A Polish adaptation
of the *Self-Assessed Wisdom Scale* (SAWS) in older adults

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Summary

Aim. The paper presents the results of work on the Polish adaptation of the *Self-Assessed Wisdom Scale* (SAWS). It presents the psychometric properties of the Polish version of the tool.

Method. The research was quantitative in nature and it was carried out in a correlation scheme. The respondents completed a set of questionnaires. 880 subjects aged 60–80 years ($M = 68.15$; $SD = 5.96$) participated in the study. Apart from the SAWS six other psychological methods were used. The selection of measuring tools was purposeful.

Results. The final Polish version of the SAWS consists of 40 items (including 36 diagnostic ones) that make up 5 dimensions of wisdom: (1) "Critical Life Experience", (2) "Emotional Regulation", (3) "Reminiscence and Reflectiveness", (4) "Openness" and (5) "Humor". The reliability index for the entire scale (36 items) was $\alpha = 0.92$ (very high). Reliability values (Cronbach's α) for individual scales vary from $\alpha = 0.60$ to $\alpha = 0.84$. The validity of the scale was evaluated by means of confirmatory analysis.

Conclusions. The results are consistent with the original version of the scale, thus it has been indicated that the Polish version of the SAWS fulfils the psychometric requirements for psychological tests. The scale can be applied in scientific research.

Key words: wisdom, older people, Polish adaptation

Introduction

Carefully analyzing the literature on the subject of aging and old age, one can easily come to the conclusion that the last stage of human life is most often associated with wisdom [1-3]. At the same time, researchers emphasize that the age of a person, although an important factor determining the disclosure of wisdom, is not the only and sufficient condition [4, 5]. The question arises, therefore, what contributes to the formation and growth of wisdom, if the time factor itself does not guarantee its evolving.

In the field of psychology, effective search for the answer to this question pre-supposes, among others, the necessity to conduct empirical research using methods with high psychometric values that would allow reliable and accurate measurement of wisdom [6-8]. The construction of this type of tools is quite a challenge. Wisdom is an interdisciplinary and multidimensional construct [9-11], and therefore difficult to operationalize [12, 13]. However, this does not mean that there are no activities in this area. Some researchers dealing with the issue of wisdom undertook efforts to develop scales that allow measuring this variable [7, 14, 15]. It is worth noting that none of these methods is better (in the sense of scientific reliability) than the others, because each of them is based on different theoretical models (concepts) of wisdom, which can be treated not only as competitive, but more as complementary to each other [7].

It is worth emphasizing that the wisdom research to date has resulted in a multitude of conceptions of this construct [9, 11, 16]. This fact suggests, on the one hand, that in the last three decades, the interest in the issue of wisdom increased significantly on the grounds of social sciences, and on the other hand it indicates that among scholars dealing with wisdom there still is a lack of universal agreement as to its understanding and interpretation [17-19]. While, as Staudinger and Pasupathi [20] note, the essence of understanding wisdom is universal (overcultural), in the area of more precise deliberations there may be some discrepancies. Their perception and insightful analysis make it possible to systematize the views on wisdom present in psychological literature [see 7, 13, 21].

In Polish psychological literature concerning the problem of wisdom, mainly theoretical and review studies dominate [22-25]. This probably results from the fact that in Poland there is a visible "gap" in the methods used to measure wisdom. So far, only one scale (3D-WS; Ardelt, 2003) has been translated and adapted to Polish conditions. The authors of the Polish version of this tool are Steuden, Brudek, and Izdebski [26]. This circumstance became the main reason for undertaking the work on the Polish adaptation of the SAWS [27, 28], which would meet the psychometric requirements of psychological tests [29], and thus could be successfully used in research on the Polish population of seniors.

Other motives that led to the decision to implement the research project on the translation and adaptation of SAWS to Polish conditions were: (1) the possibility of conducting comparative tests on the Polish sample of seniors in terms of psychometric properties of two most frequently mentioned wisdom scales in the literature: 3D-WS and SAWS [see 7, 30]; (2) the willingness to undertake international and intercultural research in the area of conditions (development) of wisdom [see 31-33] – it is worth mentioning that there are several translations and/or adaptations of this tool: Jordanian [34], Slovak [35], and Portuguese [36].

The aim of the article is to present the psychometric properties of the Polish adaptation of the SAWS scale – factor structure, reliability and theoretical (factor) validity. Based on previous research [27, 28, 30], the following hypotheses were put forward:

Hypothesis 1: The examined sample will reveal a five-factor structure of the tool, confirming the factorial validity of the Polish version of SAWS.

Hypothesis 2: The reliability index for the entire scale (α – Cronbach) will reach the value α ≥ 0.90.

Hypothesis 3: All subscales of the Polish version of SAWS will achieve at least acceptable reliability (α ≥ 0.60).

