

# Influence of Social-Economic Factors on the Contemporary Bulgarian Human Values - Experimental Results

Alexander Naidenov\*

## Summary:

The paper searches for the answer to the question 'What are the main reasons for the formation of the contemporary Bulgarian human values?'. The usage of some 'traditional' statistical methods and also non-conventional ones such as the structural equation modeling, in combination with data from the ESS representative national survey, provides a solid basis for a thorough analysis of the complex system of relations and interconnections between observed and latent types of variables. The results from the performed analyses are convincing and provide sufficient evidence for the adequate decision making process.

**Key words:** social-economic factors, human values, influence, structural equation modelling.

**JEL Classification:** C38, A3

## 1. Introduction

Living in our modern society is always accompanied by handling the complex human relationships. Each one of us is driven by a mixture of emotions, thoughts, needs and aims that shape our identity throughout our lives. Every individual part of a larger community needs some kind of a 'guiding light' in order to

manage to understand *why* someone behaves in one or other way in order to respond accordingly to him or her. Therefore it is a necessity to know the *reasons* for human behavior. It is obvious that there are many known and unknown drivers of the individuals' behavior but one of the most adequate explanations are incorporated in the *human values theory*. The latter, according to one of its most ardent proponents – Shalom Schwartz, (Schwartz, 2008), human values:

- guide the selection or evaluation of actions, policies, people, and events. Human values serve as standards or criteria.
- transcend specific actions and situations. They are abstract goals of abstract nature which distinguishes them from concepts like norms and attitudes, which usually refer to specific actions, objects or situations.
- are beliefs tied to emotions.
- are a motivational construct and refer to the desirable goals that people strive to attain.
- are ordered by priority relative to one another. People's values form an ordered system of value priorities that characterize them as individuals. This hierarchical feature of values also distinguishes them from norms and attitudes.

Therefore, as stated by Schwartz (2006) '*...basic human values are desirable, trans-situational goals, varying in importance, that serve as guiding principles in people's lives*'. The theory of the human values system

\* Chief assistant professor, Ph.D., Statistics and Econometrics, UNWE-Sofia, email: anaidenov@gmail.com

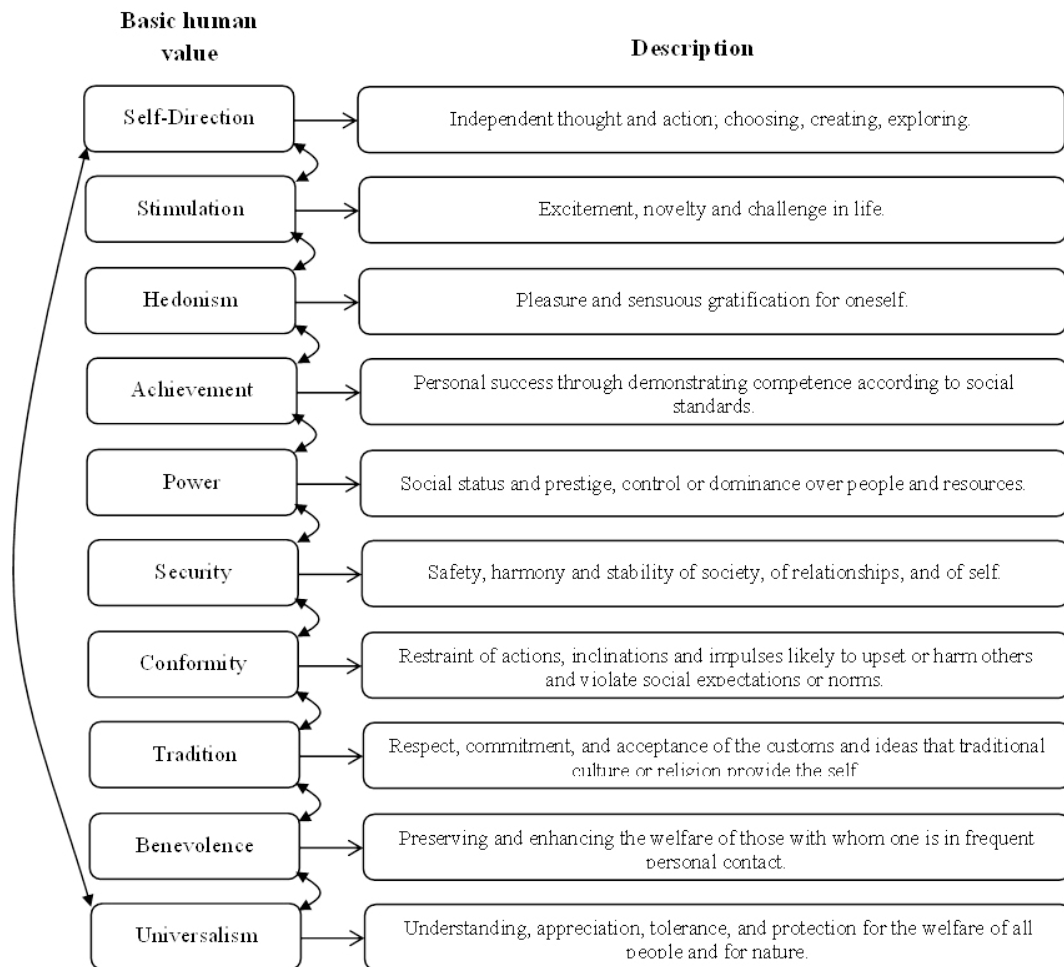


Fig. 1. Basic human values description

developed by Shalom Schwartz is supported by many multinational empirical studies in 67 countries with more than 60 000 respondents. By the use of advanced statistical methods and techniques (e.g. confirmatory factor analysis) and empirical data, Schwartz succeeds to generalize ten basic human values as described in the following figure:

These basic human values are not individually acting drivers but are *mutually interconnected ones*. In order to describe visually their inter-correlations (negative and positive), Schwartz and Boehnke (2004) built the following model:

The place of each basic human value in the circle is not chosen at random. Each human value is 'surrounded' by the values that are positively connected to it and it is placed to the opposite side of the negatively correlated one (e.g. hedonism is positively correlated with stimulation and achievement and negatively with conformity and tradition). The neighboring values form the so-called *value dimensions* (openness to change, self-transcendence, conservation, self-enhancement), which are human values of a higher order.

Building the model is one thing but it is not enough from the practical perspective. This

