

A corpus-based analysis of synesthetic metaphors in Korean*

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Jo, Charmhun. 2019. A corpus-based analysis of synesthetic metaphors in Korean. *Linguistic Research* 36(3), 459-483. Linguistic synesthesia generally means an experiential mapping of one sensory domain onto another, such as with the experience of *sweet sound*. The study aimed to test Ullmann's (1963) theoretical framework of "hierarchical distribution" through synesthetic data obtained from the Sejong Corpus. In this paper, therefore, I focused on clarifying the overall routes of Korean synesthetic transfers and the universal and/or culture-specific aspects of the synesthetic associations. The results of data analysis display that (a) Korean synesthesia conforms to Ullmann's (1963) general scheme of metaphoric mappings, (b) the predominant source domain is touch while the predominant target is hearing, which also accords with Ullmann's (1963) study, and (c) there could be a probable cultural dependency, whereby "taste" occupies a significant position along with "touch" in Korean synesthetic metaphors. (Southwest University)

Keywords linguistic synesthesia, Korean daily language, Sejong Corpus, hierarchical distribution, synesthetic transfer

1. Introduction

Synesthesia has long been a research topic of interest in diverse academic fields. The term "synesthesia" comes from the Ancient Greek *σύν* *syn*, 'together,' and *αἴσθησις* *aisthēsis*, 'sensation.' In linguistics, synesthesia is understood in terms of metaphor (Geeraerts 2010), which means that a perceptual experience of one sense is described by lexical expressions associated with another. For example, *sweet sound* is linguistically synesthetic, because the speaker expresses a

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perception of sound (*sound*) using a word related to taste (*sweet*), where *sound* becomes the target domain of the transfer and *sweet* is the source.

The idea of synesthetic metaphors was introduced by Stephen Ullmann (1963); he proposed a theoretical framework of “hierarchical distribution” as a probable universal principle in the process of synesthetic mapping. However, he admitted the need for a broader examination of additional linguistic samples in order to establish the universality of the framework. The investigations have steadily expanded from English to such languages as Chinese, Hebrew, Italian, and Japanese. However, many languages, including Korean, have yet to be studied.

In this light, the objective of the study is to test Ullmann’s (1963) theoretical framework using synesthetic data from the Sejong Corpus. As a matter of fact, this study focuses on the issue of directionality and universality of Korean synesthetic mapping rather than other issues such as motivation or cognitive interpretation. Therefore, the research questions herein are: (a) What are the routes for Korean synesthetic transfers?, (b) What are the predominant source and target domains for the transfers?, and (c) What are the universal and/or culture-specific aspects in the associations?

This article presents a brief review of the literature on previous studies of linguistic synesthesia in Section 2. The methodology of research, including corpus and data collection, are then introduced in Section 3, and the results of the analysis are demonstrated in Section 4, followed by a general discussion. Finally, in Section 5, the conclusion of the present study is provided, along with a summary.

2. Literature review

As the seminal work of synesthetic metaphors, Ullmann (1963), analyzing nineteenth century poetic writings written in English, French, and Hungarian, proposed his theoretical framework of “hierarchical distribution,” where he concluded that there are three overall tendencies in synesthetic mappings. First, the majority of synesthetic transfers show the following direction: touch → heat → taste → smell → sound → sight.¹ These transfers tend to move from the

“lower” to the “higher” sensory domains, which is called “hierarchical distribution.” The second tendency, derived from the first, is that the most frequent source domain of transfers is touch, the lowest level of sensation. The third tendency is that the most frequent target domain for synesthetic transfers is sound rather than sight.

Based on Ullmann’s (1963) study of synesthetic data drawn from poetry, Williams (1976) investigated synesthetic transfer in daily language, namely, the historical change of the meanings of synesthetic adjectives in everyday English, along with some evidence from other Indo-European languages and Japanese. While Ullmann’s (1963) research is restricted to synchronic data from poetry, Williams’s (1976) approach is focused on diachronic data from dictionary. For instance, *dull* came out as an adjective for touch, extended to color and sound, and later to intellect or knowledge (Takada 2008). In sum, his results at large support Ullmann’s (1963) framework of “hierarchical distribution,” generalized as follows:

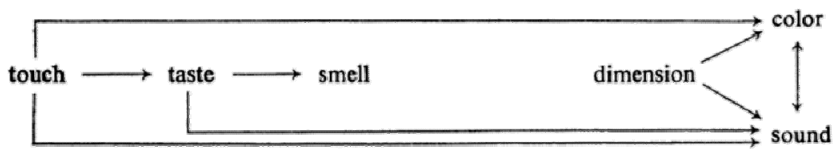


Figure 1. Williams's (1976) synesthetic transfer route

Following Ullmann (1963) and Williams (1976), Yu (1992) applied their approaches to data collected from the Chinese literary and everyday languages. The conclusion of that research shows that Chinese synesthetic metaphors basically conform to the same general schemes in metaphoric mappings. Yu (2003) also found similar results from an analysis of the synesthetic data extracted from literary works written by the eminent contemporary Chinese

