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HOW TO MEASURE SPIRITUAL SENSIVITY AT THE IT USER'S WORKPLACE? THE CONSTRUCTION PROCESS AND METHOD OF VALIDATION OF SPIRITUAL SENSITIVITY INVENTORY (SSI)

JAK ZMIERZYĆ DUCHOWĄ WRAŻLIWOŚĆ PRACOWNIKÓW IT W MIEJSCU PRACY? PROCES KONSTRUKCJI I METODY WALIDACJI INWENTARZA WRAŻLIWOŚCI DUCHOWEJ (SSI)

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Summary: This article outlines the creation of tools to measure spiritual sensitivity – Spiritual Sensitivity Inventory (SSI), starting from the assumptions underlying the source of its creation, through a phase of theoretical analysis of the construct used for development of an experimental method, a quantitative validation of the inventory, ending with a validation of quality, i.e. narrative interviews conducted in order to confirm the theoretical accuracy of the SSI. The authors clarify the construct of spiritual sensitivity, describe a deductive strategy for questionnaire creation, indicate the potential theoretical and methodological problems encountered by psychologists studying spirituality, present a spectrum of validation procedures and their ultimate effect – an accurate and reliable psychometric tool – the Spiritual Sensitivity Inventory. A developed spiritual sensitivity is beneficial not only in relationships between people but also in the educational, professional and social domain. In this light, an accurate and reliable diagnostic tool can be used in a business environment and organization.

Keywords: to measure spiritual sensitivity, questionnaire construction, questionnaire validation, validity and reliability of the questionnaire, Spiritual Sensitivity Inventory, IT users, model of ethical competencies aspects.

Streszczenie: Artykuł przybliża proces tworzenia narzędzia do pomiaru inteligencji duchowej – inwentarza wrażliwości duchowej (IID), począwszy od założeń leżących u źródła jego powstania, przez etap teoretycznej analizy konstruktu, służący opracowaniu wersji eksperymentalnej metody, walidację ilościową inwentarza, a skończywszy na walidacji jakościowej, tj. wywiadach narracyjnych przeprowadzonych w celu potwierdzenia trafności teoretycznej IID. Autorki precyzują konstrukt inteligencji duchowej, opisują strategię dedukcyjną konstruowania kwestionariusza, sygnalizują potencjalne problemy teoretyczne i metodologiczne,

jakie napotyka psycholog badający duchowość, prezentują spektrum procedur walidacyjnych oraz ich ostateczny efekt – trafne i rzetelne narzędzie psychometryczne, czyli inwentarz wrażliwości duchowej.

Słowa kluczowe: płeć, wrażliwość duchowa, inwentarz, walidacja, trafność i rzetelność.

1. Introduction

Spirituality is a problem of the utmost importance in psychology [Jung 1970a, 1970b]. If we assume that the primary aspiration of this study is the complete, holistic understanding and description of Man and his existence [Straś-Romanowska 1992], then we can discern how spirituality can play a role in the well-being of an individual. Findings from numerous studies indicate the pragmatic aspect of spirituality as beneficial to individual well-being [Reker, Butler 1990]. This fact encourages us to take into account the spiritual dimension of existence in the human experience. According to Dein and Loewenthal [1998], interest in spirituality, specifically in terms of well-being, physical, and mental health has seen a gradual increase in the number of psychological scientific publications from the early 1990s to the present. For instance, Socha [2000] highlighted in the APA, points to spirituality as one of the five areas of well-being, whereas MacDonald [2000], suggests that the classic Big Five model should involve a spiritual dimension.

Spirituality, however, is a complex phenomenon [Kapała 2015]. Usually placed within the domain of theology and philosophy, spirituality is sometimes regarded by psychologists as unobserved, immeasurable, and therefore unscientific. Thus it seems an interesting proposal to develop an approach to study this phenomenon instead of the abstract or ideational realm, and assess spirituality in a concrete way including the individual's choice of objectives and means to achieve them [Emmons 2000].

In the 1990s, in psychology, appeared a new, controversial issue of spiritual intelligence [Gardner 1999; Mayer 2000]. The authors of the best-known concepts in this field are, Zohar & Marshall [2001], and Emmons [2000].

This paper presents a tool to measure an individual's spiritual sensitivity – a Spiritual Sensitivity Inventory (SSI). The SSI structure, which we describe in detail, consists of three stages [Kowal, Gurba 2016]: a) theoretical analysis aimed at creating an experimental version of the method, b) quantitative validation, and c) qualitative validation using a narrative interview verifying the accuracy of SSI [Kowal 2002; 2009a; 2009b; Kowal and Węgłowska-Rzepa 2006]. In the course of these procedures, the following parameters were used: a) population of 400 randomly selected subjects (information technology (IT) users), diverse in terms of gender, age, education, and faith in the test-retest procedure, b) another equally diverse population of 400 randomly selected subjects in the study of links between the quality of life sense with spiritual sensitivity and the type of mind (these tests are not described in

this article), c) a cohort population of 31 subjects who received extremely high or extremely low scores in the range of spiritual sensitivity on the narrative interview procedure, thus verifying the accuracy of external SSI. The samples' construction comprised the methods of random interpersonal network and sequence sampling [Sudman, Blair 1999; Kalton et al. 1978] with the passive optimal experiment design [Kowal 2002; 2009a; 2009b; Kowal, Węgłowska-Rzepa 2006].

2. The conceptualization and measurement of spirituality: The psychological origins of the method

In the history of psychological research, questionnaire methods have been used in the exploration of various phenomena, the external characteristics of functioning, the environment variables family atmosphere, [Moos, Moos 1994], or environmental stressors [Holmes, Rahe 1967], as well as internal characteristics. In diagnosis, the latter have gained popularity [Eysenck 1981]. As an example there can be used questionnaires which measure the properties of personality, including traits, status, attitudes, and needs. Questionnaire methods assist in determining factors and measure intellectual properties of memory, cognition, emotional, and social intelligence [Drwal, Wilczyńska 1980].

A challenging research problem in psychology, when it comes to theoretical conceptualization and empirical measure, is spirituality. Spirituality can be studied in a variety of fields such as anthropology, philosophy and theology [Heszen-Niejodek, Gruszczyńska 2004].

