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## The sense of coherence and physical activity among secondary-school graduates living in the Lubelskie Province

### Poczucie koherencji i aktywność fizyczna wśród maturzystów w województwie lubelskim

**Abstrakt:**

Kwestie, wokół których koncentruje się problematyka badawcza wiążą się z ustaleniem: a) poczucia koherencji maturzystów b) aktywności fizycznej maturzystów; b) ich wzajemnego powiązania. Główny problem badawczy odnosi się do ustalenia zależności pomiędzy poziomem poczuciem koherencji a poziomem aktywności fizycznej maturzystów. W badaniach uczestniczyło 448 maturzystów (średnia wieku 18,2). W badaniach zastosowano Kwestionariusz Orientacji Życiowej(SOC-29) oraz test przesiewowy do badania poziomu aktywności fizycznej (J. Prochask i in.). W wyniku przeprowadzonych badań stwierdzono pozytywne korelacje związku poziomu poczucia koherencji oraz jego komponentów z poziomem aktywności fizycznej. Im wyższy poziom aktywności fizycznej wykazała badana osoba, tym charakteryzuje się wyższym poziomem poczucia koherencji oraz jego komponentów: poczucia zrozumiałości, poczucia zaradności i poczucia sensowności.

**Słowa kluczowe:** poczucie koherencji, aktywność fizyczna, młodzież

**Abstract:**

The issues which are the focus of the research problem addressed here are related to identifying a) the sense of coherence among secondary-school graduates, b) physical activity of secondary-school graduates, and c) mutual correlations between the two. The main research problem refers to defining the correlation between the sense of coherence and the physical activity of secondary-school graduates. The study covered 448 secondary-school graduates (average age: 18.2). The following tools were used in the study: the Life Orientation Questionnaire (SOC-29) and a screening test for testing the level of physical activity (J. Prochask et al.). As a result of the research, a positive correlation was found between the sense of coherence and its components and the levels of physical activity. The higher the sense of physical activity found in a respondent, the higher his/her sense of coherence and its components: sense of comprehensibility, manageability and meaningfulness.

**Key words:** sense of coherence, physical activity, youth

### 1. Introduction

An innovative multifaceted approach to define health, included in the socio-ecological paradigm, has been adopted since the late 1980s. Its basic assumption is that complex connections exist between individual spheres of human functioning and health. In

addition to the biological sphere, more emphasis has been placed on the psychological and social contexts of health (Kulik, s. 20-22). According to the literature on the subject, there is no doubt that our lifestyle and behaviour are to a great extent responsible for our health (Dolińska-Zygmunt, 2001, s. 9-18; Juczyński, 2004; Gniazdowski, 1990, s. 59-81). A. Antonovsky, the author of the concept of salutogenesis, has made a claim that the stronger the sense of coherence, the greater the chance of maintaining and improving one's health and engaging in health-enhancing behavior. The belief that life is meaningful, structured and predictable, which is related to a high sense of coherence, is what makes people want to be healthy and able to function well. Hence, it is assumed that persons with a strong sense of coherence are in a good mental and physical state. Antonovsky explains this in the following way – first, due to cognitive and motivational reasons, people with a strong sense of coherence avoid danger and exhibit health-enhancing behaviour patterns; secondly, there is higher probability that potentially harmful, but unavoidable, stimuli will be interpreted by a person with a strong sense of coherence not as overpowering threats but rather as challenges, or situations where they should not give up, but take up the struggle; thirdly, persons with a strong sense of coherence, will try to maximise their available resources and use them in an optimum way, regardless of how much resources they actually have. Such attitude carries health implications in the form of taking up activities which are beneficial to health, and adopting a healthy lifestyle (Antonovsky, 1997, s. 219-220). A real threat avoidance by persons with a strong sense of coherence should be expressed in health-enhancing behaviour and avoiding health-damaging behavior (Ibidem).

