

Attitudes to Health of Czech and Polish University Students

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The paper describes the main results of an international comparative research study that compared the attitudes of Czech and Polish university students to 30 concepts associated with two significant areas of life. The first was lifestyle, health and health promotion. The second social area included interpersonal relationships, self-conception and subjective perception of the future. The research method used to measure the participants' attitudes was ATER, the two-factor semantic differential. Regarding the fact that the measuring instrument was standardized for the Czech population, we performed a cross-check factor analysis of semantic differential scales and selected the most appropriate scales for measuring the evaluation and energy of the concepts presented. The results of the research indicate that various concepts were perceived differently by Czech and Polish university students. The most significant differences were observed in their attitudes to physical health, diet, education, professional preparation, and knowledge of a foreign language.

Key words: *Attitudes; Health; Health Promotion; Semantic Differential; Inter-cultural Differences the Attitudes of Czech and Polish University Students*

Introduction

The trends of the contemporary society influence and shape an individual's health promoting behaviour (i.e. determinants¹ that have a 50% impact on an individual's health) across all age periods. Today, nobody is surprised by prenatal care aimed at optimizing the lifestyle of the future mother with respect to a healthy development of the foetus². In a similar way, adults are encouraged given the high incidence of lifestyle diseases in developed countries. Last but not least, pre-senior and senior individuals are educated in the context of gerontoandragogy, medicine

¹ Machová, J. – Kubátová, D. et al. (2009). *Výchova ke zdraví*. Praha: Grada, 2009, p. 13.

² Hřivňová, M. (2014). *Výchova k sexuálně reprodukčnímu zdraví v kurikulu 2. stupně ZŠ*. In Štěrbová, D. – Rašková, M. et al. *Specifika komunikace ve vztahu k sexualitě I*. Olomouc: VÚP.

and social care. All this is currently taking place in the models of a holistic health concept helping to develop and maintain physical, mental, social and spiritual health for a maximum period of time. A significant role is taken by the ever increasing awareness of the public through information technologies and systematic education to promote health from kindergarten.

Objectives of the Research Study

The objective of international comparative research study was to find out whether all of the above mentioned efforts influence just the cognitive aspects of a personality or whether they are reflected in the attitudes of university students – future teachers who will educate students in the area of health promotion. Another aim of the research was to compare the attitudes of Czech and Polish university students to the concepts that reflect their approaches to physical, mental and social health and also to the perception of their expected future. A total of 30 concepts were used as indicators of the students' approaches – see Table 1.

Research Method – Semantic Differential

It is relatively known³ that if more individuals assess one object or concept, the perception of each individual is a little different (sometimes completely different). Besides a common cultural meaning (denotation) every concept has an additional meaning (connotation), which characterises the individual assessors. The semantic differential is a research technique developed in 1950s in USA by professor Osgood⁴ for measuring individual psychological meanings of words about or attitudes to something. It focuses on simple evaluations and thus it is especially suitable for measuring emotional and behavioural aspects of the attitude. Its great advantage is easy administration and relatively fast evaluation.

Initially, this method was developed for measuring the connotative meaning of concepts, where each concept can be expressed as a point in a semantic space. The basic dimensions of the semantic space were determined by means of a factor analysis and the three most important factors were determined accordingly. Thus, each concept is usually

³ Hewstone, M. – Stroebe, W. (2006). *Sociální psychologie*. Praha: Portál.

⁴ Osgood, C. E. – Suci, G. – Tannenbaum, P. (1957). *The Measurement of Meaning*. University of Illinois Press.

evaluated in respect to those three factors: Evaluation factor, Potency (power) factor, Activity factor.

However, when a cross-check factor analysis was performed in the Czech sociocultural conditions⁵ it was found that only two factors significantly contribute to the dispersion of the values. Extraction of three factors leads to a relatively unreliable measurement when one scale measures different factors in different concepts. The first factor was marked as the evaluation factor in compliance with Ch. Osgood. The second factor is a combination of the initial potency and activity factors and is called the energy factor.

