

The determinants of life satisfaction

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Abstract

In this article, we present a multidimensional analysis of satisfaction with life. The relationships among satisfaction within four domains of respondents' lives (satisfaction with family, acquaintances, health and achievements) and a set of socio-economic factors along with variables from the Beck's Depression Inventory are examined. The results of canonical analysis show strong correlation between satisfaction with health, the symptoms of depression and feeling of trust. Satisfaction with family relationships and life achievement is correlated with feelings of love, age, symptoms of depression and number of social contacts. There is provided an insight into impact of education, income, marital status, gender and social activity on life satisfaction. The results are compared with previous research.

Keywords: life satisfaction, family, health, friendship, happiness, canonical analysis, multidimensional analysis.

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Introduction

What does the happiness mean? It is hard to find a firm answer. A lot of philosophers over the centuries tried to define this term. One of the most extensive analyses of this subject was carried out by a Polish philosopher Tatarakiewicz [1979]. In his opus „About happiness” he provided 4 definitions. Firstly, happiness is meant to be an extraordinarily positive experience, that affected positively the life of a human being. One can understand this term also as excellently positive events and their subjective value estimated by the entity. Another happiness’ proxy is owning the greatest amount of goods that are available to humanity -- both material and mental ones (e.g. virtues). Happiness can be also seen as the life satisfaction. Tatarakiewicz focused on the fourth of the aforementioned explanations. While the first and the second one are hard to measure due to their purely subjective scale, the third one is a bit inconsistent with the fundamental economic theories. Having limited resources one is trying to diversify consumption. This means that one prefers average number of both goods to a larger number of one good. The fourth definition of happiness by Tatarakiewicz became the basis of this analysis.

In this article the attempt was made to present the application of the canonical analysis into an economic research. Canonical analysis is a generalization to linear regression for two sets of variables. This multivariate technique is concerned with determining the relationships between groups of variables in two data sets by finding the linear combinations of both independent and dependent variables, which are most highly correlated. As an example the analysis of happiness was chosen. The happiness itself is not of a great concern among the economists, but it is included in many economic models. What is more, this phenomenon can be easily described in a multidimensional way due to its qualitative nature.

This article is divided as follows. In the first section we briefly describe the previous research concerning determinants of happiness. The second section introduces data set and variables we used. In the third section we provide some basic statistics and preliminary analysis. The results of model estimation are shown in the fourth section. The fifth section presents the diagnostics of the model and the sixth section concludes.

1. Review of previous research

Life satisfaction has already been examined by scientists (e.g. Kahneman [1999], Graham and Pettinato [2001], Grochowska and Strawinski [2012]). Income was one of the most popular determinants of life satisfaction. However, the results of the research upon this factor tended to be in contradiction, depending on the techniques of analysis used and other variables included in the model. Usually, this factor has a positive impact on life satisfaction [Seghieri et al., 2006; Deaton,

2008]. Some of the researchers show that there might be a reverse impact of both variables, which means that the more satisfied people earn more [Diener et al., 2002; Graham et al., 2004]. According to Ferrer-i-Carbonell and Frijters [2004] the income itself may even not be a happiness' determinant, it is only an observable result of significant personal characteristics that are correlated with higher earnings.

As an extension to income's impact one may examine satisfaction with the earnings. In contradiction to the ambiguous impact of income, this factor is reported to influence positively on the life satisfaction (e.g. Graham and Pettinato [2001]; Hayo and Seifert [2003]). The perception of own financial situation can be even more significant in determining life satisfaction than absolute income as shown by Johnson and Krueger [2006].

Most of research showed positive correlation between education and life satisfaction. Increasing levels of education have a positive impact of life satisfaction as reported by Blanchflower and Oswald [2004]. However, the impact of education may be correlated with the impact of income, because highly educated people usually earn more. This factor can be also correlated with latent characteristics like motivation or intelligence. Ferrer-and-Carbonell [2005] examined the impact of education, controlling the national income. According to her analysis the education is more significant in determining life satisfaction in poorer countries.

The impact of gender on life satisfaction is ambiguous. Some of the research showed that women declare higher levels of life satisfaction than men [Alesina et al., 2004]. On the other hand, Louis and Zhao [2002] did not encounter discrepancies between genders. This may lead to the suspicion, that gender itself is not determining life satisfaction.

