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Life values in Russia and China: Semantic analysis and comparison

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Abstract

The paper seeks to explore the core life values of people living in Russia and China using an online survey in the respondents' native languages with samples of 887 and 559 participants from each country respectively, who were asked to think of three words associated 'with something most important in life'. The word-association arrays were translated into English by an automatic translator; then we compared the frequencies of individual words or those of their meanings obtained using the Roget's Thesaurus. The words 'family' and 'love' were the most frequent in both samples, but the frequencies of these and most of the other words from the semantic core of each sample differed significantly. Analyses at the level of semantic vectors showed that more than half of the meanings that Russian respondents described as important and more than a third of the meanings important to the Chinese respondents had significant differences in frequencies between the samples. The paper presents 62 semantic groups of the Roget's Thesaurus, the frequencies of which are reliably different; these are the meanings in which the Chinese and Russian samples differ with regard to life values. There are also 26 semantic groups, the frequencies of which are statistically the same and comparatively high in both samples: these are the common meanings. The results may be used in the design of automatic and AI systems to reduce the intercultural barriers.

Keywords

Values, intercultural communication, China, Russia, quantitative linguistics, Roget's Tesaurus, vectorisation of meanings.

Аннотация

В работе проведено исследование жизненных ценностей жителей России и Китая посредством онлайн опроса на родном для респондентов языке; выборки составили 887 и 559 анкет для каждой из стран. Участников просили назвать три слова, представляющие их свободные ассоциации «с чем-то самым важным в жизни». Массивы слов-ассоциаций переводились на английский язык автоматическим переводчиком, после чего сравнивалась либо частота появления отдельных слов, либо частота схожих смыслов, которые определялись с помощью тезауруса Роже. Слова «семья» и «любовь» были самыми частыми в обеих выборках, однако частота появления этих слов, а также большинства других слов из семантического ядра в каждой из выборок достоверно различались. Анализ на уровне семантических векторов показал, что более половины смыслов, которые российские респонденты называли важными, и более трети смыслов, важных для китайских респондентов имели существенные отличия в частотах между выборками. Приведены 62 семантические группы тезауруса Роже, частота появления которых явно различна. Они суть смыслы, по которым китайская и российская выборки различаются в отношении жизненных ценностей. Также приведены 26 семантических групп, частотность которых статистически одинакова, и при этом достаточно высока в обеих выборках – это суть общие смыслы. Результаты могут быть полезны при разработкне автоматических систем для снижения межкультурного барьера, в том числе с использованием искусственного интеллекта.

Ключевые слова

Ценности, межкультурный диалог, Китай, Россия, количественная семантика, тезаурус Роже, векторизация смыслов.

摘要

在本文中，我们为了对俄罗斯和中国居民的生活价值观展开研究。收集有关被调查者的价值观情况，被调查者在问卷中填写了三个有关“生活中最重要的事情”的关键词，并通过自由联想的形式展开，受访者均为该语言的母语人士，通过在线问卷调查网站收集的，每个国家的收集到的调查问卷样本分别为 887 份和 559 份。收集到内容通过关键词联想得到了关联词阵列，由自动机器翻译成英语，对得到的单个词的频率与罗杰词库中的单词频率进行比较。在两个样本中，“家庭”和“爱情”这两个词都是出现频率最高的，然而除这些词语以外，其他的大多数样本的，核心语义词在频率上都存在着显著的差异。在语义向量分析上展现的关键词而言，对于俄罗斯受访者认为重要的词义有一半以上，而中国受访者认为重要的词义也有三分之一以上，这些语义关键词在这两个样本中的出现频率均存在明显差异。我们研究中提到了62个罗杰词库中的语义词组，这些词组在频率出现上也有显著的差异。这些语义组代表了中俄两个样本的居民在生活价值观上的不同。同时也提到了有26个语义组在频率在统计上是相同的，并且都相当高。这些代表了两个样本存在着相同的含义。这些得到的研究结果可以运用于开发自动化系统（包括利用人工智能技术），从而有利于减少跨文化和语言造成的障碍。

关键词:

价值观、跨文化对话、中国、俄罗斯、定量语义学、罗杰辞典、意义矢量化

JEL: F02, A13, Z1.

Introduction

In recent years, the relations between Russia and China have strengthened significantly in economic, cultural, scientific and other areas; the two countries' trade turnover increased by 26.3% to a record $240.11 billion in 2023 (RBC, 2024; General Administration of Customs of the People's Republic of China, 2023). This positive change in the economic and cultural agenda entails an increase in communication. In marketing, for example, producers of brands traditionally operating in one country need to communicate with consumers of their products living in the other country. Given the multitude of intercultural differences, there is a growing need for academic research that would help representatives of the two cultures better understand each other and make their dialogue easier and more effective.

Values in marketing are of paramount importance, because they are the key to motivating consumers to buy something. The closer the product or its image offered by marketers to the consumer's current set of values, the easier it is for the individual to make a decision in favour of the product.

By the end of the previous century, marketers of the Western school had come to a consensus on the terminology and methodology of quantitative analysis of values. The basis was laid by Milton Rokeach (Rokeach, 1973), who attempted to formalise the structure of values and proposed a tool for assessing how a given person prioritises each of the 18 terminal values, which can be seen as goals of individual existence. Rokeach's methodology also proposes to rank the 18 so-called instrumental values, i.e. ways of solving the most important life tasks and achieving the most important goals related to the terminal values.

In the 1990s, Shalom Schwartz adapted Rokeach's theoretical framework for applied measurements (Schwartz, 1992). His version of the methodology has gained much popularity among both marketers and communication specialists, including intercultural communication specialists (Schwartz & Sagiv, 1995). In a review of his approach after almost twenty years of 'testing' in 82 countries, Schwartz proposed a much more extensive theory, but made no changes to the methodology (Schwartz, 2012).

The problem with their approaches is that Rokic and Schwartz had a priori formed a closed list of 'values'. Testees were asked to choose from the list, to rank the verbal categories already formulated for them. The researchers argue that the human values in question are universal, the list they offer is exhaustive and only the rank or ratio of different value categories can differ across cultures. Even if we agree with them we cannot be sure that semantics behind the words is just as universal. In every language, there are many ways to express the same value and various nuances can modify the meanings; as a result, the ratio of these meanings may vary greatly in two equally filled questionnaires.