Hypothesis 4: SAWS will be moderately strongly correlated with other psychological variables included in the study (3D-WS, LGS, GST2, HFS, PWB, SWLS).

Method

Original version of the SAWS scale

Undertaking the SAWS scale construction, Webster [27, 28] reviewed the theoretical concepts of wisdom present in the literature. Based on the theoretical findings made and the results of previous research, the author assumed that wisdom can be defined as "the competence in, intention to, and application of, critical life experiences to facilitate the optimal development of self and others" [28, p. 164]. In this understanding, it is a multidimensional construct, which consists of such elements as: Critical Life Experience, Emotional Regulation, Reminiscence and Reflectiveness, Openness and Humor. The original version of SAWS contains 40 statements referring to the areas of wisdom highlighted above. The subject's task is to respond to each question using a 6-point scale (1 = "Strongly Disagree", 6 = "Strongly Agree"). The tool is characterized by good psychometric qualities. Reliability for the whole scale, determined using α-Cronbach, is 0.90, and for individual subscales ranges from 0.68 (Openness) to 0.88 (Reminiscence and Reflectiveness) [27, 28, 30].

The process of translating SAWS from English into Polish

Work on the adaptation of the SAWS scale to Polish conditions began in 2016 after obtaining the author's consent. In the process of translation and adaptation of the Polish version of SAWS, the standards for the translation of psychological tests were followed [37]. In the first place, three professional translators (including one psychologist), translated the items of the scale from English into Polish. Then, after receiving the translated versions of the questionnaire, they were thoroughly analyzed and one initial version of the tool in Polish was agreed. It was later handed over to a fourth translator (an Englishwoman of Polish roots who knew both languages very well) in order to retranslate it into English. Subsequently, both versions, the Polish and English ones, were compared with one another and linguistic corrections were made. Finally, using the help of an English philologist who is also a psychologist, a final Polish version of the scale was developed, taking care of the psychological correspondence of English and Polish terms.

Procedure and participants

In order to evaluate the psychometric properties of the Polish version of the SAWS scale, a series of two studies was carried out, in which a total of 880 people aged 60 to 80 participated. The first study was carried out on a sample of 481 people (312 women and 169 men). The average age in the group was $M = 68.59$ with a standard deviation $SD = 5.63$. The second study included 399 respondents – 235 women and 164 men ($M = 67.62$, $SD = 6.30$). The aim of the first study was to determine the factor structure of the Polish experimental version of SAWS using exploratory factor analysis (EFA). The ratio of items to subjects in the group was 1:12. The second study was aimed at empirical verification of the wisdom model (structure of the questionnaire) disclosed in the EFA by means of confirmatory factor analysis (CFA). A more detailed description of the subjects in terms of sociodemographic variables is presented in Table 1.

Table 1. **The participants' sociodemographic characteristics**

Sociodemographic characteristics		N (Proportion)		
		Study 1	Study 2	Whole sample
Sex				
	Women	312 (64.9%)	235 (58.9%)	547 (62.2%)
	Men	169 (35.1%)	164 (41.1%)	333 (37.8%)
Age	60-65	181 (37.6%)	150 (37.6%)	331 (37.6%)
	66-70	147 (30.6%)	138 (34.6%)	285 (32.4%)
	71-75	75 (15.6%)	59 (14.8%)	134 (15.2%)
	76-80	78 (16.2%)	52 (13.0%)	130 (14.8%)
Place of residence				
	Village	194 (40.3%)	177 (44.4%)	371 (42.2%)
	Small town (up to 50 thousand)	68 (14.1%)	34 (8.5%)	102 (11.6%)
	Medium city (50 to 100 thousand)	76 (15.8%)	65 (16.3%)	141 (16.0%)
	Big city (over 100 thousand)	143 (29.7%)	123 (30.8%)	266 (30.2%)
Education				
	Primary	71 (14.8%)	66 (16.5%)	137 (15.6%)
	Primary vocational	122 (25.4%)	113 (28.4%)	235 (26.7%)
	Secondary	167 (34.7%)	162 (40.6%)	329 (37.4%)
	Higher	121 (25.2%)	58 (14.5%)	179 (20.3%)
Are you retired?				
	Yes	398 (82.7%)	290 (72.8%)	688 (78.2%)

	No	83 (17.3%)	108 (27.2%)	192 (21.8%)
Are you still working? professionally?				
	Yes	100 (20.8%)	104 (26.0%)	204 (23.2%)
	No	381 (79.2%)	295 (74.0%)	676 (76.8%)
Occupied position				
	Workers / Production	185 (38.5%)	191 (47.9%)	376 (42.7%)
	Clerical / Administrative	103 (21.4%)	84 (21.1%)	187 (21.3%)
	Teaching	59 (12.3%)	30 (7.4%)	89 (10.1%)
	Managerial / Directorial	71 (14.8%)	39 (9.8%)	110 (12.5%)
	Other	63 (13.1%)	55 (13.8%)	118 (13.4%)
Subjective health assessment				
	Negative assessment of health	85 (17.7%)	89 (22.3%)	174 (19.8%)
	Moderate assessment of health	145 (30.1%)	130 (32.6%)	275 (31.2%)
	Positive assessment of health	251 (52.2%)	180 (45.1%)	431 (49.0%)

