A Frequency and Semantic Analysis of the Most Frequent Connotations of the Notion of Beauty

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ARTICLE INFO	ABSTRACT
	In order to define and determine the meaning of a notion, its use in the natural language is a valuable source of information. Analyses aimed at understanding the meaning of a particular expression include the observation of its connotations. It is assumed that each meaningful word in a language is characterised by a set of semantic connotations and these connotations are a product of the experiences that are communicated by the use of the word. The term "beauty" is one of the most complex and multidimensional words. The study concentrates on the identification of its connotations in the natural language of 1,558 users aged 19 to 89 years (mean age = 45.23; SD = 16.33 years); there were slightly more women in the sample (52.7%). The most frequent connotation of the notion of beauty was nature, followed by woman, love, family, and child (the connotations occurred in more than 15 % of the language users in the observed sample). Most of the connotations (93.7 %) were nouns, which testifies to the substantive character of the notion of beauty. The content analysis of the connotations revealed seven areas to which they related – nature, values, feelings, people, objects, abstract ideas, and activities. Deeper analyses pointed to the necessity to study the possible influence of other variables (gender, age, value orientation ...) on the understanding of the notion of beauty and its connotations.

1. Introduction

The problem of beauty belongs among the most exciting but also the most controversial issues of philosophical, psychological, cultural as well as anthropological research. Over the history of its scientific observation, it has been connected with truth and good – Plato [Symposium 206e–207a] (in Hamilton & Cairns 1961), with knowledge, especially mathematical – Pythagoreans, but also with deity and morality – Plotinus (1952) or subjectivity – Protagoras [80B1] (Hermann & Kranz 1951–1952). In the Middle Ages, the emphasis was mainly placed on spirituality, and the Renaissance paid particular attention to the issue of proportionality. The real expansion in aesthetics research, however, occurred in the 18th and 19th centuries, when one of the key themes of philosophical research (Shaftesbury, Hutcheson, Burke, etc.) became taste and criticism. From the end of the 18th century, aesthetics became an independent philosophical discipline (Baumgarten,

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Winckelmann, Kant, Schiller, Hegel ...), and beauty became the object of philosophical exploration and the primary goal of art theory. Beauty was associated with some real-life qualities of the object that make it the way it is (Reid 1969).

Others look for it in the eye of the beholder (Hume 2013), in the experience, the organization of imagination or simply in the subject. For many, it is inevitably connected with pleasure (Kant 2009), but for others it is also possible to imagine beauty without any feelings of pleasure or liking (Mahon 2015). The traditional European concept usually expects a hierarchy of beauty through its degree of elaboration and perfection, but there are other possibilities as documented by Zen or the Japanese Wabi-sabi concept, which finds beauty in imperfection (Buetow & Wallis 2019). For many, beauty can be connected to excitement, desire and enthusiasm – to an activity that encourages us to fuse with it, look at it, or at least stay with it. For others or for other types of beauty, it is satisfaction, harmony and tranquillity.

As a result of the development of cognitive sciences (particularly at the end of the 20th century), a cognitive approach to the understanding of beauty and aesthetic experience, exploring the different components of aesthetic experience and beauty-related processes, has been on the rise. Studies of the evolutionary and biological (Singh & Singh 2011; Demuthova et al. 2019), cultural (Redies 2015), psychological (Yarosh 2019), or anthropological (Jones 1996) determinants of beauty have begun to emerge, focusing on research of the cognitive aspects of the perception of beauty or even through disciplines such as Neuroaesthetics (Chatterjee & Vartanian, 2016; Zeki et al. 2020), or the Neurological Theory of Art (Ramachandran & Hirstein 1999). A specific approach to the research of the understanding of the notion of beauty is its representation in the natural language. The concepts of cognitive semantics and semantic analysis have so far been successfully used in research (e.g. for metaphors – Broström 1994; music – Gärdenfors 1988; death – Demuthova 2012). There is already some evidence relating to the semantic analysis of the concept of beauty (see e.g. Ngai 2012, Menninghaus et al. 2019), however, this type of research is still relatively rare.