Higher levels of life satisfaction are usually correlated with better health, however there is no precise direction of its impact. Better health leads to higher satisfaction as well as higher enthusiasm with life may result in better opinion about health. Shields and Price [2005] showed that negative events like heart attack decrease one's life satisfaction. On the other hand, the impact of disability decreases in time, because handicapped people slowly adapt, although this adaptation is not full as showed by Oswald and Powdthavee [2006].

Luikart and Palmore [1972] carried out a long-term examination of over 500 respondents with the aim of identifying crucial determinants of life satisfaction. The analysis was conducted by repeating every 2 years tests (since 1968 to 1975). They collected data about demography, intelligence quotient, personality, health, social and psychological characteristics of the respondents. The dependent variable was satisfaction with life measured with Cantril's ladder. This method is based on personal assessment of life satisfaction and graphically presented in a form of a ladder which rungs represent increasing levels of satisfaction. It is assumed that the lowest rung indicates the lowest possible value [Diener et al., 1985] and respondent is supposed to choose the appropriate one. The results of regression

analysis showed that most influential factor for explaining life satisfaction was the self-rated health. Those with better perception of their own health were also more satisfied with their life. Interestingly, it occurred that assessment of health done by a physician was of less importance. The second most significant variable was the number of hours spent on social activities positively influencing life satisfaction. People thinking that they are in control of their own life were happier than those who claimed that they do not have control over their life. Declaring that they can confide someone positively influenced the level of satisfaction among men, while among women there was an opposite relation. The income was of moderate, positive significance for the level of satisfaction. Education occurred to be of little importance, along with the Intelligence Quotient. Age was of slightly negative influence on dependent variable - comparing older and older people there was a delicate drop in the level of satisfaction. Similarly insignificant influence on life satisfaction was observed considering gender, number of social contacts, career anchorage and marital status.

Another point of view on life satisfaction was introduced by Cherie and Saunders [1999]. Although the aim of the research focused on explaining the sources of depression one of variables was the level of life satisfaction. The Beck's Depression Inventory was used as the dependent variable - a measure based on a questionnaire designed to assess attitudes specific to depression. The results supported the hypothesis that those more affected by the symptoms of depression are characterized by lower levels of life satisfaction and are significantly less involved in social life. The analysis proved that women are usually more socially active than men, however it does not correlate with lower intensity of depression.

Rojas [2004] attempted to present the issue of satisfaction with life in a multidimensional manner considering both dependent and independent variables. Respondents judged to what extent they were satisfied with particular areas of their lives. Areas of life were divided into groups concerning health, economic factors, job, family, friends, personal and social life. There was also created a synthetic indicator of general satisfaction with life. The results showed that greater satisfaction with friendship and social relationships has negative influence on general level of satisfaction. Satisfaction with family has the strongest impact on general satisfaction, followed by, respectively, economic and social factors. Gender does not significantly explain the general level of satisfaction. Men were slightly more satisfied than women, but there were no significant differences in values of independent variables determining the level of satisfaction. Age has negative impact on all areas of satisfaction. People with higher levels of education are on average more satisfied than those less educated. People with lower income are less satisfied - considering both general level of satisfaction and with particular domains of life.

The results of empirical research indicate that examining life satisfaction is complex. The obtained results vary depending on the techniques of analysis and

the variables included in the models. Opinion about one's health, opinion about financial situation, unemployment or marital status are reported to have an unequivocal impact. On the other hand, the impact of education, social activity and gender is ambiguous. There are also discrepancies in significance of factors deviating from aspects controlled in analyses.

2. Empirical method and data

Canonical analysis is a generalization of linear regression designed to investigate relationships between two sets of variables. Those relationships are interpreted as the dependencies between two new variables called canonical variables. The first type of the canonical variable is a linear function of the dependent variables and the second one is a linear function of the independent variables. The canonical variables are designed to maximize the explanation of linear relationships between the sets of variables. The first pair of canonical variables explains most of the dependency between the sets of independent and dependent variables, thus this explanation is not complete. That is why the further pairs of canonical variables are necessary.

The aim of canonical analysis is to find such linear combination of the set of dependent variables so that it would maximize correlation with the set of the independent variables. The coefficients obtained via this technique of analysis are called canonical weights. They can be interpreted in the same manner as one would interpret the beta weights in a multiple regression equation. They explain the significance of particular variables in the creation of canonical variable, in other words their unique contribution to the respective weighted sum. When the variables are of significantly different ranges it is recommended to use standardized coefficient instead of original weights. The additional way to interpret the results of canonical analysis is to interpret the canonical loadings which are the coefficients of linear correlation between the initial variables and the canonical variables. The higher the loading, the more significant the variable is while interpreting the results of this technique of analysis.