The scales, which are saturated by the energy factor, express how much the respondents perceive the selected concepts as “something”, which is connected with exertion, difficulties, changes or activity. Based on the analyses performed the ATER (Attitudes Toward Education Reality) measuring instrument was developed. This instrument contains 10 scales, out of which 5 measure the evaluation factor (ev) and 5 measure the energy factor (en), * marks reserve scales – see Figure 1.

This measuring instrument was also used in the comparative research study aimed at the attitudes of Czech and Polish university students. Prior to the processing of the research data, the factor structure of the

HEALTH					
1	good	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	bad	ev	
2	undemanding	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	demanding	en*	
3	pleasant	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	unpleasant	ev*	
4	trouble	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	trouble-free	en	
5	fair	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	dark	ev	
6	light	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	heavy	en*	
7	ugly	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	beautiful	ev	
8	easy	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	difficult	en*	
9	sweet	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	sour	ev	
10	strict	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	lenient	en	

Figure 1. Data sheet of two-factor semantic differential – ATER for the concept of “Health”.

⁵ Chráska, M. sen. (2007). *Metody pedagogického výzkumu*. Praha: Grada.

semantic differential scales⁶ was verified for both Czech and Polish students (see Tables 2 and 3).

Description of the Research Sample

The research sample included 138 Czech and Polish university students who will deal with health education in their future jobs. Specifically, the research sample included the students of the Faculty of Education, Palacky University, Olomouc – 3rd year of the Bachelor's field of study Health education with an educational focus, and 1st and 2nd year of the follow-up Master's field of study Teaching of health education. To eliminate a possible cultural effect of individuals from the Czech-Polish border area, we chose the students of the University of Rzeszow. These were the students of the Bachelor's and follow-up Master's field of study Physical education, who are also involved in health education. The grade of the students was identical with the grade of the Czech students. The structure of the respondents is specified in Table 1.

University	Year of study	Gender	Gender	Total
		male	female	
UR	3 (Bc.)	8	28	36
UR	4 (1. MA)	13	12	25
UR	5 (2. MA)	8	4	12
Total UR Rzeszow		29	44	73
UP	3 (Bc.)	4	27	31
UP	4 (1. MA)	3	14	17
UP	5 (2. MA)	1	16	17
Total UP Olomouc		8	57	65
Total		37	101	138

Table 1: Structure of the research sample.

Results and Discussion of the Research Study

As mentioned above, the factor scale structure was checked before the semantic space for the monitored concepts was developed. After that the scales with the corresponding structure were selected. In the Czech

⁶ Chráska, M. (2014). The Application of a Factor Analysis to Verify the Factor Structure of Modified Semantic Differentials for Measuring Students' Attitudes. In *SGEM Conference on Psychology & Psychiatry, Sociology & Healthcare Education*. Albena: International Multidisciplinary Scientific Conferences on Social Sciences & Arts. Volume 1. p. 429–440.

students, the evaluation of concepts was performed using scales 3 and 7, energy was measured using scales 2 and 8 (see Table 2). It is interesting to note that some unselected scales of the ATER questionnaire do not have a corresponding factor structure in the case of the Czech university students (scale 4 is inapplicable).

