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The Values Mapping Scale

A PRACTICAL GUIDEBOOK / VERSION 1.0

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PSYCHOLOGIE
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The VMS-15 method can only be used for research purposes!
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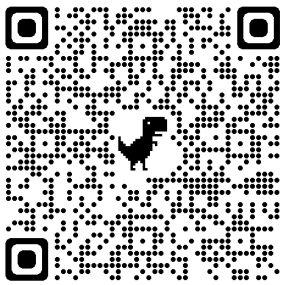

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The information provided in this guidebook corresponds to the present state and possibilities of current knowledge. It is not, nor can be, exhaustive. The guidebook is intended for psychologists (counselling, school, clinical, and others), special educators, and professionals familiar with the areas of methodology and psychological diagnostics (psychiatrists, psychotherapists, and others). The scale is suitable for diagnosing adolescents aged 11–19. The responsibility for the result of an examination using the *Values Mapping Scale* lies with the particular psychologist, special educator, or professional interpreting the results of the test, not with its author or publisher.

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1 Adolescence

The period of adolescence is an extremely important developmental stage in human life. Its length is approximately 10 years. Neither the beginning of adolescence nor its end can be precisely determined, as every individual is unique. The standard range is from the age of 11 to the age of 19 (Dolejš & Orel, 2018). The period is characterised by a number of dynamic changes, turbulent emotions, and making unwise decisions from time to time. A child gradually becomes an independent and full-fledged member of society. His/her personality is gradually formed through experience and undergoes changes into a form in which it enters adulthood. The process is influenced by numerous factors.

During the period, many changes occur in the area of physical appearance. A second body shape change occurs, encompassing more significant development of secondary sexual characteristics and more rapid body growth (Wierenga et al., 2018). Apart from obvious physical changes, the body also undergoes hormonal changes closely related to modified behaviour and intimate interest in others. Hormonal processes remodel sex-based differences in the brain (Herting & Sowell, 2017). The brain structure and activity both undergo changes, particularly in the parts regulating specific behaviour in adolescence (Mills et al., 2016). These processes in particular can influence the adolescents' reactions to the environment and to the changes happening in their body as well as in their relationships in general. It can be assumed that the cognitive and emotional changes occurring in this period are very significant (Vermeulen et al., 2018).

Adolescents begin to care for their own appearance more; they care for themselves in order to be appealing to others or to fit in their social group. At present, this aspect is influenced by social media which provide adolescents with various options for entertainment and observation of other people. Social media are frequently connected to a negative self-concept, a disturbed relationship to food, and behaviour related to the physical changes (Rodgers et al., 2020). In this respect, boys and girls differ: social media play a more important role in the life of adolescent girls. Girls who are not satisfied with their body tend to use social media more (Hosokawa et al., 2023). This begins a vicious circle involving a feeling of dissatisfaction and a constant comparison with unrealistic ideas and expectations. Boys are usually more content with their appearance and their activities on social network sites. At the same time, their *coping strategies* are more active (Mahon & Hevey, 2021). The majority of adolescents, however, can overcome their own negative self-concept before reaching the age of 18. The main factors that may change an individual's perception include, for example, identification of a social context in which the individual feels comfortable and accepted. Another strategy for coping with the pressure social media put on one's self-concept is utilization of cognitive strategies (Gattario & Frisén, 2019). According to Erikson (1950), the period of adolescence should involve getting to know one's own self and values. Along with personal identity, their social identity is also a matter of high importance for adolescents (Albarello et al., 2018). This is facilitated particularly through relationships with other people.

A child is most influenced by parents and close persons. They help to form the values adopted by the child. This relationship is later influenced by teachers, whom the child perceives as authorities. As a result, the relationship with parents is side-lined. If an adolescent perceives his/her parents as strong personalities, he/she also tends to perceive them as supportive (De Goede et al., 2009). In contrast, if there is a conflict between them, parents and adolescents commonly perceive its severity differently (Mastrotheodoros et al., 2020). During adolescence, girls and boys spend the majority of time with their peers, their friends, or with their partners; the relationship to parents is, however, still very important for adolescents' self-concept and self-criticism (Keizer et al., 2019). Freud would probably liken this phenomenon to the superego. Adolescents still feel a desire for autonomy and a need for detachment from parental authority (Dolejš et al., 2014).

During adolescence, the most important kind of relationships are those with the individual's peers and peer groups. They spend the majority of their time together and meet in the school environment as well as in their leisure time. The presence of peers increases the likelihood of engagement in risky situations and experiences (Andrews et al., 2020). It increases the risk of experimenting with alcohol, cigarettes, and drugs, particularly if such activities are conducted by adolescents in the company of other members of their social groups or friends (Loke & Mak, 2013). Friendships can significantly contribute to the establishment of value systems based on interactions and experience. Such behaviour may be observed not only in actual interpersonal interactions, but also in the online environment (Nesi et al., 2018). Adolescents tend to be very sensitive to exclusion from a social group. For this particular reason, they may try to fit in even if it might involve health risks and illegal activities (Blakemore, 2018). Good relations within the social environment are influenced by several factors, such as resistance to peer pressure and socio-cognitive processes (Andrews et al., 2021).

2 Values

Values are formed in a certain way throughout life. They are a construct serving for the description of individuals and may be defined in numerous ways. They may be interests that have the power to initiate and accomplish a certain way of behaviour (Allport & Vernon, 1931). Rokeach (1973) describes values as standards that have the ability to regulate behaviour and actions. Values may also be defined as convictions. These convictions are directly linked to emotions and point to the goals craved by the individual. While overlapping into particular situations, they also serve as norms for the functioning of society (Schwartz, 2006). They enable us to determine what kinds of behaviour and actions are morally appropriate or inappropriate and detrimental to society. Based on interpersonal experience, it may be assumed that values also overlap between individual generations.

In childhood, values are substantially influenced by parents (or other caring persons) from whom a child learns to adopt patterns of behaviour and thinking through which the values are presented. Values are reflected in human behaviour and actions. The patterns set by the parents as appropriate are automatically perceived by the child as the only correct option. Subsequently, the influence of the parents is complemented by the influence of teachers at school and within leisure activities. Teachers become certain role models concerning not only socialization but also strengthening and acquisition of values, i.e. the establishment of a value system. At a later point, the influence of peers is also included; thanks to them, an adolescent is confronted with values other than those represented by parents, teachers, and other authorities. The establishment of one's own values is a long and complex process taking place from birth to death. In adult life, there are still many factors intervening with one's values: relationships, the work life, and acquired experience.

