

Visualization of the emotional vocabulary of the Chinese language as exemplified in the associative experiment

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Abstract

This scientific research is aimed at describing of semantic connotations of the emotional words joy, sadness, happiness, sorrow, anger, love, hatred, fear, envy, jealousy, conscience, hope in the Chinese language. To achieve the stated objective, the authors used the method of the associative experiment as the most convenient way to visualize the linguistic consciousness of native speakers. With its help, one can judge about the features of the human linguistic consciousness functioning and the ways of constructing speech utterances, which are usually not recognized by native speakers and are not identified by other methods of investigation. Associations in this aspect are considered as one of the means of access to the human linguistic consciousness and the construction of the fundamental values of man and the ethos as a whole on their basis. A large number of Chinese students in the People's Friendship University of Russia made it possible to conduct an associative experiment in a computer class where one hundred Chinese respondents aged 17-25, most of whom are atheists and do not represent any confessions, were asked to fill out a questionnaire translated into Chinese. According to the research ethics, the principle of anonymity was respected during the experiment. The questionnaires completed in Chinese were translated into Russian and thoroughly analyzed.

Key words: psycholinguistics, linguistic consciousness, associative field, associative experiment, semantic connotation

Introduction

The relevance of the topic of this study related to the fact that the study of linguistic consciousness, the collection of associative norms and the creation of associative dictionaries on their basis has recently become one of the priority areas in psycholinguistic research.

This scientific research is carried out in line with the theory of the Moscow psycholinguistic school and is devoted to the analysis of words denoting emotional states in the linguistic consciousness of the speakers of the Chinese language.

The urgency of the work is determined by the increasing cross-cultural contacts with native speakers of Chinese and the related need to prevent possible conflicts of misunderstanding.

Linguistic consciousness is an object of psycholinguistics, interpreted as a set of images of consciousness, formed and visualized with the help of vocabulary (Tarasov, 2012). An associative field is used as a material for the analysis of linguistic consciousness. The authors understand the associative field as groups of words united around the stimulus word, studied within an associative experiment. The associative experiment was first applied in psycholinguistics by Ch. Osgood (1960) and J. Deese (1965).

The meaning of the word is composed of a denotative-significative part, which reflects the conceptual features, and a connotative part, which demonstrates the attitude of native speakers to the named objects (Popova, Sternin, 2007). The connotative part of the meaning of the word contains the evaluative ('good/bad'), expressive ('very') and stylistic components (Telia, 1986). Semantic connotation

(derived from *con* 'together' and *notatio* 'denoted') covers various aspects of the word as an added value to the basic lexical meaning, including "semantic associations."

The object of our associative experiment is the emotion words, that is, words denoting different states of a person: joy, sorrow, fear, anger, and others. The choice of these stimulus words is explained by the desire of the authors to get an idea of the emotions in the Chinese linguistic consciousness, somehow to sense those inner feelings and states that are present in the human soul as if they were part of the visible world. The issue of studying the linguistic means of expressing emotions is sufficiently studied in modern linguistics. This problem was dealt with by many linguists: V. Yu. Apresjan (2013), E. M. Volf (2014), V. A. Maslova (2009), A. Wierzbicka (1999), N. D. Arutyunova (1976), L. G. Babenko (2002), V. I. Shakhovskiy (2008, 2010), G. Lakoff (2015), V. V. Glebkin (2012), L. Katsyuba and V. Limin (2015), Z. Ruishuang (2016), E. V. Raxilina and T. I. Reznikova (2013), Tao (2015; 2016) and many others. The authors of the article follow the theory of L. G. Babenko (2002), who believes that there are specific patterns in the intersection of the semantics of words with different lexical groups. For example, the semantics of the word '*grief*' actively intersects with the vocabulary of destruction (to strangle, bite, seize), damage (to lacerate), disease (to ache), physiological gesture (to sniff, sip), sound (to groan). Thus, grief as the most painful and heavy feeling is associated in the human mind with pain, destruction, demolition (Babenko et al., 2000).

At present, the associative experiment is the most developed technique of psycholinguistic analysis of speech semantics. Studying linguistic consciousness, collecting associative norms and creating associative dictionaries and thesauruses on their basis has recently become one of the priority areas in psycholinguistics.

Using the method of free-associative experiment, one can judge about the features of linguistic consciousness functioning which are usually not recognized by native speakers and are not detected by other methods of research. The emotional vocabulary of the Chinese language is an object of our associative experiment.

The free-associative experiment technique is its most developed tool. Using this technique, one can infer about the features of a person's linguistic consciousness functioning and the ways of constructing speech utterances which are usually not recognized by native speakers and are not identified by other methods of investigation. Associations are considered in this aspect as one of the means of access to the inner lexicon of people and their linguistic consciousness and building the basic values of the person and the ethos as a whole on their basis.

Associative criteria of color, taste, liquid, airy and fiery state, plant, animal are manifested in the semantics of non-free combinations. Thus, for example, Russian speakers use non-free combinations: *joy is splashing, to jump for joy; to surrender to sadness, to be/get down in deep sorrow, sadness; the bird of happiness; bitter sorrow, to sup sorrow, eat the bread of affliction; come to grief; a burst of anger, ablaze with anger; ardent/passionate/blind love fades, flowers and the scent of love, on the wings of love; nourish hatred, to be overwhelmed by hatred, feel suffocated due to hatred; fear is creeping/enchaining/paralyzing; black/deep envy, envy is tormenting/to gnawing; because of jealousy, squint-eyed with jealousy; iron will squeeze the will into a fist; placid conscience, to ease one's conscience, pricking of conscience, a worm of remorse; the last drop of patience, the patience snapped; a ray of hope; a storm/a flurry of emotions, zero emotions; overwhelmed by feelings, a sea of feelings*. These non-free phrases indicate that joy in the minds of Russian speakers is something liquid and big, something to be shared and rising mood; sadness is something liquid, big, deep and not letting go; happiness is something airy, winged; sorrow is something liquid, bitter, huge; anger is something fiery; love is something blossoming, winged, fiery; hatred is some dangerous animal; fear is some dangerous animal; envy is some dangerous animal; jealousy is something low and

dangerous; will is something strong, solid; conscience is something that does not contain anything extraneous, it is pure. Otherwise, it is a dangerous animal; patience is something liquid and stiff; hope is something fiery; feelings and emotions are something airy and liquid.

