Attitude to Alcohol as Predominantly Nonlinear Psychological Process

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Abstract

Using investigation of alcoholism as an example, the problem of lack of linear correlations at presence of simplest nonlinear relations, which leads to systemic errors at interpretation of results, is considered. Specific results demonstrating errors of the 1st type are represented, when the linear correlation demonstrates results close to zero. Usually, such connections are simply neglected, but, in reality, the simplest strong nonlinear connection is present (maximum, minimum) that completely changes the picture of phenomenon under study. The results on linear correlation even do not match the criteria of zero hypothesis ("significant" correlation), which, also, is not a sign of strong correlation at all. Besides, it is possible to see obvious narrowness of represented types of dependence, that is the reason and consequence are determined already at the level of quantitative analysis. It means that problems of motivation of alcohol use do not correspond to linear models at all, and attempts of linear approximation will lead to fundamental errors at study and interpretation of this phenomenon, when with increase of one parameter another one obligatory demonstrated either increase or only decrease.

Keywords: alcohol, psychology, deviant behavior, nervous processes, alcoholism.

INTRODUCTION

Modern science seeks to explore as deeply as possible various physiological processes in the body [1,2]. In the course of long-term systematic studies, various regularities were elucidated, which made it possible to take a fresh look at ontogenesis [3,4] and the mechanisms for maintaining health throughout the body [5,6]. In addition, the obtained results of the studies allowed, by applying them in practice, to heal the body [7,8], eliminating various dysfunctions [9,10]. These successes are particularly important in the search for treatment options for a person about the most common socially significant diseases. Of particular importance in this are the results that allow to increase the social adaptation of a person with persistent dysfunctions [11].

Today's psychology, on the one hand, frequently deals with the complex nature of the subject of research in psychology, i.e. the obtaining of knowledge about the specifics of the human mind and personality, while on the other, excepting some few studies, psychologists offer, on the basis of their data, an interpretation of mainly linear correlation relations. Our experience shows [12] that in the vast majority of cases the linear dependencies make up only a small part of the strong dependencies while their contents are fairly trite and predictable.

The problem is singled out by the statistics of using the words "non-linear" or "nonlinear" (except the presentations of our team of authors (total 27) in the theses of the European congresses:

1. «11th Conference of the European Sociological Association 2013 (Torino)» (ESA, 2013) in 10 theses (a total of around 3000) [13].

2. «12th Conference of the European Sociological Association 2015 (Pragua)» (ESA, 2015) in 11 theses (a total of more than 3000) [14].

3. «The 12th European Congress of Psychology (Istanbul, 2011)» (ECP, 2011) in 3 theses (a total of around 3000) [15].

4. «The 14th European Congress of Psychology (Milan, 2015)» (ECP, 2015) in 4 theses (a total of around 2500) [16].

It means that the psychologists and sociologists continue "to live" predominantly in the framework of the late 18th century methodology (dealing with the concepts of linearity, principle of super-position, etc.). However, if they happen to mention the complex nature of the psychic and personal phenomena, in most studies this cannot be singled out statistically based on the analysis of experimental data.

The study of non-linear relations by the author's method [17] was tested in different psychological studies presenting diverse areas of the psychological science, such as the psychology of preschool children and teenagers, the political psychology, the ethno-psychology, the occupational psychology, the psychology of trust , the psychology of stress, the psychology of parenthood, the psychology of learning, the measuring of the value- relations of a person "Me and Others", the study of the family upbringing as a factor that shapes the child's meaningful spheres [18], and the study of the dynamics of motivational and semantic formations in a student's personality, etc."

The synergic mode of thinking is that of the post-non-classical science. The "non-linearity" is a fundamental conceptual node of the new paradigm. The research on any psychological process and phenomenon will be deliberately simplified to the extreme and narrowed down by the external factors, if the researcher, engaged in the study of a multi-faceted psychological phenomenon, remains in the framework of linear concepts [19,20,21].

Let's consider an example (a study of motivation for alcohol consumption), from which it can be seen that a try to ignore complex nature of psychological processes while studying problems of alcoholism as well as an attempt to reduce results of own investigations to mechanical (linear) presentations leads not only to the loss of great amount of information (represented by the simplest nonlinear relations), but to multiple systemic errors, one type of them being demonstrated in this article. In this regard, our work sets the goal: to analyze the attitude to alcohol as a predominantly non-linear psychological process.