In China, traditional values as guidelines for decision-making were formulated more than two and a half thousand years ago in the teachings of Confucius (孔子). The Lun Yu, or Analects, is perhaps one of the most famous books in China (論語 論語, 論語 or 论语). In simple dialogues, conversations, and brief comments, the book explains such concepts as nobility(君子), reverence (孝), humanity(仁), ritual(禮), wisdom(智), justice(義), sincerity(信), and a variety of other positive qualities and behaviors to be followed. This set of rules and recommendations still has a significant influence on people's attitudes to the family and society, lives and deaths, transcendent and immanent, i.e. to everything a person regards as important. The system of Confucian values is based on the pursuit of harmony, the so called virtue management; it is closely connected both with ritual and etiquette in social activity and with ethical rules that determine personal orientations (Zhou, 2005)

Since the beginning of China's active integration into the global trade system at the end of the previous century, researchers have been discussing various aspects of the relationship between Confucian ethical imperatives and Western values in all aspects of business management, from supply chain optimisation (Asif Salam, 2011) to marketing (Zhu,2009; Sun, 2016; Chen & Li, 2020). It is interesting that the discovered parallels are rarely direct and unambiguous. For example, a recent work using Schwartz's approach explored the factors that influence teacher burnout when working during the summer holidays. A set of traditional Confucian values was seen as one of the factors (Wang & Shi, 2024). It turned out that high prioritisation of these values by teachers was strongly and significantly related to their job satisfaction. In fact, adherence to traditional values served as one of the defense mechanisms saving teachers from burnout.

One of the founders of Russian psychology, L. S. Vygotsky, considered values to be part of the cultural background acquired in the process of personality formation. For him, values were an integral element of social relations (Vygotsky, 1929). Before Vygotsky, V. M. Bekhterev proposed to regard the community of people as a unified system living and controlled by the rules similar to the reflexes of the nervous system of animals (Bekhterev, 1921). In our century, these ideas were used in the works of the Russian neuroevolutionary school, where a social group is seen as a neural network information circuit, with cultural and value attitudes as control programs, similar to certain genes in a living organism (Petrunin & Andreyuk, 2008; Andreyuk, 2011; Andreyuk, 2016; Andreyuk, 2019; Andreyuk, Amelkina, 2024). Today, Russian psychologists and sociologists pay serious attention to the values of the Russian youth, especially with regard to the group's social optimism and the image of the future (Nestik, 2023).

Semantic approaches to the study of values are only beginning to enter the arsenal of researchers. In 2021, Gerasimenko et al. evaluated the methodology that involved comparing the proximity of brand ideas and consumers' values in quantitative terms. As a source of brand ideas, the authors used publications in the 'About Us' or 'Our Mission' sections on the websites of luxury brands from the top of the world ranking of globally successful brands. Consumers' values came from an array of free associations in a sample of Russian youth in response to the question about 'the most important thing in life'. Quantitative comparison was carried out by counting exact matches in words from semantic kernels (the most frequently occurring words) in each of the compared pairs of texts. The result of the analysis was 26-dimensional vectors, where each of the 26 dimensions was one of the high-particle words in the rating of Russian young people's values about life. Based on this method of vectorisation, and using the cosine proximity criterion to compare vector distances, the authors showed that the meaning positioning of, for example, Louis Vuitton and Hermes brands was almost identical, while that of Louis Vuitton and Cartier brands was so distant that it had almost no common features. This approach, however, mostly takes into consideration exact matches of words, which may be distorted, for example, during translation, and only very conditionally allows researchers to take account of the nuances of meanings. It should be noted that for the purposes of qualitative representation of meanings, simple frequency counting of individual words and visualisation of the semantic core in the form of a word cloud, where the frequency of occurrence is related to the font size of the word in the cloud, still remains one of the basic methodologies: it was used in some of the latest research into the semantics of values of the Russian youth (Andreyuk et al. 2020, Andreyuk, Khrabrovskaya, 2019).

In Andreyuk, Ochkovskaya (2022), the approach of quantitative comparison of brand ideas with values was refined to rectify the shortcomings of the previous version. Here, the Roget's Thesaurus was used for vectorisation to account more accurately for all possible shades of meaning of each word. The resulting approach allowed the researchers to quantitatively compare the values of young people with the meanings conveyed in the artwork of the Nestle brand. The only significant limitation of the method was that arranging words into arrays by semantic group as given in Roget's thesaurus was labour-intensive because the researchers had to do it manually.

A fundamental improvement was achieved thanks to the publication of a paper describing an automatic algorithm for converting words into a vector of meanings by Roget's Thesaurus groups (Andreyuk et al., 2022). This software is freely available; it can convert small arrays of English words into a vector with dimensionality 1044 in a reasonable amount of time - from a few seconds to tens of minutes, depending on the size of the text and the computational power of the computer. Each dimension of the vector is the frequency of one of the semantic groups of Roget's Thesaurus in the analysed text. It is possible to compare whole vectors, using, for example, the cosine closeness criterion, and also their individual components, with the chi-square criterion to assess the reliability of differences between arrays of words based on the representation of individual meanings.

Semantic analyses of values can be quantitative; they help examine and compare meanings. At the qualitative level, frequency histograms are a convenient analysis tool for calculations and the word clouds are most suitable for visualisation. A deeper and subtler analysis of meanings will require Roget's or similar thesaurus; the use of automatic translators and automatic algorithm for vectorisation makes it possible to completely exclude the subjective human factor from the data analysis procedure.

In the present research, the authors aimed to obtain comparable samples of free associations with the values related to life, profession and significant recent events from the residents of Russia and China and, based on semantic analyses of resulting arrays, to compare the semantic content of values in different socio-demographic groups of these two countries.

Methods

Questionnaire and primary data collection procedure

A universal multilingual questionnaire (Appendix 1) was developed to collect the arrays of associations in each country. The questions in Russian and Chinese were pre-tested on focus groups of native speakers: at least 10 people for each language version were interviewed to ensure that questions were readable, respondents understood the essence of each question and the wording of the questions did not evoke any unwanted associations.

The questionnaire was offered online, using a snowball method, with initial seeding via Management students at the Faculty of Economics of Moscow State University. A total of 914 questionnaires were collected in Russian and 612 in Chinese.

The collected questionnaires were manually treated for meaningless responses, exact repetitions, and omissions. In the Chinese version of the questionnaire, the answers of 53 respondents were completely rejected, in the Russian version 27. If there were single data omissions, such as a respondent not providing gender or age, the questionnaire was not used for analyses involving this type of data, but was included in other data sets.

Sample description

The general characteristics of the two samples are summarised in Table 1. It can be seen that the samples are broadly similar. In both samples, the respondents are mostly young, although older age groups are also represented, and there are more women than men. It will be shown below that the semantics of values in both genders are similar, which allows us to ignore the fact of gender bias in the sample. The respondents mostly live in large cities, almost 4/5 of the total sample in both cases. The breakdown into occupational groups is largely arbitrary, but for this paper it is important that the samples include a very wide range of occupations.