Term	Compliance with scale factor structure									
	s1	s2	s3	s4	s5	s6	s7	s8	s9	s10
Colleagues – students*	y	y	y	n	n	n	y	n	y	n
University that I study at *	y	y	y	n	y	y	y	y	n	y!
Education*	y	y!	y!	n	y	y	y	y	y	y
Future	y	y	y	n	y	y	y	y	y	n
Personal computer *	y	n	y	n	n	n	n	n	n	n
Parents	y	y	y	n	y	y	y	y	y	y
Friendship*	y	y	y	y	y	y	y	y	y	n
Disease	y	y	y	y	n	n	n	n	n	n
Love	y	y	y	y	y	y	y	y	y	y
Healthy lifestyle	y	y	y	y	y	y	y	y	y	y
Lifestyle diseases*	y	n	y	y	y	y	y	y	n	n
Mental stress*	n	y	y	y!	y!	n	y	n	y	n
Obesity	y	y	y	n	y	n	y	y	n	y
I	y	y	y	n	y	n	y	y	n	y
My relationships with people	y	y	y	n	y	y	y	y	n	y!
Drugs*	n	y	y	y	n	y	y	y	y	n
Interpersonal communication	n	y	y	n	y	y	y	y	y	n
Alcohol?	y	n	n	n	y	n	y	n	y	y
Smoking*?	n	y!	y	y	n	y!	y	n	y	n
Money*	y!	y	y	y!	n	y	y	y	y!	y
Foreign language knowledge	y	y	y	n	y	y	y	y	n	y!
Diet*	y	y!	y	y	y	y	y	y	n	y
My future success at work	y	y	y	n	y	y	y	y	y	y
Physical health	y!	y	y	n	y	y	y	y	y	y
Mental health	y	y	y	y	y	y	y	y	y	y
Risky sexual behaviour*	n	n	y!	y	n	n	y!	y	y	y
Physical activity	y	y	y	n	y	y	y	y	y	y
Dependence on technologies*	y	y!	n	n	y	y	y	y	y!	n
Balanced diet	y!	y!	y	y	y	y	y	y	y	n
My professional preparation	y	y	y	n	y	y	y	y	y	y!
Compliance with factor structure proposed	25	26	28	13	23	22	28	24	22	18

* the strongest factor is energy

Table 2: Cross-check of SD factor structure in Czech university students.

Accordingly, among the Polish students, the evaluation of concepts was performed using scales 3 and 7, energy was measured using scales 6 and 8 (see Table 3). Scales 2 and 10 were identified as completely unsuitable. Based on the results, we suppose that the mere use of the adopted (translated) scales in the semantic differential is not suitable for an adequate application.

Term	Compliance with scale factor structure									
	s1	s2	s3	s4	s5	s6	s7	s8	s9	s10
Colleagues – students	y	n	y	n	y!	y	y	y	n	n
University that I study at	y	y	y	n	y	y	y	y	y	n
Education	y	y	n	y	y	y	y	y	y	n
Future	y	y!	y	y	n	y!	y	y	y	n
Personal computer	y!	y	y!	y	n	y!	y	y	y	n
Parents*	y	n	y	n	n	y	y	y	n	n
Friendship	y	y	y	n	y	y	y	y	y	n
Disease*	n	n	y	y	y	n	y	n	y	n
Love	y	n	y	y	n	y	y	y	y	n
Healthy lifestyle	y	n	n	y	n	y	y	y	n	y!
Lifestyle diseases	y	n	n	n	n	y	n	y	n	y
Mental stress*	y	n	y	n	y!	n	y	n	n	y
Obesity	y	n	y	n	n	y	n	n	n	y!
I	n	n	y!	y	y	y	n	y	n	y
My relationships with people	y	n	y	n	y	y	y	y!	n	y
Drugs	y	n	n	y	n	y	n	y	n	y
Interpersonal communication	y!	n	n	n	y	y	n	y	y	n
Alcohol	y	y	y	n	y	n	y	n	y	n
Smoking*	n	n	n	y	n	y	n	y	y	n
Money	y	y	y	y!	y	n	y	y	y	n
Foreign language knowledge	n	n	y	n	n	y	y	y	y	n
Diet*	y	n	y!	y	n	y	y	y	n	y!
My future success at work*	y	n	y	y	y	y	y	y	y	n
Physical health	y	n	y	y	y	y	y	y	y!	n
Mental health	n	y!	y	y!	n	y!	y	y	n	n
Risky sexual behaviour	y	n	y!	n	y!	y	y	y	y	n
Physical activity*	y	n	y	n	y	y	y	y	y	n
Dependence on technologies*	n	n	y	y	n	n	y	y	y	n
Balanced diet*	y	n	y	y	y	y	y	y	y	n
My professional preparation	y	n	y!	y	y	y	y	y	y	n
Compliance with factor structure proposed	24	8	24	18	17	25	24	26	19	8

* the strongest factor is energy

Table 3: Cross-check of SD factor structure among the Polish university students.