Most of the research related to spirituality has previously focused on a specific aspect of spirituality, most often on the religious aspect. The measurement of "shallow" behavioral indicators, for example the frequency of worship attendance, factors of activities of parishioners and on religious attitudes [Prężyna 1968; Allport-Ross 1967. Scales for measuring religiousness, consisting of observable behaviors associated with religious practices have also been used [Hill, Pargament 2003; Latała, Socha 1981]. Spirituality, however, is a broader construct than a specifically religious phenomenon, worthy of a deep and holistic approach; it is essential not only for human development and improvement, but also for emotional and cognitive functioning [Hill, Pargament 2003], and for healthy internal integration [Heszen-Niejodek, Gruszczyńska 2004].

Previous researchers have attempted to look at spirituality, previously considered a novelty, from the perspective of cognitive psychology, and considered spirituality as a form of sensitivity, consisting of a number of capacities applicable to daily activities, serving the realization of goals and values, solving problems and dilemmas, especially moral ones [Emmons 2000]. This perspective allowed its followers to connect. However, it has been difficult to operationalize and, as spirituality with easily observable daily activities of a person, in whose spirituality is realized.

Spirituality was treated holistically. Religion is just one of seven dimensions ascribed to the concept of spirituality. This claim is consistent with many researchers interested in spirituality [Socha 2000].

Spiritual sensitivity, in itself is unobserved, and directly immeasurable. It is a theoretical concept, as well as other important concepts in psychology such as personality, cognition, will and intelligence. Associated with the components of spiritual sensitivity are many concepts yet unidentified which constitute competence for realizing certain values [Heszen-Niejodek, Gruszczyńska 2004].

Universality of thinking about spirituality and the accompanying construction of methods was supposed to allow its indigenous, original properties common to all people, regardless of religion, ideology or preference, thus, what Nosal [2006], refers to as protoreligion.

These assumptions allowed the researchers to treat spirituality and its measurement in the same way as with other theoretical constructs in psychology which, although not directly observable and measurable, can be evaluated by means of observable indicators.

3. Theoretical analysis of the phenomenon. Creation of an experimental version of the SSI

The Spiritual Sensitivity Inventory (SSI) was constructed with the use of theoretical methods [Burish 1986; Brzeziński 2004; Drwal, Wilczyńska 1980; Davidov 2008; Kowal, Gurba 2016; MacKenzie, Podsakoff, Podsakoff 2011]. The construct was thus predetermined, whereas the clarification of the semantic scope relied on collecting the required information from various sources and processing the data into a coherent whole. A key step in the construction process was to analyze the theory, to create an operational definition of spiritual sensitivity and its components. In addition, the selection of indicators to be used for the assessment tool would need to be completed. APA Standards were used to define the relevance of the assessment process. The construction of the tool includes: a) examination of the test contents, b) examination of the test solving process, c) examination of the internal structure of the test, d) examination of the associations of test results with other variables, e) examination of the consequences of testing. The validity of the inventory content was monitored. Content validity was determined as to what extent the test material is representative for the studied phenomenon. In addition, theoretical validity was determined to demonstrate to what extent the results coincide with the theoretical expectations.

The psychometric model used in the construction of the SSI corresponds to the classical theory of the test [Burish 1986; Kowal, Roztocki 2015a, 2015b; Kowal, Gurba 2016]. The selection of items was based on the discriminant power analysis, and the final model of the phenomenon was confirmed by the confirmation methods [Sagan 2002; Bagozzi 2012].

The SSI is the first method examining the spiritual sensitivity in Poland. The advantage of the tool, apart from the recognition of the innovative phenomenon of spirituality, is the goodness of fit of the adopted model of the phenomenon, which was a basis for the inventory, the large theoretical validity and reliability, whereas the disadvantage results in part from the construction strategy, and in part from the nature of spirituality. Spirituality is a phenomenon, in which many of the components are interrelated, and even penetrating one another. Therefore there is redundancy of measurement with a relatively high correlation of individual scales with other scales from the inventory.

The assumption that spiritual sensitivity is a multidimensional construct was required to determine its components. At a general level, it is helpful to say that spirituality is a disposition to transcendence, manifested through specific forms of activity and inner experience. Transcendence can go in four different directions: 1) the personal ego of self-development, 2) the other Man, 3) the Absolute, and 4) the Universe [Heszen-Niejodek, Gruszczyńska 2004]. It was necessary, however, to specify and clarify each of these directions.

The first step in the realization of this plan was the analysis of the concept of spiritual sensitivity and the spiritual realm of ideas relating to the sphere of human activity and daily life. In the four groups, 1) The first group of concepts includes: the concept of Emmons [2000], Hense [2006], Gardner [1999], Johnson [2006], MacHovec [2002], Amram [2007], Sisk and Torrance [2001], and Fairholm [1996]. 2) The second type of concepts includes: the concept of spiritual sensitivity of Hay (1998), Bradford (1995), the integral concept of Wilber (2000). The third type of concepts includes: 3) the concept of spirituality of Heszen-Niejodek and Gruszczyńska [2004], the COR concept of resources of Hobfoll [2001]. The fourth type of concepts includes: 4) the concept of spirituality of Socha [2000], the concept of positive spirituality of Hill [2003], and the concept serving the construction of Multidimensional Measurement of Religiousness/spirituality [Fetzer Institute 1999]. The authors pointed directly to the components and indicators of spiritual sensitivity, while others did so indirectly, focusing on the description of the sensitivity itself as a mental phenomenon and its placement in a wide range of psychological phenomena. Analysis of the content relied on the extraction of components of spiritual sensitivity from the concept, then comparing their meanings and ensuring that they are consistent.

The second step was to determine how spiritual sensitivity is understood in different religious traditions and creeds. This analysis was guided by the assumption that religion is not synonymous with spirituality, but it is the main and most natural way to implement spirituality [Socha 2000]. The postulate of Hense [2006], was taken into account concerning the respect towards differences and similarities between religious traditions within the meaning of spiritual sensitivity. In order to complete this step, interviews with experts in the field of spirituality were conducted. Religious professionals from various religions and beliefs were interviewed. These interviews focused on the subject of spiritual development and the attributes of

people achieving a high level of proficiency. There was a content analysis of all the completed interviews with the details and components of spiritual sensitivity highlighted, an overview and comparison of their meanings, their consistency and terminology cross-referenced according to religious/theological studies.

