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Figurative language in the olfactory domain across Chinese and English: Examples of *chòu* (臭) and *foul/smelly /stinking*[1]

Xuan Zhao
Eötvös Loránd University
Budapest, Hungary
Southwest University
Chongqing, China

Abstract

Conventionally, smell has been regarded as a relatively ineffable percept and concept. However, the personal experience of using the olfactory Chinese word chòu (臭, 'smelly') makes me think that the word is not so ineffable in China as people often use it daily. To verify the hypothesis that the Chinese character *chòu* (臭) has distinctive figurative sense and collocation patterns compared with English terms like *foul*, *smelly*, or *stinking*, the study used corpus-linguistic data to identify the salience, frequency, and collocation of olfactory words in Chinese and English. The study shows that the psychological similarity between bad smell and negative mental states is very salient in both languages. Nevertheless, the construal of the subjective feelings conveyed through these olfactory words is subject to the specific context and the speaker's intention.

Keywords: smell; *chòu* (臭); figurative sense; frequency; collocation.

1. Introduction

Compared with the other senses of human beings, smell can be regarded as a relatively "ineffable percept and concept" (Levinson & Majid, 2014; Kövecses, 2019; Winter, 2019). Winter (2019) explains "ineffability" by adding "communicative needs" explanations to Levinson & Majid (2014)'s "cognitive-architecture" explanations and "limits of language" explanations. Smell is compared with sight in their discussion, because sight and smell represent the polar side of ineffability in English, with "sight being the most

[1] I am very grateful to Professor Rita Brdar-Szabó and the anonymous reviewers for their valuable suggestions on the revision of the paper.

and smell the least effable" (Winter, 2019: 40).

In Chinese, smell is not as effable as sight either, as there are far more adjectives which are used to describe our visual experience than adjectives describing our olfactory experience based on the data collected by Deng (2018). Therefore, the usage of olfactory words should be very limited in both languages, just as Digonette claims that people tend to express themselves "through the recourse to euphemisms for private and personal odors and the recourse to hyperboles for public and distant odors" (2021: 19). However, the personal experience of using olfactory Chinese word *chòu* (臭, 'smelly') brings me the impression that the word is not so ineffable in China as people often use it in daily life. The possible explanation might be that the word has undergone semantic change and does not always mean an unpleasant smell. This semantic change, from a cognitive linguistics perspective, is always motivated by metaphor, metonymy, or other figurative usage (Győri, 2002). A recent study of smell from Schönefeld (2024) argues that smell words in American English are not primarily used figuratively, although the researcher expects an increase in the metaphorical use of smell words, and her study focuses on the three smell verbs: smell, scent, and reek.

The previous cross-linguistic studies of olfactory words are limited to a few scholars' explorations, such as Qin (2008), Qin & Tie (2018), Deng (2018), Galac (2020; 2024) and Digonette (2021). Galac and Digonette focus on the Indo-European languages. Qin's study discusses the metaphor of smell and its metaphorical scale in Chinese and English. Two of his main findings are: a) the metaphorical scale of olfactory domains is wider than the study results of Sweetser (1990/2002) and Ibarretxe-Antuñano (1999); b) Chinese and English have similar metaphorical scales of smell. Deng (2018) collects 300 English and 552 Chinese sensory adjectives and makes a contrastive analysis of prototypical members and prototypical features based on the diachronic and synchronic data in both languages. As her study has to deal with mass data, it cannot delve into the constructions of a specific olfactory adjective.

The present study aims at an in-depth examination of the semantic changes that have happened in the olfactory adjectives in Chinese and English, which have been under-explored in previous studies. The study starts from the prototypical olfactory adjective 臭. In ancient Chinese (from the start of the emergence of the Chinese character to 1919)[2], it means the behavior of sniffing, pronounced as *xiù*; therefore, the lower part of the character is 犬 (*quǎn*, 'dog'), which alludes to the meaning of the character, and indicates that the experiencer has a keen sense of smell like a dog. In modern Chinese

[2] The division between ancient Chinese and modern Chinese is based on the emergence of modern vernacular, which began from the May 4th movement in 1919, see Huang and Liao (2017: 3).

(from 1919 to the present), *chòu* (臭) no longer takes the basic meaning of *sniffing*, but keeps the meaning of *smell*, transferring the verbal meaning of sniffing to the other Chinese character *xiù* (嗅, 'sniff'). It denotes the foul odor which emits from an origin and is perceived by the organism (the experiencer). Besides, this character has very strong word association with nouns and often functions as an adjective, meaning *smelly*; sometimes it is used as an adverb or a verb. The word, when used as an adjective, often takes extended meaning, compared with its basic meaning. According to Deng (2018)'s collection of English and Chinese sensory adjectives in different periods of both languages and the data from COCA, *foul*, *smelly, and stinking* are seen as the olfactory adjectives which possess the prototypical features in modern English. Based on the dictionary meaning in the online 汉语大词典 *Hànyǔ Dà Cídiǎn* (Grand Dictionary of Chinese Language, HYDCD) and the Oxford English Dictionary (hereinafter OED), *chòu* (臭) as an adjective can be almost corresponded to *foul/smelly/stinking* in modern English.

The selection of these words is guided by the hypothesis that *chòu* (臭) has distinctive figurative meanings and collocation patterns compared with English terms like *foul*, *smelly*, or *stinking*. This hypothesis will be tested through corpus-linguistic analysis. Kövecses (2019) examines the linguistic codability of smell in English. He uses the top-down lexical method to search for various lexical items related to the conceptual category of SMELL. In contrast to Kövecses' lexical method, I attempt to take a bottom-up approach (corpus linguistics, discourse analysis) to the study of the conceptual structure of *chòu* (臭) and *foul/smelly/stinking* in order to identify the salience, frequency, and collocation of olfactory words in Chinese and English.

The study attempts to answer the following questions:

(1) What are the figurative usage and collocation patterns of the olfactory words *chòu* (臭) and *foul/smelly/stinking* in the corpora?

(2) How does the corpus analysis shed new light on the usage of olfactory words in languages?