The selection of respondents was done by purposive sampling. Before the beginning of the research, the consent of the Ethics Committee for Scientific Research of the Institute of Psychology of the John Paul II Catholic University of Lublin was obtained. The research was carried out with the consent of the respondents, it was individual and anonymous. Due to the fact that the battery of tests used was quite extensive, no time limits were introduced. People completed tests according to their own pace at home. Participants of the study were asked to complete a set of questionnaires, which included: (1) a general guide explaining the purpose of the study and providing indications on how to complete the questionnaires; (2) a descriptive sheet containing questions related to demographic variables; and (3) research methods used in the study. Each person was acquainted with the test procedure and informed that the tests are voluntary and performed for the purposes of the research project. Then the participant received an envelope with a set of research tools that he/she would return after completing. In case of questions, the researcher explained any doubts related to the nature of the research or to the process of filling out the questionnaires.

Measures

Apart from SAWS six other psychological methods were used. The selection of measuring tools was purposeful. They were chosen as a means to replicate the findings with the English version of the scale.

Three-Dimensional Wisdom Scale

The scale by Ardelt [38], used to measure wisdom, is composed of 39 items forming the three main dimensions of this construct: (1) Cognition (14 items); (2) Reflection (13 items); and (3) Compassion (12 items). The respondent's task is to answer to each claim by choosing one of five options (1 = "Strongly Agree", 5 = "Strongly Disagree"). The tool allows to obtain both a general result (counting the average of all three dimensions of wisdom), as well as specific indicators referring to individual subscales (the sum of points for items within a specific dimension). The *Three-Dimensional Wisdom Scale* (3D-WS) is characterized by good psychometric indicators. The α-Cronbach's reliability index for individual dimensions ranges between α = 0.71 and α = 0.85. The presented research project used a Polish version of the tool in the translation and adaptation of Steuden, Brudek and Izdebski [26]. Internal compliance for the entire Polish version of the scale (α = 0.84) and its individual dimensions (from α = 0.64 to α = 0.77), measured using the α-Cronbach index, proved to be satisfactory.

Loyola Generativity Scale

To measure the level of generativity of the subjects, a 20-item *Loyola Generativity Scale* (LGS) was used [39] in the Polish translation by Sękowski [40]. The test taker is invited to respond to each of the claims on a 4-point scale (0 = "The statement never applies to you"; 3 = "The statement applies to you very often"). The range of possible results is between 0 and 60. The tool has good psychometric indicators. In the presented research, reliability for the whole scale measured by α-Cronbach was 0.73.

Gerotranscendence Scale Type 2

In order to characterize gerotranscendence in the examined group, the *Gerotranscendence Scale Type 2* (GST2) by Tornstam [3] was used in the translation of Brudek [41]. The tool is made up of 10 statements that form three main dimensions: the Cosmic Dimension (5 items); the Coherence Dimension (2 items); and the Solitude Dimension (3 items). Participants of the study are asked to respond to individual statements on a 6-point scale (1 = "I strongly disagree", 6 = "I strongly agree"). The scale makes it possible to estimate the gerotranscendence index both on the global level and within individual dimensions. The Polish adaptation of the scale is characterized by acceptable psychometric parameters, comparable to the indicators developed for the original version of GST2 [3]. Reliability coefficients (α-Cronbach) for individual subscales are: α = 0.72 (Cosmic Dimension), α = 0.60 (Solitude Dimension) and α = 0.58 (Coherence Dimension).

Heartland Forgiveness Scale

The *Heartland Forgiveness Scale* (HFS) is an 18-item, self-report questionnaire that measures a person's dispositional forgiveness, i.e., the general tendency to be

forgiving, rather than forgiveness of a particular event or person. The HFS consists of the Total HFS and three six-item subscales: (1) Forgiveness of Self, (2) Forgiveness of Others, and (3) Forgiveness of Situations. The subject is asked to respond to particular items by choosing one of the seven answers (1 = Almost Always False of Me, 7 = Almost Always True of Me). In the presented studies the Polish adaptation of this tool by Mróz, Guzewicz, and Kaleta [42] was used. Reliability and validity of the Polish version of the tool were satisfactory. Cronbach's alpha (internal consistency) values were found for overall HFS 0.76.

