

DOI: <https://doi.org/10.18454/RULB.2020.24.4.36>**ЯВЛЕНИЕ ЯЗЫКОВОЙ СИНЕСТЕЗИИ НА ПРИМЕРЕ ПРИЛАГАТЕЛЬНЫХ РУССКОГО И ИТАЛЬЯНСКОГО ЯЗЫКОВ**

Научная статья

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Аннотация

В статье рассматривается проблема языковой синестезии. Синестетические переходы между разными областями сенсорного опыта анализируются с помощью методов корпусной лингвистики. Изучается способность прилагательных, обозначающих сенсорные качества, продуцировать метафорические значения при сочетании с существительными из других сенсорных модальностей. В данной работе ставится цель выявить структуру синестетических переходов на материале итальянских и русских сенсорных прилагательных и верифицировать ранее предложенные модели. Для анализа используются количественные данные о частоте сочетаний прилагательных и существительных из текстовых корпусов обоих языков, а также метод факторного анализа. Предлагается новая классификация синестетических переходов между семантическими полями, репрезентирующими сенсорные качества.

Ключевые слова: синестезия, сенсорные качества, прилагательные, метафоры, русский язык, итальянский язык, корпусная лингвистика.

LINGUISTIC SYNAESTHESIA: A CASE STUDY OF RUSSIAN AND ITALIAN ADJECTIVES

Research article

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Abstract

The paper tackles the problem of linguistic synaesthesia, or synaesthetic transfers between different zones of sensory experience. It employs corpus linguistics methods to analyze the ability of sensory adjectives to produce meanings in other sensory modalities. This research targets the Russian and Italian languages testing the models suggested previously and comparing the results for each language. More precise corpus linguistics methods and factor analysis are employed. In addition, this article suggests a new synaesthetic transfer classification.

Keywords: synaesthesia, sensory qualities, adjectives, metaphors, Russian language, Italian language, corpus linguistics.

Introduction

The fact that sensory qualities, being the basis of human perception, are hard to interpret (what is bright? what is sweet?) has always intrigued philosophers, psychologists and linguists [8]. Interpretation difficulties arise from disparate and ambiguous presence of sensory experience in language [10], [17]. According to many authors, research into sensory qualities is a challenging task. Sensations are part of subjective human experience and many sensations result only from immediate body contact and thus are hard to verify in communication. Probably, that is the reason why some sensations, above all smell, taste and partially touch, are underrepresented in language, which makes people feel the lack of linguistic means to communicate their sensory experience [6]. Besides, sensory language is considerably influenced by culture [5], [12], hence the need to study semantic fields in different languages.

Another intriguing fact is the ability of many sensory qualities to produce meanings that describe qualities from other sensory zones (e.g. *rovnyj zvuk* [flat sound] vision → hearing). Such transfers were named synaesthetic after a neurological phenomenon of synaesthesia, wherein stimulation of one sense leads not only to its inherent sensations but to stimulation of another sense, as well. The synaesthesia problem concerns the interaction not only of sensory systems but of linguistic elements, as well [9], [13]. Verbal or linguistic synaesthesia is the representation of cross-modal experience in language [14].

Scientists who dealt with the linguistic problem of synaesthetic transfers suggested various models for emerging linguistic phenomena. Ullmann [15] divided sensory adjectives into six groups according to their type or receptors (vision, hearing, touch, taste, smell and temperature) and studied their synaesthetic transfers in the works of 19th century poets. He found the following pattern: adjectives connected with the less differentiated sensations tend to be the source for the meanings connected with the more differentiated ones, and not vice versa. Henceforth, touch appears to be the main source for transfers and hearing appears to be their main target. At the same time, he found a high correlation between tactile and temperature sensations, as well as between taste and smell.

Williams [18] employs a diachronic approach taking cited meanings of sensory adjectives (65 units) in English dictionaries (like the Oxford English Dictionary). Unlike Ullmann, Williams does not isolate temperature qualities, but he splits vision into two zones: Colour and Dimension. He constructed a graph (see figure 1) where arrows show the diachronic transfer direction. The shown patterns match Ullmann's predictions although some exceptions are found, as well.