After a general introduction in Section 1, the rest of the article is structured as follows: Section 2 elaborates on the theoretical background of the study, focusing on semantic change, and the relationship between olfactory words, cognition, and corpus data; Section 3 presents the design of the study: its aim and object, the sources of the data, and the analysis method. The results from different corpora are displayed in Section 4. The figurative sense and collocation patterns of the olfactory words in the corpora are discussed, with some statistical analysis in Section 5. Meanwhile, the usage of the four olfactory words is compared and contrasted. The last section concludes the article with some general observations and future perspectives.

2. Theoretical background

2.1 *Semantic change*

The traditional studies of semantic change focus on taxonomy and classification, such as Michel Bréal, who is often acclaimed as one of the founders of semantics. He classifies the types of semasiological change through terms like pejoration and amelioration, restriction and expansion, metaphor and metonymy (see Traugott & Dasher, 2001: 54–58). However, he focuses on language-internal factors in semantic change and takes little interest in external factors, such as cultural factors (see Traugott & Dasher, 2001: 59). Later on, many linguists have proposed multiple frameworks to classify and explain this phenomenon, offering different perspectives on how and why word meanings transform, such as Saussure (1959), Bloomfield (1933: chapter 24), Ullman (1957: chapter 4), Geeraerts (1997: chapter 3), Traugott & Dasher (2001: chapter 2), Győri (2002), Haser (2003), Galac (2020, 2021).

The recent cognitive linguistics takes a non-objectivist view of meaning, which could provide a plausible account of semantic change which is fundamental to linguistic evolution. Győri (2002) elucidates that semantic change cannot be "explained satisfactorily in pragmatic terms alone" (126), as the whole communication process involves mental activity. Anttila (1989: 133) also holds that mental or psychological factors play an important role in the emergence of new meaning. In the view of most historical linguists, metaphor, metonymy, and other figurative uses emerge from cognitive mechanisms (Győri, 2002).

Langacker, as a central figure in cognitive linguistics, observes that "lexical item used with any frequency is almost invariably polysemous" (2008: 37). His idea originates from prototype theory, which can be traced back to Eleanor Rosch's research into the internal structure of categories in the mid-1970s (see Geeraerts, 2006). He proposes a network model that organically integrates prototype theory and categorization, viewing the members of a category as nodes in a network connected by various types of categorizing relationships (see Lakoff, 1987; Langacker, 1987: chapters 10-11). The model can be briefly summarized in Figure 1 below.

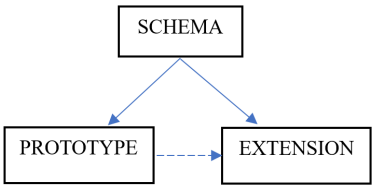

Figure 1: The network model (Langacker, 1991: 271)

In the network, an intimate connection between the "outward" growth through extension and its "upward" growth through schematization is established. If we take olfactory perception as the schema, the basic sense of the perception word *smelly* can be seen as a prototype, while the figurative senses of *smelly* are instantiations of schema. The solid arrow indicates a specialization relationship but the dashed arrow implies "some conflict in specifications between the basic and extended values" in Langacker's words (1991: 266). Building on Langacker's network model, the present study attempts to account for the fluid and context-dependent organization of meaning across languages and cultures.

Take the Chinese *chòu* (臭) as an example. The primary meaning of the Chinese character is 'the foul odor', but today this character has a new grammatical function: it can be used as an adjective; in addition, its sense is extended far beyond the domain of sense of smell; it can describe something or someone that is particularly repulsive and malicious. For example, 臭钱 (*chòu qián*) means 'smelly money', but it is often used in Chinese to refer to money that is obtained through unethical, corrupt, or dishonest means. Here 臭 emphasizes the speaker's critical tone. Later on, this extended meaning becomes conventionalized and further takes a new figurative meaning: 'an intensifier which functions as an adverb, meaning badly or thoroughly'. If we use Langacker's network model for describing the semantic structure of a polysemous lexical item, the different meanings of the word can be signaled by nodes in the network. The primary meaning can be regarded as the global prototype while the extended meaning (if it becomes central to other extended meanings) can be seen as a local prototype (see Langacker, 1991: 266; Győri, 2002: 151−152).

2.2. *Olfactory words, cognition, and corpus data*

In the present study, olfactory words are limited to olfactory adjectives in Chinese and English. Olfactory words, just like gustatory words and tactile words always possess figurative sense related to a person's preferences and subjective feelings. Generally speaking, 香 (*xiāng*, 'fragrant'), 甜 (*tián*, 'sweet') could refer to popular and beautiful things, whereas 臭 (*chòu*, 'smelly'), 苦 (*kǔ*, 'bitter') can refer to ugly, unpleasant things or behavior.

According to Lakoff and Johnson's influential work *Metaphors We Live By* (1980), metaphor is defined as a fundamental mechanism of the mind that structures our understanding and experience of the world. They explain that metaphors allow us to understand one concept in terms of another, often by relating abstract concepts to more concrete or familiar experiences. They call this the "conceptual metaphor". Eve Sweetser (1990/2002: 28–31) first proposes a semantic link-up "Mind-as-Body metaphor." She points out that the

correlations between our physical experiences and our emotional and cognitive states are not sufficient to explain the semantic change because the connection may have some psychosomatic roots, but it is essentially metaphorical in nature, and "this equation of physical self and inner self is pervasive in English and the Indo-European family at large" (Sweetser, 1990/2002: 31). Besides, the sense of smell and taste always come under general sense perception, such as French *sentir* ('feel'; 'smell') (Sweetser, 1990/2002: 36; Galac, 2021). However, if we want to differentiate these senses, the verbs that denote these senses often derive from "specific physical sensations" or "physical acts of perception" (Sweetser, 1990/2002: 36). To clarify Sweetser's idea, I'd like to use Kövecses' methods (2019) to distinguish the two concepts. Take the olfactory verb "smell" as an example, the former "specific physical sensations" can refer to the passive smell while the latter "physical acts of perception" can refer to the active smell. In other words, if we map the physical sensation domain onto the non-physical sensation target domain, the sensory words take new metaphorical meaning. The mapping arises from the psychological similarity, rather than the physical similarity. The olfactory adjectives are equally applicable. For example, the Chinese idiom 臭名昭著 (*chòu míng zhāo zhù*) means 'a person's bad fame is well-known.' Here a person's 臭名 (*bad fame*) is compared to the stinking odor, which shows the speaker's unpleasant attitude towards the referent. The psychological similarity between bad smell and bad fame is very salient.