Psychological Well-Being Scale

In order to estimate the psychological well-being of the subjects, the *Psychological Well-Being Scale* – PWB, developed by Ryff [43], was used. This tool is based on the concept of eudaimonistic well-being. It contains 42 assertions making up six subscales: (1) Autonomy, (2) Environmental Mastery, (3) Personal Growth, (4) Positive Relationships with Others, (5) Purpose in Life, and (6) Self-acceptance. The claims are evaluated on a seven-point Likert scale. The presented research uses the Polish adaptation of this tool developed by Krok [44]. The α-Cronbach reliability coefficients for individual scales ranged from 0.72 to 0.86. Validity of the tool was verified by correlation with *Satisfaction with Life Scale* – SWLS (correlation coefficients for scales ranged from 0.31 to 0.74) and *Beck Depression Inventory* – BDI (correlation coefficients ranged from – 0.35 to – 0.64).

Satisfaction with Life Scale

Characterization of life satisfaction was done using the *Satisfaction with Life Scale* (SWLS) constructed by Diener [45] and adapted to Polish conditions by Juczyński [46]. The scale is made up of five statements. The subject evaluates (on a 7-point scale: 1 – "Strongly Disagree"; 7 – "Strongly Agree") to what extent each of them refers to his/her life. The tool is used to measure (hedonistic) psychological well-being understood in terms of a conscious cognitive assessment of life. The method is characterized by satisfactory psychometric properties. Its reliability (test-retest) reached the level of 0.83. In the presented studies, the internal compatibility of the tool, measured by the coefficient Cronbach's α, amounted to α = 0.75.

Self-Assessed Wisdom Scale

The *Self-Assessed Wisdom Scale* (SAWS) by Webster [28] is used to measure wisdom understood as a multi-dimensional construct showing the ability to use previous life experiences in an optimal way. A detailed description of the original version of the tool and the procedure for translating from English to Polish was provided above. In the current project we used the Polish translation of the SAWS.

Results

Study 1

Exploratory factor analysis and reliability of the SAWS Polish version

In order to identify the factor structure of the Polish version of the SAWS scale, research was conducted on a group of 481 older people (Table 1). At the level of statistical analyses, EFA using the main components method with Oblimin rotation (according to theoretical assumptions, a five-factor solution was imposed) and Kaiser's normalization were applied [see 27, 28, 30]. The matrix determinant for the analyzed data was 0.04; KMO test = 0.923, with significant Bartlett sphericity test (χ^2= 7121.454, *df* = 780, *p* < 0.001). This means that further analysis under the EFA is eligible. The statistical activities carried out allowed for the identification of five factors that to a large extent reflect the factor structure of the English version of the SAWS scale [see 27, 28]. The five components therefore explain a total of 46.13% of the variability of the results in the area of wisdom. Each factor explains as follows: 27.43% (Emotional Regulation); 6.72% (Humor); 4.76% (Reminiscence and Reflectiveness); 3.85% (Openness); and 3.35% (Experience) of variance. More detailed data are provided in Table 2.

Table 2. **Exploratory factor analysis of the Polish version of the SAWS**

Items	Dimensions of SAWS				
	Emotional regulation	Humor	Reminiscence and reflection	Openness	Experience
SAWS-27	0.71	0.26	0.39	0.31	0.31
SAWS-17	0.71	0.28	0.28	0.10	0.41
SAWS-32	0.69	0.45	0.40	0.12	0.16
SAWS-22	0.68	0.38	0.22	0.16	0.19
SAWS-37	0.67	0.28	0.31	0.28	0.31
SAWS-12	0.65	0.57	0.20	−0 .01	0.18
SAWS-34	0.57	0.47	0.45	0.32	0.28
SAWS-7	0.56	0.27	0.21	0.05	0.23
SAWS-2	0.53	0.23	0.30	0.09	0.14
SAWS-11	0.49	0.48	0.22	−0 .09	0.47
SAWS-4	0.32	0.75	0.20	0.23	0.16
SAWS-24	0.37	0.71	0.28	0.33	0.05
SAWS-39	0.33	0.68	0.30	0.39	0.10
SAWS-9	0.17	0.63	0.30	0.16	0.10
SAWS-19	0.43	0.63	0.20	0.19	0.11
SAWS-29	0.36	0.60	0.32	0.38	0.08