In the third step, serving to increase the validity of the construct content, a survey referring to the so-called "common sense of ordinary people", who were treated as a separate group of qualified judges, was completed. The study involved 75 randomly selected individuals, diverse in terms of gender, age, education and religion. Each participant was asked to list ten character traits defining a person with a developed sense of spiritual sensitivity. The survey data were analyzed, compared and collated in terms of consistency of meaning. Each component was assigned a name.

The described steps helped not only to define the spiritual sensitivity and its components, but also to determine the scope and specificity of behaviors enabling the diagnosis of components [Burish 1986], and the final image of the hierarchical structure of spiritual sensitivity; its components, together with the indicators (and operationalization in the form of items) are shown in the graph generated for the confirmatory factor analysis (Figure 1).

There were two major methodological problems taken into consideration: the problem of the multiplication of entities and the issue of a predictive validity. The analysis of the concept of spiritual sensitivity, as well as the concept of spirituality, religiosity and wisdom helped to distinguish close mental phenomena from the tested construct. Information from interviews with experts and surveys among the representatives of the general population helped to determine the fact that spiritual sensitivity is not synonymous with the above mentioned phenomena, it only enters into a relationship with them (it is superior to them).

Finally, spiritual sensitivity was defined as a general construct composed of several components coming together in mutual relations, with indicators that relate directly to human behavior. Components of spiritual sensitivity correspond with all the cited in the literature directions of transcendence (self, the others, the Absolute, and the Universe [Heszen-Niejodek, Gruszczyńska 2004].

Then, on the basis of the components and their indicators, there were created proposals for inventory items. The form of giving responses was taken into consideration, and items were rated in terms of difficulty, rationality, ambiguity, equivalence and efficiency. Assessment of the items' relevance was conducted by three judges competent in the field of psychology, who were presented with a list of 104 claims constituting the operationalization of the indicators of spiritual sensitivity' components. After the assessments for each component the W-Kendall coefficient was calculated. The claims that reached low coefficients of variation of the average were rejected. As a result, there were seven (from the original twelve) components incorporated to the experimental version of the SSI, for which the diagnostic value was obtained by the intersubjective concordance of the judges [Kowal, Gurba 2016; Kowal, Roztocki 2015a; 2015b).

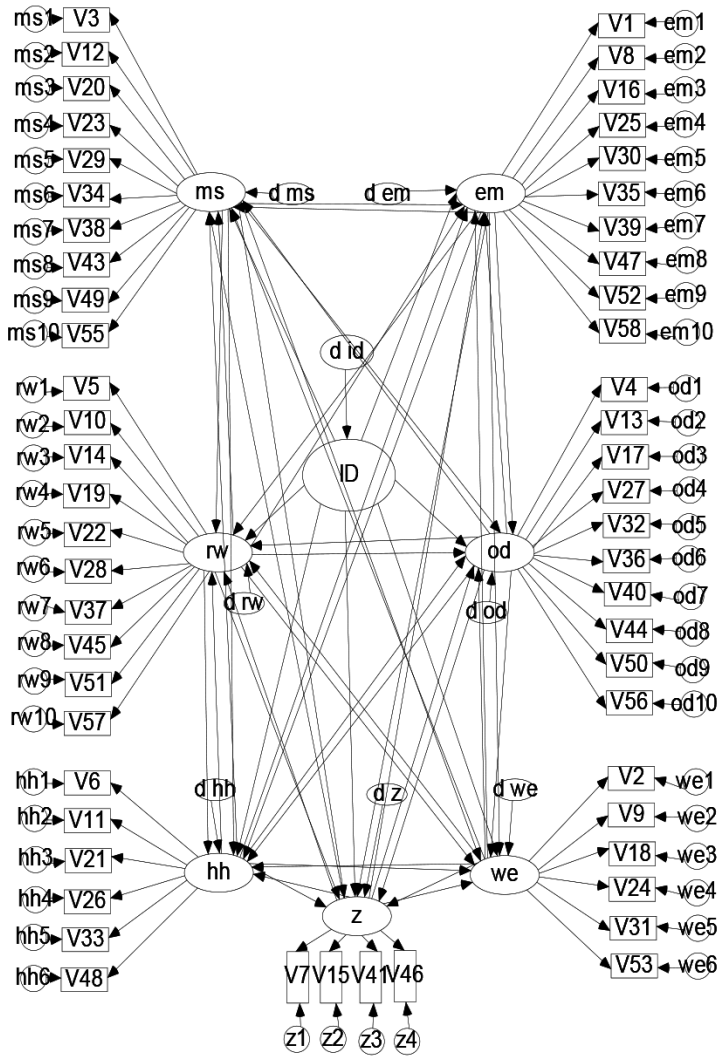

Figure 1. Graph showing the dependencies of the spiritual sensitivity structure

Source: own materials.

3.1. Test

The experimental version of the SSI was given to a random test sample to a group of 400 subjects, diverse in terms of gender, age, education and religion, representative of the general population. Sample size was based on the Nunally algorithm [1978]. Population characteristics are shown in Table 1a and Table 1b.

Table 1a. Demographic characteristics of the population – gender and education

Category	Number	Percent
Gender		
Female	200	50
Male	200	50
Age		
20-35	139	35
36-60	133	33
61 and more	128	32
Education		
Primary/ Gimnasium	32	8
Vocational	34	8,5
Secondary	135	33
Higher	199	49
Non-believer	86	14

Source: own analysis.

Table 1b. Demographic characteristics of the population – religion and world view

Religion	Number	Percent
Roman-Catholic	172	43
Greek-Catholic		
Orthodox	40	10
Protestant	43	11
Judaism	32	8
Islam	25	6
Bhuddism	24	6
Other	8	2
No affiliation/ atheism		14
World view		
Believer	344	86
Non-believer	86	14

Source: own analysis.

Due to the nature of the tested construct, which touches on sensitive issues such as religion and morality of conduct, it was decided to introduce the test procedure using the Social Approval Questionnaire [Drwal, Wilczyńska 1980]. If the obtained results demonstrate a positive relationship between spiritual sensitivity, its components and social approval, inside the inventory there will be introduced the scale of social approval. In order to verify the theoretical accuracy of the SSI and its three scales (Holism and Harmony, Religiosity and Faith, Openness to Other People), the subject test-takers were also given the Self-Report Questionnaire (SR-Q) (Heszen – Niejodek, 2003).