If we examine the relationship between 臭 ('bad smell') and 臭名 ('bad fame') from another perspective, the semantic change happens because the meaning of 臭 ('bad smell') is extended from something very specific to something more general. The bad fame might arise from any immoral, illegal, or harmful actions. Therefore, the conceptual metonymy SPECIFIC FOR GENERAL is formed between the source concept (bad smell) and the target concept (bad fame). It seems that there is an interaction between metaphor and metonymy in this example. The differences and similarities between metaphor and metonymy have been elaborated in detail in Brdar (2019). Ruiz de Mendoza (2000: 121) has observed the interaction between metaphor and metonymy, and he lists three interactional possibilities: in the first case, a metonymic mapping provides the source for a metaphor; in the second case, the output of a metaphoric mapping becomes the source of a metonymy; the third one is merely a variation of the second one, where a metonymy determines in what sense a specific correspondence within a metaphoric mapping has to be interpreted. I think the case we discussed above belongs to the second case.

If we study the relationship between olfactory words and cognition from only a few individual cases or specific examples, it is hard to know exactly the distribution and typical features of such figurative usage of olfactory

words in specific language contexts. As it is argued in Section 1 that smell is a relatively ineffable concept, Sweetser (1990/2002: 37) also confirms that the sense of smell "has few abstract or mental connotations". The claim needs further verification as the previous scholars' research is limited to the Indo-European language family. Qin's study (2018) gives evidence that the metaphorical scale of olfactory words is wider than Sweetser (1990/2002) claimed. When I made an initial pilot study of olfactory words in the corpora across Chinese and English, I found that the olfactory character 臭 (*chòu*) is often figuratively used to modify people in ancient Chinese and modern Chinese. Moreover, the English word *foul* has also gone through a big semantic change in the long history and its figurative sense is highly rich and diversified. The corpora could provide not only reliable linguistic data but also help the researchers process and analyze the data efficiently. For the present study, the data from the corpora are proper for comparison and contrast, can systematically display a variety of figurative senses and collocation patterns of the olfactory words, and shed new light on the usage of olfactory words in languages.

3. Methodology

3.1. *Data collection*

The present study is based on data retrieved from the TenTen corpora, which covers more than 100 languages, such as English, Chinese, French, Spanish, Arabic, Hungarian, and Russian. The Chinese Web Corpus 2017 (zhTenTen17) Simplified and the English Web Corpus 2021 (enTenTen21) will be selected in the study. The Chinese corpus and the English corpus collect over 13.5 billion words and 52.3 billion words respectively. Here the simplified Chinese are in contrast with the traditional Chinese. The data are built covering a large variety of genres, topics, text types, and web sources as much as possible and using a special program to collect only "linguistically valuable contents" (see website sketchengine.eu). Compared with other corpora which might not contain both Chinese and English data on the same platform, the TenTen corpora can be directly used to count the frequency, collocation pattern, and association strength of words in both languages, which makes it an optimal choice for the comparison of usage of the olfactory words.

To further corroborate the hypothesis that the Chinese word *chòu* (臭) has distinctive figurative meanings and collocation patterns, compared with the three English words *foul/smelly/stinking*, the study also collected data from BCC and COCA. BCC refers to the corpus of Beijing Language and Culture University Corpus Center, which mainly covers online data from literature,

newspapers, magazines, and academic papers from natural sciences, social sciences and humanities, etc. The total capacity of BCC is 9.5 billion Chinese characters at the time of research. COCA refers to the Corpus of Contemporary American English at Brigham Young University. The corpus, containing more than one billion words of text (25+ million words each year from 1990 to 2019), covers balanced, up-to-date data from eight genres: spoken, fiction, popular magazines, newspapers, academic texts, TV and movie subtitles, blogs, and other web pages.

3.2. *Data analysis*

The study mainly uses Sketch Engine as the data analysis tool. Sketch Engine can help identify the salience, frequency, and collocation in language; in addition, it can measure the association between the head word and the collocates.

Firstly, I searched for the frequency of the four adjectives: *chòu* (臭), *foul*, *smelly*, and *stinking*. Then I checked the right context of the keywords in the TenTen corpora. Limiting the number of words/lemmas[3] following the adjective as three, the study filtered the result through collocation analysis, showed the most frequent items occurring in the right context of the target item, and got the association patterning of the keyword. The collocation analysis provides various association measures of the head word and the collocates, such as T-score, MI, and LogDice. Gries (2012) and Gries & Durrant (2020) have clarified the rationale of association measures (AM). The present study uses LogDice because it can measure the mutual attraction of the heading word and its collocates and is regarded as the most reliable measure in linguistic software like Sketch Engine (Rychlý, 2008). The bigger the logDice number, the stronger the association. Conventionally, if the logDice association value is below 5, it means that the association strength of the heading adjective and the noun it modifies is not strong. Therefore, those nouns with the logDice value below 5 were removed and the size of the collocation window is at most 20. To accurately get knowledge about the nouns which these adjectives usually modify, I manually cleaned the co-occurrence words which are not nouns.

Similarly, I used BCC to check for the frequency of the Chinese character chòu (臭) followed by NOUN, briefed as "臭 n" in the search box. I can get 19617 results initially and then I employed the statistics button to calculate

[3] For English adjectives, *foul*, *smelly*, and *stinking*, I investigated a lemma rather than a simple word form, as lemma represents the base form of a word, independent of its grammatical inflection. However, for the Chinese character 臭，there is no inflection on the character, so we directly investigate the word. For the difference between a lemma and a word, see Tribble (2010).

the frequency of the Adjective-Noun construction, where the adjective 臭 serves as a modifier of the head noun. As the top 20 lists of collocations can represent the most frequent usage of the construction, the result can help to find the collocation pattern of the olfactory words chòu (臭) in the corpus. Then I used Collocates to search for the corresponding Adjective-Noun construction in COCA, where the adjectives *foul/smelly/stinking* serve as a modifier of the head noun. I focused on the top 20 lists of collocations that can represent the most frequent usage of the construction and compare the three words' usage.

Then the colligation will be further analyzed across Chinese and English, with a focus on studying the figurative sense of the olfactory words *chòu* (臭) and *foul/smelly/stinking*. In Section 5, the collocates can be classified as per the semantic domain and the salience of certain semantic domains in both languages will be found and discussed.