1 The sign “A → B” here means that A (the source) is mapped onto B (the target) between sensory domains, A modifying B. In the study by Ullmann (1963), the term “transfer” is used rather than “mapping.” In addition, the term “target” does not appear in the original paper; instead “destination” or “recipient” is employed. Additionally, concerning the sensory domains utilized, Ullmann (1963) selected six senses, including “heat” separate from “touch,” as seen in the above. That is why some scholars have simplified his hierarchy to “touch → taste → smell → sound → sight.” The issue of sensory domain will be discussed in more detail in Section 3.

novelist Mo Yan, in which synesthesia was examined from a cognitive perspective. Yu (2003) posited that its findings would offer “further support to the claim of the theory of conceptual metaphor that poetic (or literary in general) metaphors basically use the same cognitive mechanisms as everyday metaphors and what makes them look different is their extension, elaboration, and combination of those mechanisms in ways that go beyond the ordinary.”

From the perspective of cognitive poetics, following Ullmann’s (1963) approach, Shen (1997) explored the directionality of transfer of synesthetic metaphors in Hebrew on the basis of a literary analysis of modern poetry and two sets of experimental data. His findings reinforce Ullmann’s (1963) observations about the mapping apparent in linguistic synesthesia. That is to say, the synesthetic expressions in the Hebrew language also tend to map lower senses onto higher ones in the hierarchy. Of the 130 examples, for instance, 95 (75%) are in accordance with the previous generalization from Ullmann (1963), and 23 (18%) are neutral with respect to the generalization (e.g., such cases comprised the sound-sight combination, as in *a silent whiteness* and *the music of the lamp’s light*), and only 10 (7%) clash with the generalization. By way of the notion of accessibility, Shen (1997) claims that the low to high transfer comes from the general cognitive constraints, where a more accessible/basic to less accessible/basic concept transferring seems to be more natural and preferable to the reverse transferring. In addition, he points out that sight and sound are less accessible because they do not involve direct contact with the perceived entity.

Recently, Strik Lievers (2015) reported a notable study of linguistic synesthesia using corpora to investigate synesthetic transfers of English and Italian.² Via a semi-automatic method for extracting synesthesiae from corpora, which had been developed in Strik Lievers et al. (2013), the large-scale data results demonstrated that the so-called principle of directionality simply reflects the frequency of synesthetic connection types. Strik Lievers (2015) suggested that although the hierarchy of Ullmann (1963) is confirmed, the directional tendency

2 Recent corpus-assisted approaches to linguistic synesthesia probably arised along with the rapid growth of corpus and computational linguistics, which could contribute to drawing a comprehensive and big picture of synesthetic transfer tendencies based on a relatively massive dataset. See Park and Nam (2017) for a detailed discussion of corpus linguistics development and research trends.

for synesthetic metaphors must be understood as the reflection of frequency, not perfect constraints, because those that follow the direction are just more frequent than those that do not follow it. Lastly, with respect to the motivations of the directionality of linguistic synesthesia, she presented various relevant linguistic factors such as the distribution of parts of speech (POS) in the sensory domains, together with the extra-linguistic explanations such as the investigation of perception verbs, save the neuro-biological and cognitive explanatory model.³

With regard to problems of Korean synesthesia, on the whole, there has been only a small number of previous studies and even fewer with approaches to synesthetic route exploration and corpus-related research. Also, the existing studies that have addressed the Korean synesthetic phenomena so far have neither shown a clear and comprehensive directional order of synesthetic transfers nor have reported obvious findings (e.g., Yoon 1970; Park 1978 for Korean poetic synesthesia, and Chung 1997; Lee 2015 for Korean daily language synesthesia). The study of Korean synesthetic metaphors thus remains in an early stage. In this respect, the study reported in this article intends to apply Ullmann's (1963) theoretical framework of "hierarchical distribution" to Korean synesthetic data collected from the Sejong Corpus in order to more clearly discover and illustrate the features of Korean synesthesia.