For our research we used data from Social Diagnosis 2011. It is a cyclical Polish panel survey. We decided to use answers provided only by heads of households. This way we assured that there would not be any correlation between members of the same household. After removing missing observations our sample consisted of 8674 observations.

There were chosen 4 dependent variables consisted of satisfaction with the relationships within family (family), satisfaction related to friends (friends), satisfaction with health (health) and satisfaction with the life achievements (success). The set of independent variables consisted of average of the last 3 months disposable income (income), age of respondent (age), respondent's gender (gender) and num-

ber of years spent on schooling in 2011 (education). We also chose respondent's number of social contacts (contacts), participation in the social group activities monthly (activity) and respondent's marital status (status). Marital status was re-defined into a set of 4 indicators: married, widowed, divorced and separated people with single respondents as a reference level. This was done for the simplicity purpose. There was also included an indicator of trust which was the answer to the question "do you feel being loved and that someone trusts you" (trust). Another indicator included in the model was subjective opinion whether one controls their life or not (dependence). The set of independent variables was completed with the symptoms of depression experienced by the respondent. In the available database a few variables were congruent with the questions from the Beck Depression Inventory [Beck, 1961]. They were Body Image describing one's satisfaction with their own appearance, Work Inhibition describing enthusiasm with regards to work, Sleep Disturbance, Fatigability, and Somatic Preoccupation representing one's concern about their own health. They were recoded as nominal four values variables. The variables representing symptoms of depression were significantly correlated, however it was not possible to aggregate them to one-dimensional variable.

3. Basic statistics and preliminary analysis

Dependent variables were encoded in ascending order. The values are in the 1-6 range. Table 1 compiles several descriptive statistics concerning dependent variables. We were interested in the possible asymmetry direction.

Table 1: Descriptive characteristics of dependent variables

Variable	Median	Mean	Std Dev
family	5	4.83	0.98
friends	5	4.47	0.89
health	4	3.78	1.31
success	4	4.06	1.07

Source: Own analysis

It seems that in analyzed sample there is no significant bias toward extreme values of both satisfaction or dissatisfaction. Medians and means are of close values. Nevertheless statistical nonparametric tests on mean values indicated significant differences between means and medians. Conducted graphical analysis (not presented here) showed no signs of multi-modality. Analogous set of statistics as for dependent variables was computed for the independent continuous ones (table 2).

Table 2: Data on continuous independent variables

Variable	Median	Mean	St Dev	Min	Max
Age	56	55.51	15.15	19	98
Income	1550	1885.24	1282.09	50	13500
Education	11	11.67	3.39	0	25
Social contacts	16	19.81	15.57	0	150
Activity	1	2.16	3.98	0	66

Source: Own analysis.

According to the conducted graphical analysis (not presented here), lack of certain values within variable education results from the way Polish education system is organised. Particular numbers of years spent on schooling are simply less probable than others. We decided to use the number of years spent on schooling in exchange for discrete variable defining levels of education for simplicity of our model and possibly plain and simple explanation.

To complete the preliminary analysis the structure of discrete variables was examined. Single people counted for 11% of the sample. The married people made 62% of the sample while widowed 19%. The divorced people consisted of 7% of the sample and the separated ones were the rest. In the analyzed sample 63% of respondents were male. 91% of respondents responded positively to the question concerning feelings of love and trust. Only 37% of those surveyed claimed that they have influence on the course of their lives.

4. Estimation and results of canonical analysis

First, the standardized coefficients were chosen to interpret, because of the different variables' ranges. The model consisted of 4 dependent variables and 14 independent ones, which led to 4 canonical variables. Table 3. presents the tests of significance of canonical correlations. Obtained results indicate that all of them are significant.

Table 3: Tests of significance of canonical correlations

Tests of significance of all canonical correlations		
	F	Prob>F
Wilk's lambda	121.64	0.00 a
Pillai's trace	106.94	0.00
Lawley-Hotelling trace	138.27	0.00 a
Roy's largest root	404.07	0.00 u
Tests of significance of canonical correlations 1-4		
	F	Prob>F
Wilks' lambda	121.64	0.00 a
Tests of significance of canonical correlations 2-4		
	F	Prob>F
Wilks' lambda	51.21	0.00 a
Tests of significance of canonical correlations 3-4		
	F	Prob>F
Wilks' lambda	22.22	0.00 e
Tests of significance of canonical correlations 4-4		
	F	Prob>F
Wilks' lambda	19.23	0.00 e

e = exact, a = approximate, u = upper bound on F

Source: Own analysis.