4. Results

When I use Sketch Engine to count the frequency of the four olfactory words, the Chinese adjective *chòu* (臭) is taken as a word whereas the other three English words are taken as lemma. The total tokens I can get about the Chinese adjective *chòu* (臭) from zhTenTen17 is 88178, with 5.31 hits per million tokens. The total tokens I can get about the English adjectives *foul/smelly/stinking* from enTenTen 21 are 303225, 74359, and 36255 respectively. More details are shown in Table 1 below.

Table 1: The frequency of the four olfactory adjectives

Items	Frequency	Words (M)
chòu (臭)	88178	5.31
foul	303225	4.92
smelly	74359	1.21
stinking	36255	0.59

The above table clearly displays the raw frequency and the normalized frequency (words per million) of the olfactory adjectives. Even though the raw frequency of *foul* is 3.4 times more than that of *chòu* (臭), the normalized frequency of *chòu* (臭) is 1.07 more than that of *foul*, which means that the two words represent the prototypical features of olfactory words in their language respectively. In contrast, the number of hits (per million tokens) of *smelly* and *stinking* is nearly 25% and 12% of those of *foul*. More details about the usage of the four adjectives will be given in this section.

4.1. *The Chinese data in zhTenTen17*

I checked the right context of the keywords in the TenTen corpora by following the steps in Section 3.2 and obtained the number of the most frequent collocates (with logDice value above 5) for the four adjectives (see Table 2).

Table 2: The number of the most frequent collocates (with high logDice value)

Heading adjective	Number of the most frequent collocates (with logDice above 5)
chòu (臭)	43
foul	15
smelly	4
stinking	6

According to Table 2, the number of collocates (with high logDice value) of *chòu* (臭) is 1.72 times more than the sum of collocates of three English olfactory words. Table 3 exactly gives evidence of the strong association strength of *chòu* (臭) and its collocates, 46.5% (20 out of 43) of which have a logDice value above 6.

Table 3: The collocates, frequency, and association strength of *chòu* (臭)[4]

Number	Collocate	Freq	Coll. freq.	T-score	MI	logDice
1	水体 water body	13357	126660	115.5667	14.27644	10.99242
2	水沟 ditch	4097	26103	64.00564	14.85016	10.19813
3	小子 brat	11557	264285	107.4904	13.00648	10.06937
4	皮匠cobbler	2380	4830	48.78472	16.50068	9.71168
5	丫头 girl	2643	123168	51.39738	11.97943	8.67871
6	鳜鱼 mandarin fish	947	8491	30.7719	14.35724	8.32645
7	袜子 sock	1455	82868	38.13292	11.69001	8.12278
8	流氓 rogue	1277	85420	35.72243	11.45799	7.91315
9	河道 river	1804	230892	42.44463	10.52186	7.53347
10	婊子 bitch	528	7808	22.97644	13.63539	7.49386
11	鸡蛋 egg	2492	431501	49.874	10.08582	7.29583
12	狗屎 shit	471	10615	21.69994	13.0275	7.28746
13	毛病 habits	1034	146382	32.13168	10.37638	7.17442
14	婆娘 wife	421	7442	20.51636	13.37794	7.17265
15	脾气 temper	1144	198661	33.79186	10.08166	7.02999
16	水河 river	326	16161	18.05071	11.89024	6.67781
17	桂鱼 mandarin fish	264	4096	16.24674	13.56613	6.55076
18	水塘 reservoir	313	27870	17.68343	11.04533	6.46566
19	水坑 puddle	249	11497	15.77586	11.99277	6.35506
20	皮囊 skin bag	200	7943	14.13915	12.21013	6.09129

[4] In Table 3 and other tables in the paper, if the reader finds the collocate 婊子 ('bitch'), it has to be clarified that the author is not using the term in an offensive manner.

Meanwhile, it might be very salient that 35% (7 out of 20) collocates refer to human beings. For example, 臭皮匠 (*chòu píjiàng*) refers to unskilled craftsman even though 皮匠 (*píjiàng*) literally means cobbler. 臭小子(*chòu xiǎozi*) is often used to describe a naughty, mischievous and troublesome young boy. But depending on the context, it can be scolding or endearing.

4.2. *The English Data in enTenTen21*

Tables 4, 5, and 6 show the filtered English data of colligation (olfactory adjective+NOUN), with 40% (6 out of 15) of the logDice value of *foul* and its collocates above 6 (see Table 4). In contrast, the number of collocates (with a logDice value above 5) is very small for *smelly* and *stinking* (see Tables 5 and 6).

Table 4: The collocates, frequency, and association strength of *foul*

Number	Collocate	Freq	Coll. freq.	T-score	MI	logDice
1	odor	7292	269472	85.37767	12.42418	8.70469
2	smell	10667	1688624	103.20067	10.3253	7.45519
3	stench	1813	67332	42.57155	12.41701	7.32483
4	trouble	13487	3296966	115.99377	9.69843	6.93964
5	odour	1426	86935	37.75108	11.70196	6.90405
6	mood	5333	1264289	72.94215	9.74269	6.80068
7	pole	2475	1000643	49.65034	8.97257	5.95885
8	fiend	633	81793	25.14348	10.61823	5.7515
9	language	16425	9789056	127.78398	8.41272	5.73686
10	weather	6691	3905945	81.56343	8.44262	5.7029
11	ball	7538	4523612	86.56513	8.40278	5.67732
12	deed	1689	803592	41.00117	8.7377	5.64397
13	mouth	4416	2864837	66.24073	8.29036	5.51336
14	shot	5496	4590144	73.83016	7.92591	5.20177
15	territory	2576	2139738	50.54674	7.93377	5.11072

Table 5: The collocates, frequency, and association strength of *smelly*

Number	Collocate	Freq	Coll. freq.	T-score	MI	logDice
1	fart	377	114162	19.40939	11.41736	6.03405
2	armpit	202	58068	14.20774	11.49242	5.64337
3	hippie	306	146540	17.48274	10.75612	5.50436
4	sock	877	584121	29.59037	10.28019	5.44765

Table 6: The collocates, frequency, and association strength of *stinking*

Number	Collocate	Freq	Coll. freq.	T-score	MI	logDice
1	hellebore	111	7041	10.53526	14.70884	6.39247
2	cesspool	120	26335	10.95304	12.91819	5.97325
3	Lizaveta	51	776	7.14136	16.7685	5.49598
4	turd	101	40863	10.04748	12.03569	5.42343
5	corpse	503	377406	22.41776	11.14465	5.31633
6	smut	81	37991	8.99752	11.82247	5.15982

It seems very salient that the collocates of three English adjectives are more often used to describe non-human beings, except *foul mood, foul language, foul deed, smelly hippies,* and *stinking Lizaveta.* Here I only take *smelly hippies* as an example. This phrase, as a culturally loaded expression, can be understood in different ways in different contexts. For example, it can mean those hippies who are indeed filthy and stinky because they barely take showers and live a tramp-style life. However, as these hippies lived an unconventional lifestyle in that era, the phrase can be used to describe people who hold a free spirit and do things contrary to the mainstream. The other phrases will be analyzed in more detail in Section 5.