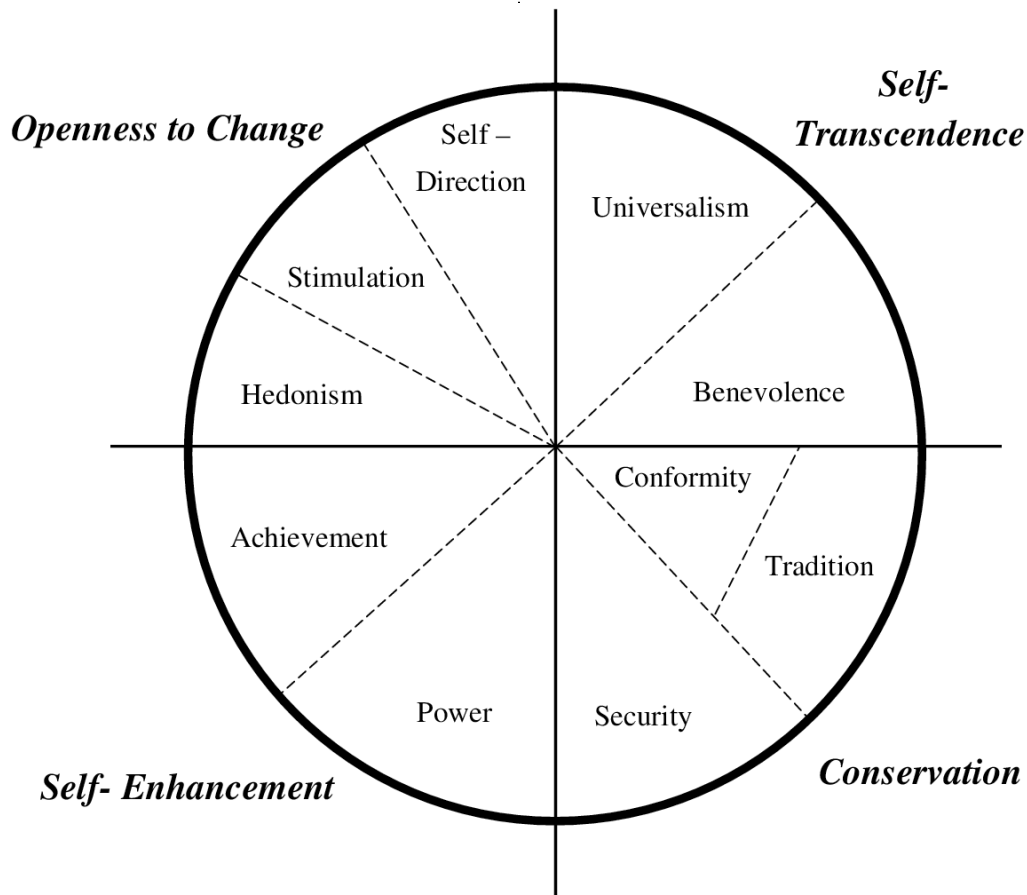


Fig. 2. Theoretical model of the relations among the values

is the reason for the creation of the special set of questions called Schwartz Value Survey (SVS), which short form is called Portrait Values Questionnaire (PVQ). The latter two are designed as a self-assessment questionnaires containing between 40 and 57 items which consists of nouns and adjectives implicitly describing given human value. The importance of each of value item is measured on the ordinal scale: from 7 (supreme importance) to 0 (not important) and -1 (opposed to my values).

In order to implement the questions in an omnibus-like survey such as the European Social Survey (ESS), a shorter version of the human values items was introduced (including 21 items only). In

this case 2 or 3 items per each value are used to measure the extent to which each respondent identifies himself or herself with the person described in each of the items. Each portrait description is evaluated by the use of the ordinal scale: 1 - Very much like me, 2 - Like me, 3 - Somewhat like me, 4 - A little like me, 5 - Not like me, 6 - Not like me at all (ESS, 2014a). By the usage of the basic human values items measuring it is possible to build a 'clearer picture' of the human values prioritization for a given group, community or the society as a whole.

The study of the social-economic factors influence on the contemporary Bulgarian human values is based on the data from the



Demographic	• Sex, age, number of household members, subjective health status.
Personal economic	• Employment last 7 days, cohabitation, children in the household, years of education, place of residence, place in the social hierarchy.
Public economic	• Satisfaction with present state of economy in country and satisfaction with the national government.
Personal social	• Satisfied with life as a whole, personal happiness, optimism for the future, sense of direction in life.
Public social based on trust	• Trust in: parliament, legal system, police, politicians, political parties.
Public social	• Country overall democracy, health services status, free and fair elections, free media, citizens equality in court.

Fig. 4. Factor groups and variables

elite, inefficient work of the judiciary, private interest serving from public institutions, etc. would lead to a lower level of *trust from the public*. The lack of trust in the government of the state leads to demotivation among citizens to 'work for the good of all' and the formation of behavior such as 'survival, regardless of the circumstances', which can be perceived and often as 'on the expense of the others'. The *environment* in which each of us lives and develops is essential for the formation of our outlook, behavior, life-satisfaction, health and optimism. In a country where health-care for its citizens is of a great importance, individuals are equal and can openly state their positions and in which representatives of the people

are elected fairly and freely, we can expect people to prosper and lead a dignified life, dedicated to preparedness in the common interest. In order to describe these complex correlations we can build a model of the social-economic factors influence on the contemporary Bulgarian human values as this one showed on *Figure 5*<sup>3</sup>.

Considering this model we can see that there are not only correlations between the factor side of the model and the dependent one but there are also a lot of *intercorrelations* between the human values and the factor groups separately. The presence of non-observed events and variables defines the correlation type of the connections which is one of the main reasons that defines the

<sup>3</sup> In the present study all factor groups are treated initially as equal from a statistical point of view even though they may be unequal from a sociological perspective.

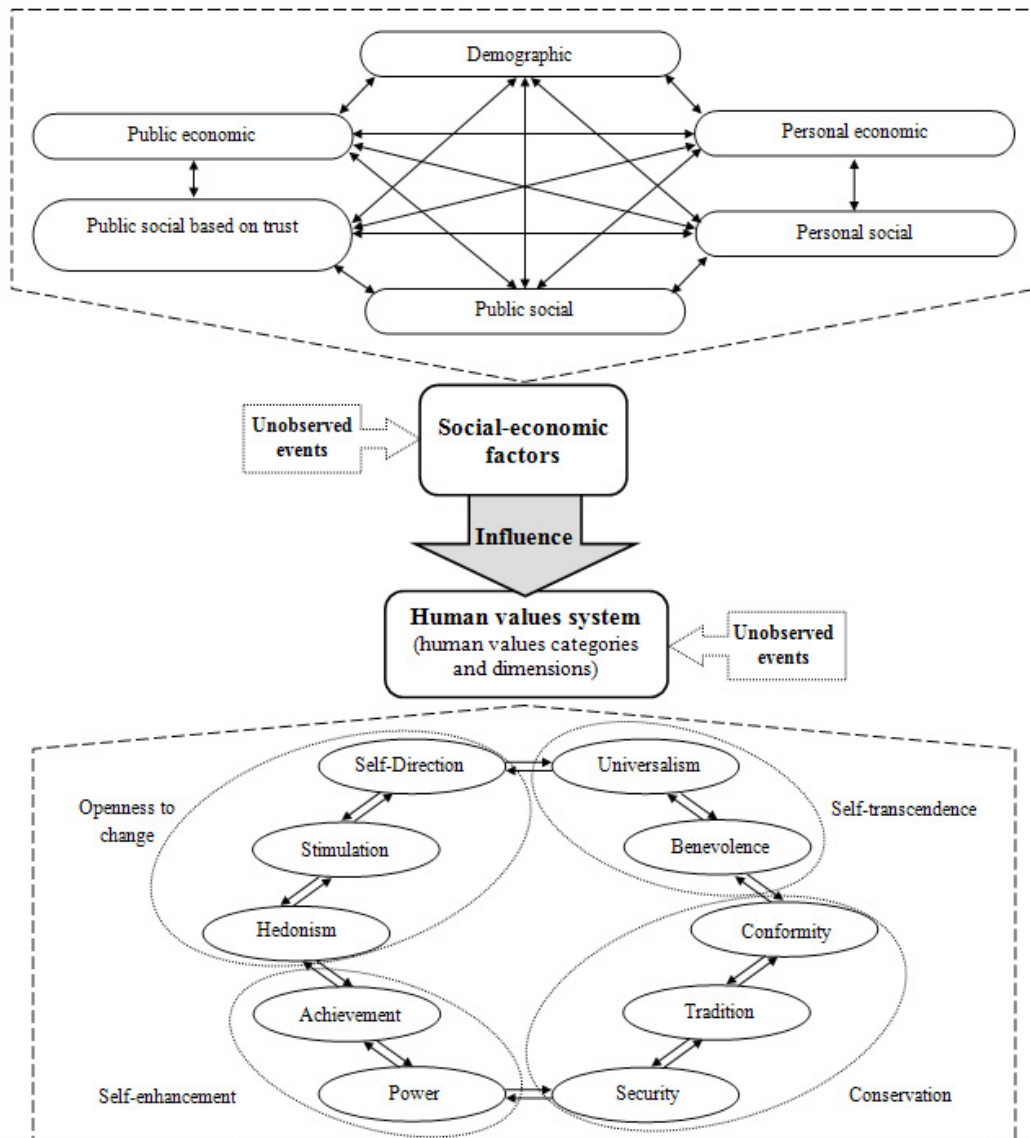


Fig. 5. Theoretical model of the social-economic factors' influence on the contemporary Bulgarian human values

need for the usage of the so called *statistical approach* (Seykova, Stoykova and Seykova, 2002). To analyze those kinds of correlations and intercorrelations *'traditional'* and *'avant-garde'* statistical methods could be used.

