice.

The founders of the SPSS program were two students studying in the field of politology, **Norman Nay (Norman Nie) and Dale Bent went (Dale Bent)**. They tried to find computer programs that allow the analysis of statistical data at Stanford University in San Francisco in 1965 year. Existing programs that fit their purpose were partially in demand. Some of the programs were configured without success, while others did not allow the processing results to be presented visually. Also, the performance prints of the programs would have changed when they moved from one program to another¹. Then, without thinking much, they decided to create their own programs, which had their own concept and syntax. At their disposal were at this time the FORTRAN programming language and the IBM 7090 type computing machine. A year later, a new interpretation of the program was created, and another year later, in 1967 year the program became operational on IBM 360.

REFERENCE REVIEW. At that time, the same group was joined by specialist Hadlai Hull. From the history of the development of Informatics it is known that at that time the programs would consist of a package of perfocards. The initial name given by the authors of the program is also associated with the package perfokartalar: SPSS – is an abbreviation of the words “**Statistical Package for the Social Science**” (statistical package for Social Sciences) [1].

SPSS software has also improved in the impact of computer and programming languages development. It should be noted that in 1983 year, the PC version SPSS\PC+, which works in the MS-DOS environment, was developed, which began to be widely used in European countries. Its name was also changed. The name of the SPSS without abbreviation was preserved, but its content was changed – referring to it as the *Superior Performance Software System* was input (highly efficient software system) [2].

¹<http://www.learnspss.ru/hndbook/glava1/cont1.htm>

The SPSS program itself is a phrase from a large set of programs designed to analyze various information in Social Sciences. These programs allow you to enter data, easily change their structure, analyze them using the most modern statistical techniques, get results in a convenient and visually appealing way. The programs are integrated into one, holistic system and are easy to use and very consistent. Since the SPSS software has a convenient interface and is relatively simple, it is considered that everyone can perform certain statistical actions using the SPSS software. At the same time, it should be noted that even a person who does not have at least an elementary education will not have an opportunity understanding of Mathematical Statistics will not be able to independently solve simple tasks and draw conclusions, even using the SPSS program [3].

And the demand for knowledge of the computer sciences is simple. Many industry experts believe that in order to work in SRSS, it is enough to know how to activate and deactivate the computer, how to work with the keyboard and mouse. Other steps to work with the program can be learned without difficulty. On the PC and information technologies, it is recommended that a new version of the SPSS for Windows program be installed as much as possible (the latter versions are SPSS for Windows 20 and SPSS for Windows 21) [5].

The above-mentioned versions of the SPSS program have a system of ba-detailed data in Russian, and, unlike the previous versions, its menu, and its multi-camellae are translated into Russian. For those who have worked with earlier versions of the SPSS software, it is worth noting that some of the names in the new version, the translation of actions, are different from the previous ones. But such a difference does not bring any additional complexity when working with the program.

SPSS modules. The structure of the SPSS program is a phrase from three main modules. A module for SPSS is a phrase from a certain set of statistical actions. The SPSS is formed by *SPSS Base* (main module). It allows you to use different data and manage them. This module consists of the most commonly used statistical analysis techniques. Traditionally, in combination with *SPSS Base*, another 2 modules, **Advanced Models** (advanced models) and **Regression Models** (regressional models) are issued.

The SPSS application is currently one of the quality and leading applications among statistical applications. It can also be used to enter and analyze data from the application, creating tables, charts and diagrams².

The opportunities of SPSS:

- Data collection and
- Organize simple data entry;
- Data management;
- Use different statistical procedures to analyze data and build accurate modules;
- To present the results clearly, clearly.

Below we have found that some of the most commonly used steps in the processing and analysis of the results of psychological and sociological research should be given a brief overview of the sequence of performance in the SPSS program [4].

Determination of mean values using SPSS software (descriptive statistics)

When analyzing the results of most psychological research, it is necessary to identify the central tendencies of normal (normalized) distribution (mode, mediana, mean arithmetic value, dispersion),

²<http://ru.wikipedia.org/wiki/SPSS#.D0.92.D0.BE.D0.B7.D0.BC.D0.BE.D0.B6.D0.BD.D0.BE.D1.81.D1.82.D0.B8>

that is, the indicators of mean values.