Literature Review

The methodological and theoretical basis of the research are formed by the provisions of the theory of speech activity and the concept of the world image of A.A. Leontiev (1967; 2016); the concept of linguistic consciousness of E.F. Tarasov (2012), N.V. Ufimtseva (2016), T.N. Ushakova (2004), V.V. Krasnykh (2016), and Yu.A. Sorokin (1982). In modern Russian psycholinguistics, the concept of 'linguistic consciousness' is widely used, which is understood as one of the types of consciousness that "is made external, i.e., expressed by external linguistic means" (Ushakova, 2004). At present, many linguists turn to the theme of the linguistic consciousness of the bearers of the Chinese language, which is a product of ethnoculture and has a national and cultural specificity. The authors note that one of the most important approaches to an integrative nature of modern linguistic science is the psycho-linguo-cultural approach, which determines the convergence of the cultural-linguistic and psycholinguistic approaches: Y. Kai (2014, 2016); the study into the content of ethnic-cultural stereotypes and the clarification of their role in cross-language lacunarity can optimise intercultural communication between the Chinese and the Russians: Z. Runmei (2017); the research on the image of "Chinese" of the Russian and Chinese cultural representatives can reveal specifics of stereotypes, prevent potential conflicts, and facilitate mutual understanding in intercultural contacts: H. Tiande (2017).

Linguistic consciousness can be visualized with the help of an associative experiment. The authors of this scientific study consider visualization as one of the most promising areas of data analysis, including emotions. Modern computer technologies offer a variety of tools for processing the results obtained during the linguistic analysis (Donina, 2015; Mohammad, Turney, 2013).

The authors of this article agree with G. Lakoff's (2015) theory of embodied rationality, who notes that emotions are almost never expressed directly but are always likened to something, and that language, thoughts, and emotions arise rather but in close interaction of consciousness and body than in consciousness.

Nowadays, scientific developments are also being conducted in the field of computational approaches to the analysis and generation of emotions in statements (Mohammad, Turney, 2013; Toldova, L'āševskaja, 2014).

Modern computer technologies offer a variety of tools for processing the results obtained during the linguistic analysis, and for visualization of abstract lexical units. This, in particular, is described by O.V. Donina (2015). Following the author, we consider visualization as one of the most promising areas of data analysis, which will allow us to evaluate language units from a new angle. Currently, Professors of HSE School of Linguistics Y. Badryzlova, O.N. Lyashevskaya (2017) is creating a metaphor corpus of the Russian language. Interesting results obtained in the course of the joint project of the Department of Mathematical Linguistics of St. Petersburg State University with the developers of the Russian National Corpus (RNC, 2003-2017) are presented in a report by O. Mitrofanova and P. Panicheva (2013). The report discusses the use of a data visualization module to clarify information about structures that implement the values of the words under study. The module is intended for lexicographers and researchers of the vocabulary and grammar of the Russian language.

Methodology

To achieve the goal, the authors use associative experiment as the most convenient way of visualizing the linguistic consciousness of native speakers, “the linguistic consciousness modeling through the construction of an associative-verbal network according to the data of the mass associative experiment” (Ufimtseva, 2016).

The course of the associative experiment consisted of the following stages:

1. To conduct this experiment, the authors of the article compiled a questionnaire in Russian containing the names of 12 words denoting the emotional state of a person, such as joy, sadness, fear, anger and so on. It was intended to write any word or phrase that comes to mind when reading it in the free fields of the questionnaire (Table 1).

Table 1: Questionnaire for conducting the associative experiment in English

Word	Association							
	Color	Taste	Liquid	Fire	Plant	Air	Animal	Bird
Joy								
Sadness								
Happiness								
Sorrow								
Anger								
Love								
Hatred								
Fear								
Envy								
Jealousy								
Conscience								
Hope								

2. This questionnaire was translated into the Chinese language by native speakers of Chinese. Before starting the experiment, the respondents were given all the explanations as to complete the questionnaire by the native speaker of Chinese.

3. The experiment was conducted in a computer class, it involved 100 Chinese students of the Peoples' Friendship University of Russia at the age of 17-25, the overwhelming majority of whom are atheists and do not represent any confession. According to the research ethics, while filling out of the questionnaires, the respondents observed the principle of anonymity. Each subject worked on a personal computer with a table translated into Chinese. The explanations concerning the form of performing the work were given in Chinese orally.

4. To identify the primary reaction of respondents, the time to fill out the questionnaire was limited to 15-20 minutes, which precluded consideration, since the first reaction was important.