4.3. *The Chinese data in BCC*

Following the steps in Section 3.2, I obtained the Chinese data in BCC. Table 7 lists the top 20 frequent collocations of "臭+NOUN".

Most of these phrases are generally used to express strong disapproval or insult. They carry a lot of derogative color and can mean quite differently depending on the context. In the above cases, 臭 literally means 'stinky' or 'smelly', and it's used to describe unpleasant odors or undesirable characteristics related to the items or habits mentioned. If it refers to the undesirable characteristics of the referent, the figurative sense emerges, such as 臭丫头 (*chòu yātóu*, 'annoying girl'), 臭毛病 (*chòu máobìng*, 'bad habit').

Table 7: The top 20 frequent collocations of "臭+NOUN"

Number	臭+NOUN	TRANSLATION	FREQUENCY
1	臭男人	jerk	1345
2	臭屁	smelly fart	1116
3	臭脸	sour face	645
4	臭丫头	annoying girl	437
5	臭脾气	bad temper	433
6	臭狗	stinky dog	407
7	臭嘴	stinky mouth	395
8	臭婊	stinky bitch	365
9	臭流氓	stinky hooligan	339
10	臭脚	stinky feet	336
11	臭水	stinky water	334
12	臭袜子	stinky socks	317
13	臭汗	stinky sweat	287
14	臭毛病	bad habit	265
15	臭鸡蛋	rotten egg	257
16	臭病	stubborn illness/bad habit	238
17	臭猪	dirty pig	207
18	臭老头	old geezer	187
19	臭老九	stinking intellectual	181
20	臭蛋	stinky egg	174

4.4. *The English Data in COCA*

Following the steps in Section 3.2, I obtained the English data in COCA. Table 8 lists the top 20 frequent collocations of "*foul/smelly/stinking* +NOUN".

Table 8 shows that the frequency of collocations of "foul+NOUN" is far more than those of "smelly+NOUN" and "stinking+NOUN", which implies the salient position of *foul* in the olfactory words. Besides, the three English adjectives have their distinctive preferences when modifying the head nouns. *Foul* is mainly used to describe sports, smells, mood, weather, and air; s*melly* is often followed by nouns that refer to animals, people, body parts, clothing, and objects; while *stinking* prefers to modify nouns that allude to place, objects, body, excretions, and abstract concepts. Further semantic analysis and discussion will be done in the next section.

Table 8: The top 20 frequent collocations of "*foul/smelly/stinking* +NOUN"

Number	foul+NOUN	FREQUENCY	smelly+NOUN	FREQUENCY	stinking+NOUN	FREQUENCY
1	play	967	cat	74	place	40
2	language	382	feet	25	corpse	23
3	line	322	stuff	21	mess	21
4	ball	319	dog	17	thing	19
5	trouble	306	fish	17	creek	17
6	mood	187	things	16	pile	17
7	weather	163	people	13	garbage	16
8	shots	107	socks	13	hole	16
9	air	100	thing	13	body	15
10	odor	98	water	13	shit	15
11	balls	96	breath	11	thinking	15
12	smell	78	clothes	11	city	14
13	pole	70	guy	10	breath	13
14	mouth	68	man	10	fish	13
15	territory	56	mess	10	mud	13
16	water	54	gym	9	smoke	13
17	breath	47	shoes	9	water	13
18	call	47	air	8	sweat	12
19	shot	42	room	8	bastard	11
20	shooting	39	ass	7	badges	11

5. Discussion

5.1. *The basic and extended meanings of chòu (臭) and foul/smelly/stinking in the dictionary*

According to the online 汉语大词典 *Hànyǔ Dà Cídiǎn* ('Grand Dictionary of Chinese Language', HYDCD), *chòu* (臭) has three main meanings:

1 秽恶之气. 与"香"相对.('foul odor', in contrast to 'fragrance')

e.g.

(1) *与不善人居，如入鲍鱼之肆，久而不闻其臭*.（《孔子家语》[5]

Yǔ bú shàn rén jū, rú rù bàoyú zhī sì,
with not good people live like enter abalone's shop
jiǔ ér bù wén qí chòu.
after a while CONJ not smell PRON stench

'Living with bad people is like entering a shop that sells salted fish; after a while, you no longer notice the stench.' 'The Family Sayings of

[5] In this paper, the following (glossing) abbreviations are employed. AUX=auxiliary; CONJ =conjunction; PRON=pronoun; fig=figurative; derog=derogative.

Confucius')

2. 香；香气.（'fragrance'; 'scent'）

e.g.

(2) *同心之言，其臭如兰.*
Tóngxīn zhī yán, qí xiù rú lán.
like-minded AUX words, PRON fragrance like orchids
'Words spoken in harmony have a fragrance like that of orchids.'
（《周易》，'The Book of Changes'）

3. 引申为形容厌恶、狠毒的贬词. ('It is extended to become a derogatory term for something repulsive and malicious')

e.g.

