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A Semantic Analysis of the Concept of Beauty (Güzellik) in Turkish Language: Mapping the Semantic Domains

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In this study, we shall attempt to clarify the semantic levels used in ordinary Turkish language when using the concept of beauty. We assume that the concept of beauty represents a multidimensional semantic complex saturated by numerous—often very diverse—dimensions of our perception and judgment. Mapping these fundamental semantic dimensions should thus enable us to then map the semantic space in which the language user operates when they use the notion of beauty. In this work, we shall focus on the internal structure, the diversification of the most important semantic domains of the notion of beauty, and the revelation of some of the connections between the particular domains and we shall use the bottom-up approach.

Keywords: semantic spaces, beauty, language, aesthetics, perception

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INTRODUCTION

Beauty has attracted our attention from time immemorial. It is no wonder that it was one of the first objects of philosophical (Hofstader and Kuhns, 1976; Pythagoreans—see e.g., Vopěnka, 2000; Eco, 2010), and also psychological research (e.g., Fechner, 1876; Lipps, 1906; Arnheim, 1954)[1]. And although other important notions exist (sublime—Burke, 1757, the pleasure of sense—Hutcheson 1725/2004; grace—Schiller, 1793/1995; zany, cute—Ngai, 2012; cf. Menninghaus et al., 2019b; on various aesthetic categories in the eighteenth century, see e.g., Makkreel, 2011), which supplement the diversity, complexity, and intricacy of aesthetic perception and evaluation, from a traditional viewpoint (Kant, 1790/1951) it is beauty, in particular, that holds a crucial position (Jacobsen et al., 2004; Brielmann and Pelli, 2018; Menninghaus et al., 2019a).

It is therefore surprising that, despite its primacy, even to this day we have no generally accepted definition of beauty[2], and philosophers and art theoreticians diverge over what is beauty, or rather what it contains and what it means. We can even encounter the opinion (e.g., Levinson, 2014) that no single universal form of beauty exists and instead there are innumerable kinds of beauty, which makes its definition or rendering into a notion impossible, or rather condemned to failure.

Nevertheless, we use the word beauty in both our everyday and specialist language, although its application to various objects or phenomena may provoke many discussions, polemics, and disputes. Many of them are based on the semantic vagueness and multidimensionality of this notion, which means that many of us ascribe various contents to it. Because many authors believe that beauty as an idea (like other aesthetic emotions) is determined by the linguistic and

[1] In Greek mythology, Psyche was a mortal woman who was so beautiful that people compared her to goddess Aphrodite.
[2] For Plato, beauty is an objective property of ideas, whereas for Reid it is a property of things. Zeki with his orientation on neuroaesthetics identifies with Burke's definition ["Beauty is, for the greater part, some quality in bodies acting mechanically upon the human mind by the intervention of the senses" (Burke, 1757, 175 in: Ishizu and Zeki, 2011)].

cultural context (Whorf, 1956), the problem of its precise determination is further complicated. Therefore, we can see a discussion about the possibilities of defining the concept of beauty and other aesthetic concepts/emotions (Luoto, 2017; Skov and Nadal, 2020; Beermann et al., 2021) in the current scientific literature, as well as the study of universal and differential aspects of different cultures, and the study of the linguistic (semantical) picture of the world, and the clear communication of aesthetic values in it.

Our everyday linguistic practice as well as a number of psycholinguistic studies (Augustin et al., 2012; Menninghaus et al., 2019b) demonstrate that beauty is truly one of the notions that are not very clear semantically, or the use of which is very free at least in the Western tradition. It even seems that among all the aesthetic notions it is particularly the meaning of the notion of beauty that is the most unclear and enjoys the least level of agreement among its users. What, in fact, do we mean when we speak about beauty?

Purpose of the Study

This study attempts to clarify semantic levels of the notion of beauty when used by a typical speaker of the Turkish language.

The research analysis is based on the idea of the geometry of thinking in terms of Gärdenfors's theory of semantic spaces (Warglien and Gärdenfors, 2013; Gärdenfors, 2014), ergo, on the belief that it is possible to geometrically define the various courses of semantic dimensions of complex notions (Démuth and Gärdenfors, 2013).

Hypothesis

The notion of "beauty" represents a multidimensional, semantic complex saturated with numerous and often very diverse dimensions of our perception and judgement (Démuth, 2017). Mapping these fundamental semantic dimensions should reveal a map of the semantic space in which the language user operates when they employ the concept of "beauty."

The Objective of the Study

The current research focuses on a study of the internal structure and diversification of the most important semantic domains of the notion of beauty, and the discovery of some of the connections between particular domains in the Turkish language. However, an issue with Gärdenfors's theoretical model is that it fails to provide an unequivocal way of uncovering the fundamental dimensions of individual semantic spaces for abstract notions.

Following the methodology of the work of the Institute for Empirical Aesthetics in Frankfurt, both a bottom-up and a top-down approach was used for this study (Knoop et al., 2016). Beginning with collecting and analyzing all meanings of any connotations linked with the notion of beauty in the minds of native speakers of the language (none of whom received any formal education in aesthetics or art history), and then moving to a logical, conceptual analysis of the associations with the semantic differential of the notion of beauty on the basis of a pre-study of adjectives selected in advance. Finally, perceptions of beauty will be compared with the most commonly understood opposite of beauty: the notion of ugliness. Their tendencies will be defined, perhaps revealing differences in content.