The *'traditional'* approach concerns the usage of methods such as: hypothesis testing, parameter estimation, correlation and regression analyses, factor analysis,

etc. Because of the ordinal nature of the variables non-parametric alternatives of the classical statistical methods should be used such as: Mann-Whitney U test, Kruskal-Wallis H Test, Chi-square analysis, Kendall's Tau and rank correlation coefficient.

Although the traditional statistical techniques give reasonable and easy-to-understand results they are not appropriate to provide adequate

estimation of complex correlations and inter-correlations especially among the variables of a higher level (latent variables) such as human values and factor groups. The 'latent' or 'hidden' nature of the studied phenomena requires the usage of more advanced methods such as *structural equation modeling (SEM)*. The latter is capable to use directly observed variables from a questionnaire (e.g. from ESS) to estimate so called regression weights between the structures of a higher order (latent variables) such as the human values categories and dimensions.

Comparing the SEM to the traditional statistical approach gives us the following main *advantages* of the latent model variables modeling (Suhr, 2006):

- SEM is a multivariate technique incorporating observed (measured) and unobserved variables (latent constructs), while traditional techniques analyze only measured variables.
- SEM allows researchers to recognize the imperfect nature of their measures. SEM explicitly specifies error while traditional methods assume measurement occurs without error.
- SEM is a highly flexible and comprehensive methodology. The latter is appropriate for investigating achievement, economic trends, health issues, family and peer dynamics, self-concept, exercise, self-efficacy, depression, psychotherapy, and other phenomenon.
- SEM is applicable even when the variables are not measured on the interval and ratio scales. Special estimation techniques are implemented in order to treat the variables measured on the ordinal (ranked) scale.
- Traditional methods specify a default model whereas SEM requires formal specification of a model to be estimated and tested. SEM offers no default model and places few limitations on what types of relations can be specified. SEM

model specification requires researchers to support hypothesis with theory or research and specify relations a priori.

- Traditional analysis provides straightforward significance tests to determine group differences, relationships between variables, or the amount of variance explained. SEM provides no straightforward tests to determine model fit. Instead, the best strategy for evaluating model fit is to examine multiple tests e.g. chi-square minimum (CMIN), root mean square error of approximation (RMSEA), goodness-of-fit index (GFI), etc.
- SEM resolves problems of multicollinearity. Multiple measures are required to describe a latent construct (unobserved variable). Multicollinearity cannot occur because unobserved variables represent distinct latent constructs.
- A graphical language provides a convenient and powerful way to present complex relationships in SEM. Model specification involves formulating statements about a set of variables. A diagram, a pictorial representation of a model, is transformed into a set of equations. The set of equations are solved simultaneously to test model fit and estimate parameters.

The main *disadvantage* of the SEM methodology<sup>4</sup> realization is its complexity and computational difficulties. One possible *solution* to this is the usage of the specially designed software for that purpose such as IBM SPSS Amos. The latter is state-of-the-art software for the SEM application, including: a number of methods for estimation procedure application (e.g. OLS, WLS, ML, ADF, Bayesian, etc.), missing data imputation, categorical variable handling, design and visualization of complex phenomena relationships, automatic composition of input covariance matrix, model adequacy, consistency testing and many more.

<sup>4</sup> More information about the SEM methodology can be found in Byrne (2010), Lei and Wu (2007), Shipley (2004) and many other books and articles.



The SEM *application* procedure usually includes the following steps:

- Building the *theoretical model* of all possible relationships between model variables, considering the theory and studies of the basic human values and the socio-economic factors;
- *Model specification* by defining the equations 'behind' the theoretical model.
- Data provision usually by random sampling design with minimum of 10 subjects per model parameter;
- SEM *requirements fulfillment check* - sufficient sample size, no outliers, multivariate normality, no missing data, etc.;
- *Model identification* i.e. to check if unique values can be found for parameter estimation. Degrees of freedom (df) are calculated and compared to zero. If  $df > 0$  then the model is an identified one;
- *Parameter estimation* by using the abovementioned methods by minimizing the differences between the population covariance matrix and the covariance matrix derived from the hypothesized model;
- *Model fit assessment* by using the fit indexes such as CMIN, RMSEA, GFI, etc.;
- *Model re-specification* in case of not good enough fit, usually done by the use of so-called modification indexes;
- *Model finalization* and results interpretation.

#### 4. Experimental Results from the Study

As it was already mentioned the main source of data for the study is the sixth wave of the European Social Survey which is based on a representative sample of the Bulgarian population aged 15+<sup>5</sup>. Although the data are freely available on the ESS website it is not possible to use these data directly. The main reason for this is the presence of missing values in the dataset. In order to provide 'rectangle' form of the dataset an imputation procedure

is executed by the usage of the hot-deck technique (Andridge and Little, 2010). Finally the dataset includes 48 variables (of which 21 for the human values items) and 2260 cases. In order to use the ordinal scales some of the variables are recoded to follow the order: small code values for the negative attitudes and big code values for the positive attitudes. Also some recoding is done in order to form groups such as: place of residence (urban/rural), age (15-29, 30-59, 60+), education (lower (up to 10 years in the educational system), secondary (11-14 years) and higher (15+years)) and place in the social hierarchy (lower, average, higher).

##### 4.1. Sampled population profile

Based on the abovementioned data, the profile of the studied sampled population can be presented as follows:

As it can be seen the proportion of the women is higher than that one of the males with 15,4% points. The people aged 30-59 y.o. form the biggest share of the population – 48,3%, and the most frequently met households contain 2 persons (35,8%) followed by the one-person ones – 21,6%. 59,6% of the studied persons are cohabitating with someone and in 37,0% of the families there at least one child. More than the half (58,5%) of the respondents were out of the labour force last 7 days, probably because of the relatively low education – 52,1% have secondary and 87,3% live outside the capital of Bulgaria.

Also the profile results show that the Bulgarian citizens are very low satisfied with the state of economy in Bulgaria (1,93)<sup>6</sup> and the Bulgarian government (2,70). The variables concerning the trust are also extremely low – parliament (2,07), legal system (2,35), police (3,52), politicians (1,73) and political parties (1,80). The latter are accompanied with low level of free and

<sup>5</sup> Because of the representative sample nature of the data, all numbers in the paper should be treated as estimates which are burdened with a certain stochastic error.