2.1 Values in the Period of Adolescence

There are not all that many research projects focused on values in adolescence. This fact is presumably caused by several factors. Adolescence is a period characterised by substantial formation of values. This variation in values over time may hinder their identification and observation. According to Piaget (1932), an adolescent is able to use autonomous morality in order to evaluate what is moral or immoral; its perception forms at approximately the age of 11–12. For this reason, observation of values and analysis of their structure may presumably only start at the beginning of adolescence. At present, this form of morality and value formation is significantly influenced by cyberspace and social media – for obvious reasons, these were not regarded as problematic in Piaget's era. An individual's behaviour in the online space may provide information on his/her world-view and ideals. Moral convictions are most commonly manifested in little acts of daily life rather than in more intense ways on specific occasions (Kalimeri et al., 2019). Social networks provide adolescents with "online role models" whose value mindset and behaviour they may adopt. This is another reason why it is very important to investigate values already in the period of adolescence, in spite of the frequency of their transformations. At the beginning of adolescence, the importance of value openness towards changes increases (Cieciuch et al., 2015), complemented by hedonism, i.e. enjoying life through achieving pleasure, and self-restraint, which regulates adolescents' thinking and acting (Vecchione et al., 2019). The values of tradition, i.e. the cultural context, and conformity are not as prominent as in adolescence (Daniel & Benish-Weisman, 2018). Adolescents commonly manifest a greater need to stand out and do things that do not match the definition of conformity for common good, or they want to adapt as much as possible to their reference group. This need may lead to an increased desire for popularity and appreciation from others, particularly

from their friends or the groups where they want to belong. This desire may be transformed into either aggression or excessive control over others (Cillessen & Rose, 2005).

Within the period of adolescence, psychosocial moratorium, which is characterised by postponing the fulfilment of one's obligations to a later time, is important (Erikson, 1968). It may result in postponing the establishment of values. An adolescent does not yet want to adopt the responsibility resulting from maturation and new obligations. The moratorium should be followed by the establishment of one's identity, where the individual's values are presumably more stable than they were during the moratorium or prior to it.

The perception of the topic of values is rather abstract during the period of adolescence. Adolescents can define and name their values (Považanová et al., 2022). The question is, however, whether they can actively use them, or whether they work with them intuitively, or under the influence of other people. They can mostly determine when they act appropriately and when their actions are outside the standards of behaviour. The values are a link between the parents' values and their influence on adolescents, and the values of adolescents themselves, their interactions in the environment, whether home, school, or leisure-time environment (Knafo-Noam et al., 2020), but also in cyberspace. The values seem to be an important factor when establishing new friendships (Kindschi et al., 2019). They influence adolescents' behaviour and actions, and also their choices of friends. Apart from relationship determinants, the values and particularly their transformations are influenced by the biological and physiological changes taking place in the body (Costa & McCrae, 2006). At the end of adolescence, the stabilization of these and other qualitative changes in relationships is also accompanied by the stabilization of value systems.

2.2 Values and Research into Them

At present, there are numerous theories concerning values and value systems, such as Schwartz's theory of basic human values (Schwartz et al., 2012) or Rokeach's categorization of values (Rokeach, 1968). Some of them have been established for some time (Allport et al., 1970; Morris, 1956), while others are new and currently widely used (Schwartz et al., 2012; Kohoutek, 2008; Jensen & Padilla-Walker, 2016). The common denominator is that they strive to delimit values and direct their definition into the most precise form possible. The values are commonly categorized into systems or hierarchies within which they are ordered either based on topic (with numerous sub-values in each group) or based on importance. The topic of human values is study matter not only for psychology, but for other research disciplines as well, for instance sociology, philosophy, and other areas of the humanities (Považanová et al., 2022), as well as physics and chemistry, or even mathematics. These scientific fields perceive values, however, in a technical sense, omitting the direct focus on the inner experience of human beings. In other words, the topic of values viewed from different angles is an interdisciplinary topic.

Values may be perceived as basic convictions as to what is important and what is not. They are regarded as the best way to analyse the personality (Allport & Vernon, 1931). Another definition states that values serve as standards regulating the behaviour and the reasoning behind it (Rokeach, 1973). Values are frequently substituted or identified by convictions, norms, attitudes, or qualities. Values and value systems often have a positive tone rather than a negative one. Some of them may, however, even correlate with the traits of the Dark Triad and have therefore negative connotations (De Holanda Coelho et al., 2021).

2.3 "The Big Three" of Morality

"The Big Three" of morality theory (Shweder, 2003) ranks among the classic theories dividing morality into three basic types: autonomous morality, community morality, and divinity morality. These three types were subsequently also used by Arnett Jensen and Padilla-Walker (2016) in their research into ethical values, which they divided in the same way. "The Big Three" divides values into three groups similar in topic and including all topics related to the particular category. This concept was based on research into family constellations in India.

The first category is autonomy ethics. It focuses on everything directly related to an individual and his/her individuality and personal interests. It involves topics such as rights, justice, and harm. The purpose of its moral regulation is the increase in one's own choice and personal liberty. Individuals reaching high autonomy

3 Development of the Values Mapping Scale

Mapping of the value orientation of Czech and Slovak pupils and students involved the implementation of six focus groups including children and youth aged 11–19. These sessions resulted in the development of a multifarious list of topics that reflected in some way the value orientations of young people. In addition, an extensive review was conducted concerning values and values systems in adolescence. The study of value groups and the review subsequently resulted in the elaboration of 203 questions. Following a pilot testing, 39 items were identified.

Individual topics were re-formulated into 39 statements describing individuals' feelings or behaviours. These statements were translated into Czech and Slovak. The list included statements focusing on various content, for instance relations to other people ("I am good to other people."), religious beliefs ("I have a close relationship with God."), acceptance of social norms ("I respect the laws."), idealistic beliefs about the functioning of society ("I believe in less aggression in society."), and evaluation of various aspects of the individual's life ("I perceive my life as good."; "I can assess my own behaviour critically."; "I have a goal to achieve something in my life.").

The list of 39 statements underwent a pilot test administered in paper form to 150 pupils of primary schools in order to verify the comprehensibility of the individual statements. This verification did not reveal any problematic items. The actual large-scale data collection involved administration of the list of 39 statements to 3,804 Czech and Slovak pupils and students aged 11–19. Detailed characteristics of the sample group are provided in chapter 4.1 Standardization Group. The research participants evaluated the individual statements on a four-point scale "Definitely disagree – Disagree – Agree – Definitely agree". Answer sheets containing over 20% (7) of omitted answers and those where some basic demographic data (age, sex) were missing were excluded. In case of a smaller proportion of omitted answers, linear regression was used to obtain the item score imputation. In more than 1.6% of cases, all items were filled in. The obtained data matrix contained 3,732 answers. The list of statements in the administered form is provided in Table 1.