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SAWS-10	0.31	0.53	0.11	0.13	0.13
SAWS-15	0.37	0.50	0.42	–0 .13	0.30
SAWS-14	0.27	0.48	0.33	0.47	– 0.07
SAWS-31	0.24	0.41	0.37	0.13	0.37
SAWS-5	0.35	0.41	0.30	0.32	0.27
SAWS-13	0.26	0.27	0.72	– 0.09	0.29
SAWS-33	0.47	0.33	0.72	0.17	0.18
SAWS-23	0.37	0.29	0.71	0.23	0.13
SAWS-8	0.11	0.04	0.70	0.06	0.36
SAWS-28	0.50	0.37	0.67	0.22	0.35
SAWS-40	0.19	0.25	0.61	0.18	0.22
SAWS-18	0.49	0.36	0.60	0.24	0.24
SAWS-3	0.28	0.19	0.57	0.14	0.44
SAWS-38	0.48	0.35	0.57	0.33	0.30
SAWS-35	0.17	0.26	0.14	0.66	0.12
SAWS-25	0.11	0.18	0.14	0.56	0.15
SAWS-20	0.33	0.40	0.22	0.54	0.03
SAWS-30	0.30	0.32	0.17	0.51	– 0.04
SAWS-6	0.45	0.38	0.34	– 0.12	0.69
SAWS-21	0.23	0.06	0.30	0.14	0.69
SAWS-1	0.32	0.19	0.25	– 0.05	0.64
SAWS-16	0.16	0.17	0.42	0.34	0.60
SAWS-26	0.40	0.11	0.41	0.37	0.58
SAWS-36	0.41	0.30	0.27	0.29	0.46

Based on Webster [28], it was assumed as the criterion of including a given item in a specific factor, the absolute value of the factor load equal to or greater than 0.45, while the saturation of the other factors was low. The analysis of the obtained results revealed that, as part of the Experience dimension of the Polish initial version of SAWS, seven out of the eight items postulated by the author (1; 6; 11; 16; 21; 26; 36) were characterized by a factor load greater than 0.45. It should be noted, however, that in the case of question 11 (I have dealt with a great many different kinds of people during my lifetime) no significant factor load was noted. Due to slight differences, it was decided to leave this item within the discussed factor. The value of the factor load in the case of the theorem number 31 (I've personally discovered that "you can't always tell a book from its cover") reached 0.37 with a slightly higher load saturation (0.41) as part of the Humor dimension. However, in order to minimally interfere with the original structure of the tool, the decision was made to leave this item in the frames of the original factor.

The second of the dimensions of SAWS – Emotional Regulation – kept the structure consistent with the proposal of the author of the tool, with the difference that it was "enriched" by item 34 (Now I find that I can really appreciate life's little ironies) taken from the Humor dimension. However, it should be emphasized that question 34 obtained a slightly lower (0.47), albeit acceptable, saturation with factor load as part of its original dimension. Guided by the desire to match the original version of the tool as faithfully as possible, it was decided to leave this item within the Humor factor.

A similar situation occurred in the case of the Reminiscence and Reflectiveness factor. Here, too, a faithful representation of the original structure of items was noted, while adding the theorem 40 (I've often wondered about life and what lies beyond), whose value of factor loads in other dimensions was very low (≤ 0.25). However, guided by the premises expressed above, this item was left as part of the Openness dimension, treating it as non-diagnostic.

Analogous tendencies were revealed in relation to the fourth factor – Humor. In the case of six (4; 9; 19; 24; 29; 39) out of eight items there was a clear saturation with factor load. The aforementioned item 34 and question 14 (I try and find a humorous side when coping with a major life transition) have revealed some deviations in this respect. However, they were not important enough to undertake the transfer of these items to other factors. In addition, within this dimension, there was a high saturation with factor load (above 0.50 with simultaneously low saturation in other dimensions) of item 10 (I enjoy listening to a variety of musical styles besides my favourite kind) and 15 (I enjoy sampling a wide variety of different ethnic foods) derived from the Openness factor. At the same time, the values of factor loads within the dimension of origin turned out to be extremely low and amounted to 0.13. In the end, it was decided not to qualify these items for the Humor dimension, leaving them as non-diagnostic in the original factor.

Finally, in the structure of the Opennes factor, as a result of the changes described above, the number of items was reduced by half. As part of this dimension, there were left four original statements (20, 25, 30, 35).

Summing up, it should be noted that, trying to as far as possible maintain the general theoretical model of wisdom proposed by Webster [27, 28], and thus the structure of the tool developed by the author, and bearing in mind the prospect of further international and intercultural studies, it was decided not to include in further statistical calculations the four controversial items (5; 10; 15 and 40) while leaving them (as non-diagnostic) in the pool of questions building the initial Polish version of SAWS. Thus, the experimental Polish version of SAWS retained 40 original claims, of which 36 were considered to be diagnostic. Four non-diagnostic questions come from the Openness dimension. This means that this factor has been reduced by half. The remaining subscales have retained the structure and number of questions consistent with the original version of the tool.

In order to determine the level of internal compatibility of the preliminary dimensions of the Polish version of SAWS selected in the EFA, α-Cronbach indexes for the entire tool and for individual factors were calculated. The reliability index for the

entire scale (36 items) obtained a very high value equal to $\alpha = 0.92$, while for the five subscales it amounted respectively to $\alpha = 0.78$ (Experience – 8 items); $\alpha = 0.82$ (Emotional Regulation – 8 items); $\alpha = 0.84$ (Reminiscence and Reflectiveness – 8 items); $\alpha = 0.83$ (Humor – 8 items); and $\alpha = 0.60$ (Openness – 4 items).