4. Quantitative Validation. Psychometric analysis

In order to test the psychometric properties of the SSI, methods to confirm character were used [Zawadzki 2006, p. 141, 5; Bagozzi, 2012; Kowal, Gurba 2015, 2016; Kowal, Roztocki 2015a; 2015b]. Below is a brief description of the procedures and the obtained results.

Analysis using discriminant power factors. The discriminatory power of the SSI position was calculated [Hornowska 2001; Bagozzi 2012; Kowal, Gurba 2015; 2016; Kowal, Roztocki 2015a; 2015b]. With the use of the r – Pearson coefficients, there were correlations between items and summary results of the inventory examined. All obtained correlations were statistically significant and ranged from $r = 0.21$ to $r = 0.76$.

There was also correlation between items and the scale in which they were comprised and calculated. All the items received satisfactory correlations with scales that measured each component whose indicators they operationalized. The best in this regard were the items of Religiosity and Faith scale, where the average correlation was $r = 0.85$. The average correlation for the following scales were: the scale of Openness to Other People r = 0.68, Spiritual Commitment scale $r = 0.66$, Aesthetic Sensitivity scale $r = 0.62$, Holism and Harmony scale $r = 0.61$, Moral Ethical Sensitivity/Conscience scale $r = 0.58$, Wisdom Awareness Meaning scale $r = 0.58$.

Analysis of the SSI scale correlation with the inventory and intercorrelation of scales. The scales representing spiritual sensitivity components correlate with the SSI overall result and the extent to which they correlate with each other. The *r*-Pearson correlation coefficient was used. All the correlations were statistically significant. The data showed a high positive correlation of scales with the general result. This demonstrates the high accuracy of the theoretical SSI – thus the inventory, as well as its scales, measure the same phenomenon.

The results were also analyzed in terms of inter-correlation of the SSI scales measuring spiritual sensitivity components. Here, as well, was r-Pearson correlation coefficient used. The correlations were quite high and positive which, from the standpoint of psychometrics, is a disadvantage because it is evidence of redundancy in the scales. Table 2a and Table 2b show the values of scale correlation with the overall score and intercorrelations of the scales.

Retest. In order to check the validity, here – more specifically – the time stability of the SSI and its scales, with an interval of one month from the first study the described population was re-examined with the experimental version of the tool. The relationship between the overall result and individual scales were examined. The r-Pearson correlation coefficient was used. Correlations of the scales results with the overall result and intercorrelations of scales representing components of spiritual sensitivity in the retest were very similar to those obtained in the first study. Again the scales results highly correlated with the general result of the SSI. Intercorrelations, which also used the r-Pearson correlation coefficient, were almost the same as in the first study. The retest was successful, indicating a high degree of the SSI time stability and its scales. Table 4 shows the values of the scales correlation with the overall result and inter-correlations in the retest.

On the basis of the retest results, the discriminative power of the SSI position was investigated with the use of the *r*-Pearson coefficient. The correlations between the positions and the overall result ranged from to $r = 0.19$ to $r = 0.78$ (Table 2a, Table 2b).

All the items received satisfactory correlation with the scales that measured a component which was operationalized by the indicators. Once again, the best in this regard were items of Religiosity and Faith scale – the average value of the correlation was $r = 0.85$. Mean values of the correlation in the other scales were: Openness to Other People $r = 0.67$ (before $r = 0.68$), Aesthetic Sensitivity $r = 0.62$

Table 2a. Correlation values the SSI overall results with scales results and intercorrelation of scales in the test after exclusion of time unstable claims

Test	MSŚ	RW	EMS	OD	Z	WE	SSI	HH
MSŚ		0.62	0.66	0.64	0.58	0.66	0.87	0.64
RW	0.62		0.53	0.31	0.64	0.51	0.83	0.49
EMS	0.66	0.53		0.44	0.68	0.59	0.78	0.54
OD	0.64	0.31	0.44		0.32	0.42	0.66	0.54
Z	0.58	0.64	0.68	0.32		0.54	0.75	0.55
WE	0.66	0.51	0.59	0.42	0.54		0.74	0.51
SSI	0.87	0.83	0.78	0.66	0.75	0.74		0.74
HH	0.64	0.49	0.54	0.54	0.55	0.51	0.74	

Source: own materials.

Table 2b. Correlation values the SSI overall results with scales results and intercorrelation of scales in the retest after exclusion of time unstable claims

Retest	MSŚ	RW	EMS	OD	Z	WE	SSI	HH
MSŚ		0.62	0.65	0.62	0.59	0.66	0.87	0.64
RW	0.62		0.54	0.29	0.64	0.51	0.83	0.49
EMS	0.65	0.54		0.44	0.69	0.57	0.78	0.55
OD	0.62	0.29	0.44		0.33	0.44	0.66	0.53
Z	0.59	0.64	0.69	0.33		0.48	0.75	0.54
WE	0.66	0.51	0.57	0.44	0.48		0.74	0.51
SSI	0.87	0.83	0.78	0.66	0.75	0.74		0.74
HH	0.64	0.49	0.55	0.53	0.54	0.51	0.74	

Source: own materials.

(same as before), Spiritual Commitment $r = 0.62$ (before $r = 0.66$), Holism and Harmony $r = 0.60$ (before $r = 0.61$), Wisdom, Awareness, Meaning $r = 0.55$ (in the test $r = 0.56$), Moral Ethical Sensitivity/Conscience $r = 0.55$ (before $r = 0.58$).

The significance of differences between the test and retest results: time stability. An important step which served the claim that the SSI is reliable and time stable was to calculate the correlation between the data obtained first in the test and then in the retest. The *r*-Pearson correlation coefficient between the test and the retest for the overall result and for the results in different scales was calculated. All the correlations were high and significant for the observed significance level

of $p < 0.001$. Their value was placed within the range $r = 0.84 – 0.95$. The highest correlation value was obtained by Religiosity and Faith scale $r = 0.95$ and the overall score, which is spiritual sensitivity $r = 0.92$. For other scales the correlations were: Openness to Other People $r = 0.93$, Aesthetic Sensitivity $r = 0.91$, Holism and Harmony $r = 0.89$, Wisdom, Knowledge, Meaning $r = 0.88$, Moral Ethical Sensitivity/Conscience $r = 0.85$, r = Spiritual Commitment $r = 0.84$.