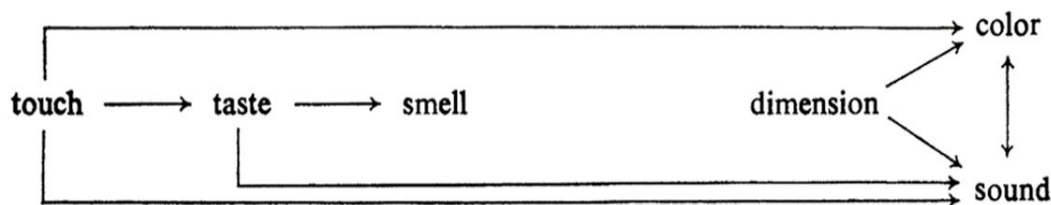


Fig.1 – Williams’ generalisation

Stepanyan [4], who studied adjective synaesthetic transfers in Russian fiction literature, suggested a similar pattern. He established that synaesthetic metaphors were formed by 87% of tactile adjectives, 88% of gustatory adjectives, 35% of olfactory adjectives, 16% of auditory adjectives, and 7.7% of colour ones. Thus, the more advanced senses produce a lower number of synaesthetic metaphors than the more primitive ones.

However, later studies challenged this model. Viberg [16] in his study of verbal synaesthesia set forth an opposite sequence of sensory modalities: vision > hearing > touch > taste/smell. In other words, verbs of visual perception can denote qualities of the following sensory modalities, whereas verbs of taste and smell cannot denote qualities of the previous senses. The hierarchy might not function with other parts of speech or Williams’ patterns might not be universal. Departing from Viberg’s ideas, Rakhilina et al. employed text corpora to find patterns in synaesthetic transfers between sensory zones in constructions *adjective + noun* of several European languages (Russian, English, French, etc.). They found differently directed transfers: from vision to taste and smell and vice versa [3]. However, that paper provided only some examples, which could be exceptions to the rules.

Following Viberg’s and Rakhilina’s work, we used text corpora to analyze synaesthetic transfers in sensory metaphor construction. We compared the Russian and Italian languages and studied the whole extent of existing synaesthetic metaphors. Our goal was to test both Viberg’s and Williams’ models to see which one would better describe synaesthetic transfer patterns. We expected the patterns to be confirmed both by the Russian and Italian data, which would mean that they were universal. Otherwise Russian and Italian should demonstrate different synaesthetic connections between sensory zones.

Research

This study included 282 sensory Italian adjectives and 266 sensory Russian adjectives (see table 1). Quantitative analysis of synaesthetic metaphors in each sensory zone was carried out. Unlike past research that could use only dictionaries and literature, today we can resort to new tools, such as text corpora that allow getting an almost adequate picture of modern language usage. The current study used glossaries (such as the Treccani Dictionary [11] for Italian and the Small Academy Dictionary [1] for Russian) and text corpora (Sketch Engine [7] for Italian and the Russian National Corpus [2] for Russian). The source of the metaphor was the first cited meaning of a word in the dictionary, whereas the target was the metaphorical meaning found in dictionaries or corpora. Besides linguistic methods we employed factor analysis, which revealed basic constructs distinguishing one sensory zone from another. A detailed sensation categorisation was employed: following Williams, Vision Zone was divided into Colour&Light Zone and Dimension Zone (which is also perceived by touch), Touch Zone was split into Texture&Consistence (Tactile), Temperature and Weight Zones. Pain sensations also formed a separate zone. Only active and commonly acknowledged synaesthetic transfers were studied.

Table 1. – Total number of studied sensory adjectives, metaphor-productive adjectives

Sensory modality	Sensory adjectives		Metaphor-productive adjectives	
	It	Ru	It	Ru
Dimension (Vision&Touch)	39	31	17	13
Colour&Light (Vision)	53	48	12	12
Sound (Hearing)	42	43	6	8
Taste	33	25	6	9
Smell	15	17	0	0
Texture& Consistence (Tactile)	78	62	25	19
Weight	6	12	4	4
Temperature	12	23	7	8
Pain	5	5	0	0
All sensors	283	266	77	73

Our research found the following subtypes of synaesthesia.