The selected scales were used to calculate the average evaluation values and energy measurements for individual concepts, and to develop the semantic space for individual groups of students (see Figures 2 and 3). These figures show the differences and similarities in the perceptions of both groups of students.

An interesting finding in the Polish students was the correlation between the attitude to obesity and diet. Diet has a significantly better evaluation, at the same time, obesity was assessed as a highly demanding concept. In the Polish students we also observed a close relationship between disease, obesity, lifestyle diseases, mental stress, drugs and smoking; these concepts were again assessed as highly demanding compared with the Czech students. The evaluation of these concepts was similar in both groups; in both groups these concepts were perceived as the most demanding. Another close association in the Polish students was represented by alcohol, risky sexual behaviour and dependence on technologies (PC, mobile, internet). The remaining concepts are perceived in far stronger associations by the Polish students compared with the Czech students (e.g. Education and University I study at; I and Interpersonal communication; Physical health, Physical activity and Friendship; Personal computer and My relationships with people).

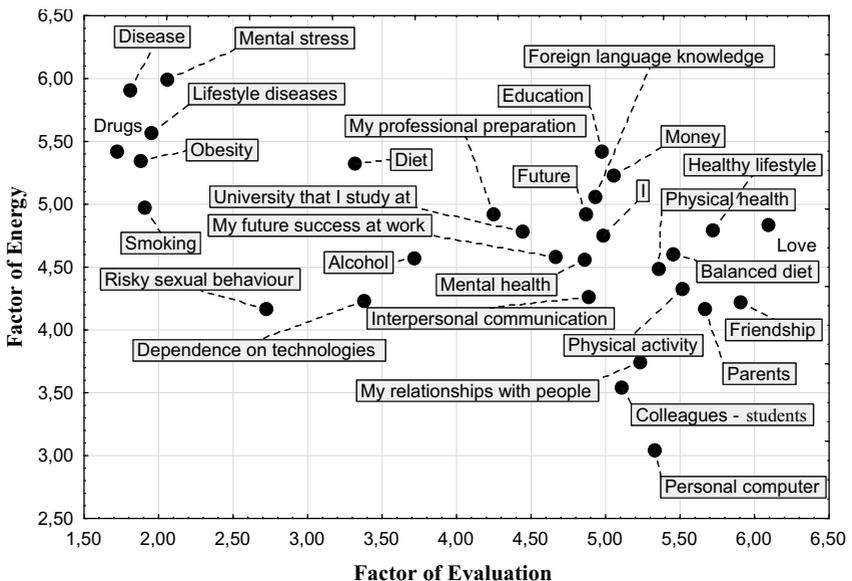


Figure 2. Semantic space of investigated concepts in Czech university students, PU.

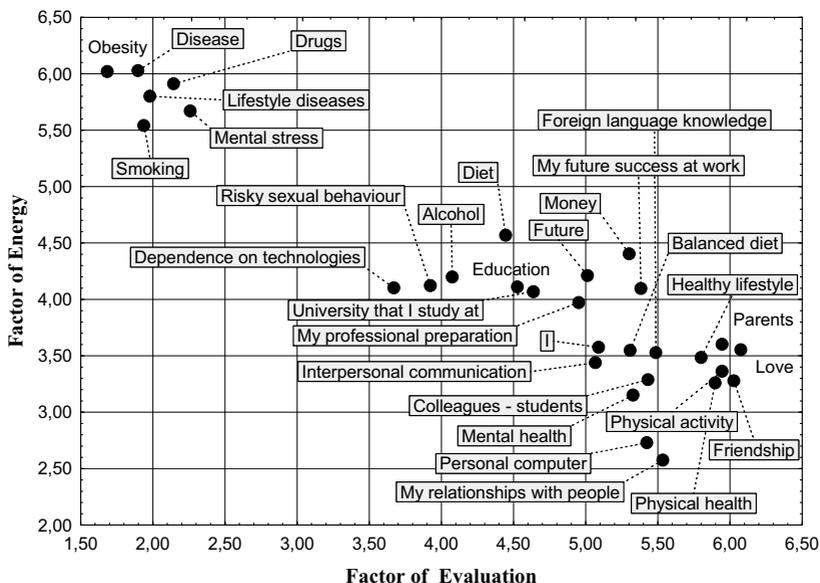


Figure 3. Semantic space of investigated concepts in Polish university students, RU.