3. Methodology

3.1 Sensory domains

Prior to the examination of synesthetic mappings in linguistic text, sensory domains (or sensory modalities) must first be designated. As a matter of fact, no agreement exists among scholars over how many sensory modalities there are,

3 Concerning the matter of motivation, there are, in general, two kinds of approaches or explanations, i.e., a neuro-biological model and a cognitive linguistic model. The first one, which is from neuro-biological study of synesthesia, posits that linguistic occurrences of synesthesia are also based on neural associations of senses in the brain like the examples of neurological synesthesia (cf. Marks 1996; Rakova 2003; Ramachandran and Hubbard 2003, among others). The other, on the other hand, suggests that linguistic synesthesia follows the general cognitive principles applied to metaphors, and the mapping and directionality are determined by the embodiment base (cf. Shen 1997; Shen and Cohen 1998; Yu 2003; Popova 2005, among others).

and the repertoires employed vary depending on researchers' viewpoints and classificatory criteria (Strik Lievers et al. 2013; Strik Lievers 2015). Most synesthesia studies now follow the Aristotelian five-sense system (i.e., touch, taste, smell, hearing, and sight) (e.g., Cytowic 1989; Shen 1997; Strik Lievers 2015). Some studies, on the other hand, make adjustments to the above system. For instance, Ullmann (1963) separated "heat" from "touch,"⁴ while Williams (1976) divided sight into the two categories of "dimension" and "color." Day (1996) is based on Ullmann's (1963) taxonomy, while Yu (1992, 2003) follows Williams's (1976). Lin and Hsieh (2011) add "emotion" to the six senses of touch, temperature, taste, smell, hearing, and vision, and Zhao and Huang (2015) also take "emotion" into consideration along with the traditional five senses. This study chooses the general Aristotelian sensory modes for broader views and comparisons.

3.2 Data and corpus

In this study, the synesthetic data were collected from the Sejong Corpus,⁵ better known as the 21st Century Sejong Project. The 21st Century Sejong Project is a comprehensive project aiming to build various kinds of language resources, including Korean corpora comparable to the British National Corpus (BNC) (cf. Aston and Burnard 1998) and Korean electronic dictionaries. The project was conceived of in 1997 and started in 1998 as a 10-year long-term project (Kang and Kim 2004).

The Sejong Corpus data basically include raw corpora of modern Korean (written and spoken), North Korean, Korean used overseas, old Korean, and oral folklore literature. They include parallel corpora consisting of Korean and other languages such as English and Japanese, morph-tagged corpora, POS-tagged corpora, sense-tagged corpora, and a parsed corpus as well. Among these, the parsed corpus of modern written Korean has been selected for this study because it is the only syntactically analyzed corpus and the contents consist of everyday linguistic data. The Korean parsed corpus was collected over four years

4 However, Ullmann (1963: 278) mentioned: "There is of course no harm in combining the two sets of data; actually this would only throw an even more glaring light on the general pattern."

5 Access: <https://ithub.korean.go.kr/user/main.do>.

from 2002 to 2006, and the size is 43,828 sentences (around 433,839 words) (NIKL 2011). According to NIKL (2011), most of the processes were manually carried out, although the human annotators made use of some tools that aided in building up the corpus.

3.3 How to extract synesthetic metaphors from the corpus

The study refers to Strik Lievers et al.'s (2013) methods to extract synesthetic data from the Sejong Corpus.⁶ Based on Stefanowitsch's (2006) approach to metaphoric data extraction, they show two steps as a general procedure for extracting synesthetic instances from corpora: "compiling a list of perception-related lexical items, divided by sensory modality" and then "searching for the sentences that include at least two perception-related words" in corpora (Strik Lievers et al. 2013). Setting up a list of sense-related lexemes is the first step as the "preliminary" stage in their methodology, which is crucial to the accurate and successful extraction of synesthetic examples from corpora. As the second step, Strik Lievers et al. (2013) present two kinds of methods for practically collecting synesthetic data from corpora, claiming that the available corpus meets (at least) both requirements of having a large enough database as well as reflecting ordinary language. One is based on the co-occurrence of two perception lexemes from two different sensory modes in one sentence, and the other considers dependency relations between two perception lexemes in a parsed corpus. According to their analysis of the results, the latter is more efficient in terms of accuracy and convenience, but the former (Method 1) is, nonetheless, said to be useful for work with non-dependency-annotated corpora.

Therefore, the author first set up the perception-related lexical items subdivided into the five sensory modes in terms of a POS categorization into noun (N), adjective (A), and verb (V),⁷ which starts from intuition and the

6 To the author's knowledge, no other proper way has been developed for the mass extraction of synesthetic data from corpora. Liu et al. (2015), Strik Lievers (2015), and Zhao et al. (2018) also followed Strik Lievers et al.'s (2013) methods for their studies.