MATERIALS AND METHODS

The study was approved by the local ethics committee of the Russian State Social University on September 15, 2016 (protocol №9). The research was conducted on the basis of the Russian State Social University. 30 people participated in the study, for whom alcoholism is a clinical diagnosis.

Data on the following methods were selected for the analysis of causative relations:

1. Method "Motivation for alcohol use" by V.Yu. Zavyalov [22].

2. "The personal growth initiative scale" by K. Robitschek [23].

3. "The hope scale" by S. R. Snyder [24].

4. "The meaning in life scale" [25].

The research results were processed with a standard statistical processing software package.

RESULTS AND DISCUSSION

Dependence of the parameter "The Subscale of meaning in life search" ("Search") (X17) on the parameter "General motivation for alcohol use" (X11) in the form of comparative weights of parameter X17 for triads on scale X11:

Triads on scale X11	Comparative weights of parameter X17 for triads
X11-3	-161
X11-2	+513
X11-1	-98
Strength of connection coefficient = 0.77 (0.17) Correlation coefficient = -0.19	

Graphically, the dependence is represented in picture 1. Values on "The scale of meaning in life search" ("Search") achieve maximum for the medium level on the parameter "General motivation for alcohol use" (comparative weights = +513). Thus, the initial increase (transition from low to medium level) of general motivation of alcohol use promotes abrupt rise (from -98 to +513) on "The scale of meaning in life search" ("Search"). However, further increase of general motivation of alcohol use (from medium to high level) leads to the reverse effect (from +513 to -161) and the search of meaning in life appears to be lost diminishing to values even lower than the initial ones.
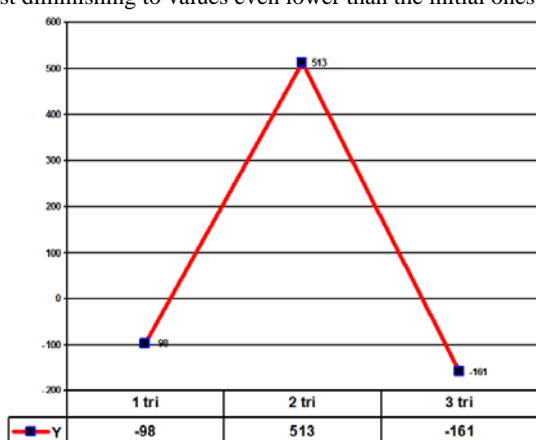

Fig. 1. Dependence of the parameter "Subscale of meaning in life search"on the parameter "General motivation for alcohol use"

Thus, the search of meaning in life in people suffering from alcoholism is not possible without moderate general motivation of alcohol use (mean level within their sample frame). At that, abrupt decrease of general motivation of alcohol use can, most probably, lead to the loss of life meaning (-98), as it occurs also at high level of general motivation of alcohol use (-161).

The study phenomenon is obviously cannot be explained by the linear model, and it will be a big mistake to study causative relations during its investigation based on the correlation analysis.

Other types of dependence described in the article are principally different – these are dependencies with the minimum.

Dependence of the parameter "Hedonistic motives – intention to get pleasure from alcohol" (X05) on the parameter "The personal growth initiative scale" by K. Robitschek (X12) in the form of comparative weights of parameter X05 for triads on scale X12:

Triads on scale X12	Comparative weights of parameter X05 for triads
X12-3	+88
X12-2	-397
X12-1	+223
Strength of connection coefficient = 0.66 (0.23) Correlation coefficient = 0.18	

Graphically, dependence is represented in picture 2. Values on scale "Hedonistic motives – intention to get pleasure from alcohol" decline abruptly at the first stage of growth (from low to medium) on "The scale of initiative to personal growth" by K. Robitschek (from +223 to -397 on comparative weighs). But

the following increase of initiative to personal growth (from medium to high) gives an opposite effect, and intention to get pleasure from alcohol rises (from -297 to +88) to values close to the initial ones.
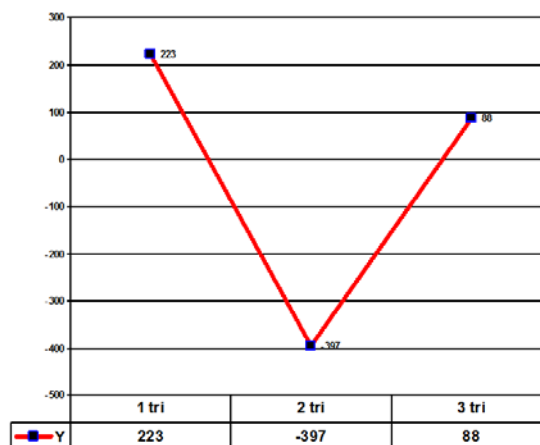