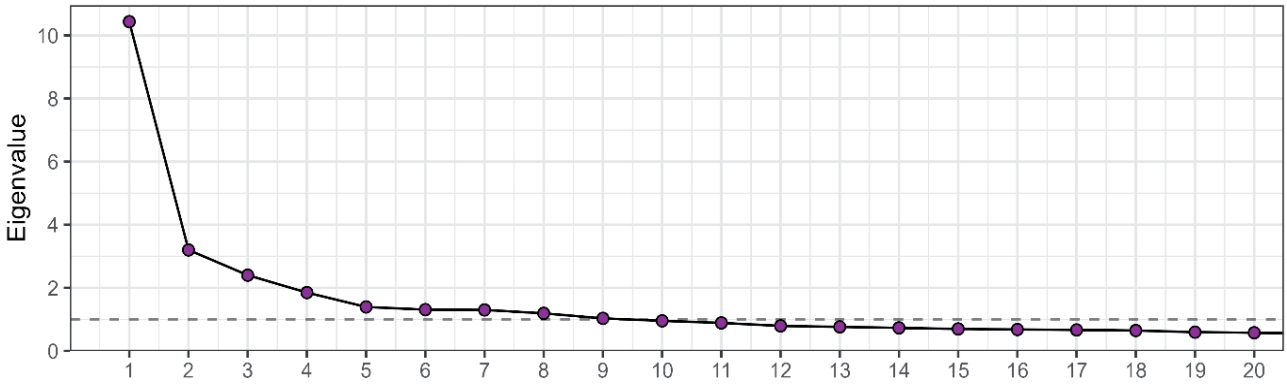
Table 1: The list of 39 statements to be evaluated

1. Faith is important to me.	21. I am good to other people.
2. I respect older people.	22. I have a goal to achieve something in my life.
3. I would help a person with a different skin colour.	23. I perceive my life as good.
4. I respect opinions of other people.	24. I live in harmony with God.
5. The well-being of people around matters to me.	25. I can assess my own behaviour critically.
6. I think it is polite to greet others.	26. I am capable of self-criticism.
7. My position in the class is important to me.	27. I have a close relationship with God.
8. I am interested in others' opinions.	28. Having food and drink and a place to live would be enough for me.
9. I accept the opinions of other people.	29. I believe that everyone should have equal opportunities.
10. I respect the laws.	30. My life has its value.
11. I am merciful to other people.	31. I help people when they are in trouble.
12. I am fair to others.	32. I am considerate of others.
13. I am interested in welfare of other people.	33. People can rely on me.
14. I comply with social conventions.	34. I believe in less aggression in society.
15. I am responsible for my own behaviour.	35. I am in favour of people treating each other nicely.
16. I feel obliged to contribute to social order.	36. I respect teachers.
17. I live my life according to God's laws.	37. I think the lives of others have a certain value.
18. I plan my future.	38. I am honest to myself.
19. I think a lot about my past.	39. It is important for me to enjoy life's pleasures.
20. I can overcome the obstacles that come.	

The obtained data were subsequently analysed in order to identify the factor structure complying with the following two requirements: 1. it closely matches the data and therefore enables the design of a reliable and factor-valid diagnostic tool, and 2. corresponds to a value classification described in current scientific literature.

The exploratory factor analysis did not result in a clear factor structure, which was expected with regard to the manner in which the list of administered statements had been obtained. Figure 1 shows a graph for the first twenty items (scree plot) of the matrix of polychoric correlation coefficients of item scores. The result is not unambiguous and implies the existence of one to nine factors. The acceleration factor method identified one factor, the optimal coordinates method identified five factors, and a parallel analysis in accordance with the eigenvalue-higher-than-one rule resulted in nine factors.[1]

Figure 1: Scree plot graph of the first twenty eigenvalues



In order to investigate the importance of the identified factors and their comparison with conceptions of values described in current scientific literature, we decided to favour the three-factor solution. The identified value clusters are labelled as internal values, external values, and higher values.

After rational assessment, 18 statements out of the set of 39 were selected – those that could be unambiguously classified under one of the factors. The suitability of this three-factor structure was verified through a confirmatory factor analysis (CFA).[2] Statements with a lower factor loading or significantly overlapping with other statements were subsequently excluded. For instance, the statement “I plan my future.” was removed from the factor of internal values, since its factor loading only reached the value 0.38. The statement “I accept the opinions of other people.” was excluded due to a high value of the modification index which indicated a significant overlap with a content-similar item “I respect the opinions of other people.”. In total, three statements were excluded: in Table 1, they are marked with the numbers 9, 18, and 38.

Each of the three mutually correlated factors included four to six items. Their wording and classification into the individual scales of the inventory are provided in Table 2.

[1] The calculation was done using the library *nFactors* (version 2.3.3.1., Raiche, 2010).

[2] The calculation used the library *lavaan* (version 0.6-12, Rosseel, 2012) of the platform R. The model’s coefficients were estimated using the method WLSMV; item scores were modelled as ordinal categories.

4 Psychometric Analyses of the Values Mapping Scale

The individual scales of the VMS method were investigated concerning their internal consistency as well as reliability from the perspective of the item response theory. Evidence regarding factor validity was also collected, and the correlation coefficients of the raw scores of the VMS method and other questionnaire methods concerning value orientation and other topics were investigated. In addition, the results of the method for various groups were compared – along with an analysis of factor invariance, the investigation also involved an analysis of differential item functioning (DIF).

4.1 Standardization Sample

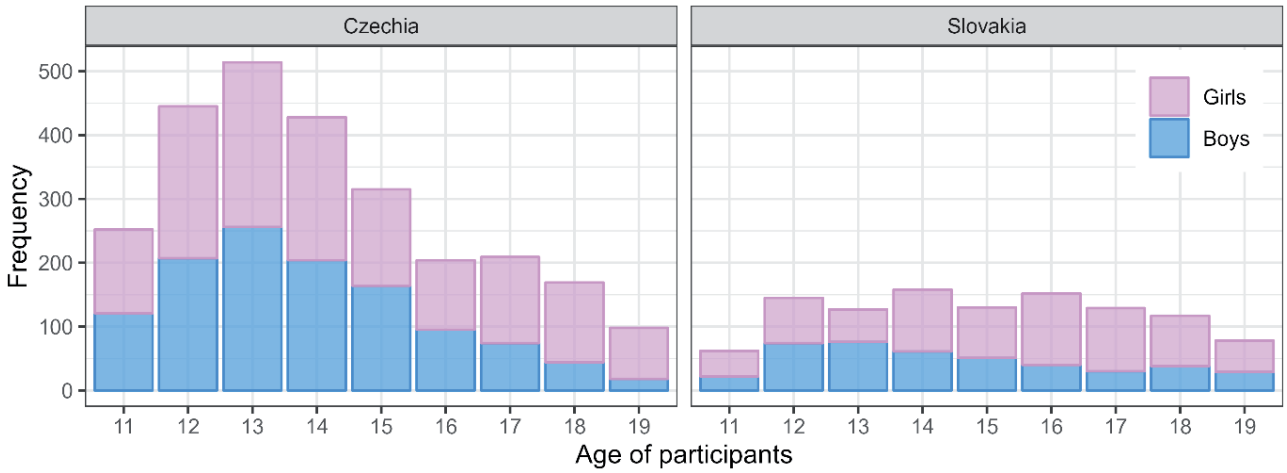
Calculations of estimated reliability, factor structure, and test norms were done with a sample of 3,732 Czech and Slovak girls and boys. The test battery was administered in two ways. One part of the data was collected online. In this form, calls for voluntary participants were published on social networks, asking Czech and Slovak adolescents within lower secondary (ISCED 2) and higher secondary (ISCED 3) education to participate – i.e. it was a self-selecting form of data collection, where participants manifested an active interest in engagement in the research project. The second part of the data was collected through a quota random selection at the level of primary and secondary schools (ISCED 2 and 3). Individual facilities from a list of Czech and Slovak schools were selected randomly and invited to participate. Out of the total number of over 100 schools invited, cooperation was actually realized with 28 schools. Data collection took place in the school years 2020/2021 and 2021/2022. The numbers of completed questionnaires are summarised in Table 3 and Figure 2.