7 Regarding the POS matter of linguistic synesthesia, the three parts of speech of noun, adjective, and verb generally have to be taken into account because they are mostly able to engage in synesthetic connections (Strik Lievers et al. 2013). For example, "She has a golden [Adj/Source] voice [N/Target]," "The flowers smell [V/Target] sweet [Adj/Source]" (Strik Lievers et al. 2013: 4).

relevant literature and is expanded through a variety of available electronic resources such as Korean WordNet⁸ and web dictionaries in the Sejong Corpus. In more detail, for example, basic perception/perception-related lexemes obtained from self-introspection or linguistic literature can be expanded via Korean WordNet as follows:

- (1) Taste: 맛 *mas* ‘taste’ > 입맛 *ipmas* ‘appetite’, 밥 *pap* ‘rice’, 밥맛 *papmas* ‘rice taste’, 신맛 *sinmas* ‘sour taste’, and so forth

Basically, a perception-related word can be classified into multiple domains depending upon the context, but the classification, which is changeable according to researchers, should be made carefully, considering the efficiency of study.

Second, for the extraction of synesthetic expressions from the corpus, the simplest method is applied that merely lists all the sentences containing at least two perception-related words, given the fact that this way can collect the largest number of candidate sentences, and the candidates will be amenable to final manual checking because the corpus is not large. Finally, to sort out “true” synesthesiae, it is necessary to manually inspect the extracted candidate output. The following is a sample of potential synesthesia sentences extracted from the corpus:

Sensory pair: Smell ↔ Hearing	
1	연기_감지_형이_니_경우제사_때쓰는 [[향]]_smell 3개정도_를 한꺼번에피우_어정보기_에갓_다_대_면 [[소리_가]]_hearing나_니다.
2	한국조류학회장_이_니_원병오_경희대교수_도야생_조류_를관찰_하_던중_닭_싹_바늘_이 [[입_에]]_hearing_smell_웨이_거나_목_에_닭_싹_줄_을_두르_니_채_날_아_다니_는_팽 이_갈매기_들_을_여러_차례_목_격_하_았_다_고 [[말_하_았_다_]] hearing
3	한_겨울_에 [[생선_을]]_smell_먹_고_싶_다_는_어머니 [[말_에]]hearing_강_가_얼음_을 깨_고_닭_시_질_하_아 [[고기_를]]_smell_굽_어_드리_었_다.
4	진흙_구이_기계_를_만들_어_보_급_하_고_있_는_김명호_씨_는_진흙_을_굽_지_않_고_그_날_에서 만_말리_니_옹기_에 [[고기_를]]_smell_담_아_가_열_하_면 [[고기_의]]_smell 수분_과_기름_기_가_알_맛_계_흡수_되_고, 진흙_이_발산_하_는_특유_의_성분

8 Access: <http://www.wordnet.co.kr/>. Refer to Choi and Kim (2008) and Moon (2010), among others for further information with reference to Korean WordNet.

5	소보원_은조사대상자_들_이_회비_외_에_도_별도_의참가비_를_내_어야_하_았_다'(_ 33_._9_%_)_계획_되_는_일부_프로그램_이_실시_되_지_않_았_다'(_30_._8_%_)_부대_시 설_이용_조건_이_실제_와_는_다르_았_다'(_19_._5_%_)_광고_와_는_달리
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Figure 2. The sample of synesthesia candidate output retrieved from Sejong Corpus

4. Results and discussion

4.1 Sense-related word lists

A total of 417 perception-related lexemes were collected for this survey. Although the lexical items are not exhaustive and still need to be updated, this quantity suffices for meaningful output. For data extraction from a corpus using similar methodology in her study of synesthesia, Strik Lievers (2015) set up a lexical list sub-divided into nouns, verbs, and adjectives for each of the five sensory domains with 425 lexemes in English and with 442 lexemes in Italian. The details of the lists for this current study are as follows:

Table 1. The distribution of sense-related words collected for the study

	Touch	Taste	Smell	Sight	Hearing
N	31	15	28	68	54
A	52	31	8	47	6
V	12	8	12	25	20
Sub-total	95	54	48	140	80
Total			417		

4.2 Results

The first finding is the overall results for the synesthsiae extracted from the Sejong Corpus, as summarized in Table 2. These data provide an overview of corpus work on Korean synesthetic phenomena.

Table 2. The total results of synesthesia extraction

Total Corpus Sentences (TCS)	Extracted Positive Sentences (EPS)	True Positives (true synesthesiae) (TP)	TP / EPS (%)	TP / TCS (%)
43,828	1,250	100	8	0.23

With regard to Table 2, to further elaborate, TP here means 100 tokens of total synesthetic occurrences detected from EPS, or 1,250 candidate sentences where true synesthesia could be expected. As obviously recognized in the percentages of TP/EPS and TP/TCS, the scarcity of synesthesia in quantity in daily language is verified, although it is common in use. The entire synesthetic expressions gathered from Sejong corpus can be confirmed in Appendix.

The second is the distribution of synesthetic mappings among sensory modes. This is practical informational data representing the frequency of each mapping and the number of forward or backward transfers that exist.