Physical activity is one of the health behaviours which have been the subject of the largest number of studies. Its importance was first recognised in a document by the World Health Organisation entitled *Targets for Health for All* of 1980, where it was acknowledged by some of the most renowned authorities in the field of health<sup>1</sup> (Ibidem). An appropriate physical activity level stimulates the physical, motor, and psychosocial development of children and teenagers (Woynarowska, 2008, s. 72-82). A lot of attention is currently devoted to the reduced levels of physical activity among children and young people, as this type of activity is being replaced by sedentary behaviour patterns. This phenomenon is related to the development of new ICT technologies, including mobile phones, computers and the Internet. The use of these technologies involves long intervals of inactivity. Given the attractiveness of the technologies, they successfully compete with activities involving movement (Mazur, 2015). The World Health Organisation, the European Platform for Action on Diet, Physical Activity and Health, and other institutions have published their advice on the recommended physical activity levels for different age groups. According to the most recent recommendations, schoolchildren should do least 60 minutes of moderate-to vigorous-intensity physical activity daily, in a form that is suitable for their development stage, enjoyable and gives them satisfaction (Przetacznik-Gierowska, 1996, s. 69).

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<sup>1</sup> *Targets for health for all. Targets in support of the European regional strategy for health for all*, Copenhagen 1985 (za: Gniazdowski, 1990, s. 19).

Most studies on health-behaviour indicators have focused on subjective and social factors related to adults and teenagers aged 16 or less (Ziarko, 2006; Mazur, 2015; Binkowska-Bury, 2009). The choice of the research group in this study is intended to close the gap in this research area. The average age of young people taking part in the study carried out for the purpose of this paper was 18.2. According to developmental psychology specialists, this age can be classified as late adolescence, also referred to as emerging adulthood (Przetacznik-Gierowska, 1996, s. 69). It is a period when the behaviour patterns which were developed at the experimenting stage in early adolescence become well established. This age group is at risk of developing health-damaging habits and an insufficient number of habits which are beneficial to health (Woynarowska, 2018, s. 254).

## 2. Research methodology

The issues which are the focus of the research problem addressed here are related to identifying a) the sense of coherence among secondary-school graduates, b) physical activity of secondary-school graduates, and c) mutual correlations between the two. The main research problem refers to defining the correlation between the sense of coherence and the physical activity of secondary-school graduates. The following detailed research questions were also formulated: 1. What are the levels of the sense of coherence among the young people taking part in the study, and how socio-demographic factors, such as gender and place of residence, influence these levels? 2. What are the levels of physical activity among the young people taking part in the study, and how socio-demographic factors, such as gender and place of residence, influence these levels?

The study covered 521 secondary-school graduates (average age: 18.2, with age ranging from 17 to 19). 448 questionnaires, which were correctly filled out, were subject to analysis (the remaining 73 questionnaires containing errors were not used for statistical calculations). The effectiveness indicator amounted to 75.11%. The research group consisted of 238 girls (56.5%) and 207 boys (45.5%)

203 respondents (45.4%) came from rural areas, while the other participants came from urban areas, including 118 residents of towns with a population of under 50,000 (27%), and 124 residents of cities with a population of over 50,000 (26.3%).

The study used the diagnostic survey method. The research material was collected with the following tools: The Orientation to Life Questionnaire (SOC -29) by A. Antonovsky (Koniarek, Dudek, Makowska, 1993, s. 494). and a physical activity screening measure for use with adolescents in primary care by J.J. Prochaska, J.F. Sallis and B. Long. The measure of physical activity is the Moderate to Vigorous Physical Activity (MVPA) index (Prochaska, Sallis, Long, 2001, pp. 558-559). It identifies the number of days per week a given research participant engaged in various forms of physical activity (for at least 60 minutes a day). The recommended physical activity level adopted by this study as satisfying the needs of young people was at least five days on which different forms of moderate physical activity were

pursued for at least 60 minutes. To calculate the indicator, the questionnaire included a definition of moderate physical activity, and asked secondary-school graduates: On how many days during the previous week did you engage in physical activity (including Physical Education classes) for at least 60 minutes? The possible answers ranged between 0 and 7 days. Those answers were used to calculate the average number of days per week on which the research participants spent at least 60 minutes on physical activity. According to the aforementioned recommendations, it was assumed that the ratio of at least 5 meant that the recommended physical activity level, i.e. the level which satisfies the needs of young people, was reached.

