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QUANTITATIVE ASPECTS OF OLFACTORY PERCEPTION

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Abstract: This article explores the quantitative aspects of olfactory perception, focusing on the measurement, evaluation, and interpretation of smell stimuli in human cognition. It examines the relationship between odor intensity, concentration, detection thresholds, and perceptual responses, highlighting the psychophysical mechanisms underlying olfactory processing. The study also discusses methodological approaches used in olfactory research, including sensory evaluation techniques and quantitative assessment models. The findings contribute to a deeper understanding of how humans perceive, categorize, and respond to odors, providing valuable insights for linguistics, psychology, neuroscience, and sensory studies.

Keywords: olfactory perception, smell perception, odor intensity, sensory evaluation, psychophysics, olfactory threshold, quantitative analysis, odor concentration, sensory cognition, perception studies.

Research conducted within the framework of cognitive linguistics is of particular importance for understanding the ways in which humans perceive the surrounding world, especially with regard to the reflection of this process in language. The process by which individuals acquire and conceptualize reality is primarily grounded in the physiological mechanisms of the human organism. Such forms of activity are often not consciously recognized by individuals themselves; nevertheless, they constitute an important object of scientific investigation. Cognitive processes may be interpreted as a paradigmatic category within which the mechanisms and procedures of cognition give rise to specific linguistic constructions. In other words, cognitive strategies serve to explain the mechanisms underlying the emergence of thought structures expressed through language. This approach can be applied to any form of human cognitive activity. In particular, it is highly relevant to the study of information perception through the olfactory channel.

Any cognitive process can be analyzed from the perspective of its means of expression and their combinations, taking into account the presence of such components as the subject, the object, the cognitive act itself, various evaluative elements, spatial parameters, and other structural constituents. Consequently, it is important to investigate the process of conceptualization of olfactory perception from a quantitative perspective. Similar to other perceptual modalities—tactile perception (touch), visual perception (sight), gustatory perception (taste), and auditory perception (hearing)—olfactory perception is formed on the basis of an individual's sensory experience.

It is well known that linguistic units function not only as communicative tools but also as repositories of knowledge derived from everyday human experience and accumulated through the process of understanding the world. Unlike scientific and theoretical knowledge, such knowledge is formed through direct sensory experience, practical interaction with reality, and stereotypical representations. Through linguistic units, human perceptions of reality are encoded and subsequently reproduced in discourse. Language materials not only reflect the external world but also serve as instruments that enrich and expand human systems of perception and cognition.

In the process of understanding reality, individuals register quantitative differences among objects and phenomena through language and interpret their sensory experiences as phenomena possessing measurable properties. Consequently, sensory perceptions may be represented as entities that can be compared and measured. Although no universally accepted unit exists for measuring odor intensity, attempts have been made to determine human olfactory sensitivity through specialized instruments known as olfactometers. The term olfactometer derives from the Latin olfacere ("to smell") and the Greek metron ("measure") and is used for assessing olfactory sensitivity. Depending on the design of the instrument, different measurement units may be employed. For example, in measurements conducted using the Svardemaker olfactometer, the principal unit is the olfactia, expressed in centimeters. In contrast, when using the Elsberg–Levy olfactometer, the unit of olfactory sensitivity is determined by the minimum volume of air delivered to the nose, which is likewise expressed in centimeters.

Without dwelling extensively on the technical details of these procedures, it is important to emphasize that quantitative evaluations expressed in language may also be interpreted as manifestations of the quantitative dimension of odor perception. Thus, olfactory perception can be regarded as a quantitative parameter at the level of linguistic expression.

Human olfactory perception represents a specific type of perceptual modality that arises when volatile molecules suspended in the air stimulate olfactory receptors during respiration. These molecules activate sensory receptors and generate olfactory perception. The quantitative dimension of this sensory modality is primarily associated, first, with the ability to distinguish one or several odors and, second, with the capacity to assess odor intensity. In this sense, olfactory perception constitutes a complex cognitive-perceptual phenomenon that is experienced not only qualitatively but also quantitatively through the parameters of intensity and discriminability.

In the first case, the result of quantitative identification may be expressed as an exact evaluation determined by the number of odors recognized. In the second case, the result is typically represented as an approximate evaluation based on the comparison of odor intensity with an average reference level and determined according to a measurement scale appropriate to the communicative situation. An individual possessing a developed system of olfactory representations is capable of simultaneously distinguishing a certain number of odors and accurately identifying each of them. A particularly productive form of linguistic expression in this domain is the approximate evaluation of odor quantity and intensity.