Table 1. Socio-demographic characteristics of the samples of respondents from Russia and China, whose answers form the basis for all further comparisons and conclusions

	Russia	China
Number of questionnaires in operation (at least for one factor)	887	559
Mean age +/- standard deviation	24.3 ± 8.96	23.1 ± 6.17
Ratio women : men	1.59 : 1	2.89 : 1
Proportion of respondents from cities with population >1 million	79.4%	78.4%
Representation of different professional groups Professions related to:		
Administration and management	31.2%	21.3%
Creative industries or with a high level of creativity in work	21.1%	28.6%

	Russia	China
'Helping' professions (doctors, teachers, psychologists, etc.)	16.1%	13.9%
Engineering, technical and natural sciences	8.7%	9.1%
Law	11.3%	2.9%
Data analysis (including financial specialities - audit, accounting, etc.)	7.7%	12.7%
Agriculture	0.6%	0.9%
Military organisations	0.3%	0.2%
Occupations not distributed by groups	3.0%	10.5%

Source: compiled by the authors based on analyses of questionnaire data.

Semantic analysis:

Frequency histograms and word clouds were created using the open online service https://classic.wordclouds.com/. When it was necessary, text arrays were manually preprocessed to remove capital letters, unreadable characters, and to separate merged words (these may occur when line breaks are automatically removed).

Vector analysis based on Roget's Thesaurus

Vectorisation of word arrays was performed using the software package available at: https://github.com/chameleon-lizard/Roget. Translation of the Chinese and Russian words into English was performed in automatic translation mode with default settings in the service https://www.deepl.com/.

Cosine proximity was calculated using the Ochiai formula:

$$similarity = \cos() = \frac{AB}{|A||B|} = \frac{\sum_{i=1}^{n} A_i \times B_i}{\sqrt{\sum_{i=1}^{n} (A_i)^2} \times \sqrt{\sum_{i=1}^{n} (B_i)^2}}$$

Calculation of reliability of differences by chi-square was carried out using standard statistical formula package in Excel. The threshold of reliability of differences when comparing frequencies of single semantic groups (unit coordinates for a pair of vectors) was set taking into account the correction for multiple comparison (Bonferroni correction), i.e. frequencies were considered to differ by chi-square at $p<0.00005$.

Results and discussion

Gender similarity in values regarding life, profession and significant recent events

Analyses of the cosine closeness of the semantic vectors of values for men and women reveal two important features of the material under study (Table 2). First, the semantic vectors are very close, which means that values are very similar in their meanings; the similarity of men's and women's views increases when moving from personal weekly news agenda to life values. Second, the changes show a very similar trend in Russia and China: gender differences decrease to almost zero (the cosine closeness of the vectors approaches 1) when the focus of attention shifts from personal weekly news agenda (significant events of the week) to life values. It is interesting that the obtained values of cosine proximity of semantic vectors for the Russian sample almost coincide with those obtained by Andreyuk et al. (2022) who conducted a survey using a slightly different questionnaire, but the questions regarding values were exactly the same. The cosine proximity for values regarding life between the semantic vectors of men and women was 0.9664 there, while in this study it was 0.9720 (Table 2).

Table 2. Analysis of gender similarity of semantics of values regarding significant events in a week, professional development and life in general in Russia and in China

	Russia		China	
	M	W	M	W
Numbers of questionnaires in the analysis (recognised as qualitative and in which respondents indicated their gender)	353	532	144	416
Mean age	23.3	25.0	24.0	23.2
Cosine proximity value of male and female semantic vectors for values regarding important events per week	0.9108		0.9009	
Value of cosine proximity of men's and women's semantic vectors for values regarding professional development	0.9622		0.903	
Value of cosine proximity of semantic vectors of men and women for values regarding life in general	0.972		0.9391	

Source: compiled by the authors based on the survey data.

Age differences in values in relation to life

Figure 1 shows the distribution of responses in the Russian and Chinese samples by age group. The word clouds associated with each age group show the highest frequency words that respondents used in their native language to express associations with something 'most important in life'. In the Russian-language clouds, it can be seen that while the highest frequency words ('family', 'love', 'health', etc.) occur in all age groups, their relative contribution varies across age groups. In Chinese clouds, this trend is even more pronounced: while in the 10-19 and 20-29 age groups, the words 学习 and 手机 ('study' and 'mobile phone') are in the top three, in the older age groups, these words are not even in the top five, and family (words 家庭 and 家人) comes first.

Table 3 collects the words from the top 10 frequency lists in the whole sample for each language. All words are given in English translation for ease of comparison. In each age group, three columns are shown: the frequencies of the word in the age group in Russia, in China, and the p-value, which represents the probability of a second-order error in the Chi-square test (the probability of making a mistake by assuming that the frequencies in the two samples are different). Values of p<0.05 are highlighted with colour (we can assume that the frequencies of a particular word in this age group are significantly different in the compared samples).

For most words, the frequencies of life values differ markedly and reliably in the samples from Russia and China. For example, the frequency of the word 'family' at ages 10 to 30 is almost three times higher in the Russian sample. For older ages, the differences diminish, but remain significant. The frequency of the word 'learning' in the sample of the young Chinese (under 30) is more than 10 times higher than in the sample of the Russians of the same age. The word 'mobile phone' is practically absent in the Russian sample, but has high frequencies in the Chinese sample. The only word of the highest frequency that is equally labelled as a value in relation to life in both Russia and China is 'friends'. Its frequency does not differ reliably in either age group. The word 'money' has statistically equal frequencies in the ages of 20 and older.

