

# The Sense of Coherence, Self-Perception of Aging and the Occurrence of Depression Among the Participants of the University of the Third Age Depending on Socio-Demographic Factors

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**Purpose:** The aim of the study was to assess the relationship between the sense of coherence and self-perception of aging and the risk of depression among attendees of the University of the Third Age (U3A). The influence of socio-demographic factors was studied.

**Participants and Methods:** The study involved 315 attendees of the U3A aged on average 68.4 years, age range 60–82 years old. The overwhelming majority were women (91.7%). Cross-sectional research was conducted using standardized questionnaires – the SOC-29 scale, the Geriatric Depression Scale (GDS – brief version) and the author’s own questionnaire regarding self-perception of aging.

**Results:** The study participants showed an average level of sense of coherence (130.7±23.2). The highest number of people obtained average results of sense of coherence, both in terms of global SOC (75.2%) and its components. The highest scores on the SOC-29 scale were found for the sense of comprehensibility (41.3%). The mean value of the self-perception of aging was 69.0±16.0 and indicates the lower range of results for positive attitude. Nearly ¾ (72.1%) of the respondents had a positive self-perception of aging. The values of the scale of self-perception of aging showed a statistically significant relation to the global level of sense of coherence and its components ( $p < 0.001$ ). In people without depression, positive self-perception of aging was significantly more frequent than among participants with depression of increasing intensity. Education was significantly correlated with the results of the SOC-29 scale, the self-perception of aging scale and the GDS scale.

**Conclusion:** From the U3A research group, better educated elderly people have a higher sense of coherence and show a more positive self-perception of aging. Moreover, these people are less likely to show signs of senile depression.

**Keywords:** sense of coherence, SOC, self-perception of aging, depression, socio-demographic factors, University of the Third Age, U3A

## Introduction

Increasing life expectancy and decreasing birth rates are the causes of one of the biggest global problems – population aging. The population aged over 65 is currently the fastest growing age group in developed countries. It is estimated that by mid-21st century the number of people aged 60 and over will reach 21.5%. At the same time, the population of the “oldest” (aged 80 and over) will also grow, from 1.7% to 4.5% of the population.<sup>1</sup> Ensuring that this group maintains a good quality of life and well-being

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and shows a positive perception of old age is becoming one of the major global challenges.

The aging process is associated with an increasing risk of adversity, including potential loss of loved ones, illness and reduction in functional capacity.<sup>2</sup> Personal resources are needed to adapt to the challenges of adversity in old age.<sup>3</sup> They provide older people with control over their well-being even in the event of health or function disorders.<sup>4</sup> Personal resources, such as extraversion, optimism, self-efficacy, resilience or a positive attitude, contribute to a successful aging.<sup>2,5</sup> Measuring personal resources can be useful in identifying those in the early stages of life who are more likely to be at risk of unsuccessful aging and depression in late life.<sup>6</sup> The type of self-perception of aging (SPA) and a sense of coherence (SOC) can be the two main psychological resources linked to the risk of depression.

First of them, self-perceptions of aging, describe individuals' experiences with the aging process and expectations about the outcome and process of getting older.<sup>7</sup> A large cross-sectional study with 4240 elderly Chinese of 55 years old or older found that those with more positive attitudes towards aging reported better mental health outcomes.<sup>8</sup> Malaysian study with group of residents of a non-governmental charity elderly care residential institution aged 60–69 showed that positive attitudes towards aging are associated with better quality of life.<sup>9</sup> Positive perceptions of aging have a (positive) connection not only with the quality of life of older people.<sup>10</sup> They also influence its length, because negative self-perception of aging is associated with a higher risk of death in old age.<sup>11</sup> Levy's studies based on the group of 1507 Australians aged 65–103 have shown that older people with a more positive perception of aging have lived 7.5 years longer than those with a less positive perception of aging.<sup>12</sup> Many older people have a negative perception of aging due to problems caused by poor or deteriorating health and daily functioning.<sup>13</sup> Socio-demographic factors have also been shown to influence the perception of aging and its consequences.<sup>14</sup> The impact of self-perception of aging on health and life expectancy is already well documented as important for successful aging process. Wurm and Benyamini indicated a link between negative perception of aging and depression.<sup>15</sup> Our study is concentrated on the factors contributing to self-perception of aging in terms of reducing the risk of depression. One of the factors having impact on self-perceptions of aging can be sense of coherence.