When quantitative differences related to olfactory perception are represented in language through a conventional gradual scale, they may be conditionally divided into three categories: **above the norm**, **within the norm**, and **below the norm**. This classification may be applied both to the number of odors perceived and to their intensity. In the first case, the notion of "norm" refers to an intensity level that does not evoke negative sensations in most individuals and is considered sufficient and appropriate for a given situation. Consequently, this level is generally not explicitly marked in language and is characterized by a zero-marking or unmarked expression. In the second case, the norm is interpreted as the presence of a single odor corresponding to a particular communicative and situational context.

The linguistic representation of the category "above the norm" demonstrates greater lexical diversity than that of the category "below the norm." This diversity encompasses not only explicit linguistic markers but also implicit means of expression manifested within discourse. In situations where it is neither necessary nor possible to enumerate all odors perceived simultaneously, language employs pronominal expressions indicating indefinite quantity as well as collective nouns. Furthermore, references to a large number of distinguishable odors may be conveyed implicitly through metaphorically reinterpreted lexical units.

The category “below the norm” is generally expressed through quantitative indicators. The distribution of subjective olfactory sensations along a conventional gradual scale may be realized through antonymic quantitative pronominal units. Alongside explicit means of expressing an “above-the-norm” quantitative evaluation, analysis of linguistic material also reveals evaluative units formed on the basis of impressions generated by odor perception.

First, these include participial forms derived from relevant verbs. Second, the notion of odor intensity may be inherently encoded within a lexical unit itself. For example, the expression “The sharp smell of perfume made him dizzy” is typically associated with an unpleasant odor. However, it may also indicate that a pleasant fragrance has become excessively intense and consequently produces a negative impression. In this case, the semantic structure of the lexical unit implicitly contains an evaluative component related to excessive odor intensity, reflecting a negative reaction caused not by the qualitative characteristics of the odor but by an increase in its quantitative parameter.

Third, implicit quantitative evaluation may be realized through lexical units that introduce into the context meanings such as “more than the norm” or “less than the norm.” For instance, the expression simirib hidlamoq (“to inhale deeply and greedily”) conveys a strong desire to absorb a large amount of odor and therefore implies the evaluation “much.” Conversely, the lexeme is (“faint smell” or “trace odor”) expresses meanings such as “little” or “extremely little,” indicating a very low degree of odor intensity.

Fourth, this type of quantitative evaluation may be expressed through the discourse as a whole, particularly by describing situations that imply an excessive degree of odor intensity.

Within the cognitive domain of olfaction, quantitative distinctions are frequently assessed according to a **total–partitive scale**. This scale represents a semantic synthesis of delimitative and gradual quantitative relations and is based on the fundamental binary opposition of **presence versus absence**. The total–partitive scale constitutes a model of quantitative evaluation that expresses the degree of odor presence in terms of complete (total) and partial (partitive) realization. Within the framework of cognitive linguistics, this model enables the analysis of odor not merely as a qualitative phenomenon but also as a quantitative cognitive category.

The linguistic characteristics of the **total** category are manifested in the complete saturation of space by an odor, its high intensity, its expression through units such as everywhere and completely spread, and its functioning as the dominant sensory element within discourse. In contrast, the linguistic characteristics of the **partitive** category include the perception of odor within a limited area, its low intensity, its expression through indicators such as slightly, faintly, trace, and weak, and its manifestation as a transient sensory impression.

Thus, the total–partitive opposition complicates the basic binary model of **presence versus absence** by introducing a quantitative dimension. Through this mechanism, olfactory perception can be interpreted not only as a qualitative phenomenon but also as a gradual and quantitative system. This scale serves as an effective framework for the systematic classification of quantitative distinctions in the linguistic representation of olfactory perception and constitutes an important model for cognitive-semantic analysis.

Reference:

1. Кондаков И. М. Психологический словарь. М.: Прайм-ЕВРОЗНАК, 2000.С.491.
2. Н.Ю.Шнякина. Концептуализация обонятельных ощущений в немецкой языковой картине мира (количественный аспект). Вестник ТГПУ. 2013.3. С.51-56.