There was also the significance of the differences to the SSI overall result and the scale results of the test and the retest examined. There were two types of statistical tests applied. In the case of the general result – spiritual sensitivity and Wisdom, Knowledge, Meaning component, there was the Student *t*-test used for dependent measurements because the distribution of these attributes was normal in all the groups distinguished in the tested population. For the remaining components of spiritual sensitivity, where distributions in some of the selected groups were slanted, there was a sign test for dependent measurements applied. Normality of distribution was previously examined by the Kolmogorov-Smirnov test. The *T*- and *Z*-statistics were calculated. It was found that the test and retest results for spiritual sensitivity and its components were not significantly different. In any case, '*p*' value was not less than 0.05.

In order to ensure the assessment of reliability of the questionnaire in terms of time stability, there was the significance of the differences for correlations of items with the overall result and with the scale result to which they were ascribed in the test and retest examined. Then, in the same way, the significance of the differences between item-scale correlation in the test and item-scale in retest were tested. Here too, there were no statistically significant differences.

In the end, again with the use of a Z test of assessment of the significance of correlation coefficients differences, there was a significance of differences between component-overall score correlation calculated in the test and component-overall result correlation in the retest. The assumed level of confidence equaled $p < 0.001$. There were no statistically significant differences.

Re-evaluation of the psychometric parameters of a shortened scale for Holism and Harmony, and for the entire inventory. Although the basic structure of the SSI remained unchanged (seven scales reflecting the components of spiritual sensitivity), it was necessary to eliminate the two unstable time claims belonging to the scale of Holism and Harmony in order to improve the accuracy of the inventory. Therefore the statistical parameters were calculated again for the scale and for the entire inventory.

It was tested how the SSI scales correlate with the overall result and with each other. The calculations were made separately for the test and separately for the retest with the use of the *r*-Pearson coefficient – these correlations were included in Tables 2a and 2b.

The results obtained in the test and retest were again correlated. The r-Pearson correlation coefficient was used. A correlation matrix was obtained, presented in

Table 3. The overall result and the results for the individual scales in the test-retest correlated best with each other.

Table 3. Significant correlations between SSI , its subscales, KAS and KS, $p < 0.001$ (* – n. s.)

	KS-Sum	KS-R	KS-SE	KS-H	KS-S
SSI – SSI	0.21	0.76	0.63	0.58	0.88
SSI – HH	0.25	0.42	0.50	0.65	0.63
SSI – MSŚ	0.12	0.60	0.56	0.59	0.73
SSI – RW	0.06*	0.93	0.42	0.38	0.87
SSI – EMS	0.11	0.51	0.48	0.39	0.57
SSI – OD	0.28	0.37	0.66	0.59	0.59
SSI – Z	0.09	0.64	0.42	0.33	0.63

Indexes for KAS – S-sensitivity, H – harmony, SE – ethical sensitivity, R – religiosity, Sum – sum of points.

Source: own materials.

Table 4. Model fit in SEM – indicators for model and scales

	AVE	α	*r*	χ^2/df	RMSEA	*p*	GFI	AGFI
HH	0.60	0.8	0.4	2.1	<0.08	0.01	0.9	0.8
MSŚ	0.6	0.6	0.4	4.5	<0.08	0.001	0.9	0.9
RW	0.7	0.8	0.3	6	<0.1	0.001	0.9	0.8
EMS	0.7	0.68	0.5	3.8	<0.08	0.002	0.92	0.9
OD	0.72	0.8	0.3	6	<0.1	0.001	0.9	0.8
Z	0.73	0.74	0.5	4	<0.08	0.002	0.9	0.3
WE	0.7	0.8	0.4	9.4	<0.1	0.001	0.9	0.9
SSI	0.73	0.95	0.46	1.7	<0.08	0.05	0.95	0.9

AVE – average variance extracted, α – Cronbach's α, *r* – mean correlation between items, *p* – observed probability, χ^2/df, RMSEA, GFI, AGFI – indicators of model fit.

Source: own materials.

Then the significance of the differences between the test results and retest for the SSI overall result and for the shortened scale Holism and Harmony were examined. In the overall result, where the distribution of variable was normal, the Student t-test for dependent measurements was applied, but for the scale Holism and Harmony, where the result distribution was not a normal distribution, the sign test of dependent measurement was applied. Normality of distribution was, as previously tested, with the Kolmogorov-Smirnov test. The differences were not statistically significant.

Similarly, the significance of the differences between the results of test and retest for item-overall score correlation was calculated. Here too, the Z test of assessment of significance of correlation coefficients differences was used. In all the considered cases the differences were not statistically significant. Also examined were the significance of differences between the results of the test and retest for item – scale correlation. These differences also were not statistically significant.

The final step of the analysis was to compute the significance of the differences between the results of the test and retest for scale – overall score correlation. Here too, there were no any statistically significant values.

Correlations of the SSI, its scales, and items with social approval. To determine whether and to what extent the constructed inventory (SSI), its scales and the claims are susceptible to the influence of disturbing factors – social approval understood as a way to respond (not as a feature) and its aspect, which is to create a good impression (the second aspect – self-deception was not taken into account), subjects were given, along with the SSI, Social Approval Questionnaire – SAQ [Drwal, Wilczyńska 1980]. In all the mentioned configurations there was obtained a high correlation with the results of SAQ (values changed from $r = 0.12$ to $r = 0.28$). Therefore the social approval scale was not included in the final version of the SSI.

SSI Correlations and its scales using the Self-Report Questionnaire. In order to verify the accuracy of the theoretical SSI and the three scales, the examined along with the inventory Self-Report Questionnaire S-RQ was used [Heszen, Gruszczyńska, Metlak 2003]. This kind of questionnaire was chosen because of good statistical parameters, the close definition of constructs, and for the simple reason that no other researchers in Poland had made attempts to construct a method of measuring the spiritual sensitivity. The Self-Report Questionnaire examines spirituality understood as a concept according to Heszen-Niejodek [2003], as a phenomenon consisting of three components: Harmony, Religiosity and Ethical Sensitivity. The authors of S-RQ define Harmony in a manner similar to a Holism and the Harmony component; Religiosity in a manner similar to Religion and Faith, and Ethical Sensitivity in a manner similar to Openness to Other People in the SSI.