According to Antonovsky sense of coherence (SOC) is a global orientation that expresses the extent to which

a person has a pervasive, enduring yet dynamic sense of comprehensibility, sense of manageability and sense of meaningfulness.<sup>16</sup> Antonovsky is looking for origins of health in the sense of coherence.<sup>17</sup> According to the theory of salutogenesis, people with a higher sense of coherence present a lower incidence of somatic symptoms, sleep disorders, anxiety and a lower risk of depression.<sup>16</sup> A. Antonovsky's salutogenesis concept shows that the sense of coherence reaches a relatively stable level in humans around 28–30 years of age.<sup>16</sup> However, recent gerontological study with study group of 43,598 participants aged 18–85 have shown that sense of coherence is a factor developing with time through the life cycle and experience.<sup>18</sup> A lack of focus on the negative past and a high orientation towards the future have a significant impact on the sense of coherence. The Wiesmann's study on the population of 210 individuals aged 70.4 on average showed that SOC is one of the important predictive factors for positive aging.<sup>19</sup> Dezutter based on the group of 100 persons aged 76.5 on average pointed to the positive correlation between the sense of coherence and mental well-being.<sup>20</sup> What is important, a strong sense of coherence is clearly linked to subjective well-being, even very aged individuals with high SOC scale scores turned out to be in better shape and had lower mortality rates.<sup>21,22</sup> Misawa in a longitudinal study with 3464 older people aged 65 or more pointed that a strong sense of coherence was linked to a lower chance of depression.

According to the World Health Organization (WHO), depression is one of the most common health problems among older people.<sup>23</sup> Vaughan's meta-analysis showed that 6.5% to 21.3% of people aged 55 and over suffer from depression.<sup>24</sup> The most serious risk of depression is suicide. Depression is one of the most common causes of suicidal behavior.<sup>25</sup> According to the Polish Police Headquarters, in 2019 alone, 5255 people died as a result of suicides, 1643 of whom were over 60 years old.<sup>26</sup> Depression is a serious disease, common in late adulthood, but can be difficult to spot and diagnose due to the presence of so-called masks of depression in the form of various somatic disorders.<sup>27</sup> Therefore, in our opinion, the analysis of depressive behavior when examining the self-perception of aging and SOC seems highly justified.

## Purpose

The aim of the study was to assess the relationship between the sense of coherence and self-perception of aging and the risk of depression among students of the

University of the Third Age (UTW), depending on socio-demographic factors.

The following research hypotheses were made:

1. The U3A attendees show an average sense of coherence.
2. A positive self-perception of aging dominates among the U3A attendees.
3. The low level of sense of coherence is associated with a negative self-perception of aging and the risk of late age depression.
4. As far as socio-demographic factors are concerned, the level of education of the participants has the greatest influence on the sense of coherence and self-perception of aging.

## Participants and Methods

### Participants and Data Collection

All 600 attendees of the University of Third Age operating in the city of Bydgoszcz (Poland) were invited to take part in the cross-sectional study. It has been established that there are around 340 active attendees, so many questionnaires have been prepared, out of which 315 completed questionnaires have been collected. Two hundred and eighty-nine women (91.7%) and 26 men (8.3%) with an average age of  $68.4 \pm 4.6$  (age range 60–82) participated in the study.

The research was conducted using questionnaire-based survey. This was a cross-sectional research. Participation was voluntary and anonymous. The basic criterion for the selection of persons for the research was the fact of attending the University of the Third Age. The participants were familiarized with the purpose and scope of the study in advance. The study was conducted on the dates of organized lectures at the University of the Third Age and the completed questionnaires were placed in specially prepared ballot boxes in order to ensure anonymity.

### Measurements and Procedure

The following research tools were used for the surveys:

Sense of Coherence Scale (SOC-29) by Antonovsky (2005) was used to measure the sense of coherence. The range of point scale from 1 to 7 of Antonovsky's research tool was included in the interval of 29–203 points, where the range of obtainable results for the sense of comprehensibility was 11–77, manageability 10–70, and for meaningfulness components 8–56. Obtaining a high result implied strong SOC. The calculations were made according to the SOC-29

scale key. The overall score on the SOC-29 scale in the range of 51–100 indicated a low sense of coherence, in the range of 101–152 – an average sense of coherence and above 152 points – a high sense of coherence.