Study 2

Confirmatory factor analysis of the SAWS Polish version

To verify the accuracy of the obtained (in the first study) factor structure, on the second sample ($N = 399$) CFA was conducted with the item grouping procedure (parceling) [47]. The decision to choose such a method of proceeding with the confirmatory analysis was due to the fact that the item grouping procedure (especially with a large number of claims included in the questionnaire) has significant advantages. The literature emphasizes that item bundles: (1) are characterized by higher reliability than individual questions; (2) are less vulnerable to unsystematic measurement errors; and (3) in comparison with individual claims, they assume a more normal distribution. The adopted method of statistical action consists in the construction of a measurement model in which the observable variables are not specific test items, but the average value or the sum of the item group. Grouping of test questions can be made on the basis of any substantive criterion or using random selection. In the following analyses, in the process of creating individual groups of items, an exploratory factor analysis (EFA) was carried out, separately for each of the dimensions of the SAWS scale. A criterion for the selection of claims to specific groups was the own values of factor loads of items that are part of a specific component of wisdom. Items, which obtained the highest saturation with factor load, became the beginnings of separate groups [48]. This method has already been used, among others, in research on the Big Five [49], the concept of identity styles by Berzonsky [50], a model of wisdom proposed by Ardelt [38] or the concept of sense of self-dignity [51]. The results of the CFA carried out in this way are satisfactory and show a high degree of matching between the tested models.

It should be emphasized, however, that using the item grouping procedure in statistical activities requires fulfillment of the assumption of one-dimensionality of the measured factors – latent variables included in the model [48]. In the presented research project, this assumption was verified by referring to EFA (with one forced factor). Separate analyses were carried out for each factor in the field of these claims, which, according to Webster's [27, 28] proposal, measure a given factor. Positive verification of the assumption about the one-dimensionality of the studied factors, based on the eigenvalue of more than 1 and the scree plot, was the basis for distinguishing groups of items. Bearing in mind the requirements for cross-validation analysis, the exploratory analysis (EFA) was based on the data obtained from the first survey. The ratio of items to subjects in the group was 1:60.

The statistical operations made it possible to positively verify the assumption of one-dimensionality of the factor in the case of all components of wisdom. Based on

the criterion of own value greater than or equal to 1 and the criterion of the scree plot, a decision was made to proceed with further analyses – creating groups of items within each dimension. The factor load values obtained in the EFA of individual statements included in the SAWS scale constituted the basis for the separation of groups of items introduced into the CFA. Within each factor, three groups have been distinguished, two of which contain three items and one two items. Table 3 presents the values of factor loads of items constituting a given factor and the belonging of test items to a group of items within particular factors.

Table 3. **Results of exploratory factor analysis (principal component axes method) for each factor separately (the percentage of explained variance and the factor loadings of items), Cronbach's α, and the classification of items into parcels in confirmatory factor analysis**

Experience			Emotional regulation			Reminiscence and reflection			Humor			Openness		
expl. v. = 38.28%			*expl. v.* = 45.99%			*expl. v.* = 49.84%			*expl. v.* = 53.86%			*expl. v.* = 31.12%		
α = 0.77			α = 0.82			α = 0.85			α = 0.88			α = 0.68		
k	f.l.	p.i.	k	f.l.	p.i.	k	f.l.	p.i.	k	f.l.	p.i.	k	f.l.	p.i.
I-6	0.71	1	I-27	0.78	1	I-23	0.76	1	I-24	0.83	1	I-20	0.64	1
I-21	0.66	2	I-22	0.71	2	I-13	0.75	2	I-39	0.77	2	I-30	0.62	2
I-16	0.64	3	I-32	0.71	3	I-3	0.74	3	I-4	0.77	3	I-10	0.61	3
I-1	0.63	1	I-12	0.70	1	I-33	0.72	1	I-29	0.76	1	I-35	0.60	1
I-26	0.63	2	I-37	0.69	2	I-28	0.71	2	I-19	0.74	2	I-5	0.57	2
I-36	0.59	3	I-7	0.68	3	I-18	0.70	3	I-9	0.70	3	I-40	0.47	3
I-31	0.57	1	I-17	0.68	1	I-8	0.66	1	I-14	0.67	1	I-25	0.47	1
I-11	0.51	2	I-2	0.43	2	I-38	0.60	2	I-34	0.63	2	I-15	0.44	2

Note. Expl. v. – the percentage of explained variance; k – item number according to SAWS; f.l. – the value of factor loading; α – the reliability of the scale (Cronbach's α); p.i. – parcel of items in CFA

At the next stage of statistical analyses, CFA with the item grouping procedure was carried out. The estimation of the model's fit was based on indicators whose use is recommended in the methodological literature on the issues of structural equations. These are: CMIN/*df*, RMSEA, SRMR, PCLOSE, GFI, CFI and TLI [52]. As suggested by Hu and Bentler [53], it was assumed that RMSEA and SRMR below 0.08 and CFI, GFI, and TLI above 0.90 means a good fit of the model to the data.