One of the ways to observe a notion in a natural language is through the analysis of its connotations, words which are most often linked to the particular notion. (Other methods used are, for instance, the semantic differential method, or analysis of the use of the notion in existing works of literature.) The observation of connotations is used e.g. in studying the attitudes (Manchaiah et al. 2015; Ellis et al. 2014) and historical changes in the understanding of notions (Dixon 2012), but it is especially important to document the understanding of a particular notion that is widely shared among the users of language. Each meaningful word in language is characterised by a set of semantic connotations and these connotations are a product of, and correlate with experiences communicated by the use of the word (Samsonovich & Ascoli 2010).

In addition to the content analysis of the connotations of the notion of beauty (that is a lexical analysis of what is most often related to the notion of beauty), it is advisable that formal criteria of the use of connotations are also observed (frequency, the order they appear in a list) as well as their morphological characteristics (that is, which parts of speech appear among the connotations). It is possible to assume that the most frequently used (most often listed) connotations will represent the typical experience of the majority of the population with the notion of beauty; further, it may be assumed that the primary (first in a list) association expresses the closest, ergo the most important link with the notion of beauty in an individual's mind. A predominance of nouns among the connotations in turn points to the possibility that beauty is substantivised in the natural language of the sample studied and is based on the object itself; a predominance of adjectives indicates that the essence of beauty

comes from the qualities (properties) of objects. A high occurrence of verbs indicates a link between the perception of beauty and appetitive behaviour, which emphasises the importance of the influence of neurological mechanisms that activate reward centres in the brain during the perception of beauty.

2. Objective

The chief objective of the research is to identify the most important connotations of the notion of beauty in the natural language. Another objective is to perform a frequency, content and morphological analysis of these connotations. We plan to meet the research objectives by answering these research questions:

- RQ 1: What are the most frequent connotations of the notion of beauty?
- RQ 2: Which are the most preferred connotations?
- RQ 3: Which connotations are most important (at the same time the most frequent and the most preferred)?
- RQ 4: How many autosemantic parts of speech are represented among the most frequent connotations?
- RQ 5: Is it possible to group the most frequent connotations together based on their content?

3. Method

3.1. Definition of Notions

As notions with several possible meanings will be used during our analyses, for the sake of clarity of understanding it is necessary to define them first.

3.1.1. Connotation
A word or an idea suggested by a stimulus (the word "beauty"), an association, an implication.

3.1.2. Frequency of the Connotation
A number that expresses the frequency of occurrence of a particular connotation in the responses from participants. In our case this is the number of participants who listed a particular connotation as an association to the notion of "beauty".

3.1.3. Relevance of the Connotation
The relevance of the connotation is based on the frequency of the connotation and is assigned to those connotations whose occurrence exceeds 1 % of the total number of connotations. Setting the limit at 1 % is based on the assumption that any associations that are represented by less than 1 % of the total are considered to be highly original (cf.: Said-Metwaly et al. 2021) and their inclusion is not conducive to meeting the objective of the study which is to reveal the typical and characteristic connotations of the notion of beauty in the natural language.

3.1.4. Preference for the Connotation
The preference for one connotation over another. The data related to preferences was obtained through the position in which the particular connotation was found in an individual participant's list of connotations. On the basis of the list a "preference value" (PV) was assigned to the connotation, which was calculated in the following way: if the connotation was in first place on a list, it was assigned a preference value of 11 points; second place was assigned a PV of 10 points; third place received 9 points, etc., with connotations in 11th place

or lower getting 1 point. The average PV then corresponds to the preference for the connotation in the study sample.

3.1.5. Importance of the Connotation

It is a combination of the frequency and preference scores for the connotation. It is expressed by the "Importance Score" (IMscore), which is a product of the frequency and preference value. The advantage of the IMscore is that it takes into account both variables (frequency and preference) which provide information about the quantitative features of the occurrence of a connotation.