The questionnaire concerning self-perception of aging was an author's tool, the first in Poland, to evaluate self-perception of aging in the population of older people. The questions were prepared based on the review of available literature. Author's questionnaire concerning self-perception of aging, consisting of basic socio-demographic data (gender, age, education, marital status, offspring quantity) and 26 questions about the self-perception of aging was used. The questions concerned such aspects as: evaluation of previous life, the possibility of achieving life goals and developing passions, enjoying the old age, feeling of fulfilment, the sense of need in the family and society and serving as authority for the younger generations, fulfilling social roles, feeling of attractiveness and vitality, experiencing respect in the family and society. There were also questions about the feeling of loneliness, depression, discrimination, burdening the loved ones, experiencing fears of biological aging and life losses. The questionnaire also included a question about attributing to children the obligation to care for their elderly parents or accepting their place of residence.

Each of the questions was evaluated on a scale of 0–4 points: yes – 4 points, rather yes – 3 points, neutral – 2 points, rather no – 1 point, no – 0 points. In total the participant was able to obtain 0–104 points. The assessment was determined according to the following interpretation: 0–41 points – negative self-perceptions of aging (0–40%), 42–62 points – neutral self-perceptions of aging (40–60%) and 63–104 points – positive self-perceptions of aging (60–100%).

The Geriatric Depression Assessment Scale (GDS) – in its short version contains 15 features and is a frequently used self-assessment screening tool in overall geriatric assessment. The participants marked the answer yes/no. A total of 0–15 points could be obtained. The result is read using a template as an attachment to this scale. Interpretation of the result: 0–5 points indicate no depression and the range of the result 6–15 points is interpreted as increasing depression. The score is positive, higher which a means more severe depression.<sup>28</sup>

### Ethical Approval

The study was approved by the Bioethics Committee of the Nicolaus Copernicus University Collegium Medicum in Bydgoszcz, Poland (KB 321/2019). The research was conducted in accordance with the Helsinki Declaration All participants provided informed consent for the research.

## Statistical Analysis

Statistical analysis was performed in Statistica 10.0 and a using Microsoft Excel spreadsheet, using standard functions of this program. The statistical significance  $p < 0.05$  was adopted. Arithmetic mean, standard deviation, median, minimum and maximum values were calculated. The strength and direction of the relationship between the two variables was calculated based on Spearman's  $r$ -rank correlation coefficient ( $r$ ) values. Depending on the number of subgroups, Mann-Whitney  $U$ -test or Kruskal-Wallis test with Dunn's post hoc test was used to assess the significance of intergroup differences in the values of analyzed measurable variables. The chi-quadrant test was used to assess the significance of intergroup differences in discrete variable distributions.<sup>29</sup>

## Results

The characteristics of the participants are presented in Table 1.

### The Sense of Coherence and the Influence of Socio-Demographic Factors

The average value for the global sense of coherence score (SOC) amounted to  $130.7 \pm 23.2$  points, with the median amounted to 132.0 points. Statistical characteristics of the

**Table 1** Characteristics of Participants (n=315)

Category		Mean $\pm$ SD	n	%
Age		<b>68.4<math>\pm</math>4.611</b>		
Age group	60–65 years of age		86	27.3
	66–70 years of age		136	43.2
	71–75 years of age		70	22.2
	76–82 years of age		23	7.3
Gender	Female		289	91.7
	Male		26	8.3
Education	Primary		26	8.3
	Secondary		198	62.9
	Higher		91	28.9
Marital status	Single		19	6.0
	Married		219	69.5
	Divorced		18	5.7
	Widowed		59	18.7
Offspring quantity	No children		26	8.3
	One		65	20.6
	Two		140	44.4
	Three		57	18.1
	Four and more		27	8.6

**Abbreviation:** SD, standard deviation.

**Table 2** Descriptive Statistics of SOC and Its Components: The Sense of Comprehensibility, Manageability and Meaningfulness

SOC	n	Range	Mean $\pm$ SD	Median
Sense of comprehensibility	315	19–75	46.6 $\pm$ 9.9	47.0
Sense of manageability	315	17–69	46.6 $\pm$ 8.6	47.0
Sense of meaningfulness	315	18–56	37.6 $\pm$ 7.6	39.0
Global SOC	315	62–102	130.7 $\pm$ 23.2	132.0