Data collection was conducted within a more extensive project investigating, apart from the values, the question of utilization of digital technologies (particularly social networking sites PC gaming, etc.). Within a rather extensive questionnaire battery, the items of VMS were placed immediately after the introductory questionnaire concerning demographic data.

Table 3: The extent of the standardization sample and its age structure

Group	Total number	Proportion of boys	Proportion of online forms	Age (M ± SD)
Czech Republic				
11–15 years	1,954	952 (49%)	233 (12%)	13.06 ± 1.27
16–19 years	680	231 (34%)	484 (71%)	17.24 ± 1.03
Total	2,634	1,183 (45%)	717 (27%)	14.14 ± 2.19
Slovakia				
11–15 years	622	284 (46%)	245 (39%)	13.24 ± 1.29
16–19 years	476	137 (29%)	371 (78%)	17.25 ± 1.08
Total	1,098	421 (38%)	616 (56%)	14.98 ± 2.33
The whole sample				
11–15 years	2,576	1,236 (48%)	478 (19%)	13.10 ± 1.28
16–19 years	1,156	368 (32%)	855 (74%)	17.24 ± 1.05
Total	3,732	1,604 (43%)	1,333 (36%)	14.38 ± 2.27

Figure 2: Age structure of the standardization sample



4.2 Reliability

The accuracy of the test was investigated from the perspective of the internal consistency of the item scores. Other methods for verification of reliability, such as stability over time, have not been applied thus far. The chosen indicator of reliability was the coefficient omega. Apart from this, there was Bentler's greatest lower bound to reliability – i.e. a conservative indicator which selects the most convenient one from multiple methods delivering the lowest guaranteed reliability rate.[3] The results of the reliability are summarized in Table 4.

Table 4: Reliability of the inventory scales

Group	External values	Internal values	Higher values
Czech Republic			
11–15 years	0.73 / 0.75	0.71 / 0.74	0.86 / 0.87
16–19 years	0.78 / 0.81	0.68 / 0.71	0.88 / 0.89
Total	0.75 / 0.77	0.70 / 0.73	0.87 / 0.88
Slovakia			
11–15 years	0.76 / 0.81	0.73 / 0.76	0.92 / 0.93
16–19 years	0.77 / 0.81	0.74 / 0.77	0.92 / 0.93
Total	0.77 / 0.81	0.74 / 0.76	0.92 / 0.93
The whole sample			
11–15 years	0.73 / 0.76	0.71 / 0.74	0.90 / 0.91
16–19 years	0.78 / 0.81	0.71 / 0.73	0.90 / 0.91
Total	0.75 / 0.78	0.71 / 0.74	0.90 / 0.91

Note: The former value refers to the omega coefficient; the latter value refers to Bentler's greatest lower bound to reliability.

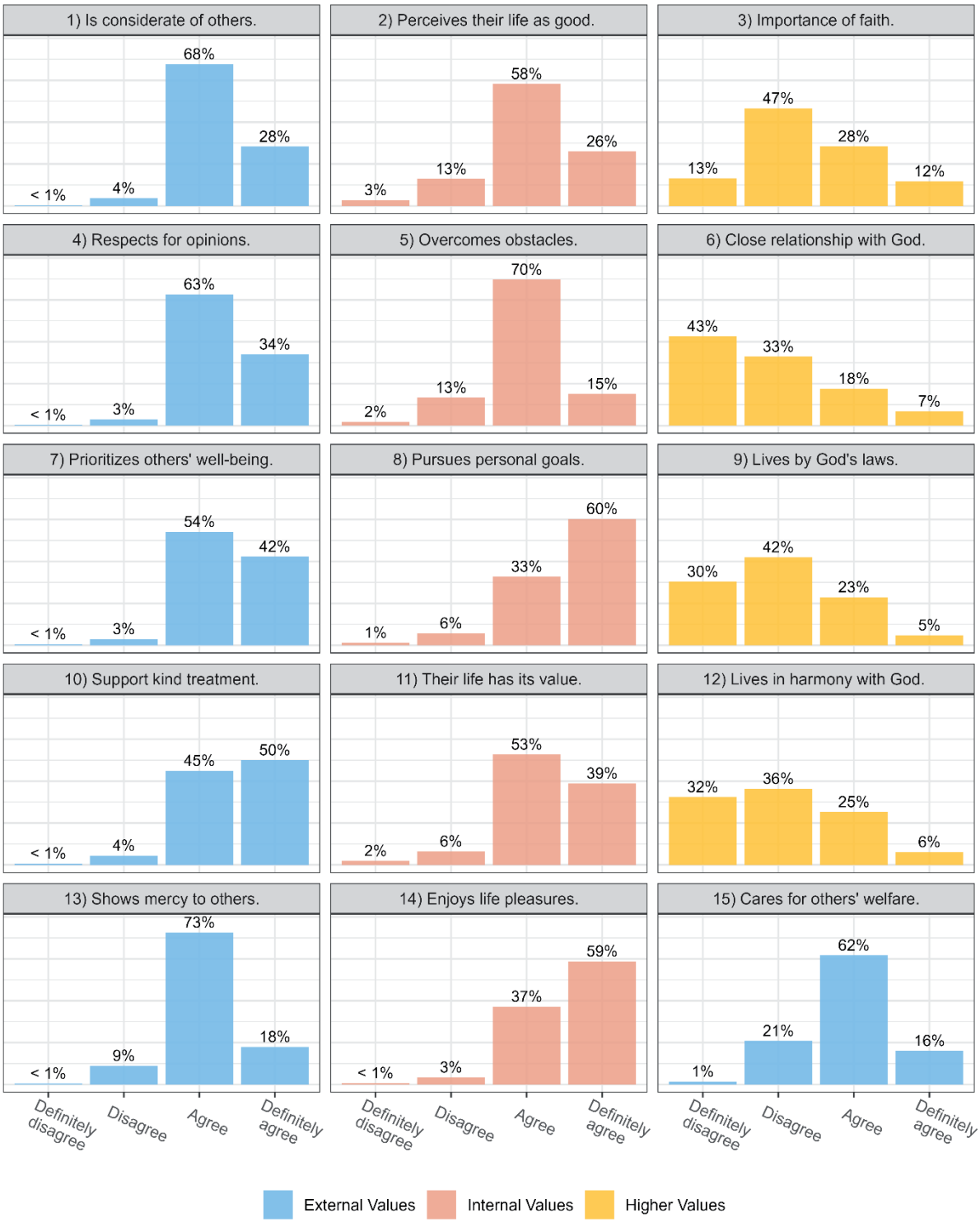
The raw scores of the Higher Values Scale show sufficient reliability around the value of 0.9. The internal consistency of the remaining two scales is more problematic. The reliability indicators mostly range between 0.7 and 0.8.