Table 4 presents the input of the original variables in the canonical variables.

Table 4: The results of the canonical analysis

Standardized coefficients for the first variable set				
	1	2	3	4
family	0.08	0.60	-0.93	0.03
friends	0.09	0.18	0.53	0.98
health	0.90	-0.61	-0.26	-0.03
success	0.09	0.60	0.67	-0.74

Standardized coefficients for the second variable set				
	1	2	3	4
Body image	0.12	0.26	0.17	-0.19
Work inhibition	0.17	0.08	0.15	0.11
Somatic Preoccupation	0.49	-0.34	-0.20	0.01
sleep disturbance	0.10	0.03	-0.06	0.16
fatigability	0.24	-0.02	-0.07	-0.01
gender	-0.03	0.15	-0.05	0.43
age	-0.03	0.58	0.30	-0.24
contacts	0.04	0.22	0.11	0.45
activity	0.06	0.07	0.33	0.14
education	0.03	0.18	0.45	-0.29
trust	0.13	0.60	-0.56	0.14
dependence	0.08	0.11	0.09	-0.04
married	-0.01	0.11	-0.19	-0.50
widowed	0.01	0.10	0.16	-0.17
divorced	-0.06	-0.12	0.07	0.04
separation	-0.01	-0.04	0.06	0.07
income	0.08	0.14	0.33	-0.28

Source: Own analysis.

For convenience we will comment on each canonical variable separately. The values of the first canonical variable can be considered as health perception. The impact of the other variables was positive, however of range smaller influence which does not exceed 0.10. The correlation between “health” variables and independent ones was 0.67. Among independent variables the most influential was Somatic Preoccupation (0.49), which means that better opinion on own health causes people to be happier. People less affected with fatigue (Fatigability: 0.24) that have as much enthusiasm for their work as before (Work Inhibition: 0.17) are also more satisfied. Feeling of trust was another significant regressor (0.13), along with satisfaction with Body Image (0.12), both having positive impact on life enjoyment.

Another factor influencing satisfaction was Sleep Disturbance (0.10). Other socio-economic variables were of little significance. Considering possible multicollinearity, we also investigated values of canonical loadings. Apart from previously mentioned variables age (negative impact), number of years of schooling (positive impact) and income (positive impact) became more significant.

The values of the second canonical variable are strongly positively influenced by the satisfaction with family relationships (0.60) and with assessment of own life achievements (0.60). There is also a strong but negative impact of satisfaction with health (-0.61). The satisfaction with friendship was way less important in this case (0.18). The correlation between the set of independent and dependent variables is moderate (0.42). The strongest influence on the side of independent variables was caused by the fact of being loved (0.60) - people claiming that they are being loved by someone are more satisfied with everything apart from health. It may be connected with the fact that the second most important independent variable was age (0.58). There is also strong effect of Somatic Preoccupation (-0.34). People more concerned with their health are also less satisfied with it, despite being more satisfied with other areas of life. Having better opinion on own Body Image (0.26) and greater number of social contacts (0.22) have positive impact on the second canonical variable. People experiencing more social contacts that are better educated display similar tendency. Basing on canonical loadings it was apparent that years of schooling are still displaying positive, however smaller influence. On the other hand, there emerged a significant influence of marital status -- widows and non-divorced people had greater values of the second canonical variable than single respondents. This effect could be possibly a statistical artefact of interaction with age.

The values of the third canonical variable were mostly influenced (negatively) by satisfaction with family relationships (-0.93). People more satisfied with their families have lower values of the third canonical variable. Pointed in the opposite direction and less influential was the impact of satisfaction with friendship (0.53) and with life achievements (0.67). Satisfaction with health had the weakest influence this time (-0.26). The correlation between independent and dependent variables was weak (0.21). Among independent variables the most influential was the feeling of being loved (-0.56). In the opposite direction there was influence of the number of years of schooling (0.45) along with greater social activity (0.33) and age (0.30). There was a noticeable positive effect of income (0.33). It means that people who spent more years on schooling, that are more socially active, older and wealthier and who are not satisfied with their relationship with their relatives are less satisfied with their family relationships, but enjoy friendship and their life achievements more. There is also a weak, nevertheless interesting influence of marital status. Married people are characterised by smaller values of this variable than single people (-0.19), but widows are characterised by greater values (0.16).