**Abbreviations:** SOC, sense of coherence; SD, standard deviation.

global sense of coherence level and its components are presented in Table 2. Most of the study participants (n=237, 75.2%) showed an average level of sense of coherence, which is shown in detail in Table 3. Statistically significant relationships between the global level of sense of coherence or its components and the gender, age and education of the study participants were demonstrated. Women had a significantly higher mean level of sense of coherence than men ( $38.0 \pm 7.4$  points vs  $33.1 \pm 8.0$  points,  $p=0.017$ ). The age of the participants showed a statistically significant, weak reverse correlation when it comes to the level of meaningfulness ( $r = -0.127$ ,  $p=0.024$ ). The education remained in statistically significant, weak positive correlation with the global level sense of coherence ( $r=0.182$ ,  $p=0.001$ ) and its components – manageability ( $r=0.169$ ,  $p=0.003$ ) and meaningfulness ( $r=0.240$ ,  $p<0.001$ ). There were no statistically significant correlations between the global level of sense of coherence and its components and the marital status of the study participants and the offspring quantity.

### The Results of the Scale of Self-Perception of Aging

The average value of the scale of the self-perception of aging was  $69.0 \pm 16.0$  points, with a median value being 71.0 points (range 18–101 points). The distribution of scale values in the studied group is shown in Figure 1. Nearly  $\frac{3}{4}$  of participants (n=227, 72.1%) had a positive perception of old age. The highest average results were obtained in the case of questions concerning acceptance of one's place of residence ( $3.2 \pm 0.9$  points), joy of life ( $3.2 \pm 0.9$  points), sense of discrimination ( $3.1 \pm 1.0$  points), and allocation to the children of the responsibility to provide care for elderly parents ( $3.1 \pm 1.9$  points) and positive evaluation of life ( $3.1 \pm 0.8$  points), and the lowest values – with regard to the sense of fear and unfavorable changes connected with aging ( $M=1.4 \pm 1.1$ ), perceiving oneself as

**Table 3** Distribution of SOC Scale Values and Its Domains: Low, Average and High Values (n=315)

Parameters	Global SOC	Sense of Comprehensibility	Sense of Manageability	Sense of Meaningfulness
	n (%) of Participants	n (%) of Participants	n (%) of Participants	n (%) of Participants
Low	28 (8.9)	29 (9.2)	25 (7.9)	50 (15.9)
Average	237 (75.2)	156 (49.5)	252 (80)	250 (79.4)
High	50 (15.9)	130 (41.3)	38 (12.1)	15 (4.8)

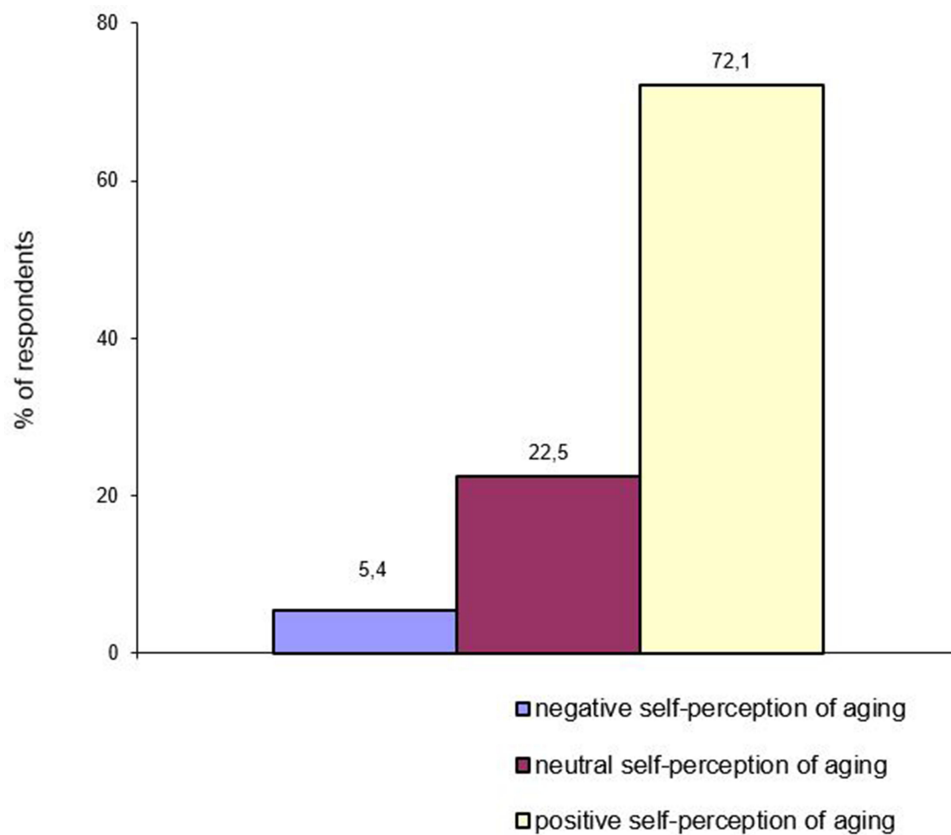
**Abbreviation:** SOC, sense of coherence.

problematic for the closest people ( $M=1.9\pm 1.1$ ) and experiencing many losses in life with age ( $M=2.2\pm 1.2$ ).