5. The questionnaires filled in the Chinese language were translated into Russian (English) (Table 2).

Table 2: Filled questionnaire translated into English

Word	Color 颜色	Taste 味道	Liquid 液体	Fire 火	Plant 植物	Air 空气	Animal 野兽	Bird 鸟
Joy 快乐	Multi-colored 五颜六色	Sweet 甜的	River 河	Warm 温暖的	To blossom 开花	Cloud 云	To run 跑	To fly 飞
Sadness 悲伤	Gray 灰色	Bitter 苦的	To drown 沉没	To fade 熄灭	To wither 枯萎	Fog 雾	Crow 乌鸦	Broke n wing 折翼
Happiness 幸福	Colorful 彩色	Sweet 甜的	Sea 海	To gleam 发光， 发亮	Fruit 果实	Oxygen 氧气	Dog 狗	Flight 飞行
Sorrow 痛苦	Black 黑色	Bitter 苦的	Rain 雨	Fire 大火	To fall off 脱落	Smoke 烟	Tiger 老虎	Crow 乌鸦
Anger 愤怒	Red 红色	Sharp 辣的	Wave 波浪	To Burn 烧	To grow 生长	Whirl 龙卷风	To bite 咬，啄	To beat 打斗
Love 爱	Pink 粉 红色	All Tastes 所有味道	Flow 水流， 急流	Hot 热的	Rose 玫瑰	Sun 阳光	Rabbit 家兔	Swan 天鹅
Hatred 恨	Black 黑色	Sharp 辣的	Abyss 深渊	Flame 火	Cactus 仙人掌	Wind 风	To bite 咬，啄	Crow 乌鸦
Fear 恐惧	Gray 灰色	Salty 咸的	Drop 滴	Darkness 暗	To fade 枯萎	Thunder storm 大雷雨， 暴风雨	Snake 蛇	To dab 啄食
Envy 羡慕， 嫉妒	Green 绿色	Sour 酸的	Water 水	To Burn 烧	Sprout 幼芽	Airless 没有空气的	Fox 狐狸	Cuckoo 杜鹃， 布谷鸟
Jealousy 吃醋	Green 绿色	Sour 酸的	Vinegar 醋	Blackout 阴影	Lemon 柠檬	Stuffy 憋闷的	Rat 老鼠	Beak 鸟嘴
Conscience 良心	Golden 金黄色	Tasty 有 滋味的	Ocean 海洋	Light 光	Orchid 兰花	Transparent 透明的	Human 人	Swallow 燕子
Hope 希望	Green 绿色	Sweet 甜的	Brook 泉水， 源泉	Sunshine 阳光	To sprout 开花	Dawn 霞光	To be born 出生	To spread wings 展开 翅膀

6. All 100 questionnaires with respondents' answers were carefully analyzed, and the number of matching answers was calculated.

Below the associative criteria of emotions revealed as a result of the associative experiment are given (Tables 3-14). Central associations were isolated if the number of responses was not less than 10. Single responses to the stimulus word, in an amount of 1-2 were considered as peripheral associations. Let us note the central associative attributes of all stimulus words.

Table 3: Associative criteria of the emotion expression ‘joy.’

Association	Respondents’ answers
Color	Multi-colored (37), Red (21), Yellow (6), Pink (4), Blue (4), Green (2), Orange (2), Goldfish (1)
Taste	Sweet (65), Sour (7), Bitter (3), Fragrant (3), Salty (2)
Liquid	Sea (44), Rain (8), Water (8), River (5), Wave (3), Springlet (2), Clean (2), To float (2), Fountain (1), Orange juice (1)
Fire	Warm (31), To shine (10), To gleam (10), To sparkle (10), To burn (5), Flame (4), Flash (2), Flame (1), Bonfire (1), Torch (1), To warm (1)
Plant	Flowers, to bloom (48), Fruit (9), To grow (6), Bud, flower bud (3), Sunflower (3), Rose (1)
Air	High (36), Sky (7), Wind (6), Fresh (6), To flutter (3), Airy (2), To fly (1)
Animal	To bite (7), To run (6), Dog (6), To rush (3), Panda (3), Squirrel (2), Kangaroo (1), To stroke (1), To lick (1)
Bird	To fly, hover (57), Wings (5), Nightingale (1), Sparrow (1), Small birds (1)

The analysis of associative links of the emotion expression ‘joy’ in the minds of Chinese speakers enabled to determine the central associative criteria of *joy*:

- Color – multi-colored (37), Red (21),
- Taste – Sweet (65),
- Liquid – Sea (44),
- Flame – Warm (31), To shine (11),
- Plant – Flowers, to bloom (48),
- Air – High (36),
- Bird – To fly, hover (57).

Table 4: Associative criteria of the emotion expression ‘sadness.’

Association	Respondents’ answers
Color	Multi-colored (37), Red (21), Yellow (6), Pink (4), Blue (4), Green (2), Orange (2), Goldfish (1)
Taste	Sweet (65), Sour (7), Bitter (3), Fragrant (3), Salty (2)
Liquid	Sea (44), Rain (8), Water (8), River (5), Wave (3), Springlet (2), Clean (2), To float (2), Fountain (1), Orange juice (1)
Flame	Warm (31), To shine (11), To gleam (10), To sparkle (10), To burn (5), Flame (4), Flash (2), Flame (1), Bonfire (1), Torch (1), To warm (1)
Plant	Flowers, to bloom (48), Fruit (9), To grow (6), Bud, flower bud (3), Sunflower (3), Rose (1)
Air	High (36), Sky (7), Wind (6), Fresh (6), To flutter (3), Airy (2), To fly (1)
Animal	To bite (7), To run (6), Dog (6), To rush (3), Panda (3), Squirrel (2), Kangaroo (1), To stroke (1), To lick (1)
Bird	To fly, hover (57), Wings (5), Nightingale (1), Sparrow (1), Small birds (1)

The analysis of associative links of the emotion expression ‘*sadness*’ in the minds of Chinese speakers enabled to draw the following conclusions: the central associative criteria of *sadness*:

- Color – Black (32), Gray (28), Blue (11),
- Taste – Bitter (50), Sour (13),
- Liquid – Salty sea (17), To drown (14), Rain, drop (11),
- Plant – To wither (17), To fall, to fall off, to drop (13), Not to grow (13), To fade (11),
- Air – To sway, wobble, flutter (18),
- Bird – Not to fly (15), Wing (broken) (15).