Being separated (0.06) or divorced (0.07) is correlated with greater dissatisfaction with family life. Again greater disappointment with health is explained by Somatic Preoccupation (-0.20). Analyzing canonical loadings there was a sole change concerning age. Its influence was still positive, but it was not as strong as before.

Values of the fourth canonical variable are explained to the greatest extent by satisfaction with friendship (positive influence: 0.98), and with satisfaction with life achievements (negative influence: -0.74). Other indicators did not have significant influence on the values of the last canonical variable (around 0.03). The correlation between independent and dependent variables was weak (0.17). Among independent variables marriage had the strongest impact (-0.50) resulting in lower values of the fourth canonical variable. People having more social contacts (0.45), women (0.43) less educated (-0.29), that are also poorer (-0.28) and younger (-0.24) are characterised by the greater values of this canonical variable. They are also less satisfied with their appearance (-0.19).

While analyzing values of canonical loadings it occurred that the number of schooling years is negatively related to canonical variable. Age was an insignificant variable. On the other hand, there appeared greater value of coefficient beside the variable defining social activity. There may be suspicion that weaker influence of years of schooling and age was compensated by their impact on the first canonical variable.

6. Model validation

Every model tries to simplify and even partly describe reality. In fact, one can rarely encounter observations that are perfectly consistent with its prognosis. Sometimes the problem is connected with contamination of database caused by its creators' mistakes. That is why we decided to check if those deviations occur in our sample.

Firstly, we inspected if the correlations between canonical variables belonging to one collection of variables were really equal zero. Fortunately, they were. Further we graphically inspected the plots of canonical variables to find potential outliers. In fact, we were not able to educe significant deviance in observations.

The goodness of fit of model was also checked. The extracted variance which is the proportion of variance explained within independent variables and redundancy which is proportion of variance of the dependent variables explained with independent ones were used. Their values for the canonical variables are shown in table 5. Taking into consideration that the highest level of explained variation of dependent variables by the independent ones was 9.38%, an attempt was made to improve the model's goodness of fit by removing or recoding regressors.

Table 5: Extracted variance and redundancy

	I variable	II variable	III variable	IV variable
extracted variance	21.21%	6.13%	7.11%	8.30%
redundancy	9.38%	1.09%	0.31%	0.25%

Source: Own analysis.

At first step, marital status was recoded. Due to the low values of factors in case of both divorce and separation we created new aggregated variable. Owing to this, canonical redundancy rose slightly. Furthermore, there were no outliers this time.

The second step aiming at fitting the model was to remove a variable of least significance, that is the variable dependence. After another estimation and checking values of redundancy it occurred that its value rose again.

Age was frequently significant, even considering its higher values, so we decided to check whether being retired is important. An additional variable was created depending on gender. The threshold values of age of 60 for women and 65 for men, respectively were assumed. Including this variable into estimation led to the suspicion that within the second and the third canonical variables important are older people, however not before retirement. The influence of gender was omitted due to the strong decrease in redundancy. Goodness of fit was not greater than in model without those factors, but on the other hand it improved our knowledge on the properties of variables.

The last change performed was another recoding of marital status. The aim was to find out whether it might be important to indicate that respondent was married or not rather than use the all indicators. The value of redundancy rose again, nevertheless this model was not chosen due to the hard explanation of the obtained correlations. Moreover, further detailed analysis based on levels of certain variables assured that one should use the model with more indicators.

Results of performed procedures -- obtained values of redundancy and extracted variance are shown in the table 6. All of canonical correlations were significant and there were no outliers.