### Correlations Between Self-Perception of Aging and the Results of the SOC-29 Scale

The values of the scale of self-perception of aging showed a statistically significant correlation with the global level of sense of coherence and its components ( $p<0.001$ ) (Table 4). The post hoc analysis showed that participants with positive self-perception of aging had significantly higher levels of sense of coherence than those with neutral ( $p<0.001$ ) or negative ( $p<0.001$ ) self-perceptions of

aging; the difference in global sense of coherence levels in participants with neutral and negative self-perception of aging was on the verge of statistical significance ( $p=0.051$ ). Participants showing positive self-perception of aging were also characterized by significantly higher levels of comprehensibility, manageability and meaningfulness than participants showing neutral or negative self-perception of aging (for all post hoc comparisons  $p<0.001$ ). Moreover, the levels of manageability and meaningfulness in the group with a neutral self-perception of aging turned out to be significantly higher than among those showing negative self-perception of aging ( $p=0.028$  and  $p=0.042$  respectively).



**Figure 1** Distribution of attitudes towards one's own old age among survey participants.

**Table 4** Statistical Characteristics of the SOC Scale and Its Domains Depending on Attitudes Towards Old Age

Parameters	Global SOC	Sense of Comprehensibility	Sense of Manageability	Sense of Meaningfulness
Self-Perceptions of Aging	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Negative	87.1 ± 15.5	33.1 ± 7.2	30.9 ± 7.5	23.0 ± 4.0
Neutral	111.8 ± 16.6	39.9 ± 7.3	40.8 ± 5.8	31.1 ± 6.1
Positive	139.9 ± 17.5	49.7 ± 8.9	49.5 ± 7.1	40.7 ± 5.3
H	H (df=2, n=315) =126.000	H (df=2, n=315) =83.497	H (df=2, n=315) =103.062	H (df=2, n=315) =125.582
p-value	<0.001	<0.001	<0.001	<0.001

**Notes:** H – Kruskal–Wallis test. Post-hoc analysis: Global SOC: negative vs neutral  $p = 0.051$ , negative vs positive  $p < 0.001$ , neutral vs positive  $p < 0.001$ . Comprehensibility: negative vs neutral  $p = 0.137$ , negative vs positive  $p < 0.001$ , neutral vs positive  $p < 0.001$ . Manageability: negative vs neutral  $p = 0.028$ , negative vs positive  $p < 0.001$ , neutral vs positive  $p < 0.001$ . Meaningfulness: negative vs neutral  $p = 0.042$ , negative vs positive  $p < 0.001$ , neutral vs positive  $p < 0.001$ .

**Abbreviations:** SOC, sense of coherence; SD, standard deviation.

## The Self-Perception of Aging and the Influence of Socio-Demographic Factors

A statistically significant negative correlation was found between the values of the self-perception of aging scale and the age of the study participants ( $r = -0.123$ ,  $p = 0.029$ ), as well as a significant positive correlation was found between the values of this scale and education ( $r = 0.168$ ,  $p = 0.003$ ). The values of the scale of self-perception of aging did not show any significant correlation with the gender and marital status of the study participants and the offspring quantity.

## GDS Scale Results and the Influence of Socio-Demographic Factors

The average value of GDS scale was  $4.5 \pm 3.7$  points (range 0–15 points). In the study group, participants without depression prevailed ( $n = 217$ , 68.9%). The remaining study participants (31.1%) showed depression of increasing severity. GDS scale values showed statistically significant relationships with all analyzed socio-demographic variables. The mean value of GDS scale in men was significantly higher than in women ( $6.2 \pm 4.3$  points vs  $4.3 \pm 3.7$  points,  $p = 0.005$ ). The age of participants remained in a statistically significant, weak positive correlation with GDS scale values ( $r = 0.129$ ,  $p = 0.022$ ). Widowed persons had significantly higher GDS scale values than married study participants ( $5.6 \pm 3.8$  points vs  $4.2 \pm 3.6$  points,  $p = 0.050$ ). Furthermore, there was a statistically significant negative correlation between the GDS scale values and education ( $r = -0.200$ ,  $p < 0.001$ ) and a statistically significant positive correlation between the scale values and the offspring quantity ( $r = 0.113$ ,  $p = 0.044$ ).