The reason for this apparent paradox, where the shortest scale shows greatest reliability, is different distribution of answers into the items of the individual scales. While the items in the Higher Values Scale reflect

[3] The calculation used libraries *psych* (version 2.0.7, Revelle, 2020), *lavaan* (version 0.6-7, Rosseel, 2012) and semTools (version 0.5-6., Jorgensen et al., 2022) of the platform R. Calculation of the coefficient omega was done with the model estimated using the method WLSMV; item scores were modelled as ordinal categories. The calculation of the coefficient omega used a correction for ordinal item scores.

the fact whether an individual considers himself/herself to be a religious person (most commonly in the Christian sense, but other kinds of religious belief cannot be excluded), i.e. a quality that has various values in the Czech and the Slovak population, the items of the Internal Values Scale and the External Values Scale deal with principles that are almost universally true. Very few people would fail to agree with the statement that he/she respects the opinions of other people or that he/she enjoys life's pleasures. The specific distribution of the item scores in the individual scales is presented in Figure 3.

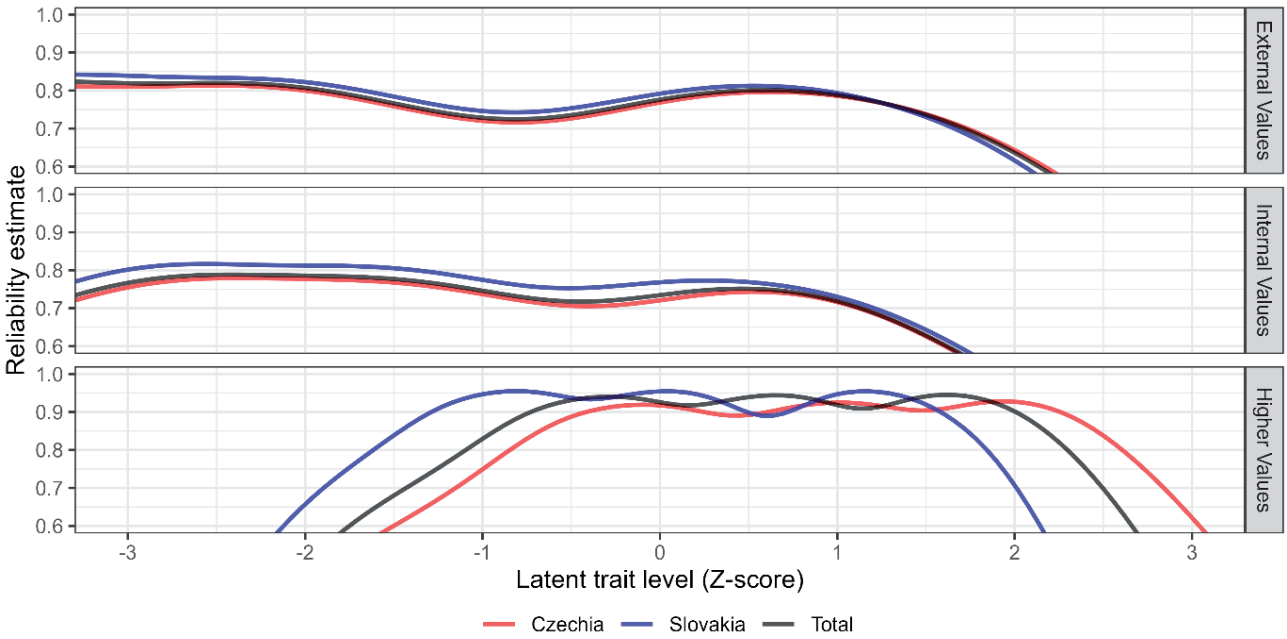
Figure 3: Distribution of item scores



Note: The titles of the individual graph parts have shortened versions of the items. Table 2.

It is therefore more suitable for the mapping of the method's reliability to be built on the paradigm of item response theory, which perceives reliability as a characteristic dependent on the level of the trait under measurement. We may therefore ask whether the individual scales measure with the same accuracy in the average range, below average, and above average. The individual scales were tested using a logistic model for an ordinal score item[4] and based on the obtained information function, the curves illustrating the changing test accuracy for various levels of the trait under measurement were created. The results are presented in Figure 4.

Figure 4: Reliability of individual scales in relation to the Czech and the Slovak sample group



The Figure shows that Internal Values Scale and External Values Scale differentiate to the greatest extent in the lower-than-average range, while they are not suitable for differentiation in the higher-than-average range. The tool can therefore identify individuals with unsocial or anti-social orientation (absence of external values), or individuals with severely disrupted self-evaluation and those failing to overcome life's difficulties (absence of internal values). It cannot differentiate, however, between an individual on the opposite end of the scale from individuals within the norm. This does not apply to the Higher Values Scale: the method identifies an individual with a strong religious orientation, but cannot differentiate between individuals without this orientation and individuals with a clear anti-religious orientation.

4.3 Validity

The VMS method's validity was tested. As concerns content evidence, apart from face and sample validity, we may say that the test manifests factorial validity. The results of the analysis are documented in this chapter. In addition, empirical evidence of validity is presented – particularly concurrent validity with the methods Ethical Values Assessment (short form) – EVA-S (Padilla-Walker & Jensen, 2016) and Portrait Values Questionnaire – PVQ-RR (Schwartz et al., 2001).