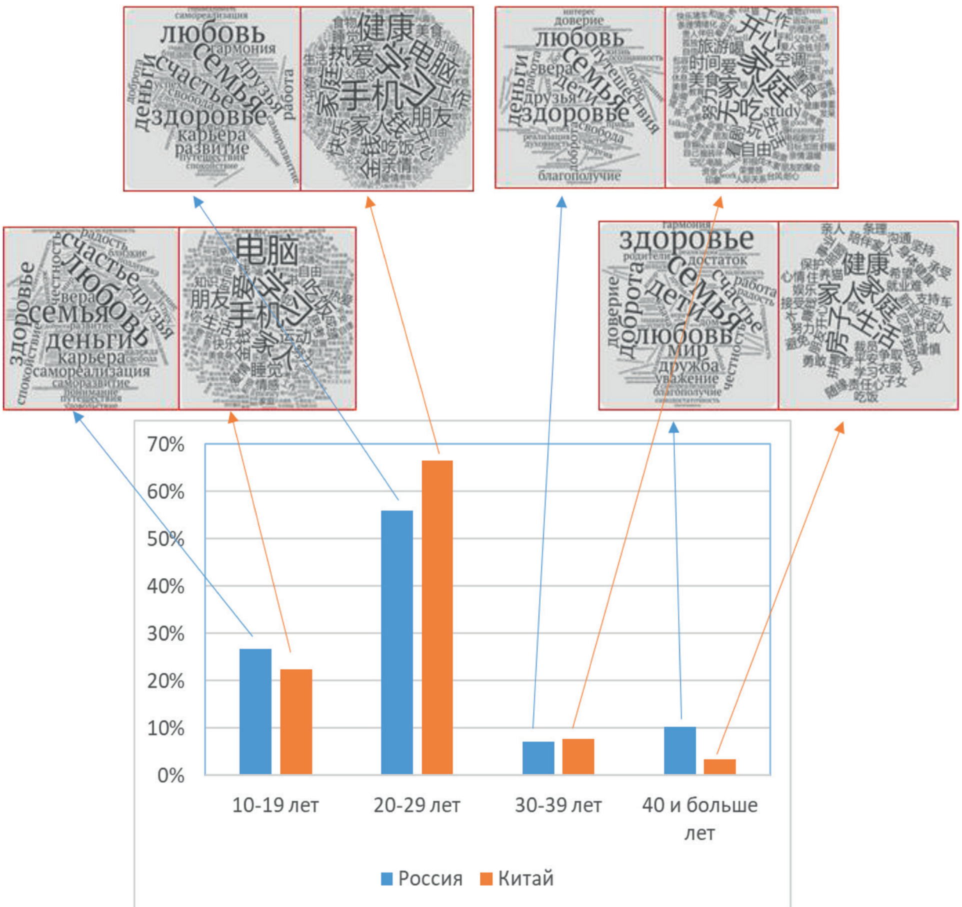

Figure 1. Distribution of associations with 'the most important thing in life' in the form of frequency clouds in the respondent's native language (Russian and Chinese) by age group. *Source*: compiled by the authors based on the survey data.

Table 3. Frequencies of words from the top-10 lists that most often express values in relation to life in the answers of respondents from Russia and China in different age groups. Words are given in English translation. The p value reflects significance in the Chi-square test

	Age groups											
	10-19 years			20-29 years			30-39 years			40+ years		
	Russia	China	p	Russia	China	p	Russia	China	p	Russia	China	p
family	11.9%	3.3%	**$p < 0.001$**	12.4%	3.3%	**$p < 0.001$**	14.8%	7.2%	**$p < 0.001$**	14.7%	10.4%	**$p < 0.05$**
love	12.6%	4.0%	**$p < 0.001$**	8.4%	3.0%	**$p < 0.001$**	12.2%	2.2%	**$p < 0.001$**	8.4%	1.5%	**$p < 0.001$**
health	3.2%	0.0%	**$p < 0.001$**	5.1%	1.2%	**$p < 0.001$**	7.9%	0.7%	**$p < 0.001$**	15.8%	3.0%	**$p < 0.001$**
happiness + happy	4.6%	1.0%	**$p < 0.001$**	4.4%	2.4%	$p > 0.05$	1.1%	2.9%	**$p < 0.05$**	3.3%	1.5%	**$p < 0.05$**
money	5.4%	2.6%	**$p < 0.05$**	3.1%	3.3%	$p > 0.05$	2.6%	2.2%	$p > 0.05$	0.7%	1.5%	$p > 0.05$
learning	0.1%	3.1%	**$p < 0.001$**	0.0%	2.7%	**$p < 0.001$**	0.5%	0.7%	$p > 0.05$	0.0%	1.5%	**$p < 0.05$**
mobile	0.0%	2.4%	**$p < 0.01$**	0.0%	1.9%	**$p < 0.01$**	0.0%	0.0%		0.0%	0.0%	
food	0.3%	1.0%	$p > 0.05$	0.3%	2.0%	**$p < 0.05$**	0.0%	2.2%	**$p < 0.01$**	0.0%	1.5%	**$p < 0.05$**
friends	2.8%	1.7%	$p > 0.05$	2.0%	1.1%	$p > 0.05$	2.1%	1.4%	$p > 0.05$	0.7%	1.5%	$p > 0.05$
peace	1.9%	0.7%	$p > 0.05$	1.4%	0.2%	**$p < 0.05$**	0.5%	0.7%	$p > 0.05$	2.6%	1.5%	$p > 0.05$
development	1.0%	0.5%	$p > 0.05$	2.0%	0.2%	**$p < 0.001$**	0.5%	0.0%	$p > 0.05$	0.7%	0.0%	**$p < 0.05$**
career	1.8%	0.2%	**$p < 0.01$**	1.8%	0.5%	**$p < 0.05$**	0.0%	0.7%	$p > 0.05$	0.0%	1.5%	**$p < 0.05$**
work	0.7%	1.2%	$p > 0.05$	1.6%	1.5%	$p > 0.05$	1.6%	2.2%	$p > 0.05$	1.5%	1.5%	$p > 0.05$
phone	0.1%	2.1%	**$p < 0.01$**	0.0%	1.2%	**$p < 0.05$**	0.0%	0.0%	#####	0.0%	0.0%	#####
Words in analysis	720	420		1539	1226		189	139		273	67	

Source: compiled by the authors based on survey data.

Comparison of the semantic content of values in relation to life in Russian and Chinese samples

Roget's Thesaurus provides an opportunity to study the semantic content of texts. On the one hand, this analysis is formal, because all the meanings that a person operates with are divided into 1044 semantic groups, and for each word the number of references to the groups is counted, effectively providing the number of semantic associations with this word in English. On the other hand, this way of analysis allows us to cover the whole semantic spectrum at once and, in particular, to compare the specific weight of certain meanings in the samples. Obviously, given the linguistic limitations (see below), it is reasonable to use this approach to compare values of the highest level. Next, we will show how the semantic spectrum of values in relation to life differs in the samples from Russia and China.

Figure 2 presents a semantic map of differences in the perception of 'the most important thing in life' among Russian and Chinese respondents. The Manhattan diagram shows the most significant differences in individual meanings between the two arrays of values - Chinese and Russian. The vertical axis shows the negative logarithm of the probability of a second error (-lg(p)) in the chi-square test; the larger it is, the smaller p is, and thus the higher the reliability of the differences. The red line cuts off the threshold of 4.3, which corresponds to significance taking into account the Bonferroni correction. On the horizontal axis we plotted all 1044 semantic groups of Roget's Thesaurus. The position of a point on the diagram is the degree of reliability of differences in the frequencies with which a given semantic group is represented in Chinese and Russian values regarding life. The subscripts denote semantic groups for which -lg(p)>8. A label with a red background means that the frequency of a given meaning is significantly higher in Chinese values, a label with a blue background indicates that, on the contrary, the frequency is higher in the Russian values. Labels are arranged so as not to cover any points. The diagram does not include the meanings for which -lg(p)>14, they are listed, among others, in Appendix 2.

Comparing Fig. 2 and the table from Appendix 2 gives an indication of the meanings that differ with high confidence but have a high frequency in one of the samples. This means that a given meaning is highly valued in one of the samples and much less valued in the other. The meanings that are valued higher in the Russian population include: kinship, continuity, father-child relationships, growth, expansion, physical pleasure, evolution, immateriality, health, harmony, love, passion, favouritism, beneficence, approval, diligence. In contrast, Chinese respondents have relatively high values for meanings related to acceptance, movement, teacher-student relationships, learning (including the meanings of discovery, information), and habits.