## Self-Perception of Aging and Depression

Statistically significant differences were found in the distribution of self-perception of aging in participants with and

without depression; detailed analysis showed that in people without depression positive self-perceptions of aging were significantly more frequent than among participants with increasing depression ( $p < 0.001$ ) (Table 5). Compared to people with depression, participants without depression also had significantly higher results of sense of coherence and its components: comprehensibility, manageability, and meaningfulness (for all comparisons  $p < 0.001$ ) (Table 6).

## SOC-29 Scale Values Depending on the Analyzed Explanatory Variables

The distributions of SOC scale values depending on the analyzed explanatory variables are presented in Table 7. Among people with higher education, high SOC scale values were significantly more frequent than among participants with primary or secondary education (for both comparisons  $p = 0.003$ ). The percentage of participants with low SOC scale values was significantly lower among people with positive self-perception of aging than among people with neutral or negative self-perceptions of aging (for both comparisons  $p < 0.001$ ); the percentage of study participants with low

**Table 5** Distribution of GDS Scale Values According to Attitudes Towards Old Age ( $n = 315$ )

Parameters	Without Depression	Depression of Increasing Severity	p-value
Self-Perceptions of Ageing	n (%) of Participants	n (%) of Participants	
Negative	0 (0)	17 (100)	<0.001
Neutral	16 (22.5)	55 (77.5)	
Positive	201 (88.5)	26 (11.5)	

**Abbreviation:** GDS, Geriatric Depression Scale.

**Table 6** Statistical Characteristics of the SOC Scale and Its Domains Depending on the Occurrence of Depression (n=315)

Parameters	Global SOC	Sense of Comprehensibility	Sense of Manageability	Sense of Meaningfulness
Depression	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Without depression	140.2 ± 17.1	49.8 ± 8.6	49.6 ± 7.0	40.9 ± 5.1
Depression of increasing severity	109.8 ± 21.2	39.6 ± 9.1	39.9 ± 8.1	30.3 ± 7.0
p-value	<0.001	<0.001	<0.001	<0.001

**Abbreviations:** SOC, sense of coherence; SD, standard deviation.

SOC scale values was also significantly lower among people with neutral self-perception of aging than among people with negative self-perceptions of ageing ( $p < 0.001$ ). The percentage of study participants with high SOC scale values was also significantly higher among people without depression than among people with depression ( $p < 0.001$ ).

## Discussion

Our research evidences that there are mutual relations between the sense of coherence, the self-perception of aging and the results of the GDS scale. In our own research presented here, the level of education positively

correlated both with the sense of coherence and self-perception of aging and negatively correlated with the results of the GDS scale. The results of our research have shown significant correlations between the sense of coherence and the level of education, which clearly corresponds to the results obtained from other studies.<sup>30</sup> The differentiating factor in the results of our study was age, both in relation to the perception of old age and depression and the “meaningfulness” component of the sense of coherence. Our research shows that the sense of meaningfulness in old age significantly decreases with the passage of years ( $p < 0.05$ ), which may be caused by the lack

**Table 7** Distribution of SOC Scale Values (Low, Average, High) According to Explanatory Variables

Parameters	SOC	Low	Average	High	p-value
N Participants = 315		n (%)	n (%)	n (%)	
Gender	female	23 (8)	220 (76.1)	46 (15.9)	0.265
	male	5 (19.2)	17 (65.4)	4 (15.4)	
Age group	60–65 years of age	9 (10.5)	65 (75.6)	12 (14)	0.396
	66–70 years of age	13 (9.6)	100 (73.5)	23 (16.9)	
	71–75 years of age	6 (8.6)	52 (74.3)	12 (17.1)	
	76–82 years of age	0 (0)	20 (87)	3 (13.0)	
Education	primary	3 (11.5)	20 (76.9)	3 (11.5)	<0.001*
	secondary	21 (10.6)	154 (77.8)	23 (11.6)	
	higher	4 (4.4)	63 (69.2)	24 (26.4)	
Offspring quantity	no children	4 (15.4)	18 (69.2)	4 (15.4)	0.105
	one	2 (3.1)	47 (72.3)	16 (24.3)	
	two	10 (7.1)	114 (81.4)	16 (11.4)	
	three	9 (15.8)	39 (68.4)	9 (15.8)	
Marital status	single	2 (10.5)	13 (68.4)	4 (21.1)	0.291
	married	15 (6.8)	172 (78.5)	32 (14.6)	
	divorced	2 (11.1)	10 (55.6)	6 (33.3)	
	widowed	9 (15.3)	42 (71.2)	8 (13.6)	
Self-perceptions of aging	negative	13 (76.5)	4 (23.5)	0 (0)	<0.001*
	neutral	13 (18.3)	58 (81.7)	0 (0)	
	positive	2 (0.9)	175 (77.1)	50 (22)	
Depression	without depression	1 (0.5)	169 (77.9)	47 (21.7)	<0.001
	with depression	27 (27.6)	68 (69.4)	3 (3.1)	