Table 5: Associative criteria of the emotion expression ‘happiness.’

Association	Respondents’ answers
Color	Black (32), Gray (28), Blue (11), Dark (3), Violet (2), Light blue (2), Green (2)
Taste	Bitter (50), Sour (13), Salty (8)
Liquid	Salty sea (17), To drown (14), Rain, drop (11), Tears (10), Dirty water (5), River (3), To squish (1)
Flame	To burn (9), To extinguish (9), Darkness (8), To sparkle (3), Ray (3), To snuff out (1), Light blue (1)
Plant	To wither (17), To fall, to fall off, to drop (13), Not to grow (13), To fade (11), Fruit (8), To rotten (5), Root is beneath (3), Leaf shedding (2), Willow (1), Grass (1)
Air	To sway, wobble, flutter (18), Cloud, cloudy sky (9), Thundercloud (8), Fog, gauze (4), Dull (2), Snow, ice (2), Moist (1), Strong rain (1), Gloomy (1), Clear (1), Dirty (1), Stinky (1)
Animal	To chew (9), Crow (6), To bark (dog, wolf) (4), To die (3), Tiger (2), Predatory (2), To seize (1)
Bird	Not to fly (15), Wing (broken) (15), Bird (5)

The analysis of associative links of the emotion expression ‘happiness’ in the minds of Chinese speakers allowed concluding:

- Color – Multi-colored -34 Red-16
- Taste – Sweet-62
- Liquid – Sea-32
- Flame – Hot, ardent, warm-30 To gleam-15
- Plant – Fruit-27 To bloom, flowers-24
- Air – Cloud-17
- Bird – Flight, to fly, hover-33

Table 6: Associative criteria of the emotion expression ‘sorrow.’

Association	Respondents’ answers
Color	Multi-colored -34 Red-16 Yellow-10 Pink-7 Orange-4 Iridescent-2 Warm-2
Taste	Sweet-62 Sour-3 Tasty-3 Pleasant (odor)-2 Honeylike-1
Liquid	Sea-32 Water (warm)-7 Rain (drop)-5 Wine (red)-4 Churning -3 Springlet-2 Lake-2 Waterfall-1
Flame	Hot, ardent, warm-30 To gleam-15 To shine-6 To burn-3 Bonfire-2 To warm-1 To sparkle-1 Glaring-1 Blaze-1 Rays-1 Flame (red)-1
Plant	Fruit-27 To bloom, flowers-24 Grow-10 Root-2 Leaf-1
Air	Cloud-17 Air, oxygen-10 Wind-4 To fly-4 To sway-2

Animal	Dog-8 Mandarin duck-4 Dolphin-1 To fawn-1
Bird	Flight, to fly, hover-33 Wing-8 Kite-2 Nest, propagate-2 Eagle-1 Pigeon-1 Hummingbird-1

The analysis of associative links of the emotion expression ‘sorrow’ in the minds of Chinese speakers enabled to draw the following conclusions:

- Color – Black-30 Gray-28
- Taste – Bitter-45 Sour-13
- Liquid – Sea-16
- Plant – To fade, faded-16

Table 7: Associative criteria of the emotion expression ‘anger.’

Association	Respondents’ answers
Color	Black-30 Gray-28 White-8 Dark-5 Pale-2 Green-2 Blue-1
Taste	Bitter-45 Sour-13 Salty-7 Sharp-5 Tasteless, odorless-2
Liquid	Sea-16 Rain, drops-9 Tears-8 River-7 To drown-6 Wave-4 Turbid-4 Swamp-3 Wine-2 To squish-1
Flame	Somber, dark-8 To extinguish, burn out-7 Flame-5 Hot, ardent-5 Fire-5 Spark-1 Lightning-1 Dim-1 Icy-1 Cold-1
Plant	To fade, faded-16 Grow-9 Not to grow, to die-8 To wither-6 Root-6 To fall-4 Leaf shedding-4 To drop-2 Fruit-2 To rotten-2 Mimosa-2 Cactus-1 To shed-1
Air	Thundercloud-10 Cloud (dark)-10 Rain (steady)-6 Smoke, smog-3 Snow-2 No oxygen-2 Fog-1 Tempest-1
Animal	Cat (black)-2 Tiger-2 Dog-2 To die-2 To bite-1 To gnaw-1 To groan-1 Eat (flower that eats human persons)-1 Sheep-1 Predatory-1
Bird	Crow-10 Bird (wingless)-7 Broken wing-3 Kite-3 Cuckoo-3

The analysis of associative links of the emotion expression ‘anger’ in the minds of Chinese speakers enabled to draw the following conclusions:

- Color – Red-46 Black-24
- Taste – Sharp, peppery, piquant-46 Bitter-14
- Liquid – Wave-11 Sea-11
- Flame – To burn-18 Flame-17
- Plant – To grow-12
- Animal – To bite-27
- Bird – To fly-20

Table 8: Associative criteria of the emotion expression ‘love.’