Subtype A. Pure metaphor

A transfer carried out directly between two physical qualities that belong to different sensory zones (*priglushennyi svet* [rus] ‘muffled light’, *sapore acuto* [it] ‘acute taste’).

Subtype B. Metonymy

Certain qualities of an object can be directly connected to its other qualities. For example, the phrase ‘a heavy rumble of wheels’ can be reformulated as ‘a rumble of heavy wheels’, i.e. the weight of the wheels, their property of being ‘heavy’, defines the sound that they make. In this case, we deal with a metonymy, not a metaphor. However, the connection between qualities of the denoted object may be lost making the metonymy of this kind a full-fledged metaphor.

Subtype C. Emotional metaphor

Emotional metaphors constitute a separate subtype as they do not denote physical qualities but emotions. Touching, gesticulation, expression of the face and eyes and, particularly, the voice are human communication channels where the respective senses (touch, vision and hearing) serve as gateways. As these channels can transfer emotions, the latter can be attributed to the channel itself (speech) or to the communication source (glance), which makes phrases like *mrachnaja rech* [rus] ‘gloomy speech’ or *sguardo amaro* [it] ‘bitter glance’ possible.

Subtype D. Intensifiers

The adjectives *lyogkiy*, *leggero* ‘light’, *pesante* ‘heavy’, *vysokiy*, *alto* ‘high’, *nizkiy*, *basso* ‘low’, *bolshoy*, *krupnyi*, *grande* ‘big’, *malenkiy*, *piccolo* ‘little’, when combined with certain nouns, intensify qualities denoted by them. The metaphors of this type presuppose that, first, the adjective loses its primary meaning and becomes an intensifier and, second, it modifies the meaning (belonging to another modality) of the noun it is combined with.

Table 2. – Total estimate of all ‘pure’ synaesthetic transfers

Sensor	Nouns										
	Dimension (Vision& Touch)	Colour& Light (Vision)	Sound (Hearing)	Taste	Smell	Texture& Consistence (Tactile)	Weight	Temperature	Pain	Total	
	It/Ru	It/Ru	It/Ru	It/Ru	It/Ru	It/Ru	It/Ru	It/Ru	It/Ru	It/Ru	
Dimension (Vision& Touch)	x	5/3	15/7	2/2	2/2	-	-	-	1/2	25/16	
Colour& Light (Vision)	-	x	8/5	1/2	0/1	-	-	-	1/2	10/10	
Sound (Hearing)	-	4/4	x	1/0	1/0	-	-	0/1	3/4	9/9	
Taste	-	1/1	1/3	x	6/8	1/1	-	1/0	1/0	11/13	
Smell	-	-	-	-	x	-	-	-	-	0/0	
Texture& Consistence (Tactile)	5/5	6/4	8/12	5/3	3/5	x	-	5/2	2/2	34/33	
Weight	0/0	1/3	0/3	0/0	1/2	-	x	1/0	2/2	5/10	
Temperature	-	5/7	1/2	1/0	-	0/0	-	x	0/0	7/9	
Pain	-	-	-	-	-	-	-	-	x	0/0	
All sensors	5/5	22/22	33/32	10/7	13/18	1/1	0/0	7/3	10/12	101/100	

Certain adjective meanings could be falsely qualified as synaesthetic metaphors, whereas in reality they are not and hence were not included in this research. For example, the phrase ‘flat surface’ may be treated as a synaesthesia between touch and vision, or vision and touch (depending on the sense this quality is primarily ascribed to), but in fact, qualities like this one are just perceived by more than one sensor and there is no transfer. Another example is transfers that create relative meanings in the target zone (*lyogkaya muzyka* [rus] ‘light music’, *voce bianca* [it] ‘white [female] voice’) as, despite the first impression, relative meanings do not qualify as sensory ones. Their primary function is to show the relation of the object to a certain class (e.g. a female voice, not a male one; light music, not heavy music) and any sensory qualities associated with the relative meanings are secondary as they derive from this relation.