This study is part of a more extensive project studying conceptual and qualitative domains of aesthetic and moral emotions. The Turkish language was chosen for this study as it is part of a different language group than that of previously published research on aesthetic notions in the German language (Hosoya et al., 2017; Beermann et al., 2021) and research of aesthetic notions by users of the Slovak language currently underway. An adaptation of the composition and size of the sample as well, as the method and logic of study used, was required so the results obtained would be mutually comparable and that, in addition to analyses of the structure itself of the semantic space of the studied concept, a comparison of notions and universality, or cultural conditionality of the notions in different languages and cultures is supported.

MATERIALS AND METHODS

Participants

One hundred and fifteen individuals took part in a survey of the connotations of the notion of beauty in the Turkish language. We present the results for 114 participants because one of the submitted questionnaires was wholly identical to another one. The gender composition of the participants was 33 female (28.9 %) and 81 male (71.1 %). The average age of the participants was, in years, $M = 22.33$, $SD = 13.75$, mean = 21 (42 participants = 36.8 %), min = 16, max = 53; for the histogram of age division, see text S2. The participants were predominantly students at fourteen Turkish universities located in thirteen cities in five different geographical areas of Turkey [the Marmaris area (Istanbul, Bursa, Edirne, Kocaeli, Çanakkale), the Black Sea area (Trabzon), the Aegean Sea area (Izmir, Afyon), the Mediterranean (Alanya, Burdur, Adana) and the area of Central Anatolia (Eskişehir, Kirşehir)].

Turkish was the mother tongue of all the participants. Being university students, they all spoke at least one other language, although the level of proficiency and structure of languages varied.

Material Used

The first task was a free association with the notion of beauty. Participants were asked to write down ten words connected with the idea of beauty in their minds. This assignment was not preceded by a theoretical part that could have, in some way, influenced the participant's thoughts on "beauty" or any possible connotations. The assignment was based on the assumption that free association provides valuable access to the mapping of the semantic space of the concept in question and to notional relationships that inform about the participant's understanding of the notion of beauty (Kuehnast et al., 2014). Participants were then asked to underline the three words (connotations) that they considered to be the most important.

Data was acquired via an online questionnaire using Google Forms from May to September 2021. To ensure comparability with data from an analogous study on the Slovak population, and from research previously carried out by Hosoya et al. (2017), data was collected from a sample of university students. The questionnaire was offered online in Turkish.

A second task, which required completion of the first, asked participants to express, via a Likert scale, to what extent a list of provided words (adjectives and nouns), conveyed (a) the notion of beauty, and (b) the notion of ugliness. The list was based on an earlier, preliminary study with specific words selected as mutual opposites, so as to represent extremes of a continuum. Unlike Osgood's classic semantic differential, participants were also allowed to react to connotations that represented nouns, as those occurred nearly as frequently as adjectives in the free associations. Through a study of semantic differential, the focus became a more delicate mapping of the individual dimensions of the notion of beauty and ugliness and a measurement of these differences (Osgood et al., 1957). The same process was utilized when studying the semantic differential of the notion of ugliness—a natural opposite of the notion of beauty—with both results subsequently compared.

RESULTS

Task 1—Free Association

The participants provided a total of 1,097 connotations [on average 9.62 connotations per participant (median = 10, *SD* = 1.31, min = 3, max = 11)]. Only 24 participants failed to provide the requested 10 connotations and one provided 11 connotations. We pre-processed the data by correcting spelling mistakes and subsuming all the nouns and adjectives of the same word root (such as "pleasantness" and "pleasant") into a single category. Following the exclusion of repeated answers, altogether, the 1,097 associations and connotations yielded 467 different associations; their lemmatisation (determination of the base form—the lemma) and stemming (determination of the identical word root—the stem) resulted in 391 words. Through a conceptual analysis, we subsequently sorted the words created in this way—the associations—into groups whose basic feature was that they denoted one of the semantic domains of the individual associations. We worked to gather the individual associations into families based on their degree of semantic closeness such that the members of any semantic domain were closer to each other than they were to any other member of another semantic family. We grouped the notions hierarchically (if a notion belongs in a group its descendants also belong there) and strictly (each notion only belongs to a single group). The categorization of the words into individual groups—semantic domains—was based on a theoretical model published by Démuth (2017). From a conceptual analysis of aesthetic notions, the dimensions of the notion of beauty are classified as: objects (that which we denote as the source of beauty—mostly nouns), assessments of the quality of perceptions (mostly adjectives), assessments of dynamics/energy, assessments of exceptionality, assessments of the rate of the complexity of the internal structure of the stimulus, etc. (Démuth, 2017). Connotations primarily referring to an object which is beautiful belonged to the same group, whereas connotations denoting the quality of perception were assigned to another group, and connotations associated with values formed yet another group.