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The average value is equal to the sum of all values divided by their number. [3, 5, 7, 5, 6, 8, 9] average value for the set (sequence of numbers) is equal to $(3 + 5 + 7 + 5 + 6 + 8 + 9)/7 = 6,14$.

Mediane is a value that is in the middle of a row of all values, after all values are sorted in the manner of growth. [3, 5, 7, 5, 6, 8, 9] for the series, the median is equal to 6, since it stands in the middle of the series of numbers [3, 5, 5, 6, 7, 8, 9].

So, if the number of elements of the series of the variation is tak, then the sequence in the middle of the series of the variation is called mediana, and it is denoted by a symbol. The median variation divides the line into two equal parts by the number of sequences. For example, this 16, 19, 21, 26, 27, 31, 32, 35, 39, 41, 45, 47, 48 for the data series 32 value will be mediana, since 32 is smaller than 32 in the left and 6 values and in the value greater than 32 is located.

Now let the number of elements of the series of the variation be in pairs, for example, 21, 25, 28, 32, 34, 35, 39, 42, 46, 54, 58, at that time, according to the definition, there will be 37, that is, the middle of the two standing numbers (35,39) will be mediane.

$$Me = \frac{35+39}{2} = 37$$

Mode. In a given variation sequence (sample), the maximum repeating value of the studied value is called fashion, and it is denoted by the symbol. For example, when measuring the height of 11 children, the following results were obtained (see. on account of): 127, 127, 128, 128, 128, 129, 130, 131, 132, 134, 136.

In this series, the fashion will be worth 128, since it is here that it is the most repeated

Dispersion- the igateng of the squares of the difference of each value from the middle, divided into $N - 30$ when the sample has 30 and more elements, less than 30. N is the number of values in the set (data row).

[3, 5, 7, 5, 6, 8, 9] dispersion for Series $((3 - 6,14)^2 + (5 - 6,14)^2 + (7 - 6,4)^2 + 5 - 6,4)^2 + (6 - 6,14)^2 + (8 - 6,4)^2 + (9 - 6,14)^2)/6 = 4,1429$ equal to.

Standard limit dispersion square is equal to square root. For the series [3, 5, 7, 5, 6, 8, 9] it is equal to 2,0354.

To analyze the descriptive characteristics of data in the SPSS program, the actions in the section **“Menu→ Analysis→Descriptive statistics”** are performed.

For example, we determine the central tendencies of the above 3, 5, 7, 5, 6, 8, 9 number series by means of the SPSS program [5].

Statistics		
Numbers		
N	Valide	7
	Missed one	0
Average		6,14
Mediane		6,00

Mode	5
Dispersion	4,143
Pa3max	6
Total	43

Numbers					
		Frequence	Percent	Valide percent	Aggregate percent
Valid	3	1	14,3	14,3	14,3
	5	2	28,6	28,6	42,9
	6	1	14,3	14,3	57,1
	7	1	14,3	14,3	71,4
	8	1	14,3	14,3	85,7
	9	1	14,3	14,3	100,0
	Total	7	100,0	100,0	

As you can see in the table, we managed to get the values we received as a result of the above known arithmetic actions in a simple way with the help of the SPSS program.

Bonds between data – correlation based on the Calculation using SPSS software.

DISCUSSION. Correlation, or coefficient of correlation, is a statistical measure of the probability relationship between two variables measured in a quantity scale. In correlation, one value of one variable is considered to have a probability correlation with several values of the other variable. For example, if the height and weight of a person are studied, then people with the same height can have several different weights, and on the contrary, the height of people with the same weight can be different.

Correlation is an indicator that lies in the range from -1 to +1, marked with r , -1 correlation is inverse, +1 positive, 0 – indicates the absence of correlation.

$r=1$, the change in the values of one variable the value of the second variable bi-lan is fully determined, that is, the increase in the values of one variable if $r = 1$ also leads to an increase in the value of the second variable. and when $r = -1$, then vice versa. The correlation between the height of a person and his weight is positive, with the growth of height, the body weight also increases.