### 3. Research results

The first stage of the analysis determined the sense of coherence among secondary school graduates. The analysis was aimed at describing the sense of coherence within the research group. Table 1 shows the levels of the sense of coherence. In relation to the research group, low, moderate and high result ranges were indicated. The ranges were determined with the use of sten scores,<sup>2</sup> with a sten score of 1-3 indicating a low level, a score of 4-7 indicating a moderate level, and a score of 8-10 indicating a high level. The following result ranges were obtained:

- as regards comprehensibility (possible scores ranging from 11 to 77 points):

Low result range                      - 11 - 33 points

Moderate result range                - 34 - 50 points

High result range                      - 51 - 71 points

- as regards manageability (possible scores ranging from 10 to 70 points):

Low result range                      - 17 - 34 points

Moderate result range                - 35 - 56 points

High result range                      - 57 - 70 points

- as regards meaningfulness (possible scores ranging from 8 to 56 points):

Low result range                      - 12 - 28 points

Moderate result range                - 29 - 48 points

High result range                      - 49 - 56 points

- as regards the overall result (possible scores ranging from 29 to 203 points):

Low result range                      - 51 - 100 points

Moderate result range                - 101 - 152 points

High result range                      - 153 - 191 points

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<sup>2</sup> For more information on sten scores, see J. Brzeziński (1980, p. 175-176).

Table 1. Descriptive statistics for the levels of the sense of coherence (overall result and components)

SOC scales	N	M	SD	Min	Max
Sense of comprehensibility (SOCO)	448	42.34	8.77	28.3	76.00
Sense of manageability (SOM)	448	42.82	9.09	33.3	65.00
Sense of meaningfulness (SOME)	448	31.48	7.49	23.3	49.00
Overall result (SOC)	448	116.51	22.25	34.7	183.00

N - group size; M- mean value; SD - standard deviation; Min - minimum value in the research group; Max. - maximum value in the research group

The results in Table 1 show that young people in the senior year of secondary school are characterised by a moderate sense of coherence, both in the overall dimension and in respect of its components - sense comprehensibility, manageability and meaningfulness.

The statistical characteristics of other variables included in the sense of coherence studies are presented in Tables 2 and 3.

Table 2. Descriptive statistics for the sense of coherence and its components in groups of boys and girls

SOC scales	Sex	N	M	SD	SN
Sense of comprehensibility (SOCO)**	Girls	238	37.8	7.36	0.04
	Boys	207	40.5	10.08	0.05
Sense of manageability (SOM) <sup>1</sup>	Girls	238	40.34	8.28	0.05
	Boys	207	41.57	9.96	0.05
Sense of meaningfulness (SOME)	Girls	238	31.92	6.84	0.06
	Boys	207	30.99	8.16	0.06
Sense of Coherence (SOC)*	Girls	238	116.30	18.74	0.04
	Boys	207	116.76	25.73	0.04

N - group size; M- mean value; SD - standard deviation; SN - standard error of the mean

\*\* statistically significant difference in mean values at 0.01

\* statistically significant difference in mean values at 0.05

<sup>1</sup> statistically significant difference in mean values at 0.10

Taking gender into consideration, there are significant differences between boys and girls. Boys are characterised by statistically significant higher levels of the overall sense of coherence than girls ( $t_{(446)} = -2.25$ ;  $p < 0.05$ ). They also display a higher sense of comprehensibility than girls ( $t_{(446)} = -04.29$ ;  $p < 0.01$ ), which means that they perceive the surrounding world and the situations and events they encounter as clear and structured to

a greater extent than girls. A comparison of the mean values for the sense of manageability, only shows differences between girls and boys at the statistical tendency level ( $t_{(446)} = -0.171$ ;  $p < 0.10$ ). No impact of gender was observed for the sense of meaningfulness values ( $t_{(446)} = 0.66$ ; nil)

Based on the analysis of the results in Table 3 concerning correlations between the sense of coherence and its components, and place of residence, it was found that young people in their senior year of secondary school display no differences as regards the sense of coherence and its components: manageability and meaningfulness. There are only differences in sense of comprehensibility between respondents living in big cities, small towns and in rural areas.

Table 3. Distribution of mean values for the results for the sense of coherence and its components in groups of students in their senior year in secondary school, living in big cities, small towns or rural areas

SOC scales	Big city			Small town			Rural area		
	N	M	SD	N	M	SD	N	M	D
Sense of comprehensibility (SOCO)*	118	41.39	0.69	124	43.23	0.62	203	42.36	.67
Sense of manageability (SOM)		42.71	0.80		43.66	0.72		42.19	.77
Sense of meaningfulness (SOME)		32.76	0.90		31.82	0.94		30.71	.92
Overall result (SOC)		116.86	0.63		118.72	0.53		114.98	.63

N - group size; M- mean value; SD - standard deviation

\* statistically significant difference in mean values at 0.05

The aspect of physical activity was introduced in the second stage of analysis. Physical activity is a complex and multidimensional variable, and specific descriptive values, i.e. physical activity levels, were applied in the research.