Categorization—Clustering—Conceptual Analysis

(a) Sources—Domain Centred Around an Object

The largest group of connotations connected with the concept of beauty in the minds of participants (43.04% of answers) was associations related to an object or something that evokes the perception of beauty. This group included a number of different responses which generally represented sources of beauty. Common answers included "woman" ($N = 21$), "art" (20), "hair" (13), "smile," but also "idea," "perception," "look." Generally speaking, participants most often listed items that often evoke feelings of beauty in themselves; objects in relation to a person that truly exist, a thing or a phenomenon, but also subjective phenomena like ideas or feelings. This corresponds to the chief semantic domain of the notion of beauty as was assumed in the theoretical model; that beauty may be perceived as an objective property of an article or as a subjective characteristic of an idea or feeling. From a grammatical view, the associations grouped in this domain were almost exclusively nouns. A large portion referenced a person (woman, girl, mother, sister, child, people) or their respective parts (the body, especially the face and its individual features such as hair, eyes, eyebrows, beard, teeth, facial expressions, smiles and also breasts, legs, feet, hands, nails), muscles or the human figure. Others focused on nature like "landscapes," "lakes," "mountains," "trees," "flowers," "animals," "cats," "birds," a "sunrise" or "sunset." Some were related to art and works of art, others were everyday objects (money, property) or other objects and phenomena. An analysis of individual associations related to the sources of beauty would merit more detailed research and classification, though, that is not the goal of this research, which is focused on uncovering the individual dimensions of the concept of beauty in natural language, not an analysis of its sources.

(b) Reflection of the Quality of Perception—the Domain of Pleasant-Unpleasant

Another important dimension connected to the notion of beauty through free associations was a focus on reflecting the quality of the experience; the quality of the feeling in a pleasant-neutral-unpleasant dimension (Brielmann and Pelli, 2019). A large number of participants (51 = 44.7%) listed at least one association expressing pleasant feelings, such as "pleasant" ($N = 24$), "sweet" ($N = 9$), "liking," "joyful," "nice," but also "happiness" ($N = 11$), etc. The overall number was relatively small: 18 notions (roots) (4.6%) of all unique associations, which were relatively frequent ($f = 79$), 7.201% of all provided responses. These connotations, most frequently expressed as nouns and adjectives, refer to a reflection of the quality of feelings and emotions that a beautiful object evokes in us. It seems that this classical Kantian aesthetic category—reflections of the manner in which the object affects us—whether we like it or not, is the most important dimension of the aesthetic evaluation

itself[3]. This correlates with the Hosoya's study mentioned above, which focused on the breakdown of aesthetic emotions into positive, negative and compound emotions. It is understandable that in the case of "beauty," most participants pointed to positively perceived feelings, although some may be characterized as compound. The whole dimension thus may be imagined as a sort of continuum, which on one end only contains the most positively perceived feelings and gradually moves through neutral to negatively perceived feelings. It is believed that this will be exhibited most frequently in the perception of ugliness.

(c) The Domain of Activity and Passivity

The third group of words that often appeared among the free associations were ideas referring to activity or passivity. Beauty is often connected with something that energizes such as "desire," "passion," "attractiveness" (11), "excitement" (8), "sexiness," "movement," etc. On the other hand, participants also frequently offered opposite feelings like "calm," "relaxation," "harmony," "balance," and "equilibrium." This shows that some types of beauty are linked with activity and suggest a desire to draw closer to the object in question, whereas others operate in an opposing way, calming us down and allowing for contemplation of the particular item. Eagerness and anxiousness activates an effort to achieve greater pleasure, or more permanent ownership of it. On the contrary, the enjoyment of beauty in the present, without time limitations, calms us and allows for contemplation of beauty in the Greek sense *theorion*.

Expressions from this group appeared at least once in 47 answers (41.22%). The overall representation of associations related to the presence or absence of energy in feelings evoked by a beautiful object was 30 unique notions (7.673%), used in the responses for a total of 80 times (7.293%).

At this point, two aspects linked to our perception of activity and energy in feelings are worth considering. Osgood's classical semantic differential assumes that one of the evaluated dimensions of a concept may be its strength. Our model of semantic spaces understands strength as a vector quantity, with size and orientation. It is therefore necessary to focus on both the intensity of a feeling and its orientation.

It may first seem that the more intense a feeling, the more strongly it is connected with an energy it does or does not contain. The feeling of beauty usually positively influences and energizes us. One problem, however, is that a part of the feelings evoked by beautiful objects are connected to an absence, which leads to activity and the desire to be even more immersed and overcome by this pleasant feeling. That is especially the case with feelings connected to a sensual source. The reason is related to neurobiological mechanisms and evolutionary rules of perception (see Démuth, 2019). But there are also very intense and fully experienced feelings of beauty not connected with eagerness and desire but on the contrary, with calm and passivity. Many percipients display a deep and full feeling of happiness, calm or internal harmony, which is not connected with activity but rather, with preserving a particular state. We do not strive to exaggerate or bring feelings to a peak, but to fully experience the existing state and possibly remove any disturbing elements that might prevent us from experiencing the particular situation completely. The intensity with which feelings of beauty are experienced does not come from the activity, but rather from the capability and strength of perception[4].

A further feature of activity and passivity is that this dimension may be perceived as merely a continuum, or more precisely, as half of the particular continuum. In reality, we may differentiate between two types of movements: "to" and "from." Some objects attract us and we feel as if they hold the focal point of our movement, forcing us to pay attention. We find ourselves in their gravitational field. Others are such that we keenly desire to see them for ourselves and the need to pay attention or physically draw close comes from inside. Studies from Ishizu and Zeki (2011) tell us that unlike beauty, ugliness evokes activity in the sensorimotor cortex (for beauty, the activity is located in the mOFC), which results in a natural reaction; to avert our eyes "from" the object. Therefore, it seems relevant to imagine the activity as a form of a continuum that begins at the movement "toward," through relative passivity to the opposite activity "away" from the object which we do not like. It is noteworthy that things we do not like can, like things we fear, at the same time attract our attention. Hence, it will be interesting to compare this assumption with the results of the semantic differential of the concepts of "beauty" and "ugliness."