After calculating the r-Spearman correlation coefficients, a correlation matrix was developed. The results indicate clear evidence of the good theoretical validity of the SSI and its scales. Heszen's theories were used to understand the conclusion that the construct measured by the SSI was something slightly different from spirituality. Table 6 presents a chart of the correlation coefficients.

Cronbach's α coefficients. Cronbach's α coefficients for the SSI overall result and the scales results measuring spiritual sensitivity components were calculated. For the entire inventory, the coefficient was high – equaled 0.95 and the coefficients for the scales were higher than 0.70 (reported in Table 6). Lower rates were obtained for the following scales: Wisdom, Knowledge, and Meaning, measuring the central component of spiritual sensitivity. According to the concepts integrating the remaining components and penetrating them, and the Spiritual Commitment

scale which consisted of a relatively small number of items, in order to maintain the integrity and structure of the tool based on the current theoretical assumptions, both scales were retained until the completion of the confirmatory factor analysis.

The obtained Cronbach's α-coefficients confirm the SSI and both scales are homogeneous, therefore theoretically accurate. Items belonging to each scale measure the same phenomenon which yields a high reliability with the reliability of the scales high or satisfactory.

The development of a model using the path analysis method: Use of Structural Equation Modeling (SEM) and Confirmatory Factor Analysis (CFA). In order to check the goodness of fit of a hypothetical model of spiritual sensitivity which was used to design the SSI, a Confirmatory Factor Analysis (CFA) was completed using 400 cases. CFA assumes the existence of a certain number of factors, and by analyzing random variable values tests, the validity of assumptions concerning the structure of the phenomenon and estimates the parameters of the assumed model [Kowal, Gurba 2015; 2016]. CFA allowed for the examination of the structure of spiritual sensitivity by assuming the existence of the so-called latent variables. These variables, defined as directly unobservable, may be the missing link in the analyzed structure of the phenomenon. Therefore taking them into account may help to understand the interrelationships and dependencies between the two variables.

The relationships between the general construct – spiritual sensitivity and its subdimensions were analyzed in the Statistical and SPSS programs, with the generalized least squares (GLS) method. Figure 1 shows the diagram of the assumed relationships between spiritual sensitivity (variable: SI) and its components, such as: 1) Holism and Harmony (variable: HH), 2) Wisdom, Awareness, Meaning (variable MS), 3) Religiosity and Faith (variable: RW), 4) Moral Ethical Sensitivity/ Conscience (variable: EMS), 5) Openness to Other People (variable: OD), 7) Spiritual Commitment (variable: Z), 8) Aesthetic Sensitivity (variable: WE).

Spiritual sensitivity is a factor of the second order and is reflected by the components listed in points 1-8 and these in turn manifest themselves by observable variables (enclosed in rectangles in the diagram), whose values were known on the basis of the studies of the experimental version of the SSI on the population of 400 randomly selected people in the test-retest procedure. As the endogenous variables, there were assumed those most strongly correlated with the spiritual sensitivity variable and those correlated with each other. Endogenous variables were the most diagnostic in character towards spiritual sensitivity.

In the course of the discussed procedure, the confirmatory factor analysis results were compared by testing four separate models. They all assumed the presence of, apart from the original seven factors identified with the created scales, the presence of the secondary factor corresponding to the main construct, spiritual sensitivity, but:

a) the first model assumed that primary factors are relatively independent of each other and uncorrelated; residual factors are relatively independent of each other and uncorrelated,

b) the second model assumed that primary factors are relatively independent of each other and uncorrelated, whereas residual factors will correlate with each other,

c) the third model assumed that primary factors are correlated, but the residual factors are not,

d) the fourth model assumed that primary factors and residual factors are correlated.

The results indicated the third model was the best for confirmation.

Variables for the confirmatory analysis model were chosen so that the observable independent variables (shown in the rectangular boxes) were strongly correlated with the primary variable, spiritual sensitivity, and at the same time that they are as poorly correlated with each other, and they included information about other endogenous variables in the directly unobservable model (shown in the elliptical boxes). The evaluation obtained from the confirmatory analysis of the model parameters , of the model, basic statistics, indicators was based on non-centrality. This indicates a very good fit between the data and the adopted model. CFA confirmed the goodness of the model [Bagozzi 2012; Kowal, Roztocki 2015; Kowal, Gurba 2016]. The model's fit goodness demonstrates slightly less than 5% error of data to a theoretical model, which is a very good result. Lower rates of a model's goodness of the individual components of spiritual sensitivity do not make the model perfect, however, some trends on the dimensions of spiritual sensitivity and diagnostic accuracy of some of the questions can be clearly seen. A graph showing the accepted model of spiritual sensitivity is presented in Figure 1.

Similar procedures in the SSI were applied separately to each scale representing components of spiritual sensitivity. The generalized least squares method was used. It assumed that the primary factors are correlated, whereas residual factors are uncorrelated (no autocorrelation). The resulting parameters were a good fit for four factors: Holism and Harmony, Moral Ethical Sensitivity/Conscience, Openness to Other People, and Spiritual Commitment, where the RMSA measure was lower than 1.0 for the each of three factors: Wisdom, Awareness, and Meaning. Religiousness and Faith, and Aesthetic Sensitivity, the factors parameters measured far less than 1.0. However, because of the fit of the phenomenon of spiritual sensitivity model which took the weaker components into account, the model was unchanged.

Final Amendments in the process: The SSI in its final form. After checking the goodness of the model, the final step in the construction of the method was to make the necessary amendments to the SSI sheet to increase its functionality. These amendments concern issues relevant to the administration method that emerged during the use of the experimental version of the inventory.

The goal of the questionnaire's construction was to measure spiritual sensitivity at the workplace of the Polish IT users population. To verify the discriminant validity of the construct, we tested with the Average Variance Extracted (AVE) method, whether the amount of variance explained by the construct in relation to the amount of variance due to the measurement error is significant [Fornell, Larcker 1981;

MacKenzie et al. 2011; Kowal, Roztocki 2015a; 2015b]. The AVE results for all constructs during different stages of test construction were statistically significant and respectively greater than AVE > 0.6, which are quite acceptable results for the constructed questionnaires.