Association	Respondents’ answers
Color	Red-46 Black-24 Brownish-3 Green-1 Colorless-1
Taste	Sharp, peppery, piquant-46 Bitter-14 Sour-6 Salty-4
Liquid	Wave-11 Sea-11 Tsunami-7 To drown-6 Boiling-3 High water-2 Saliva-2 Turbid-2 Storm-1 Whirlpool-1 Flood-1 Deluge-1 Abyss-1 Stream-1 Tempest-1 Vodka-1 Tears-1
Flame	To burn-18 Flame-17 Fire-9 Light-5 Hot-3 Blaze-2 To sparkle-2 To shine-2 Lightning-2 To parch-1 Volcano-1 To extinguish-1
Plant	To grow-12 To bloom-5 To fade-4 Root-4 To break-4 To fall off-3

	Fruit-3 Cactus-3 Not to grow-1 To wither away-1 Mimosa-1
Air	Cloud (brazen)-9 Whirl-7 To sway-4 Wind-4 Thundercloud-2 Hurricane-2 Sun (scalding)-2 Thunder storm-1 Lightning-1 Hail-1 Blizzard-1 Smoke-1 Fog-1 Whirlwind-1 Tempest-1 Chaos-1
Animal	To bite-27 Lion-9 Tiger-4 Hedgehog-3 Cat-2 To bark-2 Flamingo -2 Shark-1 To roar-1 To fight-1
Bird	To fly-20 Wing-5 To beat, a fight-4 Eagle-3 Kite-2 Crow-2 Predator-1 To hunt-1 To attack-1 To fall-1 Not to fly-1 Geese-1 Wingless-1 Woodpecker-1 Parrot-1

The analysis of associative links of the emotion expression ‘love’ in the minds of Chinese speakers enabled to draw the following conclusions:

- Color – Red-24 Pink-22
- Taste – Sweet-54
- Liquid – Sea-17 Flow, springlet-12
- Flame – Warm, hot-22 To light, light-14 To burn-11
- Plant – Flowers, to bloom, to burst into blossom-29 Fruit-11
- Air – Cloud-14
- Bird – To fly, hover-26 Mandarin duck-12

Table 9: Associative criteria of the emotion expression ‘hatred.’

Association	Respondents’ answers
Color	Red-24 Pink-22 Multi-colored-10 Blue-9 White-5 Violet-4 Iridescent-2 Purple-1
Taste	Sweet-54 Sour-9 All tastes! *of various tastes-6 Tasty-1 Pleasant-1 Honeylike-1
Liquid	Sea-17 Flow, springlet-12 Water-6 River-5 Lake-3 Fountain-2 Tide-1 Vodka-1 Juice-1 (Spring)-rain 1 To swim-1 Foam-1 Morass-1 Cocktail-1 Ripple-1
Flame	Warm, hot-22 To light, light-14 To burn-11 To shine-7 Flame-5 Flame-3 Bonfire-1
Plant	Flowers, to bloom, to burst into blossom-29 Fruit-11 To grow-10 Rose-8 Flower bud-2 Poppy-1 Leaf-1 Lemon-1 Tree-1 Cherry-1
Air	Cloud-14 Wind (light), breeze-10 Sun-6 Air, oxygen-5 Tempest-1 Lightning-1 Sky-1 Fresh-1 Fragrant-1 Moist-1
Animal	Hare, rabbit-2 Deer-2 To play-1 To run-1 Dog-1
Bird	To fly, hover-26 Mandarin duck-12 Wing-4 Bird-3 Swan-3 Magpie-3 A pair of birds-2 Nest-1 To sing-1 To feed each other-1 Swallow-1 Moth-1

The analysis of associative links of the emotion expression ‘hatred’ in the minds of Chinese speakers enabled to draw the following conclusions:

- Color – Black-40 Red-11
- Taste – Bitter-36 Sharp-15
- Liquid – Sea-13
- Flame – Flame-15 To burn-15
- Animal – To bite-14

Table 10: Associative criteria of the emotion expression ‘fear.’

Association	Respondents' answers
Color	Black-40 Red-11 Green-7 White-4 Brown-4 Gray-3 Black-and-red-2 Dark-2 Violet-2 Blue-1 Yellow-1
Taste	Bitter-36 Sharp-15 Sour-9 Salty-8 Insipid-2 Sweet-2 Piquant-1
Liquid	Sea-13 Wave-8 To drown-5 Rain, drop-4 (Lentic) water- 4 Turbid-2 Silt-2 Tears-1 Abyss-1 Storm-1
Flame	Flame-15 To burn-15 Light-9 Fire-7 Hot-5 Blaze-1 Spark-1
Plant	To grow-10 Root-6 Fruit-6 To fall off-4 Cactus (spiny)-4 To dry out-2 To miff off-2 Seed-1 Wild rose-1 Poppy-1 Baobab-1
Air	Thundercloud-9 Cloud (black)-6 Wind-4 Typhoon-4 Fog-3 Thunder-3 Tempest-3 Smoke-2 Whirlwind-1 Storm-1 Whirl-1 Downpour-1 Tsunami-1 Fire-1 Snow-1
Animal	To bite-14 Wolf-6 Bear-3 Tiger-3 Fox-2 Eagle-1 Lion-1 Snake-1 To bark-1 To fight-1 Snake-1
Bird	Crow-9 To fly-9 Wing-6 Eagle-6 Not to fly, wingless-6 To fight, fight-3 Beak-1

The analysis of associative links of the emotion expression '*fear*' in the minds of Chinese speakers enabled to draw the following conclusions:

- Color – Black-39 Gray-14
- Taste – Bitter-34
- Liquid – Sea-14

Table 11: Associative criteria of the emotion expression 'envy.'