(d) The Domain Focused on Exclusivity and Ordinariness

A fourth dimension that arose from the free association of the concept of beauty task is that of originality/exclusivity vs. ordinariness. Some of the participants listed, among their associations, terms such as "exclusive," "valuable," "original," "famous," but also "fashion," "expensive," "opulent," and "luxurious." This group accounted for 27 independent terms (6.905%) from all associations, 4.466% of all responses ($f = 49$), mentioned at least once by 35 participants or 30.7% of participants. All these notions, particularly adjectives, indicate the rarity and uncommonness—or difference—of the occurrence of a certain forms compared to that which is ordinary and common. The beautiful is thus often connected with the unusual, although on the other hand, many students also chose associations that referred to something common and ordinary. This happened most frequently in references to landscape, nature and naturalness, out of which the notion of naturalness in particular may be understood to be the exact opposite of something unusual and uncommon. However, the notion of naturalness was assigned a different group as it is a reference to a different semantic

[3]The assessment of an object is the result of a determinant judgement, whereas the evaluation of the quality of the feeling which the object evokes in us is a matter of reflective judgement (cf. Kant, 1790/1951).

[4]At this point, I would like to thank the reviewer for pointing out the neuroscience study of the capacity of the beauty to arouse both the sympathetic and parasympathetic nervous systems - (Piper et al., 2015).

level, that of the perception of the dimension of simplicity and complexity[5].

(e) The Domain that Focuses on the Structure of the Object—Simplicity and Complexity

The fifth common group of associations concerns "simplicity," "naturalness," "lightness," "purity," etc. These are terms grouped under the dimension of simplicity, or complexity, as they express a degree of complexity, structure, and regularity of an object. Nearly two-fifths of all participants (45 = 39.5%) listed at least one of the connotations referring to the level of complexity, rate or form of organization of a particular object. This group of associations was the second most numerous ($N = 46$, 11.765%) after sources of beauty, and at the same time was frequently seen in responses (155 times in total = 14.129%). This also corresponds to the fact that for several philosophers, such as Plato, Plotinus, Augustine, Ficino, Hutcheson, Santayana, Dewey, Croce, Langer, and Murdoch, beauty lies in unity in diversity (Diessner et al., 2018; Brielmann et al., 2021)[6]. From a grammatical view, adjectives were mostly used. From a semantic perspective, it has to be mentioned that the group contained adjectives with a relatively broad focus aimed at levels of organization ("simple," "complex," "sophisticated"), manner of organization ("symmetrical," "asymmetrical"), as well as "purity," "naturalness," or others. Here, the notion of naturalness and spontaneity refers to Schiller's (1793) understanding of easy beauty as something free and simple, in a similar way that the concept of purity may be understood in the sense of something without any burdensome additions. On the contrary, responses rarely contained opposites; "made-up," "complicated," "sophisticated," etc. The incomplete homogeneity of this group suggests that it may include various sub-dimensions which merit a further, more detailed investigation.

In this context we may note that we also included the notion of elegance in this group, which at first look is not an expression of structure but rather the cohesion of content and form. According to the research Menninghaus et al. (2019a), elegance is one of the key notions of aesthetic evaluation. In addition, it is expressed using the same stem in all languages. By this concept they meant, in particular, an appropriate choice, an apt presentation which merges an adequate degree of simplicity and tastefulness at the same time the beauty of a solution. Associations linked with proportion and the golden ratio were also included in this dimension, though it might equally include associations of harmony and equilibrium, which we placed in the dimension of activity as they express stability and calm.

(f) The Domain of Morality—Beauty as Good

Whereas, the original theoretical model of the semantic spaces of the concept of beauty only contained six basic semantic dimensions, the results of the free association task forced us to add another two or three levels to our model. The first, sixth in total, is the dimension of moral vs. immoral. Although in classical aesthetics, pure aesthetic judgement should be free of the moral aspects of consideration, a large number of participants ($N = 42$, 36.8%) listed associations referring to "good," "conscience," "good will" as well as moral values like "compassion," "honesty," "loyalty," "morality," "tolerance," "trust," and "sincerity." The overall number of associations linked with moral values was f = 77, 7.019% of all responses. Rarely were negative terms such as "fraud," etc. seen. The dominance of morally positive associations was almost exclusive. That prompts a belief that a strong connection exists in natural language between aesthetic and moral evaluation, which we assume may also be revealed in the semantic differential of the concepts of "beauty" and "ugliness," or "beauty" and "goodness." This reminds us that when Peterson and Seligman (2004) created their schema of 24 character strengths, they lumped "appreciation of beauty" with "appreciation of excellence," and they defined excellence as skillfulness (Haidt and Keltner, 2004). The reasons for the existence of such associations may be found in evolution and neurobiology; that which is beautiful is good from an evolutionary point of view. Good is simultaneously pleasant and beautiful, an analogous reaction of the reward system (Démuth, 2019). However, they also resonate in the linguistic field in the interconnectedness of etymologies of the concepts of "beauty" and "good" in some languages (Keceli et al., 2021). In this context, it may be interesting to observe to what extent the higher rate of occurrence of this dimension correlates with age, faith or other variables, which may present an opportunity for further research.