3.2. Materials

The data collection took place as part of the administration of a large number of questionnaires which also included demographic data. In order to obtain the connotations of the notion of beauty, at the beginning of the questionnaire was a crucial instruction: "Write the words that come to your mind when you hear the word 'beauty'." Following data collection, an analysis of the lexical properties of the connotations was performed. In further analyses only the autosemantic parts of speech were included (nouns, adjectives, pronouns, numerals, adverbs and verbs). After the exclusion of the synsemantic parts of speech (prepositions, conjunctions, particles and interjections), each connotation was assigned a number that reflected the order in which the particular connotation occurred in the list of connotations from the participant. Based on this, each connotation received a preference value. Subsequently a statistical analysis was performed that studied the frequency, relevance, preference and importance of each connotation. With the relevant connotations, a content analysis of the notions was carried out to identify areas that the relevant connotations related to. The occurrence of the individual parts of speech was likewise calculated to demonstrate the substantive, qualitative or activational character of the notion of beauty.

3.3. Procedure

The data was collected from October 2019 to February 2020 (before the outbreak of the coronavirus pandemic) and was carried out by the authors of the research and professionally trained assistants. It followed a standardised method, through a questionnaire (form: pencil – paper), which contained no sensitive data. The questionnaire was completed anonymously and voluntarily by the participants, and the participants had the opportunity to withdraw from the research at any time without the need to state a reason and without any consequences. The target group was not specified; the data collection took place dependent upon the current availability of participants in the vicinity of the data collectors.

3.4. Participants

1,558 Slovaks took place in the research with ages ranging from 19 to 89 (average age = 45.23 years, SD = 16.33 years). The sample consisted of 737 men and 821 women (52.7 %). 67 questionnaires (4.3 %) were rejected due to missing data. The analysis of the most frequent connotations was carried out on the sample of 1,491 people.

4. Results

4.1. Frequency

RQ 1: What are the most frequent connotations of the notion of beauty?

Table 1.
Frequency of the connotations of the notion of beauty

Frequency ≥ 5%

Connotation	No. of cases	% of sample	Connotation	No. of cases	% of sample	Connotation	No. of cases	% of sample
nature	526	35.28	flower	163	10.93	animal	88	5.90
woman	324	21.73	life	132	8.85	sun	87	5.84
love	265	17.77	art	106	7.11	music	79	5.30
family	224	15.02	human	102	6.84			
child	224	15.02	car	92	6.17			

5% < Frequency ≥ 1%

Connotation	No. of cases	% of sample	Connotation	No. of cases	% of sample	Connotation	No. of cases	% of sample
peace	62	4.16	grandchild	35	2.35	work	25	1.68
pretty	62	4.16	soul	35	2.35	eyes	23	1.54
man	60	4.02	fashion	35	2.35	clothes	23	1.54
home	59	3.96	heaven	35	2.35	snow	22	1.48
sea	58	3.89	youth	35	2.35	aesthetics	22	1.48
good (*n*)	55	3.69	sky	33	2.21	tree	21	1.41
purity	51	3.42	book	32	2.15	natural	21	1.41
health	50	3.35	pleasant	31	2.08	me	21	1.41
mountain	47	3.15	sex	31	2.08	relax	20	1.34
sport	43	2.88	picture	31	2.08	feeling	19	1.27
friend	41	2.75	mother	30	2.01	freedom	19	1.27
forest	41	2.75	vacation	30	2.01	water	19	1.27
smile	41	2.75	wife	29	1.95	landscape	18	1.21
happiness	39	2.62	face	28	1.88	Xmas	18	1.21
naturalness	38	2.55	God	28	1.88	figure	16	1.07
joy	38	2.55	inner	27	1.81	heart	15	1.01
gorgeousness	36	2.41	perfection	26	1.74			

Notes: (*n*) = noun
Source: Authors' own conception

From the results shown in Table 1 it follows that the most frequent connotation of the notion of beauty was the word "nature", which occurred as many as 526 times, that represents 35 % of the participants in the study. Other expressions that exceeded a frequency of 10 % were: "woman", "love", "family", "child" and "flower". On the whole, 13 connotations had a frequency higher than 5 % and a further 50 connotations were found in the range of 1–5 %.