(3) *揪住头皮，臭打一顿.*
Jiūzhù tóupi, chòu dǎ yí-dùn.
grab hair, badly heat one session
'Grab by the hair and give a thorough beating.'
（《儒林外史》，'The Scholars' written in the Qing dynasty)

In fact, the online *Hànyǔ Dà Cídiǎn* collects the meanings of Chinese character both in ancient Chinese and in modern Chinese. The first meaning of *chòu* (臭) as a noun can be regarded as the basic meaning, which is used in ancient times and today. The second meaning as a noun is more often used in ancient Chinese. The third meaning is the extended meaning, which can function as an adjective, an adverb, and a verb. 臭 in 臭打一顿 is an intensifier and functions as an adverb, meaning 'badly' or 'thoroughly'. 一顿 (*yí-dùn*) indicates that the action of hitting occurs in one session or in one go. In modern Chinese, people prefer to use 臭 as an adjective, such as 臭排场 (*chòu páichǎng*, 'ostentatious display'), 臭毛病 (*chòu máobìng*, 'bad habit'). 臭 in the above two phrases take the extended meaning. 臭排场 describes someone showing off their wealth, status, or power in a way that is considered distasteful or pretentious, with the word 臭 implying something repulsive. In the phrase 臭毛病, the character 臭 does not literally mean 'bad smell' or 'stink'; instead, it is used as an intensifier with a negative connotation, emphasizing how unpleasant or problematic the habit is. When I refer to another online Chinese dictionary 汉典 (*Hàn Diǎn*), which combined traditional and simplified Chinese characters, detailed etymologies, and historical references, I find that 臭 can be used as a verb in some regional dialects or specific contexts. For example, in the phrase 臭火 (*chòu huǒ*), 臭 as a verb means 'to fail' or 'to mess up', and 火 (*huǒ*) could refer to 'a fire' or 'a critical situation'. The whole phrase can mean 'fail to ignite' or 'fail to accomplish something critical'. It implies that an attempt to do something important or ur-

gent has failed, often with a sense of frustration or disappointment. This last usage of 臭 might not be commonly known outside a specific context, but it gives compelling evidence that the word 臭 has a very rich figurative meaning.

When I refer to the online OED, *foul*, as an adjective, takes three main meanings:

i. Offensive or revolting to the senses; dirty, not clean, and related sens es.
ii. Contrary to the rules or accepted practices of a game or contest; (of a player) acting contrary to the rules of a sport, e.g., *foul play*.
iii. Extremely unpleasant or disagreeable; awful, horrid, nasty.

According to the OED (1989: XV-787), *smelly* has two main meanings:

i. Emitting a bad smell or smells; stinking. Also *fig*. e.g. (4) *smelly feet*
ii. Suspicious. *rare.*

For the olfactory adjective *stinking*, according to the online OED and the hardback OED (1989: XVI, 708-709), it takes three main meanings:

i. That stinks; offensively smelling.
ii. Used as a vague epithet connoting intense disgust and contempt. Now only colloquial.
iii. As an intensifier: 'offensively', in *stinking drunk*, *rich* (somewhat derog.).

Through comparing and contrasting the meanings of the three olfactory English words, I have the following findings: a) *foul* can date back to the Old English period and is more frequently used before 1810 (see frequency of *foul* on online OED) than today; b) the second sense of *foul* listed above has been a unique usage since 1545[6]; c) *smelly* derives from *smell*, while 臭 as an adjective derives from 臭 as a noun. When I refer to *The Oxford Dictionary of English Etymology* (1966/1992: 838), *smell* "supersedes *stink* and *stench* in the neutral application of sense B" (i.e., *have an odor*[7]) in the twelfth century. However, the derivative *smelly* is not neutral at all; it is used to describe a very unpleasant smell. The Chinese character 臭 also goes through the semantic narrowing like *smelly*. In modern Chinese, the neutral sense of 臭 is no longer existent; it tends to be related to bad smell; d) 臭 and the three English words can all be used figuratively when they function as an adjective conveying disgust, contempt, or any other negative emotions; e) *stinking* and 臭 can be used as an intensifier, but their specific meanings in the con-

[6] Oxford English Dictionary, s.v. "foul (adj.), sense II.19.a," September 2024, https://doi.org/10.1093/OED/3661623092.

[7] *The Oxford Dictionary of English Etymology* was edited by C.T. Onions. The explanation of sense B is quoted from the same page and added by the author of the paper.

text are different from each other: *stinking* stresses 'offensively', whereas 臭 emphasizes 'thoroughly or badly'.

5.2. *The figurative sense and collocation patterns of chòu (臭) and foul/smelly/stinking in the corpora*

The result of Section 4 demonstrates that compared with the three English adjectives, chòu (臭) is more frequently used to modify people. In this part, the figurative usage of the four olfactory words needs to be further explored.

Through analyzing the semantic domains of the 20 collocates of the Chinese character chòu (臭) in Table 3, we find that there are eight different domains, such as "Nature", "Animals", "People", "Objects", etc. Here I only list domains which tend to evoke the figurative sense of chòu (臭), excluding offensive words, such as 婊子 ('bitch') and 狗屎 ('shit').

Table 9: The semantic domains of collocates of *chòu* (臭) with a figurative sense

Domains	Words
People/Human-related	小子 ('brat') 丫头 ('girl') 流氓 ('rogue') 婆娘 ('wife') 皮匠 ('cobbler') 皮囊 ('skin')
Body/Health	毛病 ('habits')
Emotions/State of Mind	脾气 ('temper')

As we can see, in the Adjective-Noun construction, when the head nouns that *chòu* (臭) modifies refer to human beings, body, and emotion, the adjective possesses figurative meaning. Here in Table 9, such usage accounts for 40% (8 out of 20 words). Most of the delicate meanings of *chòu* (臭) in the above figurative collocation differ from each other, as exemplified in Section 4.1. When the meaning of *chòu* (臭) extends from the foul odor to something or somebody that is repulsive or malicious, the word experiences a semantic change from SPECIFIC to GENERAL; in other words, 臭, as an unpleasant odor, is used to refer to anything that is derogative. The metonymy SPECIFIC FOR GENERAL becomes the linguistic motivation behind the semantic change. If we examine the problem from another perspective, whenever we want to say something bad or negative, we could use the Chinese *chòu* (臭) to modify it, such as 臭手 (*chòu shǒu*, 'smelly hand'), 臭脾气 (*chòu píqi*, 'bad temper').