(g) The Intellectually Focused Domain

In the original theoretical model, the existence of associations in the perfect-imperfect dimension was assumed. The logic behind this is in the use of the notion of "beautiful" in relation to the expression of the quality of elaboration (e.g., beautifully painted). The link between the notions of "good" and "beautiful" does not have a moral context here, but rather expresses an evaluation of quality, precision, skilfulness or intelligence. Although the responses also included connotations of "well maintained," the frequency and especially related expressions were not focused directly on the dimension of perfection. On the contrary, associations were more frequently given that pointed toward intellectual activities and feelings. In this context—the existence of intellectual connotations that describe an intellectual activity—Hosoya et al. identified a third group of aesthetic notions. They are characterized by the evocation or reflection of intellectual activity in the perception of beauty. Examples included notions such as "it surprised me," "fascinated me," "offended me," "provided me with insight," etc. (Hosoya et al., 2017). In this research, 24 participants (21%) provided at least one association within the category of intellectual emotions and activities, such as "genius," "intelligence," "discovery," "unexpected," "reason," as well as "naiveté" and "insecurity." These associations provided 35

[5]Also taking into account the ambivalence of the understanding of nature and the everyday (the beauty of the everyday is often hidden to us mainly due to its ordinariness) and the problematic character of the very notion of naturalness in a civilised and urbanised ambience (nature as our natural ambience), we prefer a different meaning of the notion of naturalness than ordinariness. In many languages, nature, naturalness and natural do not merely denote nature, but also an essence. Naturalness in terms of an essence is an expression of primordiality, and hence something fundamental, but that is frequently hidden under a layer of artificiality – culture, upbringing, etc., that is concealed by an additional admixture. It is particularly this aspect of the original layer that we perceive to be more dominant in the notion of naturalness in the context of the responses of the participants (as opposed to artificial and studied).

[6]Thanks also to one of the anonymous reviewers for pointing out this known fact.

unique word roots (8.951%), which occurred 80 times, 7.292% of total responses.

(h) The Transcendentally Oriented Domain

The last (eighth) group of associations identified is the group of words that refer to a certain form of transcendence and abstract ideas linked with beauty. These differ from the first group, sources of beauty that refer to subjective or objective sources of beauty, as they denote something abstract rather than an object. Examples of such a line of consideration are concepts like "God," "infinity," "freedom," "love," "spirit," "soul," "humanity." Such abstract notions may serve as a source of beauty but are often more of an idea of a similar type to beauty. In classical philosophy, we may therefore consider them as certain transcendental ideas that are linked with beauty. Surprisingly there were many such definitions (N = 28, 7.161% of individual word roots), which 23 participants (20.2%) listed at least one association from this category for a total of 91 times from 1,097 responses (8.295%). It may be assumed that the frequency of similar responses will increase with age or the possibly of idealistic interpretation of the world, depending on the field of study. Among the responses, some participants included notions such as "nature" or "the universe" but due to the lack of context, it is not clear whether they perceived them as an abstract idea or something tangible.

A Frequency Analysis of the Domains

Based on the number of notions used in the individual groups, or rather the frequency of responses, it is possible to determine the importance of the individual dimensions in our consideration of beauty. The group of free associations with the highest number of responses was that of the sources of beautiful objects, that is, the objects themselves. The second most numerous group comprised associations from the expression of the structure of these objects; simplicity-complexity. Such connotations were provided 155 times representing 14.129% of all responses. The third largest group was associations surrounding ideas, mentioned 91 times or 8.295%. Other dimensions showed similar a frequency. Connotations associated with activity appeared 80 times, 7.293%, the same as intellectually focused associations, f = 80, 7.293%. Connotations relating to the quality of feelings in the pleasant-unpleasant category were mentioned 79 times, 7.201%, the moral dimension 77 times, 7.019%. Associations regarding the exclusiveness of the occurrence of beauty appeared least frequently at only 49 times, 4.467%. The distribution of the frequency of the individual types of connotations may suggest balance between the individual dimensions, but it must be noted that the number of words in each category is not identical, even though the frequency of notions was nearly the same. This shows that, for instance, although the pleasantness-unpleasantness dimension may include a lower number of expressions, they are relatively numerous, which suggests a rather high level of congruity and clarity employed by language users to define this certain dimension of their notion of beauty. The greatest degree of variability, that is the lowest degree of agreement among users, was found in the first dimension, focused on the object, and centered around structure, simplicity and complexity.

A Frequency Analysis of the Subjectively Most Important Domains

A frequency analysis of the use of individual associations is based on the unconscious links and intentions of the individual language users. In the second part of the first task, participants were asked to underline three words from their lists which they considered to be the most important. Three hundred and nine underlined connotations were received and divided into the same initial groups. One hundred and ten were assigned to the object group, 59 to structure (simplicity-complexity), 33 to transcendental ideas, 32 to intellectual connotations, 28 to the pleasantness dimension, 20 to morality, 19 to activity and 8 to the exclusivity of beauty. The most important connotation in the minds of participants was again linked with source, a tangible object (face, person, thing), or with its structure. A much higher score, however, came from transcendental and intellectually related connotations (perhaps due to the participation of people from academia), and associations from the pleasantness dimension. Connotations connected to the rate of occurrence (exclusivity) also came in last place here.