Association	Respondents' answers
Color	Black-39 Gray-14 White-9 Red-1 Silvery-1
Taste	Bitter-34 Salty-8 Insipid-6 Sharp-4 Sour-2 Astringent -1
Liquid	Sea-14 To drown-10 (Dirty, black, waste) water-5 Drop-5 Tsunami-3 Flow-2 Waterfall-1 (Pouring) Rain-1 Morass-1 Shoreless-1 Wave-1 Ocean-1 Puddle-1
Flame	Darkness-10 To light-8 To burn-6 Blaze (light blue)-5 Flame-5 Fire-5 Lightning-2 Cold-2 To blow out-1 To shine-1 To burn-1
Plant	To fade-9 Fruit-8 To grow-6 To fall-4 Flower-3 Root-3 Bough-2 To dry out-2 Branch-1 Vine, osier-1 Seed-1 Spiny-1
Air	Cloud-9 Thundercloud-8 Wind-5 Thunder storm-3 Sky (high)-2 Rarefied air-2 (Terrible) weather-1 Whirl-1 Thunder-1 Fog-1 Typhoon-1 Night-1 Hurricane-1 Downpour-1 Gas (poisonous)-1
Animal	Bite-10 Snake-7 To chew-4 To shake-3 Spider-2 Cockroach -1 Mouse-1 Bear-1 Cheetah-1 To lick-1 Huge mouth-1 To quake-1 Clarion-1 To twist-1
Bird	To fly-9 Crow-9 Eagle-6 Not to fly-5 Bird-3 To fall down-2 To dab-1 To cry-1 Seagull-1

The analysis of associative links of the emotion expression '*envy*' in the minds of Chinese speakers enabled to draw the following conclusions:

- Color – Green-16 Pink-12
- Taste – Sour-54
- Flame – Not to light-14
- Plant – Flowers, to bloom-22 Grow (sprout)-14
- Bird – To fly, hover-28 Wing-15

Table 12: Associative criteria of the emotion expression ‘jealousy.’

Association	Respondents’ answers
Color	Green-16 Pink-12 Red-9 Yellow-9 Blue-6 Colored-5 White-4 Gray-2 Violet-1 Black-1
Taste	Sour-54 Sweet-5 Bitter-4 Salty-4 Insipid-1
Liquid	Rain, drop-9 Water-9 Sea-4 Springlet-3 Flow-3 Wave-3 Waterfall-1 Dew-1 Lake-1
Flame	Not to light-14 Flame (source)-7 To burn-6 Blaze-5 Sun-5 To sparkle-3 To shine-2 Hot-2 To sparkle-1 To burn-1 Clear-1
Plant	Flowers, to bloom-22 Grow (sprout)-14 Fruit-5 Rose-3 Peach flowers -3 Petal-1 Poppy-1
Air	Cloud-9 Wind (light), breeze-6 Rain-3 Thundercloud-2 Sky-1 No air-1
Animal	Bite-9 Panda-5 Fox-3
Bird	To fly, hover-28 Wing-15 To chase-2 Nightingale-2 Mandarin duck-2 Swan-2 Sparrow-1 Cuckoo-1

The analysis of associative links of the **emotion** expression ‘*jealousy*’ in the minds of Chinese speakers enabled to draw the following conclusions:

- Color – Green-18
- Taste – Sour-66
- Liquid – Water (acid), vinegar-15 Rain (pouring), drop-12
- Flame – Light (to switch off, darken)-21
- Plant – To grow, sprout-11
- Animal – To bite-12
- Bird – To fly-20

Table 13: Associative criteria of the emotion expression ‘conscience’

Association	Respondents’ answers
Color	Green-18 Dark-9 Red-9 Black-8 Yellow-6 Blue-5 Brown-4 Violet-4 Brownish-3 Purple-3 Colorной-3 Colorless-1 Transparent-1
Taste	Sour-66 Bitter-5 Salty-3 Insipid-2
Liquid	Water (acid), vinegar-15 Rain (pouring), drop-12 River-7 Wave-7 Sea-6 To swim-3 To drown-2
Flame	Light (to switch off, darken)-21 To burn-9 Spark-5 To sparkle-3 Flame (blue)-2 Hot-2 Lightning-1 Torch-1 Firewood-1 A match (burning)-1
Plant	To grow, sprout-11 Fruit-7 To miff off-5 Lemon-2 Mimosa-2 To bloom-2 To fall off-2 Birch-1 Flower (yellow)-1
Air	Cloud-11 Wind-6 Thundercloud-2 Dull day-2 Whirl-2 Stuffy-2 Moon-1 Cold-1 Tempest-1 Hurricane-1 Rain-1
Animal	To bite-12 Fight, to beat-6 Rat-4 To bark-2 Fox-2 Rabbit-1 Woodpecker-1 Crow-1 Fierce-1
Bird	To fly-20 Peacock -2 Duck-1 Wild goose-1 Swan-1 Wing-1 Pink pelican-1 Beak-1

The emotion expression ‘*conscience*’ in the minds of Chinese speakers has some associations with something clean, light and bright:

- Color – Red – 35, White-15
- Taste – Sweet- 25
- Liquid – Sea - 22
- Flame – light-13, Warm, hot- 11
- Plant – Flowers, to bloom- 16
- Air – Cloud- 14,
- Bird – To fly, hover-17

Table 14: Associative criteria of the emotion expression ‘hope.’