**Notes:** \*The results of detailed comparisons: Education level: primary vs secondary  $p = 0.990$ , primary vs higher  $p = 0.003$ , secondary vs higher  $p = 0.003$ . Self-perceptions of aging: negative vs neutral  $p < 0.001$ , negative vs positive  $p < 0.001$ , neutral vs positive  $p < 0.001$

**Abbreviation:** SOC, sense of coherence.

of perspectives for the future and life situation not improving. Thus, a comprehensive activation of an aging individual may at least slightly improve their mental condition. It is important to direct the elderly person towards new life goals, such as attending the U3A. This component of the sense of coherence, ie “meaningfulness”, as reported by other authors, may also significantly decrease in widowed persons.<sup>31</sup> However, it has not been confirmed by our research results. Our research indicates the need for a more in-depth observation as part of a comprehensive evaluation and geriatric care of men, as they are at a greater risk of developing age-related depression. Same goes for the widowed. This is of particular importance because, as our research has shown, men have a significantly lower sense of meaningfulness than women. Therefore, it would be more effective to motivate participation in lifelong learning at the U3A. Participants with higher SOC scores showed lower GDS scale scores, which means that those with a stronger sense of coherence showed less symptoms of depression.

It is worth quoting here some interesting results from large studies (n = 910) of the Swedish population indicating a significant increase of the sense of coherence with age.<sup>32</sup> It has not been confirmed in our study results. We can assume that this may be due to the life experience which increases with age.

In our study, almost  $\frac{3}{4}$  of the older people questioned (72.1%) showed a positive self-perception of aging, which is comparable to the results of the study (78.4%) conducted in Malaysia.<sup>33</sup> Slight differences can be explained by the more positive views on the aging of Asian cultures compared to members of Western society.<sup>34</sup>

Our study showed a correlation between self-perception of aging and the result of the Geriatric Depression Scale. Other authors have obtained similar results. According to Wurm and Benyamini’s research, the self-perception of aging is related not only to the occurrence of depression, but also to the severity of symptoms. In their study, those people who showed negative self-perception of aging also had more severe depressive symptoms, which is confirmed by the results of our own studies.<sup>15</sup> Han also conducted research on depressive symptoms in the context of self-perception of aging. Han’s study on chronic diseases and depressive symptoms in the elderly showed that negative self-perception by the elderly worsened the impact of accompanying chronic diseases on depressive symptoms.<sup>35</sup> Older people have a multi-disease pattern, so it would be important to study

self-perception of aging in order to identify people at risk of depression. The Freeman’s study based on the group of 6095 Irish people aged 50 years old and above showed that negative perception of aging heralds the onset and persistence of depression.<sup>36</sup> The link we have demonstrated between self-perception of aging and co-occurrence of depression, confirmed by other authors, may indicate that early identification of people with negative self-perception of aging could indicate people at risk and early diagnosis of the disease could help to treat it and improve the quality of life of older people.

Our research deals with the important issue of attitudes. Unfortunately, we cannot refer to literature data on the relationship between the sense of coherence and self-perception of aging, because we notice a research gap in research reports in this area. In the future, we will try to deepen the scope of our research in order to broaden this topic, because in the context of ongoing demographic change and the increase in the proportion of older people in the world’s population this is a very important aspect.