A Frequency Analysis of the Most Frequent Connotations

As the overall structure of the acquired data displayed a very intricate and complicated network of associations and they were not processed to find statistically important correlations but through a semantic analysis of the individual notions, in the final part of our study we focused on an analysis of the most frequently employed connotations. As we have a sufficient number of expressions, we may use the parameter of frequency as a relatively safe indicator of the importance of a particular connotation. Expressions that were only provided by a single participant or by very few participants we consider as accidental/occasional expressions (Sutrop, 2001, p. 263). The selection was based on the assumption that the most important connotations are expressions that are actively used, and are therefore listed more frequently. The opposite is also true, rarely used connotations represent less important notions. The survey included the ten most frequently used connotations.

The most frequently used connotations were notions of love f = 31, followed by aesthetics f = 27, pleasure f = 27, natural f = 23, women f = 21, art and Nature f = 20, good f = 15, purity f = 15, and simplicity (f = 14). This testifies to the importance of the individual dimensions, because both love and Nature may be understood not only as an idea toward which beauty converges, but also as a possible source of beauty (similar to a woman), aesthetics as an intellectual discipline that studies it and pleasure as a feeling it evokes. Good and purity represent another two dimensions of the studied notion. No other notion had such a high degree of representation as these connotations, which happen to be typical representatives of these particular dimensions[7].

[7]Among the other most numerous connotations was, after the notion of simplicity* f = 14 (7), also the notion of attractiveness* f = 11 (2), which is a representative of another dimension (activity), as it expresses a natural movement towards the object.

TABLE 1 | Cognitive salience index.

Rank	Connotation	Translation	f	rel f (f/n)	MLP	CSI
1.	Estetik	Aesthetics	27	0.0246	2.88	0.08224
2.	Sevgi	Love	31	0.0283	4.77	0.05701
3.	Dogal	Natural	23	0.0210	3.87	0.05213
4.	Zevk	Pleasure	27	0.0246	4.92	0.04814
5.	Kadin	Woman	21	0.0191	4.769	0.03863
6.	Doga	Nature	20	0.0182	4.8	0.03655
7.	Sanat	Art	20	0.0182	4.85	0.03617
8.	Sadelik	Simplicity	14	0.0128	3.571	0.03439
9.	Saflik	Purity	15	0.0137	4.6	0.02860
10.	Lyi	Good	15	0.0137	5.466	0.02407

The significance of the frequency of use of these notions is that it documents their share in the overall use of the notions within a particular category. The use of the notion of love was found as frequently as 34.07% of all the connotations used in the dimension of ideas. The notion of aesthetics was used in 33.75% of intellectual connotations. The notion of pleasure represented as much as 30.38% of the uses of this notion within the dimension describing the quality of perception. The frequency of use of the notion Nature represented 20.98%, natural 14.84%, good 12.32%, and purity 9.68% of the notions used within their respective groups. Given the high frequency of other connotations, the notions women $f = 11$, art = only 8 had a relatively minor level of importance in the group, sources of beauty[8].

A Frequency Analysis of the Subjectively Most Important Connotations

The relative importance of the individual domains may be most readily observed in the frequency of the notions that the participants underlined when selecting the three most important connotations. The participants chose the following notions as those with the greatest importance: aesthetics* ($f^* = 15$), natural* ($f^* = 14$), love* ($f^* = 12$), woman* ($f^* = 11$), pleasure* ($f^* = 10$), purity*($f^* = 9$), Nature* ($f^* = 8$), art* ($f^* = 8$), simplicity* ($f^* = 7$), and good* ($f^* = 3$). The first and most important connotation was aesthetics, the science of the study of beauty, which represents the intellectual dimension of judgement. The participants subsequently indicated the sources and ideas which evoke beauty, or toward which beauty converges, but pleasant feelings and purity also appeared among the most important dimensions.

Cognitive Salience Index

The last step was a calculation of the cognitive salience index of the ten most frequent connotations (**Table 1**). This could serve as a partial check of the preceding tasks, as it is based on the assumption that the most important connotations come to our mind first, whereas the less important ones only come later in the associative process. The cognitive salience index is based on the absolute frequency of the mentioned expressions ($= f$) divided by the sum of the number of participants ($= N$) and the mean order in the lists of expressions (MLP): CSI = F/(N*MLP). The CSI ranges between values of 0 and 1, with higher values reflecting the higher importance of the words in the conceptual area (Sutrop, 2001).

The results of the cognitive salience index correspond to the results of the frequency analysis of the subjectively most important connotations and only differ in small details—in the mutual order of the second and third places, fourth and fifth, etc. The most important difference is in the frequency of the notion of purity, which comes in sixth in the frequency analysis, whereas it is in ninth place in the CSI.

Task 2—Semantic Differential

(a) The Concept of Beauty

In the second task the participants were asked to mark the extent to which the notion of beauty is linked with certain adjectives. The adjectives were selected so as to represent mutual opposites and thus create a continuum. The list of adjectives took into account the results from the preliminary studies that were processed in advance. The participants determined the extent of the link of beauty with "pleasant/unpleasant," "exciting/calming," "dangerous/safe," "aggressive/mild," "active/passive," "pure/dirty," "good/bad," "healthy/diseased," "Nature/art," "simplicity/complexity," "expensive/cheap," "great/tiny," "natural/divine," "joyous/sorrowful," and "finite/infinite."