The summary data on the differences in the semantic content of life values between the Russian and Chinese samples are presented in Table 4. These numbers allow us to make two observations: firstly, the Roget's semantic groups for which frequency differences are highly reliable make up only about 6% of the whole meaning spectrum. Secondly, more than half of the meanings named in the Russian sample as the most important in life and more than a third of such meanings in the Chinese sample fall into this zone of highly reliable differences. The implications are most significant: the former means that there are only a few meanings that are important in life at all, and this is a relatively narrow slice of the entire semantic spectrum operated by a person according to Roget's Thesaurus. The latter clearly indicates that the Russian and Chinese respondents prioritise life values differently. Especially noteworthy is the fact that more than half of highly reliable differences for the Russian sample and about a third of the Chinese sample are in the class of Sentient and Moral Powers of Roget's Thesaurus (Table 4, differences in the class "Sentient and Moral Powers"), i.e. discrepancies in life values can be perceived as fundamental in moral and ethical terms.

Here the question is bound to arise: are there any meanings that could serve as a basis for uniting around some common values? The answer is shown in Table 5Table 5. It contains those semantic groups of Roget's Thesaurus, references to which have a high enough frequency (>0.3% in at least one of the samples), and which do not differ significantly according to the Chi-square criterion (p>0.05). Such meanings include concepts relating to the harmony of personal relations – accompaniment, agreement; to creativity - ornament, music; to business relations – business, property, money, material well-being; to intellectual development - knowledge, books; and also such universal feelings as pity, help, free will. It is interesting that such semantic group as 'friend' reliably falls into the general meanings (Table 5), while the group "friendship" is reliably more frequent in the Russian sample (Appendix 1).

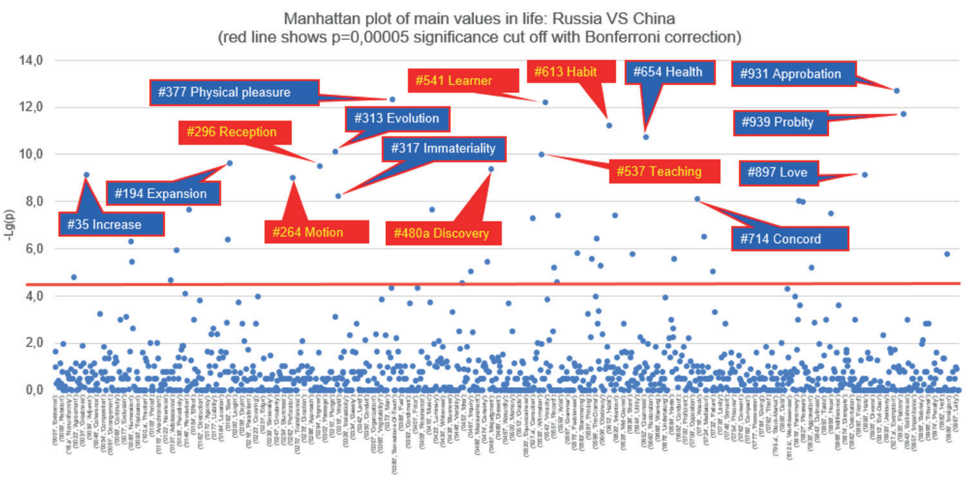

Figure 2. Diagram of pairwise comparison of the frequencies of semantic groups according to the structure of Roget's thesaurus in the arrays of values in relation to life in Russia and in China. The vertical line shows the reliability of differences by Chi-square criterion. Blue bars indicate semantic meanings that are reliably more frequent in the values of the Russian sample, red bars indicate semantic meanings that are reliably more frequent in the values of the Chinese sample. For more details, see the description in the text. *Source*: compiled by the authors by comparing semantic vectors derived from the survey data.

Table 4. Summary analysis of semantic differences in the arrays of values in relation to life in the Russian and Chinese samples

	Russia	China
Number of questionnaires used in the analysis of life values	873	559
Number of English words after automatic translation	2721	1852
Total number of references to semantic Roget's groups	12307	7467
Number of semantic Roget's groups differing with high confidence* (% of full vector dimensionality =1044)	62 (5.9%)	
Number of references in semantic Roget's groups differing reliably in their frequency	6771	2724
% of differing references among all references	55%	36%
% of different references in the class «Abstract Relations» (<#179)	15.7%	7.6%
% of different references in the class «Sentient and Moral Powers» (> #820)	23.9%	11.4%

Source: compiled by the authors by comparing semantic vectors obtained from the survey data. * – taking into account the Bonferroni correction for multiple comparisons

Table 5. Semantic groups of Roget's Thesaurus whose frequencies do not differ at a significance level of α=5% (probability of second-order error p>0.05), and whose absolute value is greater than 0.3% in one of the samples

	Russia		China		*p*
(#0009, "Relation"):	49	0.4%	21	0.3%	0.161652
(#0023, "Agreement"):	42	0.3%	39	0.5%	0.066355
(#0088, "Accompaniment"):	74	0.6%	48	0.6%	0.719776
(#0151, "Eventuality"):	33	0.3%	33	0.4%	0.052954
(#0265, "Quiescence"):	75	0.6%	51	0.7%	0.534031
(#0302, "Passage"):	36	0.3%	27	0.4%	0.41545
(#0415, "Music"):	45	0.4%	41	0.5%	0.070325
(#0467, "Evidence"):	40	0.3%	14	0.2%	0.055045
(#0484, "Belief"):	85	0.7%	36	0.5%	0.056933
(#0490, "Knowledge"):	56	0.5%	45	0.6%	0.172364
(#0593, "Book"):	37	0.3%	33	0.4%	0.121529
(#0620, "Intention"):	87	0.7%	48	0.6%	0.591458
(#0625, "Business"):	101	0.8%	63	0.8%	0.862953
(#0642, "Importance"):	28	0.2%	25	0.3%	0.176902
(#0692, "Conduct"):	64	0.5%	48	0.6%	0.276937
(#0707, "Aid"):	66	0.5%	52	0.7%	0.169684
(#0711, "Auxiliary"):	65	0.5%	33	0.4%	0.392423

	Russia		China		*p*
(#0748, "Free-will"):	50	0.4%	30	0.4%	0.961359
(#0780, "Property"):	139	1.1%	70	0.9%	0.190543
(#0800, "Money"):	126	1.0%	70	0.9%	0.54811
(#0803, "Wealth"):	113	0.9%	69	0.9%	0.966491
(#0829, "Pleasurableness"):	37	0.3%	14	0.2%	0.107487
(#0847, "Ornament"):	37	0.3%	34	0.5%	0.093477
(#0861, "Courage"):	25	0.2%	24	0.3%	0.124801
(#0890, "Friend"):	58	0.5%	31	0.4%	0.561645
(#0914, "Pity"):	68	0.6%	35	0.5%	0.418133

Source: compiled by the authors by comparing semantic vectors derived from the survey data.