It was decided to test three models using the statistical program AMOS 22.0 (Analysis of Moment Structures) using the maximum likelihood method of parameter estimation. As the first one, a model was tested that reflects the factor structure and arrangement of items (within a given factor) of the SAWS scale according to the author's proposal (Model 1). This model assumes that the structure of the scale consists of five factors, each of which is created by a pool of eight specific items. The construction of this model was therefore not preceded by EFA, but was based on findings made by Webster [27, 28]. The procedure for grouping items has not been applied here either.

The model fit indicators (Table 4) reached values interpretation of which, based on the assumed criteria [53], does not allow to conclusively state that it is well suited to the data.

The second tested model (Model 2) reflects the five-factor structure of the Polish adaptation of the SAWS scale (determined in the first study using EFA) analogous to the original version of the tool. In this model, however, observable variables were not specific test items, but groups of items. The grouping of items was done using EFA carried out separately for each of the SAWS scale dimensions (Table 3). In addition, the full number of items has been retained in this model ($n = 40$). Therefore, these statements were included in the analyses, which were considered non-diagnostic in Polish research (5; 10; 15; 40). The Model 2 adjustment parameters (Table 4) were at a level indicating good data fit [53], suggesting that it reflects the likely structure of the scale. Comparative analyses in terms of parameters describing both models revealed that Model 2 is significantly better suited than Model 1 (CMIN1 – CMIN2 = 1763.42, *df* = 650, *p* < 0.001).

The last tested model – Model 3 – is analogous to Model 2, with the difference that it does not include four controversial items (5; 10; 15; 40) originating from the Openness dimension. As a consequence, the number of groups of items within this dimension has been reduced from three to two. The adjustment measures of this model have assumed slightly lower values compared to Model 2, however, indicating a satisfactory adjustment to the data matrix (Table 4). This means that the model adequately captures the structure of the questionnaire. Referring the Model 3 adjustment parameters to the Model 2 characterization indicators, it should be noted that in terms of goodness of fit no statistically significant differences between these models were recorded (CMIN2 – CMIN3 = 7.35, *df* = 13, *p* = 0.883). This means that both the 40-item and 36-item Polish adaptation of the SAWS scale to a similar degree reflect the structure of the original version of the tool. Ultimately, wanting as much as possible to maintain the general theoretical model of wisdom proposed by Webster [27, 28], and thus the structure of the scale developed by the author, it was decided to leave 40 statements in the pool of questions included in the Polish version of the tool, among which 36 were considered diagnostic. This decision was also dictated by the prospect of further research on the Polish population using the scale presented.

Table 4. **Results of confirmatory factor analysis conducted on SAWS (n = 481). Summaries for models**

Models	χ2	df	p	CMIN/df	RMSEA	SRMR	PCLOSE	GFI	CFI	TLI
Model 1	1998.35	735	0.001	2.72	0.066	0.069	0.000	0.74	0.74	0.73
Model 2	234.93	85	0.001	2.76	0.067	0.052	0.004	0.93	0.94	0.93
Model 3	227.58	72	0.001	3.16	0.074	0.058	0.000	0.93	0.93	0.91

Construct validity of the SAWS Polish version

In order to examine the theoretical validity of the Polish version of SAWS, Pearson's correlation coefficient was used (Table 5). The analyses revealed positive relationships between the global SAWS index and other scales included in the study. At the same time, the highest and average correlation rates were observed in the case of PWB ($r = 0.43$, $p < 0.001$), GST2 ($r = 0.32$, $p < 0.001$) and LGS ($r = 0.30$, $p < 0.001$). The analysis of the relationship between the Polish version of SAWS and other scales used in the presented project has also proved that the global wisdom indicator – as expected – positively corelates with SWLS ($r = 0.25$, $p < 0.001$), 3D-WS ($r = 0.17$, $p < 0.001$) and HFS ($r = 0.16$, $p < 0.001$). These findings indicated that the construct validity of the SAWS was also established.

Table 5. **Zero order correlations among the wisdom, age, and predictor variables**

	Age	SAWS	3D-WS	LGS	GST2	HFS	PWB	SWLS
Age	—							
SAWS	0.14**	—						
3D-WS	− 0.20**	0.17**	—					
LGS	0.09**	0.30**	0.28**	—				
GST2	0.25**	0.32**	0.27**	0.18**	—			
HFS	− 0.05	0.16**	0.36**	0.16**	0.29**	—		
PWB	− 0.16**	0.43**	0.52**	0.48**	0.26**	0.40**	—	
SWLS	− 0.18**	0.25**	0.27**	0.28**	0.14**	0.25**	0.59**	—

Note. SAWS = Self-Assessed Wisdom Scale; 3D-WS = Three-Dimensional Wisdom Scale; LGS = Loyola Generativity Scale; GST2 = Gerotranscendence Scale Type 2; HFS = Heartland Scale of Forgiveness; PWB = Psychological Well-Being Scale; SWLS = Satisfaction with Life Scale; **$p < 0.01$ level (one-tailed).