4.2. Preference

RQ 2: Which are the most preferred connotations?

Table 2.
The connotations with the highest preference (according to mean PV)

Connotation	Mean PV	Connotation	Mean PV	Connotation	Mean PV
gorgeousness	10.278	nature	9.411	God	9.179
wife	10.242	youth	9.400	family	9.085
me	9.905	friend	9.317	flower	9.037
aesthetics	9.818	grandchild	9.314		
woman	9.701	happiness	9.205		

Source: Authors' own conception

It is apparent from Table 2 that some connotations which did not have a high frequency in Table 1, (e.g. "gorgeousness", "me", "aesthetics") received a very high PV score. This was

caused by a relatively small number of people in the sample who had a specific and strong preference for certain connotations. If we assessed the connotations based on their PV alone, the results might have been distorted by a rather small section of the study participants who assigned great importance to the connotations in question. This can be confirmed by comparing Table 2 to Table 1, from which we see that only four connotations ("woman", "nature", "family" and "flower") took the leading places in both tables. The other 9 highly preferred connotations did not have a high frequency.

4.3. Importance

RQ 3: Which connotations are most important (at the same time the most frequent and the most preferred)?

Within this category we studied both the frequency and preference, through IMscore. Table 3 shows the order of the most important connotations, at the same time it indicates if there was any obvious shift in their order compared to their previous position based on frequency. It is obvious that there were minimal shifts in the first 20 places.

Table 3.
Order of the connotations based on importance score

Frequency ≥ 5%					
Connotation	**IMscore**	**Connotation**	**IMscore**	**Connotation**	**IMscore**
nature	4,950	flower	1,473	animal	658
woman	3,143	life	1,115	sun	657
love	2,369	human	909 ↑[1]	music	569
family	2,035	art	853 ↓[1]		
child	1,981	car	824		
5% < Frequency ≥ 1%					
pretty	587 ↑[1]	joy	323 ↓[2]	aesthetics	216 ↑[4]
peace	499 ↓[1]	smile	313 ↓[5]	me	208 ↑[6]
man	497	fashion	303	work	204 ↓[2]
home	484	wife	297 ↑[9]	eyes	186 ↓[2]
sea	459	soul	286 ↓[3]	clothes	185 ↓[2]
good (*n*)	453	heaven	278 ↓[2]	natural	174 ↑[1]
purity	424	sex	275 ↑[2]	tree	167 ↓[1]
health	422	book	273 ↓[1]	snow	154 ↓[4]
mountain	385	mother	271 ↑[2]	landscape	151 ↑[4]
friend	382 ↑[1]	God	257 ↑[5]	Xmas	148 ↑[4]
sport	372 ↓[1]	vacation	255 ↑[1]	relax	146 ↓[2]
gorgeousness	370 ↑[5]	sky	254 ↓[6]	feeling	141 ↓[2]
happiness	359 ↑[1]	inner	237 ↑[3]	water	139 ↓[1]
forest	339 ↓[2]	pleasant	234 ↓[6]	figure	132 ↑[1]
naturalness	336	picture	233 ↓[5]	freedom	129 ↓[4]
youth	329 ↑[6]	perfection	229 ↑[1]	heart	113
grandchild	326 ↑[1]	face	225 ↓[3]		

Notes: (*n*) = noun; ↑[N] = direction (↑up; ↓down) and the number ([N]) of positions shifted compared to its position in the frequency list (Table 1)
Source: Authors' own conception

4.4. Parts of Speech

RQ 4: How many autosemantic parts of speech are represented among the most frequent connotations?
The analysis of the representation of parts of speech included those connotations that reached the relevance level (greater than 1 % of frequency of occurrence) and which are shown in Table 1. The 63 connotations were made up of 59 (93.7 %) nouns, 3 adjectives: "pretty", "pleasant", and "inner" (4.7%) and only a single pronoun: "me" (1.6%).

4.5. Content Analysis

RQ 5: Is it possible to group the most frequent connotations together based on their content?

Based on the content analysis of the connotations of the notion of beauty, seven categories were established, which covered all the relevant connotations. Their designations, as well as the representation of the particular connotations included in these categories, are presented in Table 5.