Generally, these terms are perceived by the Polish students more positively and very often as less demanding. An interesting finding is the fact that the attitudes to alcohol, smoking (and drugs) are identical in both groups.

To make a precise comparison of the perception of Czech and Polish university students, we used the Student's t-test (for results see Table 4). Statistically significant differences are marked in *italics* and in **bold**.

Based on the results of the Student's t-test we can state that the following concepts are significantly better assessed by the Polish students: Foreign language knowledge (perceived as less demanding compared with the Czech students), My future success at work, Physical health, Risky sexual behaviour, My professional preparation (again perceived as less demanding compared with the Czech students).

On the contrary, the following concepts are assessed as significantly more demanding: University I study at, Future, Money, Parents, Foreign language knowledge, Education, I, My relationships with people, Interpersonal communication, Physical health, Mental health, Physical activity, Balanced diet, My professional preparation, Friendship, Love and Healthy lifestyle.

Variable	T-tests; Grouping: UN (SD health concepts RU x PU), Group 1: RU, Group 2: PU						
	Mean (RU)	Mean (PU)	t-value	df	p	Valid N (RU)	Valid N (PU)
Colleagues – students (ev)	5.43	5.11	1.63	135	0.106	73	64
Colleagues – students (en)	3.29	3.54	-1.61	135	0.110	73	64
University I study at (ev)	4.64	4.45	0.98	136	0.329	73	65
University that I study at (en)	4.07	4.78	-3.43	136	0.001	73	65
Personal computer (ev)	5.42	5.33	0.44	135	0.662	72	65
Personal computer (en)	2.73	3.05	-1.40	135	0.165	72	65
Future (ev)	5.01	4.87	0.69	136	0.494	73	65
Future (en)	4.21	4.92	-3.34	136	0.001	73	65
Money (ev)	5.30	5.05	1.05	136	0.295	73	65
Money (en)	4.40	5.23	-3.77	136	<0.001	73	65
Diet (ev)	4.45	3.32	4.72	136	<0.001	73	65
Diet (en)	4.57	5.32	-3.12	136	0.002	73	65
Parents (ev)	5.95	5.67	1.29	136	0.199	73	65
Parents (en)	3.60	4.17	-2.46	135	0.015	73	64
Foreign language knowledge (ev)	5.49	4.93	2.48	136	0.014	73	65
Foreign language knowledge (en)	3.53	5.06	-6.52	136	<0.001	73	65
Education (ev)	4.53	4.98	-2.15	136	0.034	73	65
Education (en)	4.11	5.42	-6.04	136	<0.001	73	65
I (ev)	5.09	4.98	0.47	136	0.637	73	65
I (en)	3.58	4.75	-5.73	136	<0.001	73	65
My relationships with people (ev)	5.53	5.23	1.57	136	0.119	73	65
My relationships with people (en)	2.58	3.74	-5.65	136	<0.001	73	65
Drugs (ev)	2.14	1.72	1.76	136	0.081	73	65
Drugs (en)	5.91	5.42	1.61	136	0.110	73	65
Interpersonal communication (ev)	5.07	4.88	0.83	136	0.407	73	65
Interpersonal communication (en)	3.44	4.26	-3.51	136	0.001	73	65
Alcohol (ev)	4.08	3.72	1.46	136	0.147	73	65
Alcohol (en)	4.20	4.57	-1.36	136	0.176	73	65
Smoking (ev)	1.94	1.91	0.13	136	0.894	73	65
Smoking (en)	5.54	4.98	1.81	136	0.073	73	65
My future success at work (ev)	5.38	4.66	3.30	136	0.001	73	65
My future success at work (en)	4.10	4.58	-1.87	136	0.063	73	65
Physical health (ev)	5.90	5.35	2.70	136	0.008	73	65
Physical health (en)	3.26	4.48	-4.66	136	<0.001	73	65
Mental health (ev)	5.33	4.86	1.80	136	0.074	73	65
Mental health (en)	3.15	4.56	-5.09	136	<0.001	73	65

Table 4: Comparison of evaluation (ev) and energy (en) of the investigated concepts in university students in Poland (RU) and in the Czech Republic (PU).