Validity manifested by content, criterion, and construct validity is related to the extent to which an instrument measures what it is intended to measure [Cronbach, Meehl 1955; Kowal, Roztocki 2015a; 205b]. The constructs (dimensions, for example Openness to Other People, Aesthetic Sensitivity, Spiritual Commitment, etc.) validity is crucial to the overall observed validity of the test and we verified it by using the methods of the Confirmatory Factor Analysis (CFA) as described by Thompson [2004], Bagozzi [2012], Sagan [2002], Kowal and Roztocki [2015a; 2015b]. The results concerning validity for the constructed questionnaire were positive, the tracking errors data indicated by the RMSEA statistics were less than 0.1 for all the dimensions, configural invariance, metric invariance and scalar invariance, on each step of analysis [Davidov 2008]. As an external criterion for evaluating the validity, we calculated the average rates (on a scale of 1 to 5) of compliance questionnaires given by competent judges [Kowal, Roztocki 2015a; 2015b], which in the case of all dimensions were high. The results of the SSI indicated Kendall's coefficient of concordance $W = 0.8$.

Reliability (the ability of an instrument to measure consistently) was estimated by Cronbach's alpha, with satisfying results [Kowal, Roztocki 2015a; 2015b]. Cronbach's alpha coefficients for each scale were greater than 0.6-0.8, and for the SSI were greater than 0.95 respectively, in each step of the analysis. Average correlations between items changed from 0.3 to 0.5.

Table 5. Characteristics of variables of the model

Number of variables in the model	128
Number of observable variables	56
Number of unobservable variables	72
Number of exogenous variables	64
Number of endogenous variables	64

Source: own materials.

Table 6. Model variables considered in CFA

Unobservable, latent endogenous variables		Mean	STD	Ranking (0 – 100)
1		2	3	4
MS	Wisdom, Consciousness, and Meaning	2.76	0.39	68.94
RW	Religiosity and Faith	2.20	0.89	55.02
HH	Holism and Harmony	2.79	0.35	69.73
Z	Spiritual Commitment	2.90	0.40	72.44

1	2	3	4	5
WE	Aesthetic Sensitivity	2.65	0.46	66.26
OD	Openness to Other People	2.74	0.38	68.59
EM	Moral and Ethical Conscience	2.98	0.35	74.48
ID – SSI	Spiritual Sensitivity: main construct, overall result of SSI	2.70	0.39	67.43

Source: own materials

Table 7. Model variables considered in CFA and SEM

	Observable, endogenous variables – Spiritual Sensitivity Inventory claims (ID – SSI)	λ	r
1	2	3	4
SSI-->MS	**Wisdom, Consciousness, and Meaning**	0.73	0.73
MS-->V3	I often wonder about the meaning of different events.	0.68	0.56
MS-->V12	I'm certain that nothing happens by accident in my life.	0.78	0.76
MS-->V20	I try to find something positive in every aspect of my life.	0.22	0.42
MS-->V23	I accept that not everything in life is certain, predictable, and rational.	0.64	0.71
MS-->V29	I have a strong need to understand the meaning of what happens to me in my life.	0.85	0.65
MS-->V34	I think that feelings and intuition are an important complement to reason.	0.39	0.52
MS-->V38	I believe that the spiritual path I have chosen will lead me to realise my goals.	0.7	0.68
MS-->V43	I think that people are not inherently evil, but they may sometimes err.	0.81	0.64
MS-->V49	I am reconciled with what happened to me in my life.	0.21	0.39
MS-->V55	I look for answers to questions about my life, my place in the world, and the goals I want to, or I should achieve.	0.79	0.63
SSI-->RW	**Religiosity and Faith**	0.73	0.73
RW-->V5	Religious orders are guideposts which I try to follow in my life.	0.91	0.9
RW-->V10	I have a sense of community and responsibility towards fellow believers.	0.86	0.85
RW-->V14	Thanks to faith, I see the meaning of what happens to me in my life.	0.93	0.91
RW-->V19	I believe in the existence of a Supreme Being who is the ultimate ruler of the universe.	0.99	0.91
RW-->V22	I try to deepen my knowledge concerning my faith/religion.	0.89	0.88
RW-->V28	I believe that a Supreme Being is the cause of order and harmony.	0.99	0.9
RW-->V37	Thanks to faith, I can distance myself from what is going on in my life.	0.92	0.91
RW-->V45	I experience the closeness of God every day.	0.95	0.9

Table 7, cont.

1	2	3	4
RW-->V51	Prayer (meditation) resulting from internal needs is something important for me.	0.92	0.92
RW-->V57	I actively participate in the church/community to which I belong.	0.84	0.81
SSI-->HH	**Holism and Harmony**	0.73	0.73
HH-->V6	I am an active participant in the life of the church / community to which I belong.	0.66	0.76
HH-->V11	My life is a whole spiritual unity with other people. Rephrase: My life has a spiritual unity.	0.56	0.63
HH-->V21	When I think about my life and the world, I feel that I am in the right place.	0.62	0.73
HH-->V26	There are times when I have a sense of unity with other people and the world.	0.74	0.68
HH-->V33	Despite difficulties and adversities, I feel grateful to fate, when I think about my life.	0.63	0.56
HH-->V48	Despite various obstacles, I consider myself a lucky man/woman.	0.58	0.66
SSI-->Z	Spiritual Commitment	0.73	0.73
Z-->V7	I try to ensure agreement in my surroundings.	0.77	0.77
Z-->V15	My daily activities are accompanied by a sense of realization of universal values (truth, goodness, beauty, etc.)	0.61	0.78
Z-->V41	I try to organize my time, so that I can find a moment to realize my spiritual needs on an everyday basis.	0.4	0.56
Z-->V46	Everything that I get involved in I take seriously and with due consideration.	0.69	0.77
SSI-->WE	**Aesthetic Sensitivity**	0.73	0.82
WE-->V2	The values I hold guide all my life.	0.78	0.74
WE-->V9	I'm moved by and admire works of art.	0.49	0.65
WE-->V18	I believe that the beauty of the world reveals the Divine.	0.81	0.81
WE-->V24	I'm impressed by the beauty and harmony of the world.	0.6	0.66
WE-->V31	I feel uncomfortable when, for some reason, I have to stay in an unaesthetic (ugly, discordant) environment.	0.55	0.6
WE-->V53	I can see the inner beauty in other people.	0.72	0.72
SSI-->OD	**Openness to Other People**	0.73	0.73
OD-->V4	I'm often moved by listening to music.	0.7	0.66
OD-->V13	I'm often moved by someone else's hard luck.	0.59	0.58
OD-->V17	I feel responsible for others.	0.79	0.78
OD-->V27	I get involved in activities for the sake of others.	0.82	0.75
OD-->V32	I realize myself in the love for another human being. Rephrase: I become more aware of myself when I love….	0.73	0.7
OD-->V36	I am aware that I multiply the good by helping others.	0.67	0.71