Table 2 shows a quantitative analysis of synaesthetic transfers in the Italian and Russian languages, considering subtype A (pure metaphors), only. The first column contains groups of adjectives associated with certain sensors, whereas the first line contains groups of nouns associated with certain sensors. Each following line shows the number of transfers donated by the sensor to other sensors, while each following column shows the number of transfers received by the sensor from other sensors. The last column shows the total number of metaphors produced by each sensor and the last line shows the total number of metaphors received by each sensor. A figure before a slash shows the Italian data, whereas a figure after a slash shows the Russian data.

Italian language

77 out of 283 adjectives produce synaesthetic metaphors (27.2%). Dimension Zone has the highest number (against the total number of the Zone adjectives) of adjectives that are able to create figurative meanings (43.5%). Neither Smell Zone adjectives, nor Pain Zone adjectives produce synaesthetic metaphors.

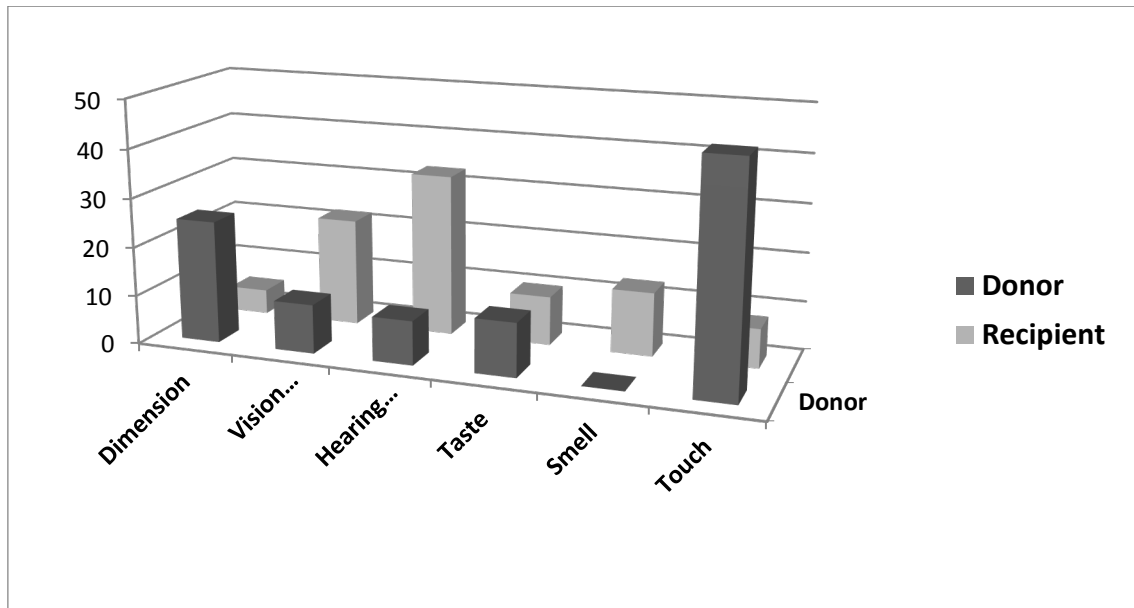


Fig. 2. – Total number of produced and received metaphors for each sensor in the Italian language (five senses plus Dimension Zone)

Tactile Zone (34 units or 33.6% of all the metaphors found) and Dimension Zone (25 units or 24.7%) are the main donor zones, Sound Zone is the main recipient zone (33 units or 32.6%). Temperature and Taste Zones receive roughly as many metaphors as they produce. Colour Zone produces less than it receives and Weight Zone does not receive any metaphors. The data are presented in Fig.2.

Russian language

73 out of 266 adjectives produce synaesthetic metaphors (27.4%). As in Italian, Dimension Zone has the highest number (against the total number of the Zone adjectives) of adjectives that are able to create figurative meanings (41.9%). Neither Smell Zone adjectives, nor Pain Zone adjectives produce synaesthetic metaphors as is also the case with Italian. Tactile Zone (33 units or 33.0% of all the metaphors found) is the main donor zone while Dimension Zone (16 units or 16%) ranks second. Sound Zone (32.0%) and Colour Zone (22.0%) are the main recipient zones. Taste Zone receives more than it produces and Temperature Zone receives less than it produces. The data are presented in figure 3.