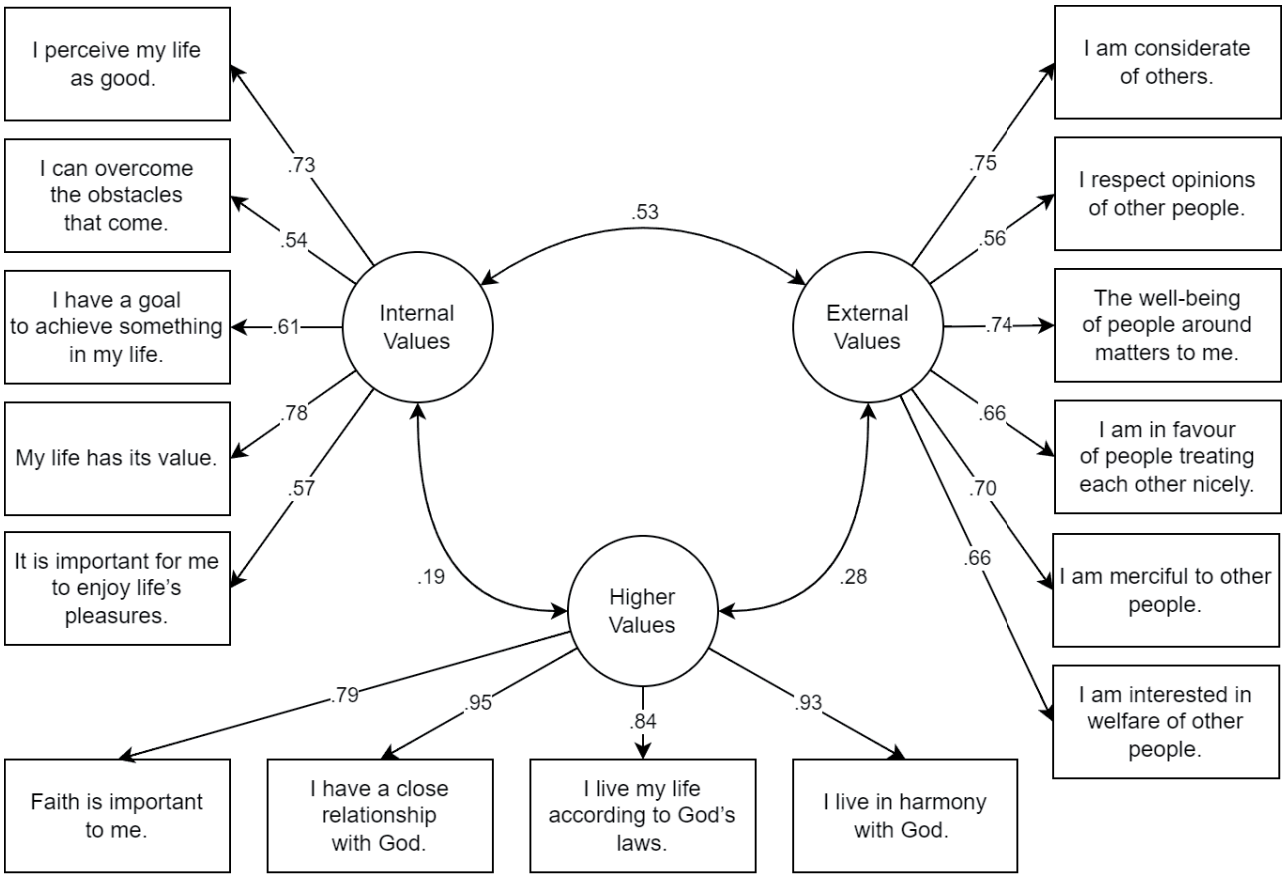
[4] Particularly the *graded response model* (GRM). The estimation was obtained using the library mirt (version 1.37.1, Chalmers, 2012).

4.3.1 Factorial Validity

The VMS method classifies the individual's value orientation according to three different, although not independent, value clusters. This conception was the basis for the verification of the factorial structure, and the description of the inventory used three mutually correlated latent variables saturating the items according to their classification in the test scales.

The correspondence of the model to the data was verified using a confirmatory factorial analysis.[5] The chosen solution provides a good correspondence of the model to the data: $\chi^2(87) = 608.663$, CFI = 0.996, TLI = 0.995, RMSEA = 0.04 [0.037, 0.043], SRMR = 0.043. Factor loadings and estimations of inter-factor correlation coefficients are illustrated in Figure 5.

Figure 5: A scheme of the VMS test structure and standardized factor loadings



There is a positive correlation between factors, i.e. high values on any given scale are associated with high values on the other scales. This dependence is apparent particularly between the Internal Values Scale and the External Values Scale. The observed correlation coefficients are summarized in Table 5.

Table 5: Correlation coefficients of the VMS inventory scales

Pair of variables	Raw score	Standard score	Latent variables
Internal values – external values	0.38	0.39	0.53
Internal values – higher values	0.15	0.19	0.19
External values – higher values	0.22	0.13	0.28

[5] The calculation used the library *lavaan* (version 0.6-12, Rosseel, 2012) of platform R. Model coefficients were estimated using the method WLSMV; item scores were modelled as ordinal categories.

5 Description of the Values Mapping Scale

All language mutations of the testing material consist of one sheet of paper in the format A4, comprising the introductory page and the page with test items. The introductory page contains various information concerning identification of the method, as well as information for participants (the manner of marking the answers and their content, and basic information about the scale). The bottom half of the introductory page asks for data identifying the diagnosed person and leaves space for results that serve for further analysis and interpretation to be done by a psychologist or another professional. A professional can convert raw scores in individual factors according to conversion tables into stanines. A psychologist can also include notes on clinical observation and interviews conducted with a client before he/she fills in the form and after. The bottom part of the introductory page of the stimulus material contains the consent of the person tested confirming that the person is familiar with the method and consents to completion of the scale and data processing.

Figure 8: The introductory page of the the Values Mapping Scale

The Values Mapping Scale (VMS-15)

(Považanová, B., & Dolejš, M., 2022; Translation to English: Považanová, B., Dolejš, M., & Kňažek, G., 2023)

This scale contains 15 statements focused on what you are like in certain areas of your life. Read every statement carefully. Answer honestly. Your answers are regarded as confidential. It is not a test, there are no correct and incorrect answers.

If the given statement corresponds to your opinion and is true, choose the answer "DEFINITELY AGREE" (that is, the statement is true 90% of cases or more) or "AGREE" (it is often true for you). If the statement is not true for you, answer "DEFINITELY DISAGREE" (90 % of cases or more untrue) or "DISAGREE" (it is only sometimes true for you).

Do not skip any statement. You are supposed to choose one answer, even if it might sometimes be difficult to decide. There can always be only one answer in each line. At the end, check that you have answered all the questions.

If you need more information, ask the worker responsible.

Marking answers in the questionnaire:

Correct answer: ☒

If you cross two boxes, circle the correct one: ⊗

If you make a mistake in marking twice and want to return to your original answer, circle and underline the final option: ⊗

Basic information:

Full name:	Month of birth:
Class:	Year of birth:
Age:	Date of administration:
Gender:	

Scale evaluation:

Scale	Numbers of items	Raw score	Stanine
External values	1, 4, 7, 10, 13, 15	_____	_____
Internal values	2, 5, 8, 11, 14	_____	_____
Higher values	3, 6, 9, 12	_____	_____
Administrator's notes:			

By completing this questionnaire, you **give consent** to the processing (i. e. collecting, analysing, storing, categorizing, processing, and transferring) of your personal data in accordance with the Regulation of the European Parliament and of the EU Council 2016/679 of 27 April 2016, on the protection of natural persons in connection with the processing of personal data and on the free movement of such data and on the repeal of Directive 95/46/EC (General Regulation on the Protection of Personal Data). All data are provided voluntarily.

6 Administration of the Values Mapping Scale

The administration in itself and the work with the testing material are not time-consuming. The adolescents need approximately 10 minutes to become familiar with the information on the introductory page and provide answers to the presented statements. The scale is flexible: it can be used for individual diagnostics as well as a group survey. It can also be the only method employed or part of a test battery. The tool can be used in research projects focusing on values, specifically on internal, external, and higher values, as well as in clinical practice, within the psycho-diagnostic process, or for counselling work with a client. When working with the scale, the investigated person should have sufficient working space and functional stationery. The administrator should ensure adequate test conditions – lightning, quiet, etc. and choose a suitable language mutation, so that the testing material is in the adolescent's mother tongue.