The descriptive statistics are shown in Table 4.

Table 4. Physical activity levels in the research group, as broken down by gender and place of residence

Physical activity Ratio (MVPA)	Total		Boys*		Girls		City > 50,000		Town** < 50,00		Rural area	
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)
0 days	19	4.4	7	3.4	12	5.1	4	3.4	3	2.6	12	6.0
0.5 - 2.5 days	161	37.1	54	26.6	107	45.7	48	48.7	47	20.4	102	39.7
3.0 to 4.5 days	193	32.5	102	33.1	91	32.4	21	27.4	38	40.2	38	31.8
5 days or more	64	26.0	40	36.9	24	16.8	15	20.5	21	36.8	26	22.5

\*\* statistically significant difference in mean values at 0.01

\* statistically significant difference in mean values at 0.05

The results in Table 4 show that only 26% of the young people taking part in the research reached the recommended physical activity level (5 days or more). A statistically significant difference ( $p < 0.05$ ) was recorded in the percentage of research participants with sufficient physical activity levels, which were higher for boys (36.9%) than for girls (16.8%). Girls were found to spend a considerably smaller number of hours on physical activity than boys. In addition, 41.5% of all the respondents, including over a half of the girls (50.8%), were characterised by very low levels of physical activity (0 - 2.5 days). The results of the analysis proved that there is a statistically significant correlation between the number of hours devoted to physical activity, and the place of residence of the respondents ( $p < 0.01$ ), i.e., persons living in small towns spend a considerably higher number of hours doing physical activity than the remaining research groups.

The last stage of the analysis was to define the correlation between the sense of coherence and physical activity in the research group. (Table 5).

Table 5. The correlation between the sense of coherence and its components and the physical activity levels

	O	SM	E	SOC
Physical activity	0.117*	0.108*	0.114*	0.143*

\*\* The correlation is significant at the 0.01 level (2-tailed)

\* The correlation is significant at the 0.05 level (2-tailed)

SOCO - Sense of comprehensibility; SM - Sense of manageability;

SOME - Sense of meaningfulness; SOC - Sense of Coherence

The results of the analysis point to a statistically significant correlation between physical activity and the sense of coherence and its components. The higher the sense of physical activity found in a respondent, the higher his/her sense of coherence and its components: sense of comprehensibility, manageability and meaningfulness.

#### 4. Discussion

The results of this study showed that the average value of the sense of coherence in adolescents is 116.8. According to sten scores, it is a moderate result. The components of the sense of coherence: the sense of comprehensibility, manageability and meaningfulness also reached moderate values. This result is lower than the result of the research carried out among upper-secondary school students in Warsaw, which amounted to 128.5 (Mroziak, Czabała, Zwoliński, 1996, s. 102), and lower than the result of the research carried out among students at Polish universities (Binkowska-Bury, 2009, s. 100). Nonetheless, all the aforementioned results indicate moderate levels of the sense of coherence. According to A. Antonovsky, a strong sense of coherence acquired in childhood can be disturbed in adolescence, which is related to this developmental stage. Furthermore, life experience, in which cultural context and the social structure reality play important roles, has a significant impact on the development of a strong sense of coherence. In adolescence, the sense of coherence might be weakened by a complex open society offering a wide range of allowable realistic options, the integrated, homogeneous and relatively closed culture or pop culture, and the social and cultural contexts, which might lead to destruction and confusion, thus hindering the discovery of any meaning in life (Antonowsky, 2005, s. 102). The sense of coherence varies between the genders. Boys display a significantly higher overall sense of coherence than girls, also in relation to the sense of comprehensibility, whereas differences in the sense of manageability were recorded at statistical tendency level. No impact of gender was observed for the sense of meaningfulness. A similar tendency related to the higher sense of coherence in boys was found by H. Antonovska in her research carried out on a group of teenagers (Antonovsky, Sagy, 1986, p. 218). A Polish study which was conducted on a group of Warsaw secondary-school students also indicated a higher sense of coherence in the group of boys compared to girls (Mroziak, Czabała, Zwoliński, 1996, s. 151). This could result from the psychological differences caused by biological characteristics, and from different upbringing methods used in relation to boys and girls, where greater independence and self-sufficiency is developed in boys, which has its implications for their ability to cope with what life brings. Furthermore, men and women are prepared for assuming different roles in family and society, which results in social status differences which are more favourable to men than to women (Ben-David, 1996, pp. 13-20). Secondary-school graduates who live in big cities, small towns or rural areas did not display differences in relation to the overall sense of coherence and its two components, the sense of manageability and meaningfulness.