Table 5.
The relevant connotations ranked into categories based on their content

Categories	Connotations					
Nature	nature*	flower*	sun*	sea	forest	snow
(n=12; 19.05%)	water	sky	landscape	mountain	tree	animal*
Values	love*	family*	life*	home	naturalness	purity
(n=12; 19.05%)	peace	freedom	health	perfection	good (*n*)	youth
Feelings	joy	pleasant	happiness	feeling	inner	
(n=9; 14.29%)	natural	relax	gorgeousness	nice		
People	me	woman*	friend	child*	human*	
(n=9; 14.29%)	mother	grandchild	man	wife		
Objects	car*	book	picture	clothes	face	
(n=9; 14.29%)	figure	eyes	fashion	smile		
Abstract Ideas	God	heaven	soul	xmas		
(n=8; 12.70%)	art*	aesthetisc	heart	music*		
Activities	sex	sport	work	vacation		
(n=4; 6.35%)						

Notes: (*n*) = noun; *connotation with a frequency greater than 5%
Source: Authors' own conception

5. Discussion

Due to the complexity and multidimensionality of the notion of beauty it may be assumed that the experience of beauty (and thus its verbal representation in the form of connotations) will partly differ between participants, depending on various factors: age, gender, value orientation, dominant activities in life, etc. At the same time these participants share a certain mental, cultural, linguistic ... space and their experience in this joint space is reflected in the content of their notions of beauty and its connotations. The analysis of the data provided by this study sample of 1,558 Slovak participants showed that the connotations with the highest frequency of occurrence were the notions: nature, woman, love, family, child, flower, life, art, human, car, animal, sun, and music (Table 1). These expressions were listed by a large proportion of the participants (more than 5 %, for the expression "nature" it was as much as 35.3 %), and therefore they may be considered to be the connotations that provide the greatest degree of agreement in the study sample – consensus. They describe the mutually similar experience of the participants with the notion of beauty (Samsonovich & Ascoli 2010) and it is clear from their content that they refer to a number of areas in life: people (woman, human, child), natural elements (nature, animal, flower, sun) as well as human products (art, music, car) and values (love, life) are all present in this group of notions. These areas may also be grouped with other frequent connotations (with a frequency of occurrence from 1–5 %), which points to the content orientation of the notion of beauty. The appearance of the word "car" in the list of frequent connotations is a bit of a surprise. To provide an interpretation of its occurrence we suggest that further in-depth analyses be performed to focus on any possible specifics relating to the age and gender composition of the participants that listed this connotation.

The second type of data analysis observed the occurrence of the connotations which were at the top of the lists of connotations (Table 2). They reflected the "preference for the

connotation" variable, this data points to the connotations which are most closely related to the notion of beauty. They are the connotations that were thought of first (immediate associations) and may be considered to be those that are most intensely linked with the notion of beauty in the minds of the participants. We assume that the "preference for the connotation" will be affected even more by personal experience than the "frequency of the connotation". The association (connotation) which occurs to the participant first may be affected by the neuronal processes active in the formation of associations (e.g. in the reward system of the brain – Weierich et al. 2010), specifically through the newness of the experience (the novelty factor – more recent associations usually overlay older ones), the emotional timbre (the arousal factor – experiences which have a stronger emotional impact are fixed more strongly than neutral ones), as well as the force of the connection with important psychological categories (e.g. values, significant people, etc.). Despite this specificity the analysis of the preference for the connotation is useful, mainly due to its potential to reveal those experiences (connotations) which are most closely linked with the notion of beauty. If we compare the thirteen most frequent and the thirteen most preferred connotations of the notion of beauty (from Tables 1 and 2), we can see that only four expressions were found in both categories (woman, nature, family, and flower). From the content of the thirteen most preferred connotations it is obvious that they strongly relate to values and important people (God, happiness, gorgeousness, youth, wife, friend, grandchild, and family); we could formulate an assumption that the preference for the connotation might point rather to fixed and more permanent experiences. The occurrence of the connotation "me" high up in the list of the most preferred connotations (3rd place) suggests a very interesting subject for future research. From a psychological viewpoint it testifies to the high level of positive self-image of the individuals that make up the study sample, which suggests a positive shift in comparison to the data from older studies into the assessment of self-image (Schmitt 2005; Tomsik 2014).