Table 3. The distribution of Korean synesthetic mappings among sensory domains (TOKEN)

Target \ Source	Touch	Taste	Smell	Sight	Hearing	Total
Touch	0	3	3	11	20	37
Taste	1	0	8	9	15	33
Smell	0	0	0	1	2	3
Sight	2	1	4	0	13	20
Hearing	0	1	1	5	0	7
Total	3	5	16	26	50	100

Representative examples of synesthesia drawn from the Sejong Corpus are as follows:⁹

⁹ In this article, each Korean language example will be described on four levels: first, in *Hangul*, the Korean writing system; second, in phonetic transcription by *Yale Romanization*; third, a literal gloss in English; and fourth, an English translation. In addition, the notation for the glosses in the

- (2) Touch → Taste
 간편하게 부담없이 먹을 수 있도록
 kanphyenha-key putam-eps-i mek-ul su iss-tolok
 easy-P light-not-P eat-P can be-P-for
 '(that it) can be eaten easily and lightly'
- (3) Touch → Smell
 커피향이 아주 부드럽게
 khephi-hyang-i acwu pwutulep-keh
 coffee-aroma-P so subtle-P
 'The coffee aroma is so subtle'
- (4) Touch → Hearing
 아주 부드러운 목소리로
 acwu pwutule-wun mok-soli-lo
 very soft-P neck-sound-P
 'in a very soft voice'
- (5) Taste → Smell
 달콤한 꽃향기와 함께
 talkhomha-n kkoch-hyangki-wua hamkey
 sweet-P flower-fragrance-P together
 'along with a sweet fragrance of flowers'
- (6) Taste → Sight
 시종일관 느끼한 태도로
 sicong-ilkwuan nukkiha-n thayto-lo
 start to end-consistence oily-P attitude-P
 'consistently with an oily attitude'
- (7) Smell → Sight
 향기로운 시선을 보내다
 hyangkilo-wun sisen-ul ponay-ta
 fragrant-P gaze-P send-P
 '(Someone) sends a fragrant gaze.'
- (8) Sight → Touch
 하늘 빛 느낌이 난다

lexical analysis is simplified with the use of "P" for particle.

hanul pich nukkim-i na-nta
 sky light feeling-P arise-P
 'It gives off the impression of the light of the sky.'

(9) Sight → Smell

다채로운 향기 속에서
 tachaylo-wun hyangki sok-eyse
 colorful-P fragrance inside-P-at
 'amidst colorful fragrance'

(10) Hearing → Sight

요란한 몸짓으로
 yolanha-n momcis-ulo
 loud-P gesture-P
 'with loud gestures'

4.3 General discussion

The first issue to be discussed here is with regard to the directionality of Korean synesthetic mappings. This is the overall synesthetic transfer route in Korean, which directly concerns the nature of Korean synesthetic transfers found in the corpus data. The result, generalized from the Table 3, is displayed in the following figure:



Figure 3. Overall synesthetic transfer route in Korean Sejong Corpus

In short, the result reported in this research on the whole conforms to the theory of “hierarchical distribution” of Ullmann (1963) and the “general” synesthetic transfer pattern in everyday language presented by Williams (1976), as shown in Figure 3. Although the directional order of “Sight → Hearing” in this study is different from that of Ullmann’s conclusion (“Hearing → Sight”), it does not make difference as it is acceptable that this sensory order/position in vision and sound is usually changeable as per data in linguistic synesthesia research (Ullmann 1963). Likewise, the discrepancy in the relationship of vision

and audition between Ullmann's (1963) and Williams's (1976) directional tendency does not mean to be contradictory to each other, because "the same set of data could be consistent in both models" in that "both are models of directional tendencies that do not claim to be strict rules" (Zhao et al. 2018: 1171). It is generally accepted that their findings are both similar.

This result shows that Ullmann's so-called universal hypothesis based on poetic language is applicable to daily language synesthesia data from Sejong Corpus. In other words, adding to existing studies, this report in this article presents that the mapping directionality from linguistic synesthesia can be applied universally across genre as well as across language, because the Korean data used for this study belongs to another non-related language family and genre far away from Ullmann's research sample. Moreover, this linguistic evidence says that in terms of conceptual metaphor theory, as Lakoff and Turner (1989) pointed out, synesthesia as metaphor also supports the view that metaphors from poetry have no essential difference with conventional metaphors, given the identical cognitive mechanism apart from the distinction of their delineation and representation.