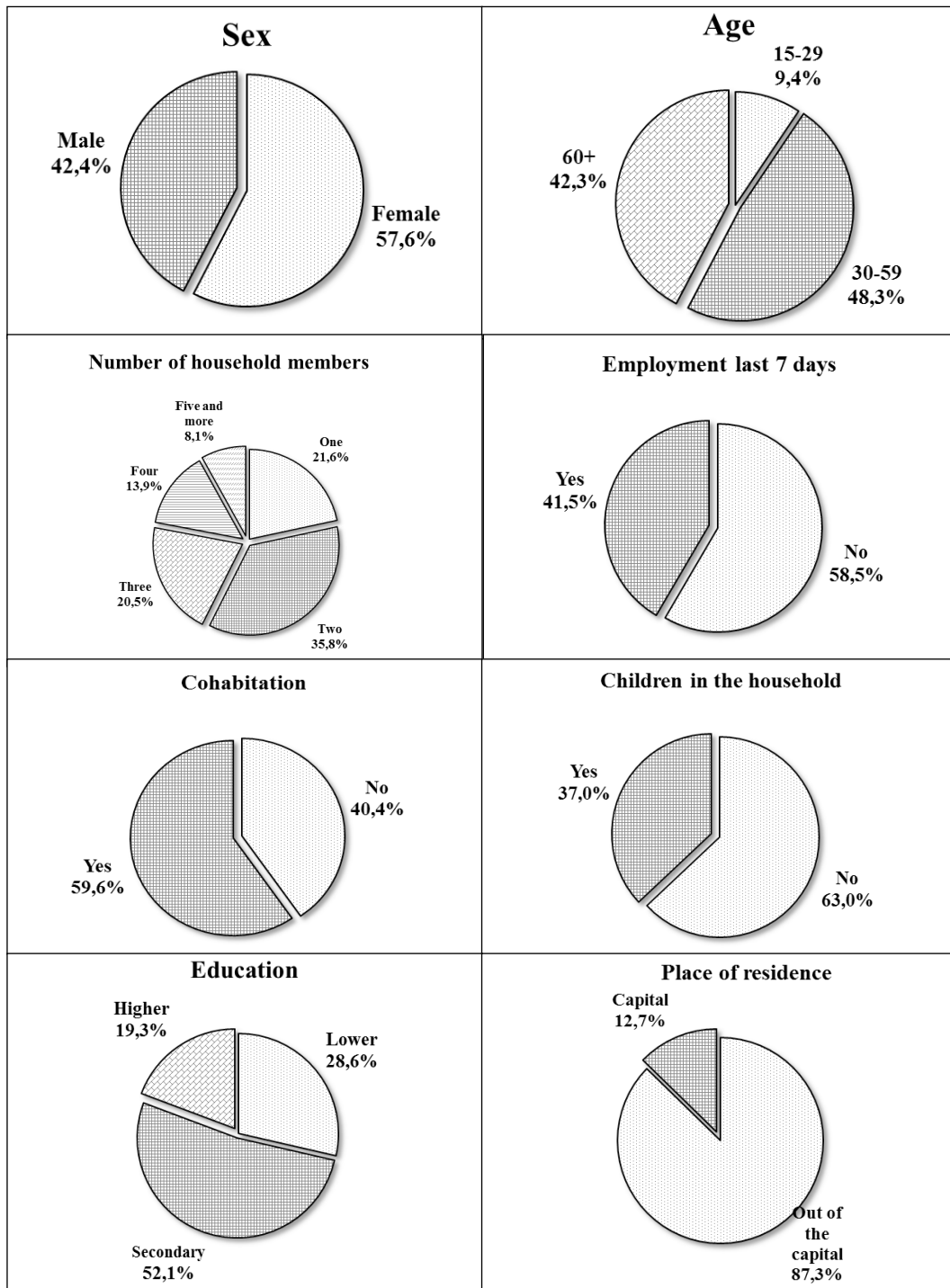


Fig. 6. Sampled population profile

fair elections evaluation (3,99). In the self-assessment part of the ESS questionnaire the 'picture' is a better looking one. Satisfaction with life as a whole is averaged at 4,43 and personal happiness is fixed a little bit over the mid-scale at 5,27. Overall optimism of the Bulgarians for their future is not so high (3,42), but the their sense of direction in life is positioned higher at 6,38. Most of the Bulgarians consider the mass media as a free one (6,24), but the country overall democracy is under the average (4,01). Critical are the levels of the health services status (2,82) and the equality in the court (2,33).

**4.2. Bulgarian human values status**

Before considering the social-economic factor influence study here we should make a short description of the Bulgarian human values status, not only from the dimensional point of view, but for the categories too. Calculated as averages of the values on the 1-to-6 scale the human values dimensions and categories are as presented on the following figure:

It is obvious that Bulgarian citizens are devoted on the self-transcendence (4,94) and conservation (4,83) and their top important 'ingredients' - security (5,17) and benevolence (5,07). At the bottom of

Bulgarian strivings are the openness to change (3,80) and the stimulation (3,55). The results show that Bulgarians are 'thirsty' for stability and peace not only for him/her but for his/hers family and the friends too. Although he/she lives most of the time 'on the edge of survival', the Bulgarians are not prepared enough to make serious changes in their lives and intent to agree with the status quo. Bulgarian citizens are passive with no independent thinking, but 'dream' to demonstrate competence in the society, obeying the national 'standards' for living. Overall the answers of the respondents do not go to the extremes and show a lit bit of confusion and lack of purposefulness.

**4.3. Social-economic factors influence on the contemporary Bulgarians' human values using 'traditional' statistical methods**

As it was mentioned it is not enough to know the status of the Bulgarians human values system. In order to find the reasons for this status we should explore the main drivers deeper too. Using the Mann-Whitney U and Kruskal-Wallis H tests of hypothesis for the significance of the difference between the means of the human values for the different factor levels we obtain the results presented in Table 1

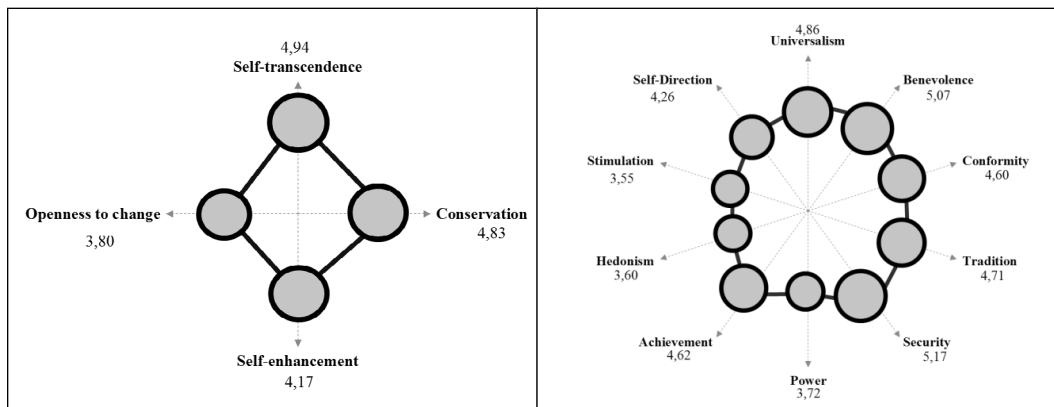


Fig. 7. Human values dimensions and categories averages

<sup>6</sup> All estimations are made in the form of averages of the values placed on the scale 0 to 10.

and Table 3 place in the Annex. The latter also contain the results of the Chi-square analysis of the possible associations between the human values and the factors measured at the categorical level. In Tables 2 and 4 (also placed in the Annex) the results concerning the Kendall's Tau and rank correlation coefficient calculation results are presented. The latter concern the correlation study between the human values and the factors measured on the ordinal scale.

As it can be seen from the Table 1 in the Annex, for the self-enhancement and the openness to change, most of the categorical measured factors influence is significant at 5% level. The least influenced human value dimension is the self-transcendence – four of ten factors. The main drivers in this case are the sex, the cohabitation, the education and place in the social hierarchy. All the results are confirmed by the usage of the chi-square method.

The significance of the factors influence on Bulgarians' human values categories (Table 3 from the Annex) is obvious about the power, achievement and stimulation, which is the opposite for the security and the universalism. The main drivers for the security value are the sex and the availability of children in the household and for the universalism - the place in the social hierarchy, the education, the cohabitation and the sex. The results concerning the same factors influence on the human values categories are fully confirmed by the chi-square analysis at 5% level of significance.

Because of the ordinal and interval nature of some of the social-economic factors it is necessary to use modified correlation coefficients such as the Kendall's Tau and the rank correlation one. In these cases we can test not only the significance of the relationship between the studied variables but we can define the direction of the correlation too.

Considering the results in Table 2 we can conclude that most of the socio-economic factors have a positive influence on the self-transcendence, the self-enhancement and the openness to change, but obviously negative on the conservation. Although the coefficients are situated in the highest range of the possible values, the strongest impact is induced by factors such as the subjective health status, the personal happiness and the optimism for the future.

The results situated in Table 4 in the Annex show that there is a great mixture of positive and negative significant influence of the socio-economic factors on the Bulgarians' human values categories. The positive impact is obvious only on the achievement and the hedonism and negative one can be clearly seen on the tradition and the conformity. The highest overall influence is observed for the factors such as the age (mostly negative) and the subjective health status, the education, the optimism for the future and the sense of direction in life (mostly positive).

#### ***4.4. Social-economic factors' influence on the contemporary Bulgarians' human values using SEM***

In order to overcome the fragmentary of the 'traditional' statistical methods and to study the complex interconnections between the factory groups' elements and the human values categories and dimensions, considering the latent structure of the latters and the non-observed factors influence and measurements errors, we should use non-conventional statistical approaches such as structural equation modeling . As we have seen in the theoretical part of this paper the SEM application has specific requirements and steps to follow.