The results of our study prove also that there is a link between the global outcome of the sense of coherence and all its components and the coexistence of depression. Dezutter’s study also confirms our results. He discovered that elderly people with a strong sense of coherence experienced less severe depression symptoms and showed a higher level of satisfaction with their lives.<sup>20</sup> Similar results were obtained by Drageset in the study of elderly people with cancer and living in nursing homes. The study showed that a sense of coherence was associated with the reduction of depression symptoms.<sup>37</sup> In turn, Misawa in a longitudinal study with 3.464 older people aged 65 or above living in Japan proved that a strong sense of coherence was linked to a lower chance of depression in both sexes.<sup>38</sup> Guo also proved that a sense of coherence was linked to depression in the group of 3000 elderly patients with stroke.<sup>39</sup> According to Antonowsky’s theory of salutogenesis, people with a higher sense of coherence have a lower propensity for depression.<sup>16</sup> A person with a strong sense of coherence believes that life and the aging processes that affect him or her make sense, treats aging as a challenge and even if he or she suffers from illness, death of a loved one or the negative effects of aging, they see sense in this too, do not feel a victim of fate, do not sense that life is unfair to them and are able to cope with it and does not despair for too long.

It should be noted that there are socio-demographic factors influencing the occurrence of depression. Our



study has shown that there is a statistically significant correlation between depression and factors such as gender, age, level of education, marital status, offspring quantity and the type of self-perception of aging. Men find it harder to cope with the loss of health, vitality or a loved one. Maintaining the image of masculinity, strength and emotional control becomes a challenge under the influence of adversities related to aging.<sup>40</sup> Widows are more likely to seek positive reframing, active distraction as well as seek help and ask God for strength, while widowers tend to apply avoidance strategies, such as trying to forget and suppress pain with alcohol, increasing symptoms of depression and anger.<sup>41</sup> Own research has shown the importance of the number of children for the occurrence of depression in the studied group. As evidenced by the results of our own research presented herein, multiple births are conducive to depression, which may be related to the family's more difficult financial situation. In turn, as shown by our own research, the offspring quantity does not show any significant connection with their self-perception of aging. Ylli's research has shown that the incidence of depression is significantly related to low levels of education which is mostly in line with the results of our research.<sup>42</sup>

## Limitations of the Study

The limitation in the own research presented here was a small percentage of men (8.3%) participating in the study with a predominance of women (91.7%), which is due to the continuing trend – feminization of the UTA, which is also confirmed by Brazilian studies with 90% of female participants.<sup>43</sup> This is related to the feminization of old age and, unfortunately, little interest in this form of continuing education on the part of men. The distribution of most of the socio-demographic factors taken into account in this study was uneven (a definite prevalence of women over men, those in a relationship over singles, a definite majority of respondents with secondary and tertiary education, etc.), which excluded the creation of reliable multidimensional models of appropriate strength. The aim of the study was not to analyze the cause–effect relationship, and based on the correlation analysis we investigated the occurrence of mutual dependencies. Therefore, no directional conclusions can be drawn from the authors' results. It is necessary to extend the research.

Another limitation was that the research was based on a non-standardized author's tool when evaluating self-

perception of aging. The study was carried out at the University of the Third Age in order to obtain a uniform group for research. The selection of the research group on the basis of participation in the U3A may result in the generalization of results.

## Implications

Conducting screening for a sense of coherence already in the pre-old age would make it possible to identify people at risk of negative self-perception of aging and include them in preventive measures, such as encouraging them to participate in U3A. The sense of coherence – as one of the important personal resources of an individual, should be constantly strengthened in educational and pedagogical influences, and especially the sense of meaningfulness, which, according to our research, shows a downward trend in old age. Strengthening this component by focusing on new life goals (U3A) can effectively reduce the risk of old age depression and improve the overall functioning of the growing population of older people in times of demographic change. However, in order to draw more generalized conclusions, this requires further expanded research.

## Conclusion

- The attendees of U3A show an average level of sense of coherence and most of them (72.1%) have a positive self-perception of aging.
- A significant positive relationship was shown between the sense of coherence and self-perception of aging.
- Better educated older people have a higher sense of coherence and a positive self-perception of aging.
- Men, the widowed, the older ones, the less educated and those with many children are more likely to show depression.
- In the pursuit of a better perception of old age, the individual's personal resources, including the sense of coherence, should be strengthened. The individual should also be motivated to develop at all stages of life.

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## Author Contributions

All authors made a significant contribution to the work reported including the conception, study design, execution, acquisition of data, analysis and interpretation and took part in drafting, revising and critically reviewing the article. Both authors gave final approval of the version to be published and agree to be accountable for all aspects of the work.

## Disclosure

The authors report no conflicts of interest in this work.

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