Association	Respondents’ answers
Color	Green-20 Red-11 Multi-colored -8 Yellow-5 Orange-4 Blue-4 Golden-3 Pink-2 Light-2 Bright-1 Violet-1 White-1 Beautiful-1
Taste	Sweet-48 Sour-4 Bitter-3 Salty-3 Sharp-1 Insipid-1 Honeylike-1 Syrup-1 Orange juice-1
Liquid	Sea-21 Drop-6 Brook, spring-6 Water (mineral)-5 To float-2 Dew-2 Rain (April)-1 Ocean (quiet)-1 Wave-1 Springlet-1 River-1 Lake-1
Fire	Light, to light-12 Sun, sunny light-10 Flame-9 Burn-7 Warmth, to warm-7 Blaze-5 Fire-4 Stars-4 To shine, to sparkle-4 Daybreak-1 Rocket-1 Torch-1 Spark-1
Plant	To bloom, blossoming-13 To grow-12 Fruit-10 Leaves (green)-4 To sprout-3 Forest, tree-3 Sunflower-2 Root-2 Orange-2 Flower bud, sprout-2 Oliva branch-1 Grass-1
Air	Cloud-13 Fresh-6 Air-4 After rain-3 Sky (blue)-3 Light-2 To fly, to flutter-2 Spring evening-1 Dawn-1
Animal	To bite-6 To gnaw-2 To chew-2 To run, to ride-2 To (be) born-2 Deer-1 Butterfly-1 Hummingbird-1 Cuckoo-1 Lion-1 Snail-1 Magpie-1 Panda-1 To lick-1
Bird	To fly, hover-25 Pigeon-7 Wings (to spread)-7 Bird-4 Kite-2 Seagull-1 Eagle-1 Egg-1 To feed-1 Phoenix -1

The analysis of associative links of the emotion expression ‘hope’ in the minds of Chinese speakers enabled to draw the following conclusions:

- Color – green - 20
- Taste – Sweet- 48
- Liquid – sea - 21
- Flame – To light, light-12
- Plant – Flowers, to bloom- 13, To grow – 12
- Air – Cloud- 13,
- Bird – To fly, hover-25

Results

Summing up all of the above, the authors conclude that the goal of their psycholinguistic research has been achieved, namely: semantic connotations have been established for such words as joy, sadness, happiness, sorrow, anger, love, hatred, fear, envy, jealousy, conscience, hope. In the author’s opinion, the analyzed central associative criteria visualize each emotion expression, giving the idea of Chinese speakers about these words in association with the visible world: with something liquid, airy, fiery, having color, taste and so on.

The results of the associative experiment show that the Chinese people associate *joy* (a sense of great spiritual satisfaction) mainly with something sweet (80), bright color (77), fiery (77), liquid (76), plant (70), bird (65), air (61). *Sadness* (the state of internal

grief) appears in the minds of the Chinese speakers as something dark (71), bitter (46), large (27), and oriented downward (38). The feeling and state of full, highest life satisfaction (*happiness*) is realized by the Chinese as something colored, in warm tones (red-yellow 60), sweet (62), large (32), warm (30), oriented upwards (61), high (60). The state of deep sadness (*sorrow*) is imagined by the native speakers of the Chinese language primarily as something dark, black-grey (78), bitter-sour (57). The feeling of strong outrage, indignation, (*anger*) in the Chinese mind is something red-and-black (70), acrid and bitter (60), aggressive (43). Deep emotional attraction, a strong heart feeling (*love*) is associated with red and pink (56), sweet (54), oriented upwards (49), high (40). Feeling of strong hostility, rage, malice (*hatred*) is something dark (mostly in black and red tones 45) and bitter-sharp (47). Strong startle, dismay (*fear*) has the following pronounced associations: black-and-grey color (53), bitter taste (34). The feeling of vexation caused by good fortune and success of others (*envy*) is represented in the Chinese mind as something green (16), sour (49), restless (36). A painful doubt in someone's loyalty (*jealousy*) is understood by the Chinese speakers as something dark green (37) and sour (66). It should be noted that the association criterion 'sour' is the core of EMOTIONS *envy* and *jealousy*. The sense of moral responsibility for one's behavior in front of the surrounding people, the society (*conscience*) has associations of something warm (43), sweet (25), clean and large (47), oriented upwards (48). The emotion expression *hope* is associated with something high (54) and sweet (45).

The analysis of the central associative attributes of these words allows for conclusion that the words with positive evaluation (**joy, happiness, love**) have connotations of color, taste, liquid, fire, light, air, plant, bird and are associated with the sea, with something red, sweet, warm, light, high, flowering, hovering. Also, **happiness** and **love** have associations with a plant that yields fruits. **Conscience** is associated with red and white, and **hope** – with green. The words with negative evaluation (**sadness, sorrow, anger, hatred, fear**) have connotations of color, taste, fluid and are associated with something black and bitter, with the sea. Also, **sadness, sorrow**, and **fear** are associated with grey, and **anger** and **hatred** – with a red color. **Sadness** and **sorrow** have connotations of the plant (fading), anger, on the contrary, implies a growing plant; **anger** and **hatred** have connotations of fire (burn) and aggressive animal (bite). **Sadness** has associations with a bird having a broken wing, unable to fly, **anger**, on the contrary, is associated with the ability to fly. The words **envy** and **jealousy** have similar associations with green color, sour taste, a growing plant and a flying bird.

In the Chinese consciousness, the word grief, which has a connotation of 'aggressive,' is associated with a mysterious plant that, like a predatory animal in Chinese folk tales, can eat a human (食人花 [shí rén huā]). The emotional expression 'envy' has two variants of translation into Chinese: 羡慕 [xiàn mù] (compare 'admiring, friendly envy') and 嫉妒 [jídù] (compare 'black envy'). A positive variant of envy was analyzed in this experiment. While connoting positive attributes, the emotion 'envy,' is associated in the Chinese consciousness in particular with peach flowers (桃花 [táo huā]). Mentioning peach flowers, the Chinese imply success in love, success in relations with the opposite sex: to be lucky in love; to be popular with the opposite sex (especially when speaking about males) (走桃花运 [zǒu táo huā yùn]) (CCL, 2017). It is likely that the emotional expression 'envy' requires a deeper insight into the Chinese language.