Discussion and conclusions

The aim of the presented article was to validate the Polish adaptation of the SAWS scale [27, 28, 30]. The completed research project allowed to determine the factor structure, reliability, accuracy and development of sten norms of the Polish version of the tool. The study group was narrowed to elderly people aged 60 to 80. It was a deliberate procedure finding its theoretical justification in psychological literature pointing to wisdom as a special attribute of old age [1-3]. An additional motivation that led to work on the translation and adaptation of SAWS was the willingness to make available to Polish researchers dealing with aging an alternative to the 3D-WS scale of wisdom. This will undoubtedly allow broadening the scope of research on wisdom in Poland and will also allow international projects to be implemented. The concept of wisdom proposed by Webster [27, 28, 30] is the basis of many contemporary wisdom studies [15, 34-36].

Thus, the presented research has verified Webster's concept of wisdom [27, 28] and the tool used to measure wisdom based on it. Both EFA and CFA with the item grouping procedure were used for this purpose [48]. Exploratory analyses carried out allowed for the identification of five factors within the Polish version of SAWS and proved that the tool is characterized by satisfying reliability indicators. In turn, as a result of confirmatory analyses, the five-factor structure of wisdom, emerging in EFA – has been confirmed. The analyses carried out thus confirm the good psychometric properties of the Polish adaptation of SAWS. Both α-Cronbach's (as indicators of reliability) as well as the CFA model fit indicators (as the theoretical validity indicators) proved to be high enough that the tool could be successfully used in scientific research.

The obtained results are consistent and comparable with the results obtained by Webster [27, 28, 30]. The reliability indicator in relation to the Polish SAWS adaptation for the whole scale (36 items) was very high – equal to $\alpha = 0.92$, while for the five subscales it amounted to $\alpha = 0.78$ (Experience); $\alpha = 0.82$ (Emotional Regulation); $\alpha = 0.84$ (Reminiscence and Reflectiveness); $\alpha = 0.83$ (Humor); and $\alpha = 0.60$ (Openness). On the other hand, in the case of the original SAWS scale, the Cronbach's alpha coefficient for the whole tool assumed the value of 0.90, while for individual subscales it reached the level from 0.68 (Openness) to 0.88 (Reminiscence and Reflectiveness) [30].

Correlation analyses revealed that the Polish version of SAWS is positively associated with 3D-WS ($r = 0.17$, $p < 0.001$), LGS ($r = 0.30$, $p < 0.001$), HFS ($r = 0.16$, $p < 0.001$) and PWB ($r = 0.43$, $p < 0.001$). However, the obtained values of correlation coefficients proved to be lower in comparison with Webster's [28] research results and his collaborators [30]. Correlation indicators in reference to the original version of SAWS and individual scales were respectively: 3D-WS $r = 0.33$, $p < 0.01$; LGS $r = 0.45$, $p < 0.01$; HFS $r = 0.35$, $p < 0.01$; PWB $r = 0.46$, $p < 0.01$. The low correlation between SAWS and 3D-WS as obtained in Polish research suggests that these tools relate to various aspects of wisdom [4]. This means that the Polish adaptation of SAWS is a valuable supplement in the area of psychological tools for measuring wisdom.

The conducted studies also confirmed positive correlations between SAWS and gerotranscendency (GST2: $r = 0.32$, $p < 0.01$) as well as life satisfaction (SWLS: $r = 0.25$, $p < 0.01$). These results correspond with Tornstam's [3] research results, for which the theory developed by him was the theoretical basis of gerotranscendence. According to this theory, gerotranscendence is a process free from cultural conditioning, which is carried out on three basic levels: cosmic, self and social relations. As a result of gerotranscendent transformations, an individual gains a new developmental quality in the form of wisdom and experiences an increase in life satisfaction.

The research presented here, apart from cognitively valuable results, has its limitations. Their articulation and elimination can be a starting point for further research. First of all, it would be useful to empirically verify the five-factor structure of wisdom in different age groups (adolescence, early adulthood, average adulthood, late adult-

hood). Secondly, a research project devoted to changes in the structure of wisdom over the course of life would be valuable cognitively. For its implementation, longitudinal studies should be carried out using a tool with verified psychometric qualities, for which the Polish version of SAWS, described in this publication, can undoubtedly be considered. Thirdly, intercultural research would be interesting to undertake. Fourthly, it would be worth finding an empirical answer to the question whether the wisdom manifested in late adulthood has real psychological consequences for the functioning of older people in various areas of life.

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