Through statistical analysis of the answers a strong correlation was found between the items "active" and "good" (0.682) and the adjectives "pure" and "healthy" (0.602). A medium strength correlations was found between the items "dangerous" and "aggressive" (0.547), "good" and "healthy" (0.553), "healthy" and "joyous" (0.502), "pure" and "great" (0.466), "good" and "joyous" (0.461), "active" and "healthy" (0.416), "pleasant" and "healthy" (0.410) and "nature" and "joyous" (0.400). The relationships between "dangerous" and "good" (−0.411) and "aggressive" and "good" (−0.403) provided the most important negative correlations. These results refer to the connection between

[8]The frequency of occurrence of the notion of woman is affected by a significant imbalance between the male and female participants of the study.

TABLE 2 | The concept of beauty semantic differential scale.

1	2	3	4	5	6	7	
Pleasant	2.55						Unpleasant
Exciting			4.24				Calming
Dangerous			4.97				Safe
Aggressive				5.10			Mild
Active	2.82						Passive
Pure	2.48						Dirty
Good	2.38						Bad
Healthy	2.31						Diseased
Nature		3.53					Art
Simplicity		3.73					Complexity
Expensive		3.71					Cheap
Great		3.64					Tiny
Natural		3.04					Divine
Joyous	2.64						Sorrowful
Finite		3.96					Infinite

activity, good and health and also partially with joyousness, as well as to the connection between "aggression," "danger," and "bad."

The resultant curve on a Likert scale shows the average values for individual adjectives (**Table 2**).

The largest standard deviations occurred with the adjectives "exciting" ($SD = 2.11$) and "finite" ($SD = 2.32$), whereas the smallest deviation was found with the adjective "large" ($SD = 1.48$).

(b) The Concept of Ugliness

Using a method analogous to the one used in the semantic differential of the concept of beauty, we evaluated the semantic differential of the concept of ugliness. The notion of ugliness is logically considered an opposite to that of beauty, and thus requires further analysis to determine whether it is truly a total opposite or merely opposing in some of the chief domains of assessment of "beauty."

Through a statistical analysis of all the answers a strong positive correlation was found between the items "dangerous" and "aggressive" (0.783), "pure" and "good," and "dirty" and "ugly" (0.771), and medium correlations between the adjectives "exciting" and "dangerous" (0.594), "pure" and "healthy"—and "dirty" and "diseased" (0.586) –, "good" and "healthy" (0.583), "exciting" and "aggressive" (0.532), "passive" and "sorrowful" (0.527), etc. The strongest negative correlation was found between the attributes "aggressive" and "pure" (−0.538). From the results it follows that when dealing with the notion of ugliness the participants found an association between "pleasantness" and "purity" (0.463) and a negative link between the notions of "passive" (−0.455) and "sorrowful" (−0.426); between "dangerous" and "tiny" (0.412), "dangerous" and "sorrowful" (0.0438), and a negative correlation between "dangerous" and "purity" (−0.420) and "dangerous" and "good" (−0.419). Likewise there was a correlation between "aggressive" and "sorrowful" (0.448), "aggressive" and "tiny" (0.411), "tiny" and "sorrowful" (0.437) and a negative correlation between "aggressive" and "good" (−0.464), as well as a negative correlation between "sorrowful" and "good" (−0.406) and "sorrowful" and "healthy" (−0.441). All the above results were statistically significant ($p \leq 0.01$), and apply with a 99 % probability.

Results point to the existence of important links between the understanding of "ugliness" and "danger," "aggression" and "excitement," together with "sorrowfulness," "passivity" and "tiny-ness," as well as between "dirty" and "diseased." On the contrary, the relationship between "aggressive" and "good" or "healthy" is highly negative, which means that as the display of one of the items increases, the other decreases. A similar condition was identified between "pleasantness" and "sorrowfulness," which explains the relative scarcity of pleasure derived from sadness.

The development of a curve on a Likert scale shows the average values displayed by the individual adjectives in relation to the concept of ugliness (**Table 3**).

A comparison of the semantic differential curves of the concepts of "beauty" and "ugliness" suggests an important relationship between the two. The notion of "beauty" is connected more with "activity," "purity," "goodness" and "health," whereas "ugliness" is associated with the opposites. The progression of the curves is similar, albeit mirrored, which correlates with our understanding of them as opposites. However, the two notions are not complete opposites as they differ in the extent to which they are covered by some selected adjectives. For instance, it is possible to find associations of "beauty" with "nature," "naturalness," "greatness" and "joyfulness," but the notion of "ugliness" does not provide direct opposites. An inverse can clearly be seen in the relationships of individual notions with "joyfulness," which is important for "beauty." Logically the opposite of "ugliness" links with "sadness," but this was not observed in the research. On the contrary, even for "ugliness" it is possible to observe a connection to "joyfulness." This may

TABLE 3 | The concept of ugliness semantic difference scale.

1	2	3	4	5	6	7	
Pleasant				5.39			Unpleasant
Exciting		3.89					Calming
Dangerous		3.42					Safe
Aggressive		3.17					Mild
Active		3.61					Passive
Pure				5.00			Dirty
Good				5.07			Bad
healthy			4.98				Diseased
Nature		3.88					Art
Simplicity			4.42				Complexity
Expensive			4.63				Cheap
Great		3.16					Tiny
Natural		3.88					Divine
Joyous		3.92					Sorrowful
Finite				5.00			Infinite

explain why "ugliness" is able to entertain us, but "beauty" does not usually evoke sadness. In the same way, it is possible to observe a stronger merging of beauty toward finiteness than toward infiniteness, but surprisingly, "finiteness" is more strongly connected with "ugliness" than with "beauty." Ergo, the two notions are not completely saturated in opposition, and their relationships are much more complicated.