At the first place a confirmatory factor analysis has been done and Cronbach's alphas have been calculated for each combination of the observed variables included in the human values dimensions

and categories and for the factor groups too. The results show that the observed variables are formed under the impact of the latent variables that they are incorporated in. This information gave us the basis for the application of the SEM procedure – once for the human values dimensions and once for the categories.

Following the above-mentioned steps in the SEM application we obtained the following final form of the graphical model of the social-economic factors influence on the contemporary Bulgarian human values dimensions presented on *Figure 8*.<sup>7</sup>

After a number of iterations the final graphical model has been obtained. The characteristics of the model are: 19 equations for the factor model, 21 for the human value dimensions model and 4 for the latent one. The total number of variables is 94 from which 40 instrumental (measured) and 54 latent and 187 parameters are estimated. The model is identified (692 degrees of freedom) and its overall characteristics are: CMIN/DF=6,078, RMSEA=0,047 GFI=0,905. The successfully estimated model shows that:

- The self-transcendence is significantly influenced by the demographic and personal economic factors. In the first case the connection is negative and in the second – positive. Also the personal economic factors have stronger impact than the demographic ones.
- The conservation is influenced by the demographic, personal economic, public economic, public social (based on the trust) and personal social factors. Excluding the last one in all other cases the connections are positive and the private social factors have the strongest impact on the conservation.
- The self-enhancement is formed by the factors such as demographic, public

economic, personal social and personal economic ones. For the first two the connection is positive and for the second ones – negative. The strongest influence is driven by the demographic factors.

- The latent construct ‘openness for change’ is influenced by demographic, public economic, personal economic and public social factors. The first two factors have positive impact on the ‘openness for change’ and the other two – negative. The public economic factors have the highest impact on this latent construct.

Considering the SEM for the social-economic factors influence on the contemporary Bulgarian human values categories we obtain a more sophisticated model with the following characteristics: 106 variables (40 instrumental and 66 latent), 242 parameters estimated, 19 equations for the factor model, 21 equations for the human values categories and 10 for the structural model. The SEM overall characteristics are CMIN/DF=6,594, RMSEA=0,049 and GFI=0,910. The graphical representation of the model estimated is given in *Figure 9*.

The results for the significant socio-demographic factor groups’ impact on the human values categories are summarized in the following table:

The table shows that every human value category is influenced by at least one socio-economic factor group. The most important factors are the private social and the public economic ones. This led us to the conclusion that the Bulgarian human values system is mostly formed under the influence of the personal happiness, satisfaction with life, the economic environment and the ‘appropriate’ government. The overall impact of the different factor groups on the human value categories is not unidirectional but forms a complicated amalgam of interconnections.

<sup>7</sup> Because of the ordinal scale nature of the most of the variables the scale-free least squares method is used in order to estimate the model parameters.

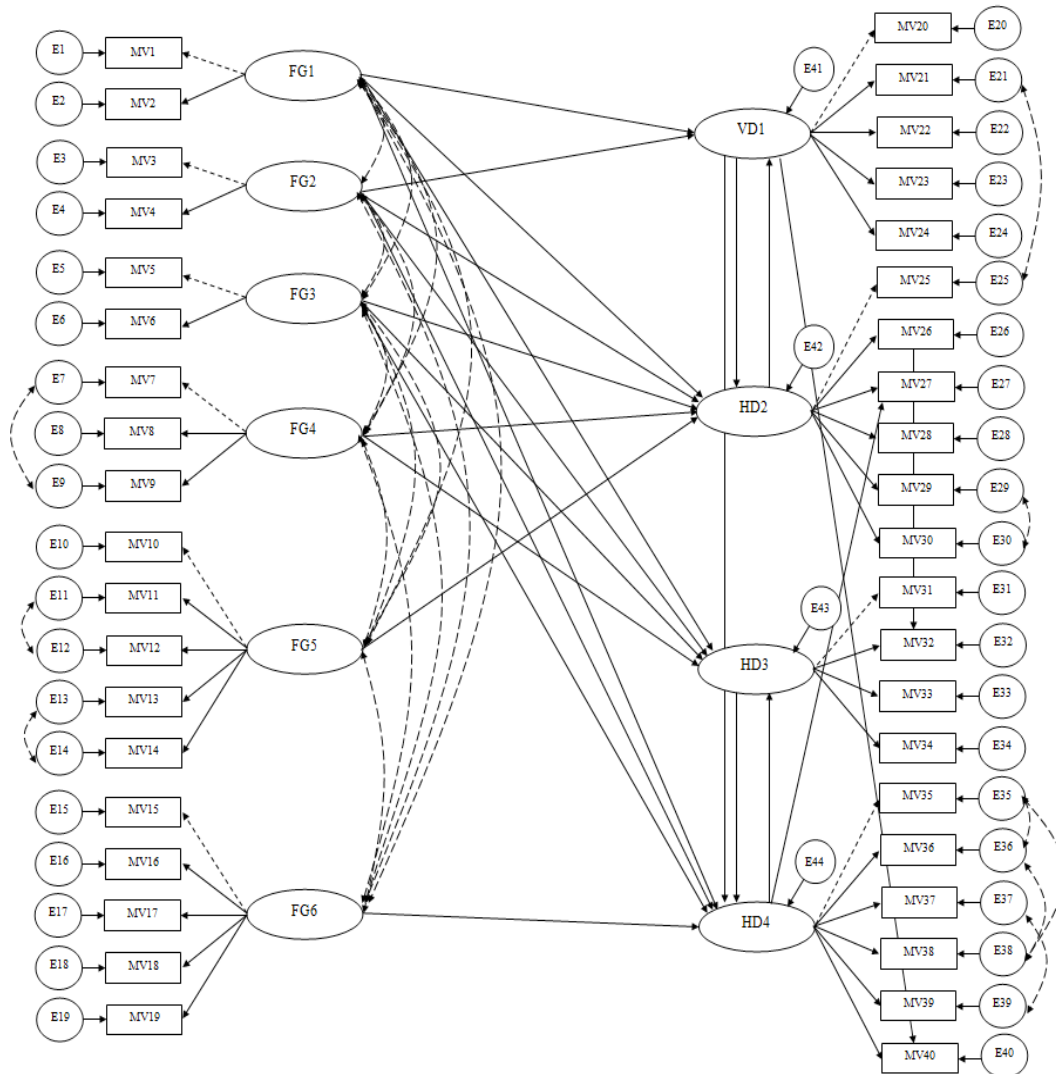


Fig. 8. Graphical model of the social-economic factors influence on the contemporary Bulgarian human values dimensions <sup>8</sup>

### 5. Conclusion

The identification of the impact of the main social and economic factors

on the Bulgarians' human value system is important and viable. A clearer picture of the drivers of modern society delivers more power to provide better

<sup>8</sup> The abbreviations used are as follows: E – error terms, MV – measured variable, HD – human value dimension, FG – factor group. The rectangles are used for directly measured variable and the ovals and circles describe the hidden (latent) and non-observed factors/variables. The description of the measured variables used in the SEM models is given in table 5 in the Annex.