Table 6: Values of redundancy and the extracted variance

Model with aggregated separation and divorce				
	I variable	II variable	III variable	IV variable
Extracted var.	22.54%	6.53%	7.54%	8.87%
redundancy	9.97%	1.16%	0.33%	0.27%
Model with aggregated separation and divorce without variable dependence				
	I variable	II variable	III variable	IV variable
Extracted var.	23.69%	6.93%	8.08%	9.40%
redundancy	10.41%	1.22%	0.35%	0.28%
Model with retirement and age				
	I variable	II variable	III variable	IV variable
Extracted var.	21.67%	6.91%	7.08%	9.90%
redundancy	9.54%	1.23%	0.31%	0.30%
Model with retirement				
	I variable	II variable	III variable	IV variable
Extracted var.	23.21%	7.58%	7.45%	8.88%
redundancy	10.21%	1.35%	0.33%	0.27%
Model with binary variable marital status				
	I variable	II variable	III variable	IV variable
Extracted var.	26.71%	7.36%	9.24%	7.99%
redundancy	11.71%	1.26%	0.38%	0.20%

Source: Own analysis.

Gender turned out to be significant variable, so we decided to check if the analysis should be divided into 2 models (a different one for men and women, respectively). We aimed at functional form stability by looking at the increase in the redundancy. In the beginning, the differences between standardized coefficients were inspected. It turned out, that the first canonical variable explaining most of the variance was analogous for both genders. A narrow discrepancy in values of coefficients was encountered, but the direction of impact remained the same. The years of schooling and activity were more often among the most significant variables for women. For men, more frequently significant were Somatic Preoccupation and Work Inhibition. An important inconsistency occurred in the third and the fourth canonical variable. Higher levels of Work Inhibition stimulated men and had the negative effect in the women's case. According to the expectations, the differences emerged in the fourth variable (originally describing the effects connected

with gender). Social activity appeared to be more significant for women, in men's case income had the stronger impact. On the other hand, the comparison could be slightly problematic due to change in sign of the coefficient on dependent variable family in the regression on the subset of women. It was the only discrepancy in coefficients among dependent variables.

The obtained results were sufficient but without formal tests one could hardly judge whether there is a structural change in the model or not. As far as men are concerned, the redundancy decreased (9.87%), but in the women's case it increased narrowly (11.45%). Inspection of canonical loadings revealed fewer differences among models. The significant variables from the models for both genders summed up to the basic model with gender included. We did not encounter the change of coefficient's sign in the last canonical variable. It enabled an easier assessment of potential inconsistencies and their significance. Additionally, the analysis of models for both genders gave no basis for recoding the marital status into binary variable. In the second canonical variable widowment was significant for women and the lack of divorce in the case of men. The third canonical variable was characterized by the significance of marriage for men. In the fourth one divorce appeared significant for women.

The final results did not convince us to divide model into two sections. However, the analysis in groups gave us a better insight into the relationships between coefficients.

7. Conclusions

The aim of this article was to present the application of the canonical analysis into an economic research. The presented estimation proved that happiness with the several aspects of life can be explained using specific socio-economic variables. To verify it we used the canonical analysis model.

Our model allowed us a multidimensional analysis of the phenomenon which was simultaneously its weakness. In comparison to regression we were not able to obtain precise dependencies between variables. The explanation was based on correlations between factors that were varying in force. We were not able to provide statistical significance tests. Though we consider obtained results consistent with intuition.

In most cases the obtained results were not inconsistent with those presented in previous research. An important discrepancy occurred in the case of variable defining the subjective factor controlling respondent's life. In our model unlike Luikart and Palmore's model [1972], this variable turned out to be insignificant, what is more omitting this regressor improved goodness of fit. Similarly marital status - although in the Luikart and Palmore's research it was not significant, in our model it was important. It could be even noticed that its impact can be cor-

related with gender. Age's impact was of opposite direction than the one presented in Luikart and Palmore's analysis. The difficulties in comparing the results were caused by the differences in methodologies. The previous researches were based on regressions. That is why we compared only directions of regressors' impact. The conclusions concerning the impact of social contacts activity were consistent with those obtained by Cherie [1999]. The influence of education and income on one's satisfaction with life was not contradicting the Rojas [2004] results.

Eventually, the model with the highest redundancy at 10.41% was chosen. Taking into consideration the methodology of research the database was used from (quite high subjectivity of indices) we find this value acceptable. We obtained 4 significant canonical correlations.

Our analysis proved that people, who have better judgment of their health, who are not tired and whose motivation to work is not worse than it used to be, along with high satisfaction with their appearance and having less difficulties with sleeping, enjoy their health more. Additionally, they are older people feeling that somebody loves them. They are also better educated and earn more. Older, better educated respondents (probably retired) who feel that their friends trust them and who care about their health, being more socially active at the same time are characterized with higher satisfaction with relationships within family and friends. They enjoy their life achievements more, too. However they are not content with their health. Older respondents that do not feel loved, who are better educated with higher income and socially active are not satisfied with their family life but they enjoy their relationships with friends. They are also more proud of their life achievements. Higher satisfaction with family life is connected with marriage or lack of divorce or separation (especially in the case of men). High levels of satisfaction with the relationships with friends and greater disappointment with life achievements occur in cases of young, single, less educated women, who earn less but are more socially active.