Individual administration of the method must take place in a suitable environment. The respondent needs a suitable surface for work with the scale and a pencil or preferably a pen. After basic instruction (reading the introductory text on the first page of the stimulus material: "This scale contains 15 statements final option:" has been provided and the basic data have been filled in, the administrator ensures that the adolescent understands the task. Should any questions arise, the administrator actively provides an answer. If everything is clear, the administrator lets the adolescent work independently until he/she asks for help. While providing basic instructions, the administrator explains to the adolescent about the content of the presented scale and how the answers should be marked, and informs him/her that it is not a test with correct and incorrect answers, that the adolescent should answer honestly, and that the answers are confidential. When the client hands in the scale, the administrator should verify that all items have been answered and no required basic information is missing. If a client encounters difficulties filling in the scale independently for various reasons (physical or psychological condition), the scale can be filled in with the help of the administrator who can read the questions aloud, mark the selected answers, ensure that the client understands the statements, etc.

At the beginning of group administration, the administrator asks adolescents to have nothing but the necessary stationery on their desk. Once this condition is fulfilled, the administrator hands out the stimulus material and reads the written instructions (the introductory text on the first page of the stimulus material: "This scale contains 15 statements final option:" while the respondents follow the instruction in their copies of the Values Mapping Scale. The administrator subsequently asks the adolescents to fill in the basic information about themselves (class, age, sex, etc.) and waits until they have done so. After the basic instructions have been read, the basic data have been filled in, or even during this stage, questions might occur – the administrator must actively respond to them, for instance explaining an unknown word or an incomprehensible expression, providing more detailed information on the manner of completion of the scale, or specifying the content and response options. It is important to answer every individual question and ensure that the particular respondent understands what the content of the question is and what he/she is being asked about. After the testing has begun, the administrator should supervise all the participants and ensure that they work in accordance with the instructions. While the participants work on the scale, the administrator should note how quickly individual adolescents work and ask them to work more quickly or slowly accordingly. At the end of the administration, it is essential to ask the adolescents to check their answers again and ensure that they have completed all the items. When they hand in the scale, the administrator should verify that all items have been answered and no required basic information is missing.

7 Evaluation of the Values Mapping Scale

Evaluation of the completed scale is a process that incorporates several steps. The administrator or person responsible for the evaluation should begin with verification that no answers are missing and there are no extra answers for any of the items. If there is any irregularity, various methods of imputation can be used (univariate or multivariate single or multiple imputation). This option can be used only if the absence of answer occurs only for one item within the particular factor. While research projects enable the exclusion of a scale (a respondent) with two or more irregularities in the factor, contexts such as a clinical examination do not enable such an option. If such a situation occurs during a clinical examination, the scale can be used as the basis for an interview. A psychologist or a professional can use the omitted items as sub-topics for an interview and work with them qualitatively. Mistakes or irregularities are usually caused by lack of concentration while completing the scale or unwillingness to participate in the administration, but the reason might also be concern about the results the adolescent would achieve and his/her feeling that these results might cause him/her trouble.

The evaluation of the scale and the obtained results for the individual sub-factors may be compared to the population norms for Czech or Slovak adolescents in the age groups 11–15 and 16–19 based on various criteria (sex and nationality) – see the conversion tables in chapter 8. Along with the option for determining a stanine position of the adolescent within the observed population and a comparison of his/her results with other members of the group, it is possible to analyse the results and individual answers qualitatively, i.e. link the content of the particular item and the selected answer as information reflecting the value system of the particular adolescent under observation.

A professional conducting the evaluation of the scale and analysis of results and responses to individual items can compare the particular adolescent with individuals of the same sex and age (this applies to all factors). As concerns individual factors, the higher raw score or stanine the adolescent achieves, the higher the rate of the particular values he/she has internalized, which is manifested in his/her thinking, behaviour, and actions. Diagnostic conclusions should not be made based on a single scale. In order to arrive at more precise results, a combination of methods should be applied – an interview with the adolescent, observation of the adolescent while he/she is solving tasks, administration and evaluation of multiple psycho-diagnostic methods, analysis of medical history, an interview with the individual's legal guardian or a close person, etc.

The scale measures three sub-factors: external, internal, and higher values. The results are obtained according to the following key containing: a) the number of items, b) the maximum and minimum number of points, c) points awarded for individual answers, d) the method of evaluation of items, e) identification of items of the particular factor, and f) description of the factor.

When describing the factors, the authors of the presented method build on an in-depth, robust, and detailed review of Czech and foreign-language scientific literature focused on values, value systems, and relevant phenomena related to values. The method underwent a number of stages from research interviews with adolescents concerning the topic of values, reviews of scientific literature in order to define dozens of questions, several runs of pilot testing, and nationwide surveys with Czech and Slovak adolescents, eventually resulting in the identification of the most suitable items within the individual factors.

The particular results achieved by the adolescent in the individual factors can be processed quantitatively, i.e. the total number of the adolescent's raw points can be compared to the results of the population in the same age group within the respective factor. The more raw points or the higher stanine an adolescent achieves, the more likely the occurrence of activities, behaviour, and actions characteristic for the respective factor.

Factor 1: **External values**

Number of items: 6
Minimum number of points: 6
Maximum number of points: 24
Numbers of items: 1, 4, 7, 10, 13 and 15
Points awarded for answers: a) definitely disagree = 1; b) disagree = 2; c) agree = 3; d) definitely agree = 4

Characteristics of adolescents with lower-than-average score (stanine score 1 to 3): The individual rarely establishes close relationships with other people and is often thoughtless towards others. The individual does not respect others, nor the rules of the community. He/she does not care about the welfare of other individuals, groups and the community where he/she belongs and does not accept the opinions and needs of others. The individual manifests low loyalty towards others, has a low rate of pro-social behaviour and is cruel to others. He/she behaves and acts irresponsibly towards the community, groups, and individuals. He/she does not behave in accordance with the rules attributed to particular roles he/she has, and is not beneficial for groups and the community where he/she belongs. The individual encounters trouble functioning in groups and does not accept his/her roles within these groups and the community. He/she does not cooperate with others and rarely fulfils his/her duties towards his/her groups and the community. The individual shows no concern for the prosperity of the community and the groups where he/she belongs. His/her characteristic feature is low conformity. The individual rarely participates in charitable activities, does not care about order in the community, and does not make efforts to contribute to it. He/she does not perceive his/her obligations to the groups and the community, and does not care about the physical and psychological health of others.

Characteristics of adolescents with an average score (stanine score 4 to 6): The individual establishes close relationships with other people, behaves with adequate thoughtfulness to others, and respects others and the rules of the community. He/she normally shows concern for the welfare of other individuals, groups, and the community where he/she belongs and accepts the opinions and needs of others. The individual is relatively loyal to other people, is capable of pro-social behaviour and is compassionate towards certain people. He/she behaves responsibly towards the community, groups, and individuals, brings some benefit to the groups and the community where he/she belongs, and cooperates with other members on tasks and activities. Frequently, but not always, the individual follows the rules attributed to the particular roles he/she has within the groups and the community. He/she frequently fulfils his/her duties towards his/her groups and the community. The individual shows concern for the prosperity of the community and the groups where he/she belongs. His/her characteristic feature is moderate conformity. He/she sufficiently participates in charitable activities, cares about order in the community, and tries to contribute to it. He/she perceives and fulfils well obligations to the groups and the community, and cares about the physical and psychological health of others.