Table 1. Summarized results from the SEM application for the human values categories

Human value category	Factor group
Universalism	Personal social (-), Personal economic (+), Public social (+), Demographic (-), Public social (based on trust) (-)
Benevolence	Personal social (+), Personal economic (-), Public social (-), Demographic (+), Public social (based on trust) (+)
Conformity	Personal social (+), Personal economic (-), Public social (-), Demographic(+)
Tradition	Personal social (+), Personal economic (-), Public economic(-), Demographic(+), Public social (based on trust) (+)
Security	Public economic (+), Public social (-), Public social (based on trust) (-)
Power	Public economic (+), Public social (-), Public social (based on trust) (-)
Achievement	Public economic (-), Public social (+), Personal social (+), Public social (based on trust) (+), Demographic (+)
Hedonism	Personal social (+)
Stimulation	Public economic (+), Public social (-), Personal economic (-), Public social (based on trust) (-)
Self-Direction	Personal social (-), Personal economic (+), Public social (+), Demographic(-), Public social (based on trust) (-)

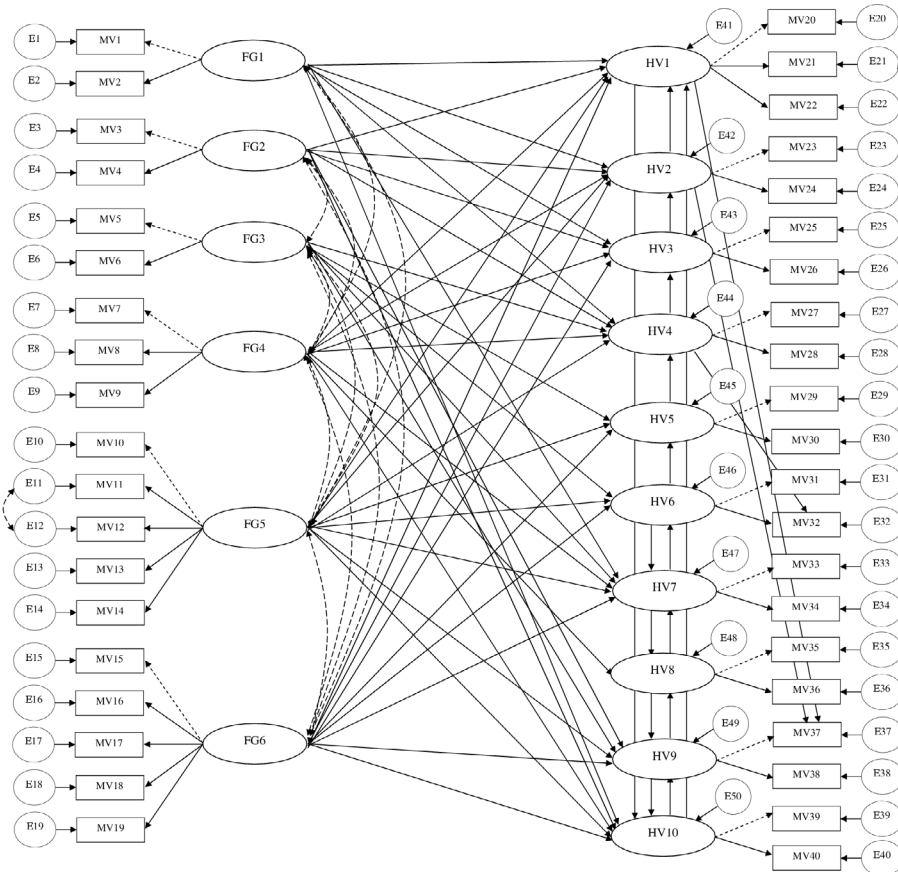


Fig. 9. Graphical model of the social-economic factors influence on the contemporary Bulgarian human values categories<sup>9</sup>

<sup>9</sup> The abbreviation 'HV' denotes given human value category and all other abbreviations are already described above.



governmental decisions in order to push social development in the 'right' direction. The application of the 'traditional' and the non-conventional statistical techniques (such as SEM) in combination with perfectly organized international survey (ESS) provided a solid basis for a thorough analysis of the connections studied. The results showed that the Bulgarian human values system, represented by its dimensions and categories, is influenced by social and economic factors not only on a low level (sex, education, place in the society, etc.) but also on the higher order (demographic, personal social, public economic, etc.). In case of an interest from the government side the analysis applied could provide a good basis for adequate management decisions. This is essential especially when there is a clear need for the application of an influence to certain population groups in order to achieve specific results or reach some targets (e.g. stimulating the low social hierarchy groups to work for better living conditions).

## REFERENCES

- Andridge, R., Little, R., 2010. A Review of Hot-Deck Imputation for Survey Non-response, *International Statistical Review*.
- Baychinska, Kr., 2000. Tsennostite na balgarina i balgarskata kultura v prehoda kam demokratichno obshtestvo.
- Byrne, B., 2010. Structural Equation Modeling with AMOS. Basic Concepts, Applications, and Programming, 2nd edition, Routledge Taylor & Francis Group.
- European Social Survey (ESS), 2014a. ESS6 - 2012 Documentation Report, European Social Survey.

European Social Survey (ESS), 2014b. ESS6 - 2012 Data Download, European Social Survey.

Garvanova, M., 2013. Transformatsia v tsennostite na savremennia balgarin, Izdatelstvo "Za bukvite – O pismeneh".

Lei, P., Wu, Q., 2007. Introduction to Structural Equation Modeling: Issues and Practical Considerations, Educational Measurement: Issues and Practice.

Paunov, M., 2009. Tsennosti i tsennostni prioriteti na balgarite: osobenosti, shodstva i razlichia s drugi evropeyski darzhavi, Universitetski izdatelstvo Stopanstvo.

Seykova, Iv., Stoykova-Kanalieva, An. and Seykova, Sv., 2002. Statisticheskoto izsledvane na zavisimosti, Izdatelstvo "Stopanstvo".

Shipley, B., 2004. A User's Guide to Path Analysis, Structural Equations and Causal Inference, Cambridge University Press.

Schwartz, S. and Boehnke, K., 2004. Evaluating the structure of human values with confirmatory factor analysis, *Journal of Research in Personality*.

Schwartz, S., 2006. Basic Human Values: Theory, Measurement, and Applications, *Revue Française de Sociologie*.

Schwartz, S., 2008. Basic Human Values: An Overview, The Hebrew University of Jerusalem.

Suhr, D., 2006. The Basics of Structural Equation Modeling, University of Northern Colorado.



## ANNEX

Table 1. Results from hypothesis testing of the difference significance and chi-square analysis of the social-economic factor influence on the Bulgarians' human values dimensions

Factor	Human value dimension			
	Self-transcendence	Conservation	Self-enhancement	Openness to change
<b>Significance of the difference (<math>\alpha=5\%</math>)</b>				
Sex	Yes (0,001) <sup>10</sup>	Yes (0,000)	Yes (0,000)	Yes (0,000)
Age (in groups)	No (0,154)	Yes (0,000)	Yes (0,000)	Yes (0,000)
Number of household members	No (0,118)	No (0,276)	Yes (0,000)	Yes (0,000)
Subjective health status	No (0,459)	Yes (0,000)	Yes (0,000)	Yes (0,000)
Employment	No (0,084)	Yes (0,000)	Yes (0,000)	Yes (0,000)
Cohabitation	Yes (0,005)	No (0,101)	Yes (0,000)	Yes (0,019)
Children in the household	No (0,177)	No (0,769)	Yes (0,000)	Yes (0,001)
Education	Yes (0,001)	Yes (0,000)	Yes (0,000)	Yes (0,000)
Place of residence	No (0,177)	Yes (0,004)	No (0,972)	Yes (0,000)
Place in the social hierarchy	Yes (0,000)	No (0,310)	Yes (0,000)	Yes (0,000)
<b>Chi-square analysis (<math>\alpha=5\%</math>)</b>				
Sex	18,188 (0,001) <sup>11</sup>	37,441 (0,000)	35,118 (0,000)	45,157 (0,000)
Age (in groups)	7,309 (0,504)	104,149 (0,000)	162,531 (0,000)	370,308 (0,000)
Subjective health status	21,103 (0,391)	78,54 (0,000)	250,246 (0,000)	496,539 (0,000)
Employment	9,484 (0,051)	33,999 (0,000)	128,407 (0,000)	226,815 (0,000)
Cohabitation	15,136 (0,010)	7,839 (0,098)	31,212 (0,000)	28,712 (0,000)
Children in the household	4,720 (0,317)	2,268 (0,811)	28,618 (0,000)	19,662 (0,016)
Education	18,414 (0,018)	37,529 (0,000)	127,902 (0,000)	299,461 (0,000)
Place of residence	19,963 (0,053)	21,593 (0,001)	11,046 (0,071)	25,067 (0,000)
Place in the social hierarchy	47,451 (0,000)	15,216 (0,051)	201,855 (0,000)	262,136 (0,000)

<sup>10</sup> The difference is tested for significance at 5% level and the significance is noted with 'Yes' or 'No' depending on the p-value (in parentheses).

