Frame Your Smell: The Multimodal Prototypes of Olfactory Concepts

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Back in the early 70s, some psychologists started discussing focal colors (Heider, 1971; Heider, 1972; Rosch, 1975). They analyzed prototypes of real-world concepts by utilizing both images and words (Labov, 1973; Rosch, 1973). One experiment in Rosch and Mervis’ typology study (1975) asked the subjects to identify the most typical kind of birds in the category of BIRD; another test in the same paper asked the subjects to choose pictures that would fit a specific class the most. In recent years, linguists have been trying to combine language with different modalities – such as images, gesture, videos, and music (see O’halloran, 2011) – to explore human communication. However, studies of multimodality focus mainly on situations where distinct modes occur simultaneously or with some minor delay (e.g. Müller et al., 2009).

The current research centers on using different modalities to semantically frame (Fillmore, 2006) two elusively defined concepts of smell. Based on the design of Rosch and Mervis’ 1975 experiments, this study aims to uncover possible prototypes of olfactory word meanings. Two Mandarin words, xiangwei 香味 (fragrance) and chouwei 臭味 (stink), are selected because of their lack of real-world referents. These words’ ambiguity in nature is a great example to test the power of multimodal tools. Also, unlike the aforementioned previous studies of multimodality, which focused on simultaneous data, this study analyzed word senses of the two olfactory words under two modalities, utterance and drawing, non-simultaneously. We hope to know if, in different modalities, participants’ elicited responses would differ when they describe the same word concepts, and determine if this method can serve as an alternative for the inquiry of word meanings.

The experiment consists of two tasks. Two groups of participants are assigned to the concept either chouwei 臭味 (stink) or xiangwei 香味 (fragrance). In the first part, the Association Task, subjects are asked to write down ten keywords regarding one of the two concepts. Then, during the Drawing Task, they are instructed to draw their first impression prompted by that olfactory word. In this part, different components of each drawing and their functions are analyzed as Table 1.

Two groups of native speakers of Taiwan Mandarin participated in the current experiment. For both xiangwei 香味 (fragrance) and chouwei 臭味 (stink), participants consisted of 6 females and 5 males for each of them. The subjects in xiangwei 香味 (fragrance) had an average age of 23.45 and a standard deviation of 2.23. Their counterparts in chouwei 臭味 (stink) had an average age of 24.363 years old and a standard deviation of 3.023.

There are some minor differences between the verbal and drawing tasks. The results of this study show that speakers’ prototypes of smell come from their everyday experiences. According to the Association Task, the concept of xiangwei 香味 (fragrance) is often connected with Aromatic Products (e.g. 香水 Perfume), Plants (e.g. 花 Flower),
and Eating Culture (e.g. 臭豆腐 Stinky Tofu). These similiar patterns can also be found in the second task, the Drawing Task. Yet, there are still some differences. Aromatic Products are most frequently used to verbally describe xiangwei 香味 (fragrance), while the most commonly shown objects in their drawings are Food. On the other hand, the result of chouwei 臭味 (Stink) in both tasks suggests a tight connection with Body Waste. Still, they are not entirely the same like the last olfactory concept. In the verbal task,屎 Feces, 尿 Urine, and 汗 Sweat appears most often. And in their drawings, only屎 Feces can be found.

One very intriguing result is the case of 臭豆腐 Stinky Tofu, an iconic food in Taiwanese culture. 臭豆腐 Stinky Tofu, appears in both xiangwei 香味 (fragrance) and chouwei 臭味 (stink) in the Association Task. That is, this traditional Taiwanese food is regarded as good and bad smell at the same time. One possible explanation of this is the factor that this local cuisine is both prestigious and prevalent. Therefore, Taiwanese are very familiar with this cuisine’s smelliness yet also very proud of it. This neutralizes the food’s badness judgment even though it contains a very strong judgment element, 臭 Stinky, in its character. However, the frequency of the usages and experiences has allowed the possibility of positive interpretation.

For the drawings from the Drawing Task, they have been analyzed and categorized as Main Character or Supportive Character according to subject’s description (see Table 1). The frequency of different characters is then used to determine the core ideas of the two olfactory concepts. For instance, while the food is served on a plate, it will be considered as good in smell.

Here is an example drawing from one of the subjects in xiangwei 香味 (fragrance):

<table>
<thead>
<tr>
<th>OBJECT</th>
<th>STEAK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Character</td>
<td>STEAM, PLATE, VEG(ETABLE), SOUP</td>
</tr>
<tr>
<td>Supportive Character</td>
<td></td>
</tr>
</tbody>
</table>

Illustration 1. The Drawing from One of the Subjects
Abstracts

FEATURE

1. STEAK * lined [grilled]
2. STEAM * number of lines (3, 5) [hot, good smell]
3. PLATE * holder, below STEAK [served -> restaurant]
4. VEG * small, beside STEAK [additional]
5. SOUP * small [additional]

STATUS

<table>
<thead>
<tr>
<th>ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>none</td>
</tr>
</tbody>
</table>

Description: When considered good in smell, STEAK should be grilled and hot, as well as served as the main dish.

Table 1. The Analysis of Illustration 1