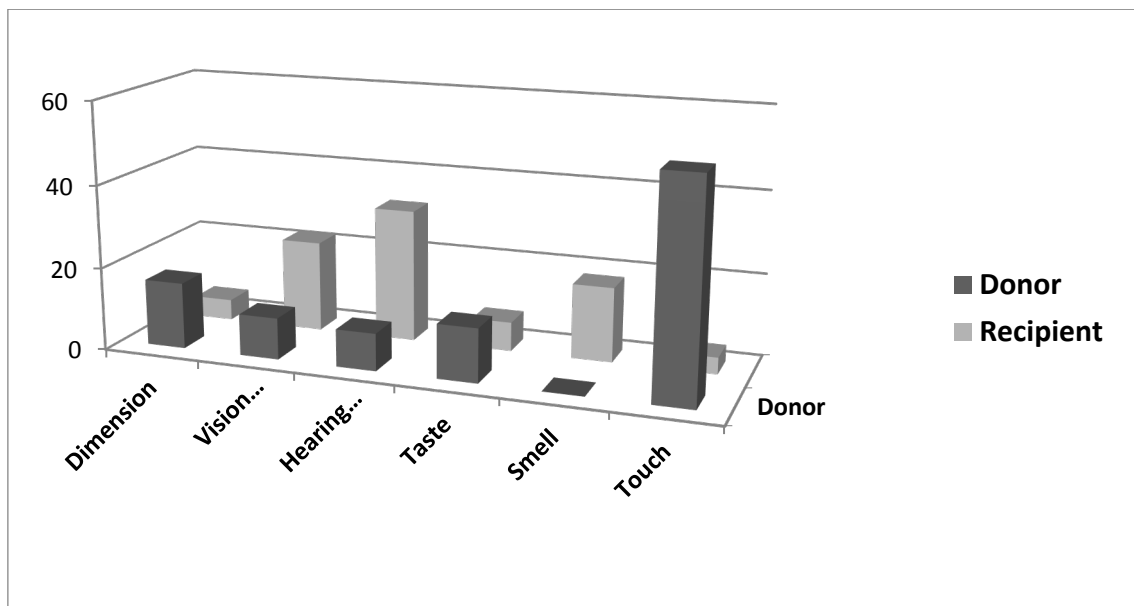


Fig. 3. – Total number of produced and received metaphors for each sensor in the Russian language (five senses plus Dimension Zone)

Italian and Russian compared

The Italian and Russian languages show similar transfer directions and numerical data. Pain and Smell Zones produce no metaphors, while Weight Zone receives none. Tactile Zone is the main donor zone and Sound Zone is the main recipient zone.

A close number of metaphor-productive adjectives in both languages is also of interest (77 in Italian and 73 in Russian). Nevertheless, some differences were found: Dimension Zone donates much more meanings in Italian than in Russian and Russian Temperature and Taste Zones donate more than they receive, while the equivalent Italian zones are balanced (see table 3).

The languages showed similarities on the level of individual lexemes, too. The list of the most productive adjectives in both languages is almost identical: *acuto, ostryi* ‘acute’, *leggero, lyogkiy* ‘light’, *pesante, tyazhelyi* ‘heavy’, *duro, zhostkiy* ‘hard’, *morbido, myagkiy* ‘soft’, *tenero, nezhnyi* ‘tender’ in both languages and *dolce* ‘sweet’ only in Italian. These adjectives account for 36 synaesthetic meanings in Italian and 33 meanings in Russian. The Russian lexeme *yarkiy* ‘bright’ is of interest as it produces three figurative meanings while its closest Italian analogue *vivido* produces only one (which is an emotional metaphor).

Table 3. – Total number of produced and received metaphors for each sensor in the Russian and Italian languages

		Dimension	Colour & Light	Sound	Taste	Smell	Texture & Consistence	Weight	Temperature	Pain
RUSSIAN	Donor	16	10	9	13	0	33	10	9	0
	Recipient	5	22	32	7	18	1	0	3	12
ITALIAN	Donor	25	10	9	11	0	34	5	7	0
	Recipient	5	22	33	10	13	1	0	7	10

Notes: Donor zones are white, recipient zones are grey, balanced zones are black.