In addition, as confirmed in Table 3, among these transfers of synesthetic metaphors collected from the Korean corpus, the predominant sensory source domain is touch and the predominant target domain is hearing. More specifically, the tactile domain functions most predominantly as the source of 37 of the 100 synesthetic expressions, followed by the gustatory domain with 33. Meanwhile, the auditory domain is the most common target, comprising the target of 50 of the 100 synesthetic expressions, followed by vision with 26. The predominant source (touch) and target (hearing) for this study both match with the conclusion of Ullmann (1963) too.

On the other hand, it is noted that the probable universal tendency of synesthesia directionality is not unidirectional but frequency-based. That is because opposite transfers, or backward transfer types, are found, although the number of cases is remarkably low. More precisely, forward tokens account for 85% and the reverse ones 15% of the whole mappings in synesthesia data of this study. This results have also been confirmed by Strik Lievers (2015), who explored synesthetic phenomena in English and Italian through a large-scale corpus-based approach. In Strik Lievers's (2015) study of synesthesia, the forward

mappings take up 62% in English and 74% in Italian.

More importantly, along with the above commonalities, there was found a probable cultural dependency or culture-based difference here in Sejong Corpus synesthesia. A closer examination of the data found out a notable point in Korean synesthetic metaphor phenomena regarding the gustatory domain, taste, which serves as the second largest source modality of the Korean synesthetic mappings investigated. The key point here is that the difference between the most frequent and second most frequent source sensory domains is very slight, as indicated in Table 4.

Table 4. Korean source sensory domains in decreasing order of frequency (%)

Touch	Taste	Sight	Hearing	Smell
37	33	20	7	3

This observation is comparable to Strik Lievers's (2015) data, as shown in Table 5.

Table 5. English and Italian source sensory domains in decreasing order of frequency (%), adapted from Strik Lievers (2015)

	Touch	Taste	Sight	Hearing	Smell
English	49.3	25.7	21.8	3.0	0.2
Italian	55.6	20.2	19.1	4.6	0.2

The frequency of target modes in Korean synesthetic transfers is likely stable and universal when the result of this study is compared with the results from Strik Lievers (2015), as shown in Table 6.

Table 6. Target sensory domains in decreasing order of frequency in Korean, English, and Italian (%), merged with the data presented in Strik Lievers (2015)

	Hearing	Sight	Smell	Taste	Touch
Korean	50	26	16	5	3
English	52.3	28.0	12.4	5.3	2.1
Italian	50.2	42.5	3.8	3.0	0.2

Accordingly, this situation can imply that together with the tactile domain (touch), the sense of taste occupies a significant position in the Korean or Asian cultural context, such that people in these cultural circles tend to describe something in terms of gustation or tactility more often than westerners do. Such a view is strongly supported by Zhao and Huang (2015), who reached the following conclusion in their study of synesthetic metaphors in modern Chinese:

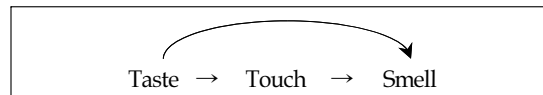


Figure 4. The hierarchy of synesthetic transfers among taste, touch, and smell in Chinese, excerpted from Zhao and Huang (2015)

Then, it is an interesting question why the people in Korean or Chinese culture (furthermore, in Asian culture) employ the gustatory sense as much as the tactile sense, the “universally” lowest (or, most basic) sensation domain, to illustrate something else. Especially in China, the importance of food is based on the huge population and the long history of wars and famines, as shown in a well-known proverb of *people regard food as God/their prime want*. On top of that, various kinds of (rare) dishes and gustatory terms and expressions coming out of a huge amount of territory is likely to make the sense of taste equal to the sense of touch in Chinese culture (cf. Chang 1977).

In Korean culture, the importance and prevalence of food and taste are reflected in various familiar expressional combinations in daily life, such as *a tasty world* or *Yummy Guys* (the title of a Korean TV programme hosted by four fat gourmets navigating for gastro-venture) including a sensual expression like *Delicious Sex* (a Korean film’s title). According to Lee (2017), to Koreans, food has assumed an importance more than food itself through thousands of years of history, as confirmed in a proverb of *food is equal to medicine*. Furthermore, lexical expressions related to taste are displayed relatively in detail, abundance, and variety in old Korean literature as well as in modern Korean, compared with other senses in Korea (Paek 2017). In this sense, the gustatory sense can probably perform a significant role as a source domain for metaphorical representation in Korean cultural and linguistic context. However, this issue is still not easy to

make a clear answer to, because many factors such as anthropology, sociology, history, and so on as well as linguistics should be considered and duly weighed.