References

- Alesina A., Di Tella R., MacCulloch R. (2004) Inequality and happiness: Are Europeans and Americans different? *Journal of Public Economics*, 88, 2009-2042.
- Beck A. T., Ward C. H., Mendelson M., Mock J., Erbaugh J., (1961) An inventory for measuring depression. *Arch Gen Psychiatry*, Vol. 4, Issue 6.
- Blanchflower D. G., Oswald A. J. (2004b) Well-being over time in Britain and the USA. *Journal of Public Economics*, 88, 1359-1386.
- Cherie R., Saunders S. A. (1999) The relationship between depression, satisfaction with life, and social interest. *South Pacific Journal of Psychology*, Vol. 11 Issue 1.
- Deaton A. (2008) Income, Health and Well-Being around the World: Evidence from the Gallup World Poll. *Journal of Economic Perspectives*, 22(2), 53-72.
- Diener E., Emmons R. A., Larsen J., Griffin S. (1985) The satisfaction With Life Scale. *Journal of Personality Assessment* Vol. 49 Issue 1.
- Diener E., Lucas R. E., Oishi S., Suh E. (2002) Looking up and looking down: Weighting good and bad information in life satisfaction judgements. *Personality and Social Psychology Bulletin*, 28(4), 437-445.
- Ferrer-i-Carbonell A. (2005) Income and well-being: An empirical analysis of the comparison income effect. *Journal of Public Economics*, 89, 997-1019.
- Ferrer-i-Carbonell A., Frijters P. (2004) How important is methodology for the estimates of the determinants of happiness. *The Economic Journal*, 114, 641-659.
- Graham C., Eggers A., Sukhtankar S. (2004) Does happiness pay? An exploration based on panel data from Russia. *Journal of Economic Behavior and Organization*, 55(3), 319-342.
- Graham C., Felton A. (2006) Inequality and happiness: Insights from Latin America. *Journal of Economic Inequality*, Vol. 4 Issue 1, 107-122.
- Graham C., Pettinato S. (2001) Happiness, markets and democracy: Latin America in comparative perspective. *Journal of Happiness Studies*, 2, 237-268.
- Grochowska A., Strawiński P. (2012) Impact of Social Capital on Income. *Ekonomia*, Vol. 31, 56-70.
- Hayo B., Seifert W. (2003) Subjective economic well-being in Eastern Europe. *Journal of Economic Psychology*, 24, 329-348.
- Johnson W., Krueger R. F. (2006) How money buys happiness: Genetic and environmental processes linking finances and life satisfaction. *Journal of Personality and Social Psychology*, 90, 680-691.
- Kahneman D. (1999) Objective Happiness. W: D. Kahneman, E. Diener, N. Schwarz (red.), *Well-Being: The Foundations of Hedonic Psychology*. Russel Sage, New York, 3-25.
- Louis V. V., Zhao S. (2002) Effects of family structure, family SES, and adulthood experiences on life satisfaction. *Journal of Family Issues*, 23, 986-1005.
- Luikart C., Palmore E. (1971) Health and Social Factors Related to Life Satisfaction. *Journal of Health & Social Behavior*, Vol. 13.
- Oswald A., Powdthavee N., (2006) Does happiness adapt? A longitudinal study of disability with implications for economists and judges. *Institute for the Study of Labour, IZA DP*, 2208.

- Rojas M. (2004) The Complexity of Well-being. A Life Satisfaction Conception and a Domains-of-Life Approach. Paper for the International Workshop on Researching Well-being in Developing Countries, Hame Institute for Advanced Study.
- Shields M., Price S. (2005) Exploring the economic and social determinants of psychological wellbeing and perceived social support in England. *Journal Royal Statistical Society. Series A*, 513-537.
- Seghieri C., Desantis G., Tanturri M. L. (2006) The Richer, the Happier? An Empirical Investigation in Selected European Countries. *Social Indicators Research*, 79, 455-476.
- Tatarkiewicz W., (1979) *O szczęściu*, Warszawa.