DISCUSSION AND THE LIMITS OF THE RESEARCH

In approaching an analysis of the semantic dimensions of the individual concepts, the question becomes whether to approach research from a top-down manner, basing it on a model, or the contrary, whether to seek links between the concepts purely on the basis of associations and connections as they reveal themselves in the data set. In the first task, the bottom-up approach (free associations) was combined with a model (the basic division of dimensions) developed in advance. This research was carried out predominantly for the sake of verification and succeeded in demonstrating that the dimensions assumed in the theoretical model (with the exception of the dimension of perfection) are truly, massively encompassed by the frequency of the responses by the participants. However, it was discovered that a significant number of the free associations relate to other presumed dimensions from Hosoya's study (intellectual aesthetic emotions). Simultaneously, the need arose to consider the inclusion of the dimension of transcendence among the fundamental dimensions of beauty—at least for speakers of the Turkish language. However, the a priori selected dimensions and back filling with actual responses might have caused the saturation of groups in a more artificial way than if they had originated through, for example, a factor analysis. The establishment of dimensions in advance may have influenced the extent to which they were saturated by associations as responses were classified into pre-established groups based on their expected relationships. In this way, other—and more important—links may have been overlooked, which could have been concealed by the established classification logic.

Another limitation of the study was the selection of hierarchical, precise and strict grouping. In order to highlight differences and prevent mutual overlap, a strict division between the groups was preferred and each of the word roots (with the exception of the differentiation of nature and naturalness mentioned above) was only ranked in a single group of answers. However, with respect to the natural use of language, it might be possible to rank some associations into several dimensions and determining the dominant meaning of the word employed depends, above all, on context, something which was absent in a number of cases. Thus, a participant could have used a metaphoric connotation which was then ranked into a different semantic dimension than what was originally intended. For example, "love"—"Sevgi" is an umbrella concept. Although it includes "liking," the characteristic feature of "sevgi" is "commitment." Therefore, "sevgi" can be divided into several different groups e.g., "divine love," "human love," "erotic love," "agape love" etc.

A lack of significant differences between genders and age groups cannot be generalized for this study because the research sample was not sufficiently extensive and was not balanced with regard to these variables. In our sample, participants of 25 and over only accounted for 12% of the group, and so are insufficiently represented. Similarly, the proportion of women was 28.9% (which corresponds to the share of women at Turkish universities), also too low to make any general conclusions.

Despite being based on a theoretical model and confirming significant saturation of certain presumed dimensions, the study of associations is to a great extent, of a probing nature. Nonetheless, the diversity and intricacy of the connotations generated in some dimensions (e.g., object,

structure of the object, intellectual emotions) requires further and more detailed research into their structure and representation.

A limitation of the second part of this study, the semantic differential, may be the putative overcoming and modification of Osgood's original theoretical model on which a number of studies and critical observations have been based (Heise, 1969; Mann et al., 1979; Fennell and Baddeley, 2013; Stoklasa et al., 2019). The original tool was used especially with the aim of maintaining compatibility with Hosoya et al.'s (2017) study, as well as with regard to the effort to understand more deeply the internal structure of the concept of beauty and its opposite (ugliness) on the basis of a statistical analysis of significant associations between the observed notions. When employing modifications of this tool, it is possible to arrive at slightly different results.

It is likewise apparent that in order to generalize the results of this research beyond the studied sample, it is necessary to compare the results with a similarly structured sample of aesthetically educated participants, or with a differently structured group with regard to age and gender. As this research focuses on mapping conceptual spaces and connotations, it is natural to assume that the perception of "beauty" or "ugliness" is influenced by the cultural and linguistic peculiarities of individual language users. A further step for this research would to compare the results with similar studies using other language samples and testing of the particular hypotheses derived from our current findings.

CONCLUSION

The results of both performed studies showed that (1) the notion of beauty is linked with various connotations from various semantic dimensions. The most frequent and most important have proven to be the associations of (sources of) objects which we denote as beautiful, (2) followed by dimensions that denote the reflection of the quality of feelings, (3) the structure of the object (simplicity vs. complexity), (4) intellectual domain, (5) moral domain, and (6) the domain of activity or passivity. A bottom-up study of given associations confirmed some anticipated, fundamental dimensions of the concept of beauty in the tested theoretical model (Démuth, 2017), although it also showed a certain unexpected specificity; the importance of the moral domain and transcendental domain for speakers of the Turkish language (which does not seem to be as important in the German and Slovak languages to date), as well as the justification of including the intellectual domain within Hosoya's research (2017).

A subsequent correlation analysis of evaluating adjectives and nouns in the semantic differential proved that "beauty" for Turkish speakers very significantly correlates with "activity," "purity," "goodness" and "health," and its most frequent connotation was with the notion of "love"[9]. On the other hand, the analysis showed that the concepts of "beauty" and "ugliness" are not perceived as total opposites by the participants in the semantic differential, as there exists dimensions which score very similarly with both concepts ("joy," "finality"). This study therefore builds a suitable point of departure for an analogous analysis of these aesthetic notions in the Slovak and German languages and their comparison, which might enable a more precise understanding of the semantic universality of the notion of beauty (and ugliness), and possible cultural differences in understanding both concepts and their fundamental dimensions in the different linguistic-cultural contexts.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the participants' legal guardian/next of kin was not required to participate in this study in accordance with the national legislation and the institutional requirements.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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