<sup>11</sup> Every chi-square analysis is tested at 5% significance level and the p-value is given in parentheses.

Table 2. Correlations coefficients from the analysis of the social-economic factor influence on the Bulgarians' human values dimensions

Factor	Human value dimension			
	Self-transcendence	Conservation	Self-enhancement	Openness to change
Age (in groups)	0,032 (0,100) <sup>12</sup>	0,183 (0,000)	-0,233 (0,000)	-0,332 (0,000)
Number of household members	0,032 (0,075)	-0,031 (0,081)	0,127 (0,000)	0,133 (0,000)
Subjective health status	0,016 (0,375)	-0,129 (0,000)	0,247 (0,000)	0,336 (0,000)
Education duration (in years)	0,060 (0,002)	-0,100 (0,000)	0,200 (0,000)	0,290 (0,000)
Place in the social hierarchy	0,092 (0,000)	0,007 (0,721)	0,243 (0,000)	0,290 (0,000)
Satisfaction with present state of economy in country	-0,098 (0,000)	-0,083 (0,000)	0,048 (0,005)	0,056 (0,001)
Satisfaction with the national government	-0,048 (0,005)	-0,032 (0,059)	0,030 (0,079)	0,042 (0,012)
Satisfied with life as a whole	0,044 (0,009)	-0,038 (0,024)	0,210 (0,000)	0,247 (0,000)
Personal happiness	0,075 (0,000)	-0,013 (0,442)	0,228 (0,000)	0,301 (0,000)

(cont.)

Optimism for the future	0,092 (0,000)	-0,014 (0,421)	0,217 (0,000)	0,315 (0,000)
Sense of direction in life	0,172 (0,000)	0,050 (0,003)	0,252 (0,000)	0,321 (0,000)
Trust in parliament	-0,061 (0,000)	-0,039 (0,025)	0,021 (0,231)	0,019 (0,265)
Trust in legal system	-0,075 (0,000)	-0,039 (0,023)	-0,035 (0,042)	-0,037 (0,028)
Trust in police	0,016 (0,350)	0,036 (0,035)	-0,030 (0,068)	-0,040 (0,014)
Trust in politicians	-0,068 (0,000)	-0,023 (0,188)	-0,008 (0,648)	0,003 (0,853)
Trust in political parties	-0,073 (0,000)	-0,023 (0,196)	-0,017 (0,319)	0,009 (0,605)
Country overall democracy	-0,021 (0,220)	-0,010 (0,550)	0,012 (0,478)	0,022 (0,183)
Health services status	0,024 (0,171)	0,064 (0,000)	0,078 (0,000)	0,058 (0,000)
Free and fair elections	-0,024 (0,163)	0,006 (0,731)	-0,019 (0,262)	-0,007 (0,656)
Free media	0,042 (0,014)	0,061 (0,000)	-0,022 (0,193)	-0,021 (0,203)
Citizens equality in court	-0,116 (0,000)	-0,062 (0,000)	-0,034 (0,045)	0,003 (0,852)

<sup>12</sup> The value is based on the Kendall's tau and the p-value of significance is given in parentheses.

Table 3. Results from hypothesis testing of the difference significance and chi-square analysis of the social-economic factor influence on the Bulgarians' human values categories

Factor	Human value category									
	Univer- salism	Benevo- lence	Confor- mity	Tradi- tion	Secu- rity	Power	Achieve- ment	Hedo- nism	Stimu- lation	Self- Direction
Significance of the difference ( $\alpha=5\%$ )										
Sex	Yes (0,000)	No (0,060)	Yes (0,000)	Yes (0,000)	Yes (0,000)	Yes (0,000)	Yes (0,000)	Yes (0,000)	Yes (0,000)	Yes (0,000)
Age (in groups)	No (0,058)	No (0,786)	Yes (0,000)	Yes (0,000)	No (0,068)	Yes (0,000)	Yes (0,000)	Yes (0,000)	Yes (0,000)	Yes (0,000)
Number of household members	No (0,416)	Yes (0,008)	No (0,491)	Yes (0,000)	No (0,500)	Yes (0,000)	Yes (0,000)	Yes (0,000)	Yes (0,000)	Yes (0,000)
Subjective health status	No (0,243)	Yes (0,008)	Yes (0,000)	Yes (0,000)	No (0,054)	Yes (0,000)	Yes (0,000)	Yes (0,000)	Yes (0,000)	Yes (0,000)
Employment	No (0,543)	Yes (0,021)	Yes (0,000)	Yes (0,000)	No (0,144)	Yes (0,000)	Yes (0,000)	Yes (0,000)	Yes (0,000)	Yes (0,000)
Cohabitation	Yes (0,024)	Yes (0,004)	No (0,148)	No (0,224)	No (0,157)	Yes (0,003)	Yes (0,000)	No (0,180)	Yes (0,002)	No (0,057)
Children in the household	No (0,088)	No (0,606)	No (0,625)	Yes (0,045)	Yes (0,007)	Yes (0,003)	Yes (0,000)	Yes (0,002)	Yes (0,000)	No (0,320)
Education	Yes (0,042)	Yes (0,000)	Yes (0,000)	Yes (0,000)	No (0,197)	Yes (0,000)	Yes (0,000)	Yes (0,000)	Yes (0,000)	Yes (0,000)
Place of residence	No (0,061)	No (0,984)	Yes (0,000)	Yes (0,000)	No (0,237)	Yes (0,000)	Yes (0,000)	Yes (0,000)	Yes (0,008)	Yes (0,000)
Place in the social hierarchy	Yes (0,026)	Yes (0,000)	No (0,232)	No (0,409)	No (0,102)	Yes (0,000)	Yes (0,000)	Yes (0,000)	Yes (0,000)	Yes (0,000)
Chi-square analysis ( $\alpha=5\%$ )										
Sex	17,317 (0,004)	8,418 (0,077)	12,306 (0,047)	65,731 (0,000)	30,262 (0,000)	34,195 (0,000)	30,671 (0,000)	33,454 (0,000)	29,739 (0,000)	60,012 (0,000)
Age (in groups)	8,026 (0,626)	5,995 (0,648)	64,573 (0,000)	153,190 (0,000)	11,325 (0,333)	100,348 (0,000)	140,223 (0,000)	391,872 (0,000)	338,876 (0,000)	133,010 (0,000)
Subjective health status	18,345 (0,827)	40,281 (0,005)	47,549 (0,004)	86,559 (0,000)	27,974 (0,309)	124,991 (0,000)	255,814 (0,000)	376,622 (0,000)	368,728 (0,000)	344,879 (0,000)
Employment	3,559 (0,614)	9,257 (0,045)	20,131 (0,001)	52,809 (0,000)	5,303 (0,380)	46,194 (0,000)	160,276 (0,000)	163,997 (0,000)	193,815 (0,000)	213,091 (0,000)

(cont.)