Differences were found only in relation to the sense of comprehensibility, which was lower for young people living in small towns compared to those living in big cities or rural areas. The results can be compared to the results of a study by A. Pohorecka and I. Jelonkiewicz which has indicated that students living in Warsaw obtained higher results in the sense of coherence than students from Ełk and Kraśnik (Pohorecka, Jelonkiewicz, 1995, pp. 43-57). The research results which refer to the differences in the sense of coherence resulting from the place of residence are inconclusive. Considering the results from the perspective of the social and cultural contexts, it should be assumed that the sense of coherence among young people should vary depending on their place of residence. However, this claim needs to be investigated further.

The research results show that only a quarter of the respondents reached the recommended physical activity level. The fact that the physical activity levels among girls were too low is a cause for concern. There were more boys in the group which reached the recommended physical activity levels. Low physical activity levels in girls are also confirmed by other studies. In a group of 18-year-old students taking part in a study by B. Zawadzka, the number of boys who reached the recommended levels was twice as high as the number of girls (Zawadzka, 2001, p. 318). It has been observed that motivation for physical activity decreases in adolescence, especially among girls. This results in profound changes to the physical activity structure in population, with the number of girls with minimum levels of physical activity growing with age (Żak, 1994, p. 12). Young people living in small towns spend a considerably greater number of hours on physical activity than young people living in big cities or rural areas. The results of a 2014 HBSC study also indicate that gender and living in a small town are factors that support the following of recommendations in respect of physical activity (Mazur, 2015).

As expected on the basis of the existing literature on the subject, positive correlations were recorded between the sense of coherence and its components, and levels of physical activity. The higher the physical activity found in a respondent, the higher his/her sense of coherence and its components: sense of comprehensibility, manageability and meaningfulness. The results of a study by P. Włodarczyk support this correlation. That study was carried out on a group of adults, and examined the correlations between the sense of coherence and its components, and the quantity and quality of health-enhancing behaviour related to physical activity (Włodarczyk, 2001, s. 13-18). The results of that research are consistent with the claim by A. Antonovsky (1997) that there is a connection between a high sense of coherence and health-enhancing behavior.

The following conclusions can be drawn from this study and its results:

- The mean sense of coherence, and the levels of its components, in a group of young people can be classified as moderate;
- Boys have a significantly higher sense of coherence than girls;
- Place of residence does not have any impact on the overall sense of coherence, or on the sense of manageability or meaningfulness. Differences were

found only in relation to the sense of comprehensibility, which was lower for young people living in small towns than for those living in big cities or rural areas.

- The proportion of young people following the recommendations related to the minimum physical activity necessary to retain health and proper development is 26%;
- The physical activity of girls is lower than that of boys;
- The place of residence significantly correlated with the occurrence of risks related to insufficient physical activity levels; small town background proved to be favourable to following recommendations on physical activity levels, whereas big cities were less favourable.
- A positive correlation was found between the sense of coherence and its components, and the levels of physical activity.

In general, the research findings presented here point to interesting conclusions, both theoretical and practical. Shaping the health-enhancing behaviour of young people is vital to developing the health potential of future generations and is one of the most important objectives of health education. It is a difficult task, since health behaviour is dependent on numerous internal and external factors. The sense of coherence, as an overall orientation based on a firm and strong conviction of the predictability and rationality of the world and individual life circumstances, is a personal asset which can significantly influence one's health behaviours (Antonovsky, 2005). A strong sense of coherence shaped during the upbringing process can become a factor which protects young people from engaging in risky behaviour, and may foster health-enhancing behavior (Linca-Ćwikła, 2018). These findings should not only be part of theoretical discussions, but also encourage efforts to incorporate measures aimed at developing a strong sense of coherence in health education curricula.

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