Fig. 2. Dependence of the parameter "Hedonistic motives" on the parameter "The personal growth initiative scale"

Thus, the process of development of initiative to personal growth in people suffering from alcoholism requires restriction, because only mean values on this scale give a positive effect – minimization of hedonistic motives (intention to get pleasure from alcohol). At that, leaving "the norms" (high level) in the process of development of initiative to personal growth will, most probably, give an opposite effect, and a result on the scale "Hedonistic motives – intention to get pleasure from alcohol" will approach the initial one.

Dependence of the parameter "General motivation for alcohol use" (X11) on the parameter "General hope scale" ("The total hope scale") (X15) in the form of comparative weights of parameter X11 for triads on scale X15:

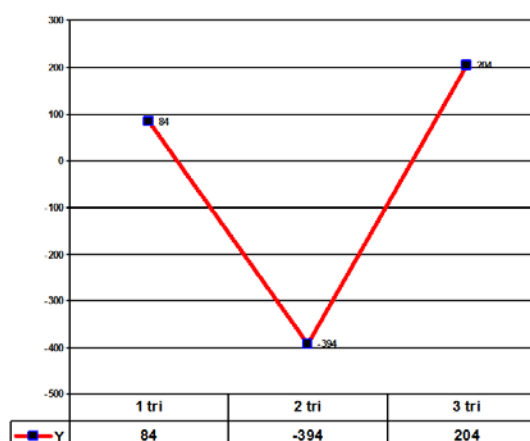| Triads on scale X15	Comparative weights of parameter X11 for triads
X15-3	+204
X15-2	-394
X15-1	+84
Strength of connection coefficient = 0.64 (0.24) Correlation coefficient = 0.21	

Fig. 3. Dependence of the parameter "General motivation for alcohol use" on the parameter "General hope scale"

Graphically, dependence is represented in picture 3. Values on scale "General motivation for alcohol use" declines abruptly at the first stage of growth (from low to medium) of the

parameter "General hope scale" (on comparative weighs from +84 to -394). However, further growth of the parameter "General hope scale" (from medium to high) gives an opposite effect, and general motivation for alcohol use increases (from -394 to +204) to values even slightly higher than the original ones.

"The hope scale" by S.R. Snyder is based on its cognitive model of hope, where hope is determined as a positive motivation state with grounds on: 1) interactively developed feeling (interactively derived sense) of a successful action (agency) of energy directed at a specific target (goal-directed energy); 2) ways (of planning for goal achievement). Thus, the following factors are regarded as components of hope: the feeling of activity successfullness and presence of planning for determination of life purposes [26].

In our case, process of development of the feeling of activity successfullness and presence of planning for determination of life goals in people suffering from alcoholism requires restriction, because only mean values on this scale give a positive effect – minimization of general motivation of alcohol use. At that, leaving the «norm» zone (high level) in the process of development of the feeling of successful performance and presence of planning will give a positive effect in the development of general motivation of alcohol use, at that, the result will exceed the original one.

Dependence of the parameter "Addictive motives – subjective fixation on alcohol, perception of it by a person as a sedative" (X09) on the parameter "Subscale of action (agency subscale) demonstrates the level of expression of the feeling of successful performance" (X13) in the form of comparative weights of parameter X09 for triads on scale X13:

Triads on scale X13	Comparative weights of parameter X09 for triads
X13-3	+356
X13-2	-556
X13-1	0
Strength of connection coefficient = 0.88 (0.22) Correlation coefficient = 0.35	

Graphically, dependence is represented in picture 4. Values on scale "Addictive motives – subjective fixation on alcohol, perception of it by a person as a sedative" decline abruptly at the first stage of growth (from low to medium) of the parameter "Subscale of action" that demonstrates the level of expression of the activity successfulness feeling (from 0 to -556 on comparative weighs). However, further growth of the parameter "Subscale of action" (from medium to high) gives an opposite effect, and addictive motives increase significantly (from -556 to +356), at that, to values that are considerably higher than the original ones.
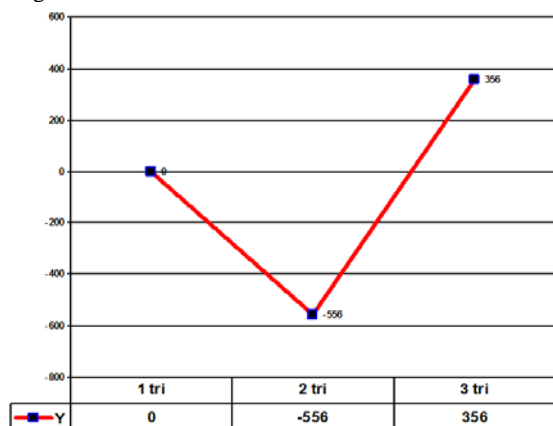