For the phrase 臭手, it can mean a person's poor skill in playing chess. Similarly, for the phrase 臭脾气 (*chòu píqi*), bad temper is compared to something smelly. In both cases, the conceptual metaphor BAD IS SMELLY (see Ibarretxe-Antuñano, 1999; Sweetser, 1990/2002; Kövecses, 2019) is used. Here, the source domain is sense of smell, while the target domain can be human beings' character, skill, body, and emotion. According to Langacker's network model (1991: 266), 'smelly,' as the basic meaning of 臭, can be seen as a global prototype, whereas 'bad,' as the extended meaning of 臭 and also central to other extended meanings (e.g. UNSKILLED IS SMELLY, ANNOYING IS SMELLY), can be viewed as the local prototype. Therefore, when the Chinese adjective *chòu* (臭) is used figuratively to modify human beings, body, and emotions, the figurative sense of 臭 can be extended beyond the general word 'bad.'

The counterparts of chòu (臭) as an adjective in English are *foul/smelly/stinking*. In order to know the figurative sense and collocation patterns of the three English words, I categorize their semantic domains respectively based on Tables 4, 5, and 6. For the adjective *foul*, five collocates refer to smell or odor, and the remaining ten collocates can be classified into four semantic domains: sports, language, mental states/nature, and devil/behavior (see Table 4). When *foul* modifies these collocates, its figurative sense is evoked. The list of the four semantic domains can be found in Table 10.

Table 10: The semantic domains of collocates of *foul* with a figurative sense

Domains	Words
Sports	trouble pole ball shot territory
Language	language
Mental States/Nature	mood weather
Devil/Behavior	fiend deed

The reason why I classify the semantic domains in the way Table 10 displays is that the figurative meanings of *foul* are different in the four domains. When *foul* follows a noun relating to sports, such as sports field (e.g., *foul territory*), rule (e.g., *foul trouble*), matches (e.g., *foul ball*), etc., it means that a player acts against the rules of a sport. This sense is an extension of the basic meaning of *foul* as the unfair or unlawful actions in the sports field can be compared to the offensive and unacceptable odor. What cannot be ignored is

that *foul play* extends their meaning by referring to dishonest or criminal conduct not limited to the sports field, so we have such phrase as 'foul deed' to mean immoral behavior. When *foul* modifies language, it means that the language is offensive and obscene, but sometimes in weaker use; unpolished or inelegant (see online OED). *Foul* can also be used to describe the weather, characterized by strong winds and rain. *Foul mood* means very unpleasant mental states. Similarly, *foul temper* is also used often by people, maybe not so often as other phrases in Table 10, according to the data from enTenTen21. In the last domain, *foul fiend* refers to the evil spirit, such as a demon, or a diabolical being (see online OED).

For adjectives *smelly* and *stinking*, their collocates with high logDice value amount to ten (see Tables 5 and 6), so it is more convenient to analyze them as a whole. Most of the collocates of *smelly* are nouns related to excretion, body parts, and clothing, while *stinking* is often used to modify plants (e.g., hellebore), places, and objects (e.g., cesspool, smut) which emits a foul odor. The usage in this way is normally not figurative. As stated in Section 4.2, the only two collocates related to human beings are *smelly hippies* and *stinking Lizaveta*. When these head nouns are related to human beings or some abstract concepts, the modifying adjective takes the figurative sense. *Stinking Lizaveta* originates from the novel *The Brothers Karamazov* by Fyodor Dostoevsky. Because of her mental condition and her lack of personal hygiene, she is cruelly nicknamed "Stinking Lizaveta" by the townspeople. But today *stinking Lizaveta* is well-known because it is the name of a very popular musical band in America. The band chose the name because *stinking* can be seen as a metaphorical way to convey something raw, intense, or uncompromising—qualities that align with the band's powerful and unconventional instrumental music. In brief, the word *stinking* figuratively conveys the speaker's defiance against any kind of authority or convention.

Here, through the detailed analysis of the figurative sense and collocation patterns of *chòu* (臭) and *foul/smelly/stinking*, I have some new findings: a) the construal of the modifying adjectives in the constructions depends greatly on the specific context in both languages; b) the use of Chinese *chòu* (臭), in most circumstances, has a negative connotation and is often used in a derogative or insulting manner. Sometimes, the word could express the speaker's teasing or affectionate attitude, such as 臭丫头; c) the use of *foul* is almost as rich as the use of *chòu* (臭) in Chinese, but the two words have their distinctive figurative sense and collocation patterns. In Chinese we never use 臭 to modify *language*, but in English *foul language* is widely used, with a frequency of 16425 as seen in Table 4; d) the use of *smelly* and *stinking* can metaphorically convey the speaker's rebellion against the authority or conventional practice, as the two phrases *smelly hippies* and *stinking Lizaveta* reflect. In these cases, the conceptual metaphor UNCONVENTIONAL IS SMELLY and UN-

CONVENTIONAL IS STINKING are used.

The data from BCC and COCA could indeed corroborate the hypothesis in Section 1. I'd like to focus on the top 20 frequent collocations in both languages, as shown in Tables 7 and 8. An initial glimpse of the data from the two tables gives us the impression that the lists of collocations are not the same for zhTenTen17 and BCC, neither are enTenTen21 and COCA. However, they are not so different from each other. Let's take *foul* as an example. In COCA, eleven nouns are linked to sports, six nouns are related to smell or odor, and the remaining three nouns are language, mood, and weather. The rankings in the two corpora are different because COCA represents contemporary American English but TenTen corpora include American English, British English, and other English varieties. As Chinese is characterized by using *chòu* (臭) to modify people, I'd like to compare the data of collocations related to people in both languages below:

Table 11: The collocations related to people in Chinese and English[8]

Adjectives	Collocations related to people	Frequency	Total capacity	Frequency (per million)
chòu (臭)	臭男人 ('jerk') 臭丫头 ('annoying girl') 臭婊 ('stinky bitch') 臭流氓 ('stinky hooligan') 臭老头 ('old geezer') 臭老九 ('stinking intellectual')	2854	9.5 billion characters	0.3
smelly	smelly people smelly guy smelly man	33	1 billion words	0.033
stinking	stinking bastard	11	1 billion words	0.011

As shown in Table 11, the frequency of "臭+NOUN" construction related to people in Chinese is about 86 times bigger than that of "smelly+NOUN" construction in English and even about 259 times bigger than that of "stinking+NOUN" construction. After the difference in total capacity for BCC and COCA is taken into account, the frequency (per million) for the "olfactory adjective+NOUN" construction still demonstrates a wide gap between Chi-

[8] *Foul* is not counted because the nouns this adjective modifies are all non-human beings according to Table 8.

nese and English. The frequency (per million) of the Chinese construction is 0.3, which is about 9 times bigger than that of "smelly+NOUN" construction and 27 times bigger than that of "stinking+NOUN" construction. The olfactory adjectives in both languages are used figuratively when the head nouns they modify are related to people, which has been discussed in the above words.