Limitations of the study

One limitation of the work that needs to be discussed is related to translation issues. The authors followed a strategy of maximising the objectivisation of the research methodology, namely all word arrays collected and accepted into the work had to be processed without human intervention, especially in those stages where humans could introduce semantic distortions that were not controlled and countable. That is why the translation from the original language into English was done by an automatic program (deeple.com), and the automatic algorithm was used to translate the array of English words into a vector using Roget's Thesaurus. This does not guarantee the absence of semantic distortions as the program can also distort the meaning during translation, but we can be sure that this distortion will be the same for all processed questionnaires. And the authors obtained identical semantic vectors when repeating the whole sequence of operations with an interval of 3 months.

It is possible that an automatic translator can distort different languages in different ways, systematically miss or, on the contrary, constantly introduce incorrect shades of meaning for some high-frequency words in one language. If this happened, it may result in an error when comparing semantic vectors of Russian and Chinese values. Still, the differences shown in the paper are so strong and involve such distant meanings that it is difficult to distort them completely. For example, if in one sample people name a mobile phone in the top five values and in another it is not even in the top twenty, there is no doubt that a difference is observed. Similarly, one can count the nuanced use of different denotations of family in Chinese in different ways, but it is hard to confuse family and study. In other words, at least in some key meanings we are dealing with significant value differences between Russian and Chinese cultures.

With regard to the bias of the sample, which is certainly not representative of the entire population in either Russia or China, as can be seen in Table 1, it should be taken noted that the questionnaires were distributed using a snowball method, with the process starting with students of economics. Participants were instructed at the initial stage to search and collect as many different professions as possible. The result was that the respondents did indeed represent a fairly wide range of occupational fields and certainly spread far beyond the economic areas.

Yet, the sampling bias clearly exists. The average age of the sample was 24.3 years for Russia and 23.1 years for China, which differs from the average demographic data, 40.0 and 39.6, respectively, according to the official statistical offices of these countries.

The shift of the sample determined by age and by the city of residence should be regarded as a positive circumstance from the point of view of possible applications of the results of the work in marketing: the respondents are overwhelmingly young and live in large and very large cities. They are the main target audience of the marketing efforts of many leading brands, both luxury and mass-market.

The gender bias of the samples may seem much more serious. Table 1 shows that women are more than 1.5 times more common than men in the Russian sample and almost three times more common in the Chinese sample. However, the results from Table 2 convincingly show that the semantic content of value associations for men and women is very close. Moreover, about the values regarding life, we can say that they are the same in both Russia and China (cosine proximity of semantic vectors 0.97 and 0.94, respectively). The gender bias may give a small error in those sections of the study where words were analysed, but this bias should have no effect in quantitative analyses of meanings.

Possible lines of further research

Concerning practical applicability of the results, the authors first of all see promising tasks in the sphere of economics and marketing. In this regard, it is appropriate to recall the psychological approach "Level of correlation of "value" and "accessibility" in different life spheres" (LCVA). It allows to quantitatively assess the discrepancy between what is important for a person and how accessible it is. The method involves values as interpreted by Milton Rokeach, and the assessment is based on subjective ranking. The method has proven itself in the study of the mechanisms of psychosomatic diseases, especially when the disease is directly or very closely related to the discomfort that a person feels when it is impossible to satisfy an important need or when there is far too much of something valuable and the satiety also causes discomfort (Fantalova, 2011).

The results of the present research allow us to significantly extend the application of this methodology. The continuous spectrum of value meanings enables the researcher to make a much more accurate and objective account of what is important to a person. In particular, this opens the way for the development of neuromarketing techniques in which the degree of discomfort can be measured as a neurophysiological response by objective means of observation, and words from the set of value-significant meanings shown in the present paper can be used as stimuli. The advantage of this new variety of LCVA-methods development is that the analysis of meanings can be conducted in vector form, and this, in turn, will allow the application of artificial intelligence algorithms to develop culturally specific motivational marketing solutions. The transfer of neuromarketing to the field of cultural codes is actively discussed today, but no practical solutions have been suggested (Andreyuk & Mishina, 2023).

Apart from marketing, the results obtained by the authors can be used to develop new communication technologies. It is certainly possible to vectorise meaning by different methods, but the vector form can help us manage, explore and harmonise the differences in cultural stereotypes of the participants in the communication process. Moreover, we will be able to process stereotypes in relation to meaning, i.e. different value attitudes of people from different cultures. So it may not be unrealistic to expect that the developed and trained neural networks for reducing the intercultural barrier will soon be part of the standard package of negotiation software, along with programs for automatic translation of texts, speech and video.

References

Andreyuk, D. S. (2011). Behavioural programs and information flows: neuroevolutionary approach to the optimization of economic systems management. *Neurocomputers: development, application*, 3, 17-23. (in Russian).

Andreyuk, D. S. (2016). Designing of social systems: methodological borrowings from the modern theory of evolution. *Russian Journal of Philosophical Sciences*, (8), 75-85.

Andreyuk, D. S. (2019). Neuroevolutionary paradigm as a model for the formation of large nanotechnological projects. *International Journal of Nanotechnology*, *16*(1-3), 12-14. https://doi.org/10.1504/IJNT.2019.102387

Andreyuk, D. S., & Amelkina, A. A. (2024). Behavioural programs can function as biological genes participating in the social evolution. *International Journal of Nanotechnology*, *21*(1-2), 69-81. https://doi.org/10.1504/IJNT.2024.136505

Andreyuk, D. S., & Khrabrovskaya, V. D. (2019). How to quantify and visualise motivation hierarchy of social group: semantic analysis. *International Journal of Nanotechnology*, *16*(6-10), 307-315. https://doi.org/10.1504/IJNT.2019.106606

Andreyuk D., Livitina A., & Sushko N. (2022). Semantic Analysis of Group Values Structure Using Roget Thesaurus: Automated Algorithm. *Public Administration. Electronic Bulletin*, 91, 48-161. http://doi.org/10.24412/2070-1381-2022-91-148-161

Andreyuk D. S., & Mishina A. S. (2023). Neuromarketing technologies as a factor of human modification: from consumer behaviour to cultural code. *Social Novelties and Social Sciences: A view from Moscow*, 4, 34-51. http://doi.org/10.31249/snsn/2023.04.03

Andreyuk D. S., & Ochkovskaya M. S. (2022). Relevance of context of brand mentions in fiction to the contemporary brand values and target audience (the case of Nestlé in K. Chukovsky's memoirs about A. Akhmatova). *Vestnik of Saint Petersburg University. Management*, 21 (4): 527–547. http://doi.org/10.21638/11701/spbu08.2022.402

Andreyuk D. S., Petrunin Y. Y., & Khrabrovskaya V. D. (2020). Method Of Clustering Groups Of Young People Based On Value Meanings In Relation To Professional Development

And Life In General. *Public Administration. Electronic Bulletin*, (83), 221-242. http://doi.org/10.24411/2070-1381-2020-10117

Asif Salam, M. (2011). Supply chain commitment and business process integration: The implications of Confucian dynamism. *European Journal of Marketing*, *45*(3), 358-382. https://doi.org/10.1108/03090561111107230

Bekhterev, V. M. (1921). *Collective Reflexology.* Petrograd, publishing company «Kolos», 432 p.