Fig. 4. Dependence of the parameter "Addictive motives" on the

Thus, the process of development of action that demonstrates the level of expression of the successful performance feeling, gives a positive effect only at the initial stage in people suffering from alcoholism: subjective fixation on alcohol as well as perception of it as a sedative significantly and quickly decreases. Only mean values on the subscale of action give a positive effect realized as minimization of addictive motives. At that, leaving the «normal» range (high level) on scale of action will most probably give an opposite effect: subjective fixation on alcohol, along with its perception as a sedative, abruptly increases, to values that are considerably higher than the original ones.

Dependence of the parameter "Motives of self-injury – alcohol use contrary to everybody and themselves" (X10) on the parameter "Subscale of meaning in life search" ("Search") (X17) in the form of comparative weights of parameter X10 for triads on scale X17:

Triads on scale X17	Comparative weights of parameter X10 for triads
X17-3	+119
X17-2	-491
X17-1	+184
Strength of connection coefficient = 0.77 (0.35) Correlation coefficient = 0.16	

Graphically, dependence is represented in picture 5. Values on scale "Motives of self-injury –alcohol use contrary to everybody and themselves" decline abruptly at the first stage of growth (from low to medium) of the parameter "Subscale of meaning in life search" (from +184 to -491 on comparative weighs). However, further growth of meaning in life search (from medium to high) gives an opposite effect, and motives of self-injury increase significantly (from -491 to +119) to values close to the original ones.
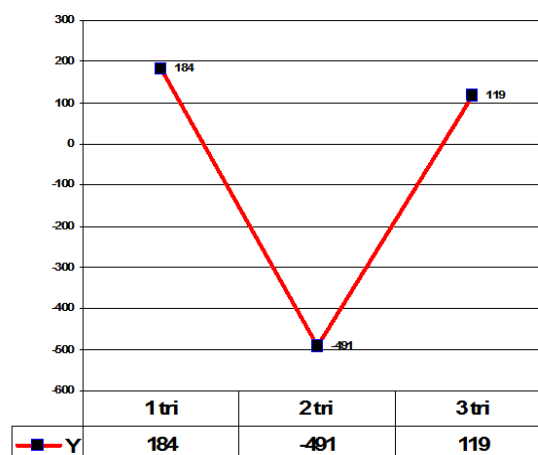

Fig. 5. Dependence of the parameter "Motives of self-injury" on the parameter "Subscale of meaning in life search"

Thus, the process of meaning in life search gives a positive effect only at the initial stage in people suffering from alcoholism: motives of self-injury –alcohol use contrary to everybody and themselves demonstrate sharp decrease. Only mean values on the subscale of life meaning search give a positive effect – minimization of self-injury motives. At that, leaving the range of the «norm» (high level) on the scale of meaning search will give an opposite effect: motives of self-injury increase significantly to values practically equal to the original ones (which is noteworthy).

CONCLUSIONS

Five types of dependence considered here clearly demonstrate that models in the study of relation to alcohol obviously do not correspond to linear models. The results on linear correlation even do not match the criteria of zero hypothesis ("significant" correlation), which, also, is not a sign of strong correlation at all. Besides, it is possible to see obvious narrowness of represented types of dependence, that is the reason and consequence are determined already at the level of quantitative analysis. It means that problems of motivation of alcohol use do not correspond to linear models at all, and attempts of linear approximation will lead to fundamental errors at study and interpretation of this phenomenon, when with increase of one parameter another one obligatory demonstrated either increase or only decrease.

It means that a clinical psychologist should be accurate working with a patient and not misuse all actions that seem to be useful at first sight, because he/she works not with a linear model that most psychologists seem to regard a priori as a single possible at the subconsciousness mind level. It is especially actual in terms of their "research" work, because a practical psychologist has to be more careful trying not to trust "scientific" results based on very weak but "significant" correlation and being guided preferably by own intuition.

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