The linkage or correlation can be either straight line or not straight line. Pearson correlation coefficient (X^2 Pearson), widely used in Ij-Timoi Sciences, assesses linear correlation. In a straight-line connection, the values are located along one straight line, if we reflect the Qi-mats of the two variables in a graphical style. In life, such a link is less than threeraydi. If the connection between the parameters is not a straight line, then Spirmen and Kendal correlations are used. It should be remembered that sometimes the smallness of the correlation coefficient does not indicate the absence of bonding. For example, let's see the link between a good find of the exam and the excitation of the nerve (frustration). In experiments, it was found that the results of students who were strongly excited and very little excited were lower than those who were excited in the norm. If we see the results in a graphic style, it is in the form of “∩”. Of course, in this case, the coefficient of correlation turns out to be small, and it is required to check the presence of the bond in another way [5].

The “*Analysis→Correlation*” practice of the SPSS program allows you to simultaneously determine all the above coefficients and their degree of reliability. The degree of reliability (or degree of value) is a statistical measure indicating the reliability of the correlation and is used in interpreting the correlation between variables.

RESULTS. For example, let's consider calculating the double correlation. Couple correlation in the SPSS program is considered in the section “**Analysis→Correlation →Paired**”.

Correlation						
		counting	Number sequence	dictionary	Level of knowledge	Short memory
Assumption	Pearson correlation	1	,436**	-,051	-,134	,017
	Value.(2-lateral)		,000	,617	,185	,867
	N	100	100	100	100	100
Number sequence	Pearson correlation	,436**	1	-,196	-,153	,015
	Value (2-lateral)	,000		,050	,127	,886
	N	100	100	100	100	100
Dictionary	Pearson correlation	-,051	-,196	1	,441**	,483**
	Value.(2-lateral)	,617	,050		,000	,000
	N	100	100	100	100	100
Level of knowledge	Pearson correlation	-,134	-,153	,441**	1	,475**
	Value (2-lateral)	,185	,127	,000		,000
	N	100	100	100	100	100
Short memory Xotira	Pearson correlation	,017	,015	,483**	,475**	1
	Value (2-lateral)	,867	,886	,000	,000	
	N	100	100	100	100	100

** . Correlation is significant at the level 0.01 (2-lateral).

In the table it is shown that the correlation between the two variables ($,436^{**}$), the 2-laterality of (**Value.(2-lateral)**), and the correlation coefficient of level of trustiness

By means of ** the following is determined $P=0,01$, * билан $P=0,05$ даражадагилар белгиланади.

Statistics of paired samples					
		Average	N	Standard deviation	Standard deviation error
Pair 1	Grade 1	3,9630	100	,30597	,03060
	Grade 2	4,2205	100	,27589	,02759

Correlation of paired samples				
		N	correlation	Value.
Pair1	Grade 1 & grade 2	100	,434	,000

Criteria of paired samples								
	Paired differences				T	ст.св.	Significance (2-sided)	
	Average	Standard deviation	Error of Average deviation	95% confidence interval of mean difference				
				Lower limit				Upper limit
Grade 1 – Value 2	-,25750	,31062	,03106	-,31913	-,19587	-8,290	99	,000

Let's consider the results.

As it can be seen from the first table, the average grade point average is higher in the 8 class (3,9630) than in the 9 class (4,2205).

In the second table, there is enough correlation (0,434) between the prices, that is, the higher the price in the 8 class, the better I will burn in the 9 class.

We look at the right side of the third table. $t = -8,290$, this is an empirical (obtained in experience) result, that is, *t is empirical*. The degree of reliability of the result, that is, the difference (**Significance (2-lateral)**) is -0,000. This means that the existing difference ($r < 0,001$) is statistically significant, reliable.

In the SPSS program, setting the type of scale is carried out by activating the scale, as in other parameters, and then selecting the scale that corresponds to the data type.

In the process of conducting various statistical analyzes with data using the SPSS program, it is possible to see the images (icons) that are displayed next to the names of the data or in the table below in the data entry window. They are signs indicating the type of data and the type of scale.

CONCLUSION. As can be seen from the above, it can be noted that the SPSS program provides convenience to psychologist specialists in comparing psychological data on the basis of accuracy with the concretization of empirical results in mathematical-statistical analysis and correlation connections.

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