Another way to quantify the occurrences of connotations of the notion of beauty was through the observation of the "importance of the connotation". This was expressed through the IMscore, which is a product of the connotation frequency and preference value. From Table 3, that presents the order of the connotations based on their importance, and a comparison with Tables 1 (frequency) and 2 (preference), it is obvious that the connotations in the highest positions are identical to Table 1. The supplementary information in the Table (the arrow that expresses the direction of any shift and the number that expresses the number of places the connotation has shifted) makes it clear that there were only shifts in the position of the connotations, "art" and "human", which swapped positions. The low number of shifts suggests that, in the evaluation of the variable "importance of the connotation", the "frequency of the connotation" is a more reliable indicator than the "preference for the connotation". This finding may be useful in further research that focuses on a study of connotations of various notions, as it reveals the significance and sensitivity of the individual variables.

An analysis of the representation of parts of speech among the connotations of the notion of beauty, found in the participants' responses with a frequency higher than 1 %, showed that as many as 93.7 % of these words were nouns. There were only a small percentage of adjectives (4.7 %) and a single pronoun: "me" (1.6 %). A possible explanation is offered by the concept, mentioned in the introduction, of the substantive character of the notion of beauty. In addition to that, however, it is necessary to take into account the possibility that the high occurrence of nouns among the connotations might have been influenced by morphological (grammatical) fixation, a tendency to seek, as a priority, notions from the same group of word types in the associations. It is likely that the participants were strongly influenced by a tendency to

prioritise connotations from the same grammatical category and only after they had exhausted these did, they release connotations using other word types into the association flow.

The content analysis of connotations of the notion of beauty found in over 1 % of the participants in the study sample (N = 63) identified seven areas into which the connotations were assigned. The most highly represented (N = 12) were the categories "nature" and "values". The categories of "feeling", "people" and "objects" contained an identical number of connotations, 9, and the most poorly represented were "abstract ideas" (N = 8) and "activities". The most frequent connotations (an occurrence of over 5 %) were those in the categories of "nature", "values" and "people". Beauty and value have always been closely linked (see e.g., Gotshalk 1935). On one hand, beautiful objects are exceptional, unique, they provide pleasure, and therefore are highly valued by the percipient, and on the other, the values which an individual cherishes and protects in their life are considered to be beautiful thanks to their qualities (purity, uniqueness, irreplaceability). The significance of values in relation to the notion of beauty is also apparent in other categories – e.g. calling a child, grandchild, mother, or friend "beautiful" for most of the participants is probably not an assessment of the looks (beauty) of the particular person, but rather the beauty that arises from the role which the particular person (grandchild, friend …) plays in the participant's life; beauty derived from their mutual relationship, and therefore yet again it is more a reference to values (parenthood, friendship ...). Other connotations may be perceived in a similar way – e.g. "God", "nature", or "soul". In this context it would be useful to perform an analysis of the occurrence of the individual categories of connotations with respect to the age of the participants and observe, for example, the possible predominance of the category of values in older participants as opposed to the category of objects or activities in younger participants.

6. Conclusion

The frequency and semantic analysis of the notion of beauty, in the natural language, has shown that this notion is most frequently linked with the words nature, woman, love, family and child. From a content point of view, the most frequently produced connotations mostly referred to nature and values, but connotations that refer to feelings, people and specific objects were also quite frequent. Almost 94 % of all the connotations were nouns; this suggests that the notion of beauty is strongly substantivised in the natural language of the studied participants. The discussion also considered the possibility that the production of the associations was strongly influenced by grammatical fixation, which might motivate further research in this area. Likewise, it might also be valuable to observe the possible effect of other variables (gender, age, value orientation, etc.) on the understanding of the notion of beauty and the production of its connotations.

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