Discussion

The results of the research confirm the idea that that emotional vocabulary with a negative connotation (sadness, sorrow, anger, hatred, fear) approaches the vocabulary

of destruction, demolition, aggression, darkness, sorrow, immobility, cold, downward orientation. Emotional vocabulary with a positive connotation (joy, happiness, love, conscience, hope) associatively approaches fire, light, warmth, sweetness, movement, upward orientation (Babenco et al., 2000). However, this scientific study allows talking about the national specifics: for example, the Chinese linguistic consciousness associates envy and jealousy with something green and sour.

The authors of this study agree with the theory of famous Russian linguist V.A. Uspenskiy (1979), who studied the theme of “thingish connotations” as exemplified in the Russian language when an abstracted noun can have such lexical compatibility as if it meant some material, definite object. Thus, he described sorrow as “a heavy liquid, because you can drink grief: cf. “to drain sorrow, to sup sorrow.” For example, in Russian, such non-free combinations are used as to glow with joy, the bluebird of happiness, to sup sorrow, gush of anger, passionate love, to cherish hatred, paralyzed with fear, black envy, the pangs of jealousy, pure conscience, qualms of conscience, a ray of hope, and others. In Chinese, there are also unfree combinations with the words being analyzed. Thus, the words joy, sorrow, happiness, sorrow, love, having connotations of fluid in their meaning, can form the following combinations: burst of joy, deep sorrow, happiness like water in a dragnet, to sup sorrow, fall in love 坠入爱河 [zhuìrù ài hé] (CCL, 2017). The semantics of the word anger has connotations of fire, high temperature, which is confirmed by the combinations of to flush with anger, seethe with anger in the meaning of ‘to be very angry.’

The words love, joy, envy 羡慕 [xiàn mù] have associations with peach flowers: 桃花 [táo huā] (CCL, 2017): You got on the road with peach flowers means ‘Someone fell in love with you!’ 你走桃花运了! [nǐ zǒu táo huā yùn le !], “Peach flowers bloom one after another” is used to talk ‘about joy’. The words **hatred**, **conscience** have the connotations of an aggressive animal: *hatred has eaten into bones* – in the meaning ‘begin to detest somebody very much,’ *conscience torments*. The word **sorrow** is associated with a carnivorous plant from Chinese folk tales, 食人花 [shí rén huā]: *sorrow has eaten smb*. The words **jealousy**, **envy**, **sadness** have connotations of sour taste: *someone has a sour expression* – in the meaning of ‘someone is jealous, envious,’ *sour* (about a person) – in the meaning of ‘sad.’ The words **jealousy** and **envy** have connotations of green color: green is the color of infidelity, betrayal, that is why the Chinese believe that ‘putting on a green hat’ means ‘to be unfaithful to a wife/husband’ (Wei, 2011; Lu, Ding, 2005).

Thus, as N. A. Arutyunova rightly notes, “on the basis of a number of concepts – moisture, fire, wind, a living creature, etc. – a kind of consolidated image of feeling arises, revealed in a set of predicates that contradict each other from the point of view of logic” (Arutyunova, 1976).

The scientific novelty of the study is that the obtained visualization of emotions with liquid, airy, fiery and so on helps compile a list of those specific objects and phenomena of the visible world surrounding us which is relevant for the Chinese speakers. Thus, for example, animals are significant for the Chinese, the names of numerous animals and birds were a repeated response to stimulus words (panda – 11, dog – 26, tiger – 13, lion – 12, wolf – 8, bear – 7, fox – 8, snake – 9, rat – 4, turtle – 3, nightingale – 4, sparrow – 6, crow – 29, mandarin duck – 18, kite – 9, eagle – 12, pigeon – 3, hummingbird – 4, cuckoo – 7, swan – 8, woodpecker – 4, magpie – 4, swallow – 4, wild goose – 5). The authors assume that the repeated use of these words as responses to the stimulus words carries a certain evaluation component in the sphere of the emotional vocabulary and requires a deeper study, in particular, analyzing the qualities of the human characteristics associated with a certain animal and being present in the minds of Chinese speakers. The authors consider that these associations require more in-depth study, since the images denoting the same real animal, when realized in different languages, have a national-specific character and

represent it as a standard of different human qualities and properties in different cultures (Shakhovskiy, 2010).

Conclusion

The associative experiment revealed, that the emotional words with a negative evaluation comes close to the vocabulary of destruction, annihilation, aggression, darkness, bitterness, immobility, cold and is oriented down, while the emotional words with a positive evaluation associates with fire, light, warmth, sweetness, movement and is oriented upwards. The materials of this study, which allowed visualizing the emotional words, can be interesting for lexicographers and researchers of the Chinese language lexicon. The authors of this article rely on subsequent joint projects with scholars engaged in computational linguistics to compile corpora of emotions since modern computer technologies offer a variety of tools for processing the results obtained in the course of linguistic analysis, and for visualization of abstract lexical units.

The theoretical significance of the study is as follows:

- associative attributes of words indicating emotional states that help visualize them are revealed;
- semantic connotations of the words denoting emotional states are described;
- national-cultural specificity of the words denoting emotional states in the linguistic consciousness of the speakers of the Chinese language is revealed;
- a certain contribution is made to the concept of the structure of linguistic consciousness, and a gap is filled in the study of words denoting emotional states in the Chinese linguistics.

The practical significance of this work is that its results:

- will serve to optimise cross-cultural communication between the native speakers of Chinese and Russian,
- can be used in university courses of general linguistics and psycholinguistics,
- contribute to the practice of creating associative dictionaries in China.

The novelty of the research is determined by the fact that for the first time the material of the associative experiment as exemplified by the words, which denote emotional states in the Chinese language, has been introduced into scientific circulation.

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