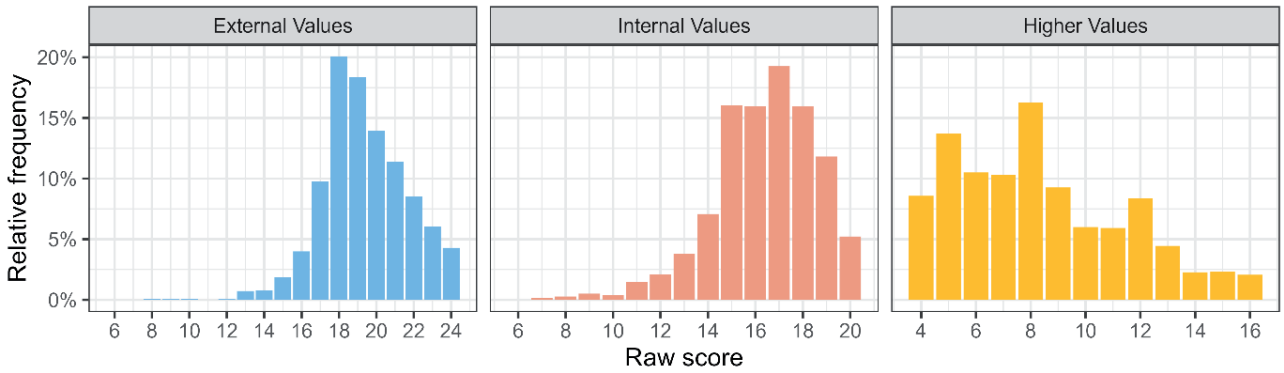
Characteristics of adolescents with higher-than-average score (stanine score 7 to 9): The individual establishes very close relationships with other people, is thoughtful to other people in every situation and respects others. In every situation, he/she tries to follow the rules of the community. He/she shows genuine and active concern about the welfare of other individuals, groups, and the community where he/she belongs and accepts the opinions and needs of others. The individual is loyal, compassionate, and manifests a high rate of pro-social behaviour. He/she is always responsible towards the community, groups, and individuals, and always follows the rules attributed to the particular roles he/she has. The individual is an important member of groups and the community where he/she belongs. He/she seeks cooperation with others and is motivated to use his/her energy for cooperation with others. He/she always fulfils his/her duties towards his/her groups and the community, and his/her behaviour is intended to contribute to the prosperity of the community and the groups where he/she belongs. The individual manifests high conformity and perceives participation in charitable activities and events as important. Equally important for him/her is order in the community, and he/she makes an effort to contribute to it to the maximum extent possible. The physical and psychological health of others is very important to him/her.

8 Design of Test Norms for the Values Mapping Scale

The VMS method provides stanine norms for eight groups of individuals. These groups were created with regard to the following factors: nationality (Czech vs. Slovak), sex (boys vs. girls), and age (11–15 vs. 15–19).

The total raw scores of scales within the VMS inventory show a significant degree of sloping. Concerning scales of internal and external values, the sloping is directed towards negative values, while with the scale of higher values, it is directed towards positive values. The distribution of raw scores in all three scales is provided in Figure 11.

Figure 11: Distribution of raw scores in scales of the VMS inventory



With regard to this fact, non-linear transformation was used for the design of the norms. The raw scores of individuals within particular groups were converted into percentiles. The corresponding values of quantile of a standardized normal distribution were subsequently attributed to these percentiles in order to obtain the standard score in the form of Z-score. In order to eliminate random fluctuations, the function of raw score conversion into Z-score was smoothened with the cubic spline function. These Z-score values were subsequently converted in a standard way into stanines. This procedure ensures approximately standardized normal distribution of scores (stanines). The users of the test need to bear in mind that, due to a relatively low variability in raw scores in certain groups, it is not possible to achieve some particular stanine values – for instance, in the case of Czech boys aged 11–15, the raw score of 19 points corresponds to stanine 7, while 20 points on the same scale already corresponds to stanine 9 – i. e. stanine 8 is missing.

In addition to stanine norms, we also provide averages and standard deviations for individual groups and their domains that can be used for research purposes. These data are listed in Table 10.

Table 10: Averages and standard deviations of raw scores of the VMS inventory scales

Sample	Extent	Internal Values	External Values	Higher Values
Czech Republic and Slovakia				
Sample total	3,732	16.41 ± 2.18	19.38 ± 2.29	8.35 ± 3.10
Age 11–15	2,576	16.38 ± 2.19	19.17 ± 2.24	8.26 ± 3.03
Age 16–19	1,156	16.45 ± 2.16	19.84 ± 2.35	8.54 ± 3.23
Girls in total	2,128	16.39 ± 2.19	19.88 ± 2.19	8.62 ± 3.04
Younger girls	1,340	16.25 ± 2.27	19.61 ± 2.19	8.47 ± 2.91
Older girls	788	16.62 ± 2.03	20.33 ± 2.12	8.88 ± 3.22
Boys in total	1,604	16.43 ± 2.18	18.71 ± 2.26	7.98 ± 3.14
Younger boys	1,236	16.53 ± 2.10	18.69 ± 2.19	8.03 ± 3.15
Older boys	368	16.09 ± 2.39	18.78 ± 2.47	7.81 ± 3.14
Czech Republic				
Sample total	2,634	16.35 ± 2.17	19.28 ± 2.28	7.65 ± 2.71
Age 11–15	1,954	16.35 ± 2.19	19.12 ± 2.22	7.59 ± 2.63
Age 16–19	680	16.35 ± 2.12	19.76 ± 2.37	7.84 ± 2.94
Girls in total	1,451	16.29 ± 2.20	19.78 ± 2.22	7.92 ± 2.63
Younger girls	1,002	16.17 ± 2.28	19.54 ± 2.19	7.81 ± 2.48
Older girls	449	16.57 ± 1.99	20.31 ± 2.20	8.15 ± 2.90
Boys in total	1,183	16.42 ± 2.14	18.68 ± 2.20	7.33 ± 2.79
Younger boys	952	16.54 ± 2.08	18.68 ± 2.18	7.36 ± 2.76
Older boys	231	15.92 ± 2.29	18.67 ± 2.31	7.22 ± 2.91
Slovakia				
Sample total	1,098	16.54 ± 2.20	19.60 ± 2.32	10.00 ± 3.33
Age 11–15	622	16.49 ± 2.20	19.32 ± 2.27	10.36 ± 3.26
Age 16–19	476	16.61 ± 2.21	19.96 ± 2.33	9.54 ± 3.37
Girls in total	677	16.59 ± 2.14	20.09 ± 2.12	10.13 ± 3.30
Younger girls	338	16.48 ± 2.22	19.82 ± 2.18	10.42 ± 3.20
Older girls	339	16.70 ± 2.07	20.36 ± 2.02	9.84 ± 3.37
Boys in total	421	16.47 ± 2.29	18.81 ± 2.41	9.80 ± 3.38
Younger boys	284	16.51 ± 2.18	18.73 ± 2.25	10.28 ± 3.33
Older boys	137	16.39 ± 2.52	18.96 ± 2.72	8.80 ± 3.26

Note: The labels “younger” and “older” refer to age categories 11–15 (early adolescence) and 16–19 (late adolescence).