5.3. *The Chinese and English data in comparison*

The comparison of data from different corpora could help us seek the answer to our research questions. When examining Table 8, I find that *stinking body* seems to bear the same meaning as 臭皮囊 (*chòu píngáng*, 'stinking skin bag') in Table 3. However, *stinking body* usually refers to a body that smells bad, so it does not have the connotative meaning 臭皮囊 takes. In traditional Chinese culture and philosophy, especially in Buddhist and Taoist thought, 臭皮囊 is often used to remind people that the physical body is temporary and not as important as the spirit or mind. In English, a corresponding expression to 臭皮囊 might be 'mortal coil' or 'earthly shell.' Another expression *stinking thinking* in Table 8 also draws my attention as stinking in the phrase is used metaphorically to modify the head noun 'thinking'. *Stinking thinking* refers to negative or irrational thought patterns that might lead to anxiety, depression, or low self-esteem. The phrase suggests that these thoughts must be discarded, just like one would get rid of something smelly. However, in Chinese, we seldom use 臭 to modify 'thinking' or 'idea.'

The usage of the four olfactory words examined in the study can be summarized as follows:

Firstly, both the Chinese character *chòu* (臭) as a noun and the English corresponding word *smell* can be used as the general term for various smells. Their derivative *chòu* (臭) as an adjective and the English corresponding word *smelly* go through the semantic narrowing, because both are not neutral and refer to very unpleasant smell literally.

Secondly, according to the logDice association measure in the TenTen corpora, both 臭 and *foul* are strongly associated with the collocates listed in Tables 3 and 4, which means that they represent the prototypical features of olfactory words in both languages. *Foul* has a long history of evolution, so some meanings are obsolete but more creative meanings are generated. The further semantic domains analysis (as shown in Tables 9 and 10) of the Adjective-Noun construction in both languages shows that when the Chinese character *chòu* (臭) modifies the head nouns related to human beings, body, and emotions, the adjective possesses figurative meaning. 40% of the collocates belong to this type. For the collocates of *smelly* and *stinking*, most of the

semantic domains are related to the smell of the referent, whether the odor comes from animate things or inanimate things, with only a few collocates referring to human beings. *Foul* is an exception as this word can be used figuratively in many different contexts, such as sports, language, mood, etc. Therefore, the usage of the four olfactory words has their unique features. The data from BCC and COCA have already corroborated this point.

Thirdly, it seems that the figurative usage of the olfactory words *chòu* (臭) and *foul/smelly/stinking* can all be explained by using the BAD IS SMELLY conceptual metaphor. Through checking the olfactory adjective+NOUN construction in the corpora, we find that the conceptual metaphor is too general and fails to describe the specific meaning of the olfactory words in the context. As the Chinese character *chòu* (臭) takes more derogatory nuance, meaning differently in the context, the metaphorical mapping could be UNSKILLED IS SMELLY (such as 臭皮匠), ANNOYING IS SMELLY (such as 臭丫头), REPULSIVE IS SMELLY (such as 臭排场), ENDEARING IS SMELLY (such as 臭小子). In comparison with it, as the English olfactory words *foul, smelly* and *stinking* have their unique usage in different contexts, the metaphorical mapping could be UNFAIR IS FOUL (such as foul play), IMMORAL IS FOUL (such as foul deed), INELEGANT IS FOUL (such as foul language), UNCONVENTIONAL IS STINKING (such as the band stinking Lizaveta).

Very importantly, according to Ruiz de Mendoza (2000: 121), the output of a metaphoric mapping could become the source of a metonymy. In the present study, the metaphorical mapping between the sense of smell and the subjective feelings forms the basis of the metonymy SPECIFIC FOR GENERAL as the foul odor could be used to refer to almost anything that is negative. The semantic range is extended.

6. Conclusion

Through the above corpus-linguistic analysis, the present paper gives a relatively complete picture of the figurative sense and collocation patterns of the four olfactory words in Chinese and English. Briefly speaking, in both languages, the olfactory adjectives could be used to modify head nouns which cover a wide variety of semantic domains. However, the corpus study demonstrates that 臭 bears a similar meaning as the other three English adjectives when it is used figuratively to refer to repulsive things, but the four words in the study have their distinctive usage. For example, 臭 is more often used to refer to people, while *foul* is the only word which can modify nouns relating to sports. The above metaphorical mappings become good evidence to show the differences across languages. Chinese would seldom say 臭语言 (literal translation: foul language). Correspondingly, English

speakers may not mean 'endearing' when they use *foul*, *smelly*, or *stinking* to modify a young man.

The psychological similarity forms the cognitive basis of mapping the physical sensation domain onto the non-physical sensation target domain. Therefore, many scholars used the conceptual metaphor BAD IS SMELLY (see Ibarretxe-Antunano, 1999; Sweetser, 1990/2002; Kövecses, 2019) to construe the figurative sense of these olfactory words. However, the present study claims that the conceptual metaphor is too general and fails to describe the specific meaning of the olfactory words in the context. The corpus data shows that the subjective feeling conveyed through these olfactory words is very delicate, with the construal subject to the specific context and the speaker's intention. Sometimes, the character *chòu* (臭) could express the speaker's teasing or affectionate attitude, such as 臭小子, 臭老头 (*chòu lǎotóu*, 'old geezer'), with a tone of endearment rather than being seriously derogatory.

Despite its contributions, the study has certain limitations. Firstly, as the number of olfactory words under investigation is very limited, more olfactory adjectives with different smells can be covered in future studies. Secondly, since the study examined the differences and similarities in the usage of olfactory words across Chinese and English, the cultural motivation of the results could be explored in the following study.

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Author's address

Eötvös Loránd University
Faculty of Humanities, Intercultural Linguistics PhD program
Múzeum krt. 4/A
H-1088 Budapest
Hungary
Email: zhaoxuan2022@student.elte.hu

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