5. Conclusion

The present study endeavored to clarify the aspects and characteristics of Korean synesthetic metaphors on the basis of the “universal” tendencies claimed by Ullmann (1963). In the course of the examination and comparison, the universality of his theory was properly tested. The results of the analysis of Sejong Corpus synesthetic data confirmed Ullmann’s (1963) hierarchy of synesthetic metaphor including the tendencies of the predominant source and target domain of the senses. They support the existing claims that the tendencies of direction, source, and target from linguistic synesthesia have a cross-linguistic and cross-genre universality. Additionally, it was pointed out that the directional pattern is not rule-based but frequency-based because a minority of opposite examples are still existent. Finally, this study suggested that there could be a likely culture/language-based difference in linguistic synesthesia. That is, together with the tactile domain, the gustatory domain held a significant position as a source in this research data, which can signify that Korean (or Asian) people tend to describe something in terms of gustation as well as tactility more often than do people in western cultures. Related to this issue, the significance of food and the existence of a variety of gustatory expressions in Korea and China were discussed. For future work, the research on synesthetic data drawn from Korean poetry should be conducted, given that Ullmann’s (1963) “universal” hypotheses emerged from a series of explorations of poetic language. Furthermore, the issue of culture-synesthesia relationship also needs more in-depth research including interdisciplinary studies in consideration of its complication.

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Appendix

Korean synesthetic expressions from the corpus (TOKEN)

TOUCH → TASTE

1. 담백하고 부드러운 맛
Clean and smooth taste
2. 간편하게 부담없이 먹을 수 있도록
To eat easily and lightly
3. 그 맛이 매우 부드럽고
The taste is very smooth and...

TOUCH → SMELL

4. 눅눅하고 퀴퀴한 곰팡이 냄새
Dank and musty smell of mold
5. 장마철에는 눅눅한 냄새가 나서
Because it smells moldy during the rainy season,
6. 커피향이 아주 부드럽게
The coffee aroma is so subtle...

TOUCH → SIGHT

7. 따스하고 부드러운 시선으로
With a warm and soft gaze
8. 더 따뜻한 컬러를 사용하여
By using warmer colors
9. 색상이 좀 밝고 따뜻하게 보여야
The colors need to look brighter and warmer.
10. 차디찬 시선을 보내면서
While sending a cold gaze
11. 여름에는 시원한 색깔이
In summer, cool colors...
12. 그녀의 시선이 부드럽게
Her gaze ... softly
13. 지금 시즌에는 밝고 따뜻한 컬러가
For current season, bright and warm colors...
14. 다소 차가운 이미지로

With a rather cold image

15. 부드러운 인상은 아니고

Not a soft (or rounded) impression

16. 언제나 산뜻한 이미지를

Always a refreshing image

17. 얼굴이 까칠한 것이

The face (with stubble) is scratchy

TOUCH → HEARING

18. 아주 부드러운 목소리로

In a very soft voice

19. 무거운 침묵이 가득했다

Filled with a heavy silence

20. 오늘 따라 그녀의 촉촉한 목소리가

Particularly today, her moist voice...

21. 마른 기침 소리만 가끔씩

Only her dry coughing sound ... occasionally

22. 라디오에선 아나운서의 부드러운 목소리가

From the radio, a soothing voice of an announcer...

23. 갑자기 날카로운 굉음이

Suddenly, a sharp thunderous sound...

24. 그날의 뜨거운 함성이 여전히

The vehement roar of the day still...

25. 바람 소리마저 부드럽게 들리고

Even the wind sounded soft.

26. 그녀의 산뜻한 목소리에 취해

Intoxicated by her refreshing voice

27. 한없이 가벼운 말의 향연

Feast of endlessly empty words

28. 모두들 경쾌한 목소리로

Everyone... in a pleasant voice

29. 잠시 무거운 침묵이 흐른 뒤

After a heavy silence fell,

30. 그의 목소리가 한없이 부드러워져서

His voice became incessantly soft,

31. 이번에는 조금 더 경쾌한 음악에 맞춰

This time, accompanied by more cheerful music

32. 육중한 기계음이 점차
Heavy machinery noise gradually…
33. 한동안 침묵이 무겁게 흘렀고
For a while, a heavy silence followed.
34. 그들 사이에는 오직 무거운 침묵만이
Only a heavy silence … between them.
35. 가벼운 음악에 맞춰 댄스 댄스
Keep dancing to light music.
36. 여름에는 경쾌한 음악이 좋고
In the summer, pleasant music is good.
37. 어디에선가 날카로운 비명이
From somewhere, a sharp shriek…

TASTE → TOUCH

38. 약간 쓰디쓴 느낌으로 합시다
Let's do it with a slightly bitter feeling.