In order to compare our results with other studies, in particular Williams’ predictions, the used zones (except for Dimension and Colour Zones) were united into the groups corresponding to the traditional five senses. Although the transfers found by Ullmann [15] and Williams [18] were confirmed, their patterns were violated or, at least, the order of donating/receiving senses did not turn out to be as linear as it had been predicted. Fig.4 shows Williams’ generalisation with superimposed thick arrows showing violations of his hierarchy that were found in this research. Thus, Colour (thanks to *yarkiy* ‘bright’, *yasnyi* ‘clear’ [rus] and *chiaro* ‘clear’ [it]) donates metaphors to Taste Zone; Dimension Zone donates metaphors to Taste and Smell Zones (*ostryi* ‘sharp’, *tonkiy* ‘thin’ [rus]; *acuto* ‘acute’, *tenue* ‘thin’ [it]); Touch Zone is the source for metaphors to Dimension (e.g. *tyordyi* ‘hard’, *ryhlyi* ‘crumbly’ [rus]; *tagliante* ‘sharp’, *soffice* ‘soft’ [it]) and Smell Zones (e.g. *nezhnyi* ‘tender’, *gustoy* ‘thick’ [rus]; *denso* ‘thick’, *aspro* ‘coarse’ [it]).

Other deviations are rare or are found only in one language, and hence can be treated as exceptions. For example, the adjective *dolce* ‘sweet’ (taste) in Italian can denote pain and tactile sensations, and the adjective *arguto* ‘shrill’ (sound) can denote gustatory and olfactory ones (another proof that we deal with an exception here is that its historically first meaning was ‘acute’).

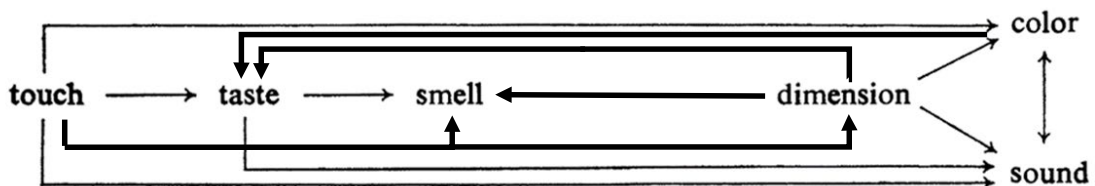


Fig.4. – Williams’ generalisation revised

Factor analysis

Factor analysis was employed to confirm the found patterns (fig.5). It confirmed a) relevancy of donation-reception factor and b) proximity of patterns in the Russian and Italian languages.