Risky sexual behaviour (ev)	3.92	2.72	4.20	136	<0.001	73	65
Risky sexual behaviour (en)	4.12	4.17	-0.14	136	0.887	73	65
Physical activity (ev)	5.95	5.52	1.80	136	0.074	73	65
Physical activity (en)	3.36	4.32	-3.40	136	0.001	73	65
Dependence on technologies (PC, mobile phone, internet) (ev)	3.67	3.38	1.14	136	0.258	73	65
Dependence on technologies (PC, mobile phone, internet) (en)	4.10	4.23	-0.44	136	0.660	73	65
Balanced diet (ev)	5.31	5.45	-0.61	135	0.545	73	64
Balanced diet (en)	3.55	4.60	-4.11	135	<0.001	73	64
My professional preparation (ev)	4.95	4.25	3.32	136	0.001	73	65
My professional preparation (en)	3.97	4.92	-4.35	136	<0.001	73	65
Friendship (ev)	6.03	5.91	0.58	136	0.565	73	65
Friendship (en)	3.28	4.22	-3.50	135	0.001	72	65
Disease (ev)	1.90	1.81	0.40	136	0.691	73	65
Disease (en)	6.03	5.91	0.48	136	0.633	73	65
Love (ev)	6.08	6.09	-0.07	136	0.945	73	65
Love (en)	3.55	4.83	-5.00	136	<0.001	73	65
Healthy lifestyle (ev)	5.80	5.72	0.36	136	0.717	73	65
Healthy lifestyle (en)	3.49	4.79	-5.58	136	<0.001	73	65
Lifestyle diseases (ev)	1.98	1.95	0.12	136	0.909	73	65
Lifestyle diseases (en)	5.80	5.57	0.94	136	0.351	73	65
Mental stress (ev)	2.26	2.05	0.85	136	0.398	73	65
Mental stress (en)	5.67	5.99	-1.43	136	0.154	73	65
Obesity (ev)	1.68	1.88	-0.98	136	0.331	73	65
Obesity (en)	6.02	5.35	2.62	136	0.010	73	65

Table 4: Continued.

Conclusion

The results of the performed international comparative research indicate that the attitudes of Czech and Polish university students to the presented concepts in the area of health differ. The most statistically significant differences were observed in their attitudes to physical health, diet, education, professional preparation, and knowledge of a foreign language.

The respondents were selected deliberately; they were the students of higher grades of fields of study systematically focusing on the issue of health promotion. However, we anticipated greater inter-cultural differences between the attitudes of Czech and Polish university students. The transferability of the ATER measure instrument was

ensured by means of translations by two independent native speakers (university lecturers – man and woman), who translated the semantic differential in cooperation with the author. Despite this fact, the factor agreement of the semantic differential scales was lower than expected.

An interesting finding among the Polish students is the close correlation between the attitude to obesity and diet. Diet had a significantly better evaluation compared with the Czech students, at the same time, obesity was associated with a higher degree of energy expenditure compared with the Czech students. In case of Polish students we also observed a close relationship between disease, obesity, lifestyle diseases, mental stress, drugs and smoking; these concepts were again assessed as highly energy demanding compared with the Czech students. The evaluation of these concepts was similar in both groups; in both groups these concepts were perceived as the most energy demanding.

The research study also focused on other variables that can affect the students' attitudes to health. These were possible differences between genders, correlation between attitude to health and parents' education, eating habits, students' leisure, and physical activities and overall PC time. Regarding the length of this paper these effects are not considered.