Chen, C., & Li, X. (2020). Effects of Singles' Day atmosphere stimuli and Confucian values on consumer purchase intention. *Asia Pacific Journal of Marketing and Logistics*, *32*(7), 1387-1405. https://doi.org/10.1108/APJML-05-2019-0294

General Administration of Customs of the People's Republic of China (2016). *Total value of imported and exported goods by major countries (regions), December 2023 (USD).* http://www.customs.gov.cn/customs/302249/zfxxgk/2799825/302274/302275/5624373/index.html

Fantalova E. B. (2011). Level of correlation between "value" and "availability" in different life spheres": a psychometric study of indicators. Methodology. *World of psychology*, 2 (66), 228-243. (in Russian).

Gerasimenko, V., Andreyuk, D., & Kurkova, D. (2021). Approach for management of brand positioning: Quantification of value matching between brand and target audience. *Polish Journal of Management Studies*, *24(1)*, 96-111. http://dx.doi.org/10.17512/pjms.2021.24.1.06.

Nestik T. A. (2023). Social Optimism of Russians in a Crisis: Results of a Longitudinal Study. *Psychological Journal*, 44(3), 5-17. https://doi.org/10.31857/S020595920026152-3

Petrunin, Yu. Yu., & Andreyuk D. S. (2008). Behavioural programs as a basis for management of modern economic systems. *Vestnik of Moscow University. Series 21: Management (State and Society)*,3, 38-53.

RBC. (2024,) *The trade turnover between Russia and China in 2023 broke a record*. https://www.rbc.ru/rbcfreenews/65a0d3e09a79477823d74f7d

Rokeach, M. (1973). *The nature of human values*. Free press.

Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. *Advances in experimental social psychology*, 25, 1-65. https://doi.org/10.1016/S0065-2601(08)60281-6

Schwartz, S. H. (2012). An overview of the Schwartz theory of basic values. *Online readings in Psychology and Culture*, *2*(1), 11. https://doi.org/10.9707/2307-0919.1116

Schwartz, S. H., & Sagiv, L. (1995). Identifying culture-specifics in the content and structure of values. *Journal of cross-cultural psychology*, *26*(1), 92-116. https://doi.org/10.1177/0022022195261007

Sun, Y., Garrett, T. C., & Kim, K. H. (2016). Do Confucian principles enhance sustainable marketing and customer equity? *Journal of Business Research*, *69*(9), 3772-3779. https://doi.org/10.1016/j.jbusres.2015.12.069

Vygotsky, L. S. (1929). The problem of the cultural development of the child II. *Journal of Genetic Psychology*, 36, 415-32.

Wang, G., & Shi, J. (2024). Testing a chain mediation model of effort-reward imbalance, Confucian values, job satisfaction, and intention to quit among Chinese vocational education teachers. *Frontiers in Psychology*, *14*, 1341928. https://doi.org/10.3389/fpsyg.2023.1341928

Zhou, K. J. (2005). *A basic Confucius* (1st. edition), Long River Press: China

Zhu, Y. (2009). Confucian ethics exhibited in the discourse of Chinese business and marketing communication. *Journal of Business Ethics*, *88*, 517-528. https://doi.org/10.1007/s10551-009-0299-2

Appendix 1

Questionnaire for the survey

Профессия и ценности

职业和价值观关键词调查

Profession and values

Мы приглашаем вас принять участие в анонимном опросе о ценностях различных профессий, который займет от 2 до 5 минут.

我们邀请您参加一项关于不同职业的价值取向的调查。该调查是匿名的,需要2至5分钟。

We invite you to participate in a survey on the values of different professions, which is anonymous and takes 2-5 minutes.

1. Ваш пол
您的性别 :

Your gender :
- 男/Male
- 女/Female

2. Ваш возраст
您的年龄 :
Your age :

____

3. Страна, в которой вы родились
您所出生的国家 :
The country you were born in:

____

4. Страна и город, где вы живете сейчас:
您目前生活的国家和城市 :
Country and city where you live now :

____

5. Населённый пункт, где вы проживаете, насчитывает:
您现在生活的城市的常住人口数量 :
Your place of residence (city, town, community, etc.) has…

- Мегаполис город (более 10 миллионов) /大都市(1000 万以上)/Megacity city (more than 10 million)
- Крупный город (5 миллионов - 10 миллионов) /特大城市(500 万-1000 万)/ Huge city (5 million - 10 million)
- Большой город (более 1 миллион-менее 5 миллионов) /大城市(100 万以上-500 万以下)/Large city (more than 1 million-less than 5 million)
- Средний город (500 тыс. - 1 миллион) /中型城市(50 万至 100 万)/ Medium city (500,000 to 1 million)
- Малый город (менее чем 500 тыс.) /小城市(50 万以下)/ Small city (less than 500,000)

6. Как называется профессия, которую вы сейчас получаете или по которой сейчас работаете?
您目前正在学习的专业或工作专业名称(职业)是什么 ?
What is the called the profession you are studying or working in now ? ____________
____

7. Вы выбрали профессию, которую сейчас получаете или по которой сейчас работаете, потому что... (множественный выбор)
您为什么选择了你目前所从事的职业或工作,是因为... (多选题)
You have chosen the profession which you are studying or in which you are currently occupied because… (Multiple choice)

- Так решили родители/这是我父母决定的/ it was your parents' decision
- Эта профессия является династической (мои родители/бабушки и дедушки получили ту же профессию)/我的父母/祖父母从事相同职业/it is a dynastic profession (my parents/grandparents received the same profession)
- Эта профессия считается престижной/这是一份有声望的职业/it is a prestigious profession
- Эта профессия считается высокооплачиваемой/这份工作有丰厚的薪水/it is well-paid
- Мне хотелось / нравился этот род занятий/我热爱这份职业/ I like this occupation
- Случайно/偶然接触到了这份职业/by accident
- 其他/other reasons _________________

8. Напишите три слова, которые характеризуют хорошего специалиста – представителя вашей профессии.
请写出三个在您的职业中,优秀从业者必备的的3个关键词 :
Please write down 3 words which characterise a good specialist in your profession:

1.	______________________
2.	______________________
3.	______________________

9. Напишите три слова, которые ассоциируются у вас с чем-то важным, произошедшим с вами за прошедшую неделю.