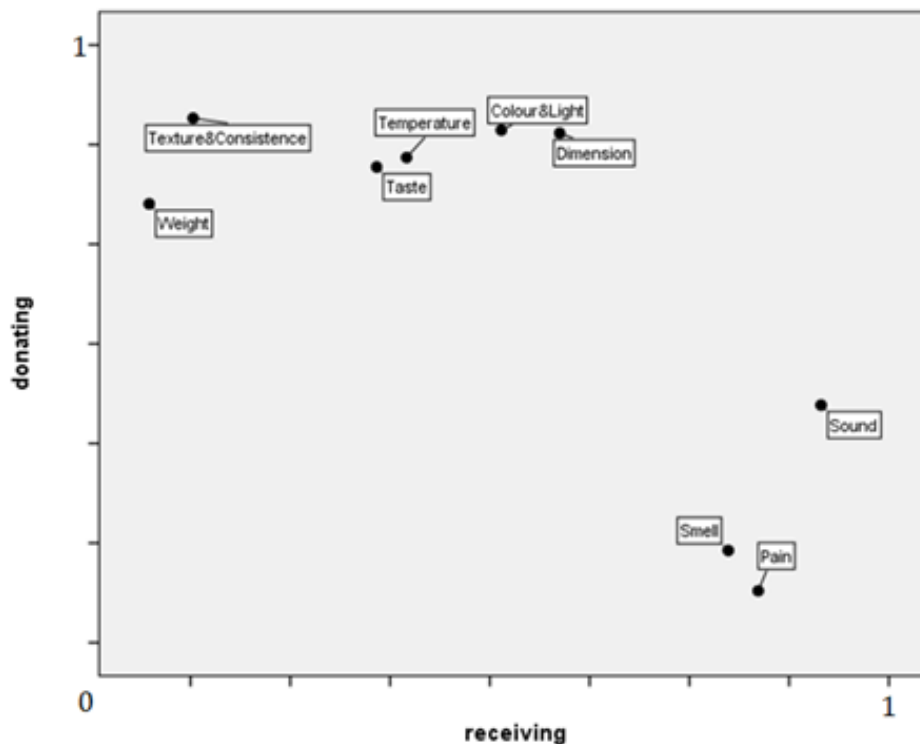


Fig.5. – Factor analysis output

In the course of the analysis that included both languages, two factors stood out, accounting for 72.83% of the total dispersion. The first factor (which accounted for 42,36% of the dispersion), included such zones as Texture&Consistence (0,853), Colour&Light (0,829), Dimension (0,823), Temperature (0,774), Taste (0,755) and Weight (0,687) which are primarily donors, while the second factor (which accounted for 25,65% of the dispersion) included Sound (0,864), Pain (0,738) and Smell (0,678) which are primarily recipient zones.

Synaesthesia expanded

If we add other subtypes of synaesthesia (metonymies, emotional metaphors and intensifiers), we will see the following: A much higher interaction of Dimension Zone with other zones, due to Dimension intensifiers ('high', 'low', 'big', 'little' in both languages) and emotional metaphors used with the word 'glance' (*vzglyad* [rus], *sguardo* [it]); a more productive Weight Zone, thanks to intensifiers ('light', 'heavy' in both languages); and, due to the emotional metaphors with the word 'voice' (*golos* [rus], *voce* [it]), the Sound Zone tendency to receive metaphors is reinforced.

Conclusions

The case study of the Italian and Russian languages did not confirm the clear-cut transfer direction from more primitive senses to more advanced ones, predicted by Ullmann and Williams. Instead, the scheme of transfers between senses appears to be more complicated, especially if we take into account peripheral subtypes of synaesthesia. Speaking about zone productivity, we can see that while more primitive Smell and Pain Zones do not produce any metaphors, more advanced Colour and Sound Zones are the source for a certain number of transfers (at least, nine). It may be true that in absolute terms Taste, Smell, Pain and Touch Zones receive fewer metaphors than Dimension, Colour and Sound Zones, but if we compare the primitive senses figures with the total number of their adjectives, the relative values (with the exception of Tactile Zone) appear to be quite similar¹ to or even higher² than the respective values of the more advanced senses. These figures also disprove the aforementioned hierarchy.

Nevertheless, two patterns can be established with a high degree of certainty. First, a significant number of transfers into Smell and Pain Zones shows that the zones that lack their 'own' adjectives (and whose qualities are hard to verbalise) have to borrow lexemes from other sensory zones. Second, qualities perceived by touch and vision serve as the main source for synaesthetic metaphors.

Themes for future research

This study took into account all the transfers between zones regardless of the number of nouns the adjectives under study could collocate with. However, there is a significant difference between a metaphor that could be formed with any noun from the target zone and a metaphor confined to just a few (or even one) nouns. This factor should be taken into account by any future study. A study of borrowings from other languages and potential metaphors that have not become part of language usage but are considered possible by native speakers can be of interest, too. A possible explanation for the similarities between Italian

¹ 30.3% in Taste Zone against 41.5% in Colour Zone out of the total number of the respective zone adjectives [pure Italian metaphors]

² 105.8% in Smell Zone against 74.4% in Sound Zone out of the total number of the respective zone adjectives [pure Russian metaphors]

and Russian can be the fact that they belong to the same cultural and linguistic area (the so-called Standard Average European), although Russian is not in its core. Thus, a study of languages belonging to other language families and linguistic areas is essential as only this kind of data can show if the found patterns are culturally determined or if they are a universal human feature.

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Conflict of Interest

None declared.

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