Cohabitation	14,232 (0,014)	11,573 (0,021)	11,546 (0,052)	7,990 (0,157)	6,297 (0,278)	11,156 (0,051)	32,132 (0,000)	10,997 (0,070)	29,065 (0,000)	8,703 (0,121)
Children in the household	4,302 (0,507)	7,993 (0,092)	8,852 (0,115)	9,613 (0,056)	10,191 (0,050)	10,258 (0,048)	22,980 (0,000)	21,074 (0,001)	14,778 (0,011)	4,589 (0,468)
Education	23,625 (0,009)	28,408 (0,000)	21,034 (0,021)	52,185 (0,000)	5,279 (0,872)	31,777 (0,000)	226,967 (0,000)	186,183 (0,000)	207,198 (0,000)	355,129 (0,000)
Place of residence	11,676 (0,053)	8,214 (0,084)	30,758 (0,000)	16,593 (0,005)	7,141 (0,210)	27,438 (0,000)	29,016 (0,000)	18,905 (0,002)	13,050 (0,023)	26,225 (0,000)
Place in the social hierarchy	27,905 (0,002)	75,231 (0,000)	18,432 (0,063)	7,183 (0,708)	18,118 (0,062)	71,065 (0,000)	253,581 (0,000)	163,574 (0,000)	198,637 (0,000)	318,539 (0,000)

Table 4. Correlations coefficients from the analysis of the social-economic factor influence on the Bulgarians' human values categories

Factor	Human value category									
	Univer- salism	Benevo- lence	Confor- mity	Tradi- tion	Secu- rity	Power	Achieve- ment	Hedo- nism	Stimu- lation	Self- Direction
Age (in groups)	0,040 (0,036)	0,015 (0,444)	0,123 (0,000)	0,226 (0,000)	0,037 (0,055)	-0,170 (0,000)	-0,214 (0,000)	-0,335 (0,000)	-0,313 (0,000)	-0,205 (0,000)
Number of household members	0,025 (0,165)	0,025 (0,168)	-0,019 (0,273)	-0,049 (0,006)	0,028 (0,126)	0,085 (0,000)	0,128 (0,000)	0,137 (0,000)	0,141 (0,000)	0,058 (0,001)
Subjective health status	-0,030 (0,093)	0,040 (0,027)	-0,080 (0,000)	-0,149 (0,000)	-0,022 (0,229)	0,156 (0,000)	0,231 (0,000)	0,304 (0,000)	0,305 (0,000)	0,268 (0,000)
Education duration (in years)	0,042 (0,027)	0,083 (0,000)	-0,052 (0,005)	-0,121 (0,000)	-0,011 (0,557)	0,090 (0,000)	0,263 (0,000)	0,221 (0,000)	0,244 (0,000)	0,326 (0,000)
Place in the social hierarchy	0,048 (0,012)	0,132 (0,000)	0,029 (0,129)	-0,023 (0,236)	0,051 (0,009)	0,134 (0,000)	0,287 (0,000)	0,228 (0,000)	0,250 (0,000)	0,316 (0,000)
Satisfaction with present state of economy in country	-0,114 (0,000)	-0,061 (0,001)	-0,066 (0,000)	-0,068 (0,000)	-0,071 (0,000)	0,038 (0,024)	0,026 (0,131)	0,052 (0,002)	0,053 (0,001)	0,059 (0,000)
Satisfaction with the national government	-0,058 (0,001)	-0,007 (0,708)	-0,014 (0,418)	-0,027 (0,108)	-0,022 (0,210)	0,012 (0,469)	0,034 (0,045)	0,024 (0,141)	0,042 (0,010)	0,082 (0,000)
Satisfied with life as a whole	-0,002 (0,913)	0,086 (0,000)	-0,014 (0,393)	-0,037 (0,028)	-0,007 (0,676)	0,131 (0,000)	0,226 (0,000)	0,204 (0,000)	0,219 (0,000)	0,242 (0,000)
Personal happiness	0,037 (0,028)	0,116 (0,000)	-0,005 (0,780)	-0,035 (0,036)	0,053 (0,002)	0,142 (0,000)	0,233 (0,000)	0,251 (0,000)	0,262 (0,000)	0,296 (0,000)
Optimistism for the future	0,058 (0,001)	0,124 (0,000)	-0,004 (0,838)	-0,037 (0,037)	0,039 (0,033)	0,124 (0,000)	0,262 (0,000)	0,258 (0,000)	0,289 (0,000)	0,309 (0,000)
Sense of direction in life	0,129 (0,000)	0,194 (0,000)	0,051 (0,002)	0,005 (0,788)	0,099 (0,000)	0,136 (0,000)	0,301 (0,000)	0,241 (0,000)	0,274 (0,000)	0,349 (0,000)
Trust in parliament	-0,061 (0,000)	-0,027 (0,129)	-0,025 (0,151)	-0,022 (0,200)	-0,023 (0,188)	-0,001 (0,937)	0,032 (0,064)	0,012 (0,473)	0,013 (0,423)	0,057 (0,001)

(cont.)

Trust in legal system	-0,074 (0,000)	-0,046 (0,009)	-0,016 (0,351)	-0,013 (0,448)	-0,055 (0,002)	-0,037 (0,026)	-0,009 (0,584)	-0,035 (0,034)	-0,039 (0,019)	-0,002 (0,901)
Trust in police	0,010 (0,575)	0,038 (0,027)	0,052 (0,002)	0,038 (0,024)	0,025 (0,142)	-0,055 (0,001)	0,010 (0,559)	-0,044 (0,007)	-0,036 (0,027)	-0,001 (0,944)
Trust in politicians	-0,068 (0,000)	-0,035 (0,047)	0,000 (0,990)	-0,005 (0,759)	-0,026 (0,139)	-0,011 (0,500)	0,002 (0,897)	0,004 (0,813)	-0,002 (0,905)	0,032 (0,059)

Trust in political parties	-0,074 (0,000)	-0,044 (0,014)	-0,013 (0,448)	-0,009 (0,602)	-0,028 (0,118)	-0,019 (0,271)	0,003 (0,868)	0,006 (0,698)	0,003 (0,862)	0,043 (0,011)
Country overall democracy	-0,038 (0,025)	0,027 (0,114)	0,006 (0,734)	0,008 (0,654)	-0,053 (0,002)	0,012 (0,463)	0,014 (0,405)	0,020 (0,204)	0,038 (0,019)	0,003 (0,842)
Health services status	-0,003 (0,864)	0,055 (0,002)	0,064 (0,000)	0,039 (0,023)	0,028 (0,109)	0,082 (0,000)	0,042 (0,012)	0,075 (0,000)	0,057 (0,001)	0,049 (0,003)
Free and fair elections	-0,021 (0,201)	0,002 (0,886)	0,008 (0,635)	0,031 (0,060)	-0,037 (0,033)	-0,035 (0,033)	0,016 (0,330)	0,003 (0,840)	-0,008 (0,620)	-0,002 (0,900)
Free media	0,041 (0,016)	0,059 (0,001)	0,047 (0,004)	0,072 (0,000)	0,063 (0,000)	-0,055 (0,001)	0,014 (0,401)	-0,019 (0,224)	-0,017 (0,288)	-0,006 (0,704)
Citizens equality in court	-0,123 (0,000)	-0,075 (0,000)	-0,030 (0,082)	-0,017 (0,308)	-0,103 (0,000)	-0,033 (0,046)	-0,013 (0,456)	0,007 (0,676)	0,015 (0,358)	-0,009 (0,574)

Table 5. Description of the measured variables used in the SEM models

Measured variable	Description
MV1	Age
MV2	Number of household members
MV3	Education duration
MV4	Place in the social hierarchy
MV5	Satisfaction with present state of economy in country
MV6	Satisfaction with the national government
MV7	Satisfied with life as a whole
MV8	Personal happiness
MV9	Sense of direction in life
MV10	Trust in parliament
MV11	Trust in legal system
MV12	Trust in police
MV13	Trust in politicians
MV14	Trust in political parties
MV15	Country overall democracy
MV16	Health services status
MV17	Free and fair elections

MV18	Free media
MV19	Citizens equality in court

(cont.)

MV20	Important that people are treated equally and have equal opportunities
MV21	Important to understand different people
MV22	Important to care for nature and environment
MV23	Important to help people and care for others well-being
MV24	Important to be loyal to friends and devote to people close
MV25	Important to do what is told and follow rules
MV26	Important to behave properly
MV27	Important to be humble and modest, not draw attention
MV28	Important to follow traditions and customs
MV29	Important to live in secure and safe surroundings
MV30	Important that government is strong and ensures safety
MV31	Important to be rich, have money and expensive things
MV32	Important to get respect from others
MV33	Important to show abilities and be admired
MV34	Important to be successful and that people recognise achievements
MV35	Important to have a good time
MV36	Important to seek fun and things that give pleasure
MV37	Important to try new and different things in life
MV38	Important to seek adventures and have an exiting life
MV39	Important to think new ideas and being creative
MV40	Important to make own decisions and be free