1	2	3	4
OD-->V40	I'm certain that doing good pays off.	0.69	0.68
OD-->V44	I try to understand the motives of people even when, in my opinion, they do wrong.	0.68	0.66
OD-->V50	I think people are not inherently evil, even though they may sometimes err.	0.68	0.64
OD-->V56	I try to forgive those who hurt me, although it is sometimes difficult.	0.65	0.64
ESSI-->EM	**Moral and Ethical Conscience**	0.73	0.73
EM-->V1	I feel compassion for the weak and suffering.	0.52	0.59
EM-->V8	I strive for spiritual development.	0.52	0.64
EM-->V16	There is a person that represents moral authority to me.	0.5	0.55
EM-->V25	The most important thing in my life is to live in accordance with my conscience.	0.75	0.69
EM-->V30	I try to live in harmony with the values I hold.	0.75	0.72
EM-->V35	I think that regardless of the circumstances, we should be guided by a higher value.	0.65	0.64
EM-->V39	I'm guided by moral, ethical principles in decision making.	0.45	0.47
EM-->V47	My philosophy of life helps me deal with external influences.	0.47	0.57
EM-->V52	What I see around me makes me sometimes feel disappointed, but also encourages me to do good.	0.7	0.7
EM-->V58	Moral principles facilitate and organize my life.	0.59	0.57
	r-Pearson's correlation coefficient, λ- factor loading (see [Davidov 2008])		

Source: own materials.

5. Quality validation: use of narrative interviews

To ultimately confirm the accuracy of the constructed theoretical tool, we should refer to the appropriate external criterion and analyze the relationship between the construct and the corresponding behavior [Hornowska 2001]. It was not possible to check the criterion validity of the SSI with the use of the correlation matrix between the inventory and other methods measuring the same construct, as it was not available. While there are methods for exploring and studying spirituality, spiritual sensitivity, the construct is defined differently by each methodology. It was necessary to find an alternative to reassess the relationship between spiritual sensitivity as measured by the SSI and the corresponding behaviors.

The chosen method was a short narrative interview consisting of the subject's experience of life, with an emphasis on the spiritual dimension. The 31 subjects were divided into two groups: 1) subjects who achieved extremely high scores on the spiritual sensitivity in the SSI, 2) subjects with extremely low scores on the spiritual sensitivity in the SSI.

6. Conclusions: applications and contributions

According to theoretical concepts, spiritual sensitivity is a construct that combines the harmoniously elusive, and the spiritual realm of ideational concrete, observable human activity [Emmons 2000; Zohar, Marshall 2001; Sisk, Torrance 2001; Wigglesworth 2003; Vaughan 2003; Korcz 2006]. This sensitivity gives spirituality cognitive-motivational meaning and serves as a bridge between what provides inspiration to Man to act. It consists of concepts such as values, ideals, and sense – and the consequences of actions taken. According to the concept of Straś-Romanowska [1992, p. 45], the metaphysical realm, focused around the values of the sacred, sacrum and the subjective sphere, manifested in activity and self-fulfillment, determine the spiritual essence of a person. Also too, this essence or spirituality itself is understood by many as a kind of metasphere embracing or rather penetrating all areas of human life [Straś-Romanowska 1992; Shannon 2000; May 2004; Wagener and Malony 2006; Wiseman 2007].

Thanks to the skills that constitute spiritual sensitivity, Man pursues life's goals effectively, solves problems creatively, and copes with life's tasks [Emmons 2000]. It is not surprising that the issue of spiritual sensitivity, including its diagnosis, may be relevant to many areas of life, especially professional, individual and social [Kowal, Keplinger 2015; Kowal, Keplinger, Mäkiö Sonntag 2016]. A developed spiritual sensitivity is beneficial, not only in relationships between people, but also in the educational, professional and social domains [Zohar and Marshall 2004; Wigglesworth 2003; Korcz 2006; Smith, Katz 2006; Kowal, Gurba 2016; Kowal and Roztocki 2015a; 2015b], especially in the sphere of communication [Jasińska-Biliczak, Kowal, Hafner2016; Kuzio 2013].

Learning organizations can utilize this reliable tool to assist in the development of personnel to achieve innovative organizational goals [Jasińska-Biliczak, Kowal, Hafner 2016]. The correct selection of leaders in business management in relation to spiritual sensitivity and human potentiality may be closer aligned in meeting expectations and be better prepared to assist their subordinates to perform job functions [Kowal, Keplinger 2015; Kowal, Keplinger, Mäkiö Sonntag 2016].

In religious roles, spiritual sensitivity can assist the religious profession in the facilitation, coaching and spiritual advising of parishioners [Kriger 1999; Wigglesworth, 2003; Hense 2006; Amram, Dryer 2007]. Helping understand spirituality may provide a framework for religious study coursework or the selection of future leaders.

In education the development of the SSI also has important implications. Because the educational process involves not only the acquisition of knowledge but also communication between individuals, the understanding of personality constructs is important to future educational programs. Education consisting of values-based coursework and experiences which contribute to the formation of a mature whole personality can contribute positively and benefit the world [Kriger 1999;

Wigglesworth 2003; Hense 2006; Amram, Dryer 2007]. Spiritual sensitivity skills are essential for the effective performance in professional tasks at the workplace [Kapała, Kowal, Straś-Romanowska 2016], social and religious roles [Kapała 2015].

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