请写下您与过去一周发生在您身上的重要事情相关的三个词

Please write down 3 words which you associate with something important that has happened in your life during the past week [矩阵文本题]

1.	______________________
2.	______________________
3.	______________________

10. Напишите три слова, которые ассоциируются у вас с чем-то важным для профессионального развития человека.

请写出您能想到对一个人职业发展相关的三个关键词

Please write down 3 words which you associate with something important for a person's professional development[矩阵文本题]

1.	______________________
2.	______________________
3.	______________________

11. Напишите три слова, которые ассоциируются у вас с чем-то важным в жизни вообще.

请写出您与生活中的重要的事物相关联的3个关键词

Please write down 3 words which you associate with something important in life in general. [矩阵文本题]

1.	______________________
2.	______________________
3.	______________________

Appendix 2

Table A1. Semantic groups of Roget's thesaurus, the frequencies of which reliably, taking into account the Bonferroni correction, differ in the arrays of values in relation to life in the samples of Russian and Chinese respondents

	Russia		China		
	number of references	frequency, %	number of references	frequency, %	*p*
(#0011, "Consanguinity"):	358	2.9%	89	1.2%	<10(30)
(#0021, "Copy"):	3	0.0%	23	0.3%	1.56E-05
(#0035, "Increase"):	73	0.6%	8	0.1%	7.26E-10
(#0069, "Continuity"):	347	2.8%	79	1.1%	<10(30)
(#0075, "Class"):	350	2.8%	74	1.0%	<10(30)
(#0085, "Numeration"):	7	0.1%	35	0.5%	4.96E-07
(#0086, "List"):	1	0.0%	23	0.3%	3.49E-06
(#0129, "Infant"):	39	0.3%	5	0.1%	2.16E-05
(#0134, "Occasion"):	5	0.0%	31	0.4%	1.01E-06
(#0149, "Changeableness"):	1	0.0%	33	0.4%	1.91E-08
(#0166, "Paternity"):	360	2.9%	90	1.2%	<10(30)
(#0167, "Posterity"):	384	3.1%	77	1.0%	<10(30)
(#0191, "Receptacle"):	9	0.1%	38	0.5%	3.88E-07
(#0194, "Expansion"):	72	0.6%	7	0.1%	2.11E-10
(#0264, "Motion"):	6	0.0%	46	0.6%	9.42E-10
(#0296, "Reception"):	1	0.0%	41	0.5%	3.03E-10
(#0298, "Food"):	12	0.1%	103	1.4%	<10(30)
(#0313, "Evolution"):	62	0.5%	4	0.1%	7.76E-11
(#0317, "Immateriality"):	61	0.5%	6	0.1%	5.7E-09
(#0372, "Mankind"):	385	3.1%	91	1.2%	<10(30)
(#0376, "Physical-Insensibility"):	7	0.1%	26	0.3%	4.59E-05
(#0377, "Physical-Pleasure"):	128	1.0%	19	0.3%	4.37E-13
(#0403, "Silence"):	44	0.4%	7	0.1%	4.22E-05
(#0418, "Hearing"):	1	0.0%	33	0.4%	1.91E-08
(#0451, "Thought"):	15	0.1%	36	0.5%	2.87E-05
(#0461, "Inquiry"):	6	0.0%	28	0.4%	9E-06
(#0477, "Intuition-&-Sophistry"):	27	0.2%	1	0.0%	3.24E-06
(#480.a, "Discovery"):	4	0.0%	45	0.6%	3.77E-10
(#0527, "Information"):	30	0.2%	66	0.9%	4.57E-08

	Russia		China		
	number of references	frequency, %	number of references	frequency, %	*p*
(#0537, “Teaching”):	11	0.1%	57	0.8%	1.02E-10
(#0539, “Learning”):	5	0.0%	80	1.1%	<10(30)
(#0541, “Learner”):	1	0.0%	53	0.7%	6.14E-13
(#0551, “Record”):	11	0.1%	35	0.5%	5.55E-06
(#0554, “Representation”):	3	0.0%	22	0.3%	2.62E-05
(#0556, “Painting”):	6	0.0%	39	0.5%	3.35E-08
(#0578, “Elegance”):	4	0.0%	29	0.4%	1.42E-06
(#0595, “Dissertation”):	4	0.0%	28	0.4%	2.37E-06
(#0600, “Will”):	92	0.7%	19	0.3%	3.81E-07
(#604.a, “Perseverance”):	6	0.0%	29	0.4%	5.42E-06
(#0613, “Habit”):	6	0.0%	56	0.7%	5.67E-12
(#0618, “Good”):	137	1.1%	33	0.4%	3.57E-08
(#0639, “Sufficiency”):	15	0.1%	42	0.6%	1.71E-06
(#0654, “Health”):	160	1.3%	33	0.4%	1.85E-11
(‘#687, “Repose”):	15	0.1%	41	0.5%	2.75E-06
(#0712, “Party”):	367	3.0%	85	1.1%	<10(30)
(#0714, “Concord”):	78	0.6%	11	0.1%	7.53E-09
(#0721, “Peace”):	75	0.6%	13	0.2%	3.17E-07
(#0731, “Success”):	41	0.3%	5	0.1%	9E-06
(#0822, “Sensibility”):	0	0.0%	33	0.4%	8.55E-09
(#0826, “Inexcitability”):	25	0.2%	64	0.9%	1.01E-08
(#0827, “Pleasure”):	441	3.6%	128	1.7%	<10(30)
(#0836, “Cheerfulness”):	27	0.2%	52	0.7%	5.63E-06
(#0858, “Hope”):	81	0.7%	13	0.2%	3.06E-08
(#0865, “Desire”):	338	2.7%	76	1.0%	<10(30)
(#0888, “Friendship”):	377	3.1%	89	1.2%	<10(30)
(#0894, “Courtesy”):	307	2.5%	67	0.9%	<10(30)
(#0897, “Love”):	312	2.5%	100	1.3%	7.58E-10
(#0899, “Favorite”):	281	2.3%	62	0.8%	<10(30)
(#0906, “Benevolence”):	341	2.8%	80	1.1%	<10(30)
(#0931, “Approbation”):	287	2.3%	76	1.0%	2.03E-13
(#0939, “Probity”):	86	0.7%	8	0.1%	1.98E-12
(#0987, “Piety”):	33	0.3%	2	0.0%	1.61E-06

Source: compiled by the authors in the course of analysing semantic vectors derived from the survey data. The p value indicates the probability of a second-order error in the Chi-square test.