TASTE → SMELL

39. 맛있는 냄새가 난다
There is a delicious smell.
40. 느끼한 냄새가 나서
Because there is a nauseating smell,
41. 고기에서 약간 비릿한 냄새가 난다
The fish smells slightly rotten.
42. 달콤한 커피향에 끌려
Drawn to a sweet aroma of coffee
43. 고소한 냄새가 방안에 가득
Aromatic smell filled the room.
44. 맛있는 냄새가 부엌에 가득했다
A delicious smell filled the kitchen.
45. 달콤한 꽃향기와 함께
Along with a sweet fragrance of flowers
46. 시큼한 오렌지향 때문에
Because of the tangy fragrance of an orange

TASTE → SIGHT

47. 처음엔 인상이 참 싱거웠는데
The first impression was really tasteless,
48. 밥맛 떨어지는 그들의 행태로 인해
Because of their unappetizing behaviors,
49. 산뜻하고 담백한 첫 인상이
The first impression, which was clean and refreshing...
50. 그녀의 씩씩한 모습이 여전히
Her poignant look still...
51. 씩씩한 표정을 지으며 그가 먼저 일어서고
He first rose from his seat, making a poignant facial expression.
52. 뽀뽀한 표정으로 사람들이
People with astringent facial expressions...
53. 심심한 표정을 지었다
Made a bored facial expression
54. 시종일관 느끼한 태도로
Consistently with an oily attitude
55. 사람들은 뽀뽀한 표정을 애써 감추며
People were trying hard to hide poignant emotions.

TASTE → HEARING

56. 맛있는 소리를 찾는 사람들
People who search for tasteful (or delightful) sounds
57. 맛있는 이야기
A tasteful story
58. 씩씩한 말의 여운이
The lingering imagery of poignant words
59. 느끼한 목소리에 모두들
Everyone... at oily voice
60. 싱거운 말만 남기고서
Leaving tasteless words
61. 달콤한 말에 속으면
If you are fooled by sweet talk,
62. 쓰디쓴 충언을 듣고 그녀는
When she heard a pungent advice, she...
63. 맛있는 소리

A delicious sound

64. 칼칼한 기침 소리에 깨어
Woken by a dry coughing noise
65. 그분의 구수한 사투리에
At his delightful dialect
66. 달콤한 귓속말에 이어서
Followed by a sweet whisper
67. 사기꾼의 살살 녹는 언변에 속아서
Fooled by the con-man's softening words,
68. 감미로운 음악에 취해
Intoxicated by sweet music
69. 그녀의 달콤한 말에 이끌려
Drawn by her sweet talk
70. 감미로운 라틴 음악의 세계로
Into the world of sweet Latin music

SMELL → SIGHT

71. 향기로운 시선을 보내다
(Subject) sends/send a fragrant gaze.

SMELL → HEARING

72. 그분의 향기로운 음성
At the sound of his aromatic voice
73. 향기로운 음악 소리
Fragrant sound of music

SIGHT → TOUCH

74. 하늘 빛 느낌이 난다
It gives off the impression of sky light.
75. 마알간 볼 터치
Reddish touch on the cheek

SIGHT → TASTE

76. 다채로운 맛이 일품이다
A colorful taste is a magnum opus.

SIGHT → SMELL

77. 다양한 종류의 향을
A wide array of fragrance
78. 싱그러운 꽃내음과 함께
Along with a refreshing fragrance of flowers
79. 다채로운 향기 속에서
Amidst colorful fragrance
80. 알 수 없는 복잡한 체취를 풍기며
Giving off a mysteriously complex body odor

SIGHT → HEARING

81. 맑은 소리를 들으면
Upon hearing a clear sound,
82. 단조로운 울림
Monotonous ringing
83. 그 화려한 사운드에 청중은
The audience ... at such a splendid sound
84. 맑고 밝은 소리
A clear and bright sound
85. 그녀의 청아한 목소리에
At her clear voice
86. 그는 밝은 귀를 가졌다
He has a bright (or good/sharp) hearing.
87. 그 맑은 소리가 점점 더 퍼져나가고
The clear sound gradually traveled farther.
88. 소리가 참 맑다
The sound is really clear.
89. 한없이 단조롭게 울려퍼지는 가운데
While it repeatedly rang without end,
90. 소리가 정말 곱구나
The sound is really soft.
91. 귀가 많이 어두워서
Because hearing is very dull,
92. 귀가 참 밝다
Hearing is really bright (or good/sharp)
93. 소박한 가야금 선율에

At the simple *gayageum* melody

HEARING → TASTE

94. 장터엔 떠들썩한 맛이 있다

At the market place, there is a bustling taste.

HEARING → SMELL

95. 냄새가 진동을 한다

The smell is vibrating.

HEARING → SIGHT

96. 터지는 붉은 노을

Bursting red sunset

97. 색깔은 커뮤니케이션이다

Colors are (forms of) communication.

98. 요란한 몸짓으로

With loud gestures

99. 조용한 움직임

Quiet movements

100. 고요한 응시

A silent stare

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