Linguistic Synesthesia in Korean: Universality and Variation

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Abstract

It has long been argued that linguistic synesthesia has a universal linear-hierarchical directionality tendency, which is mostly grounded in Indo-European language data. This study explores linguistic synesthesia in Korean to verify the cross-linguistic generalizability of the universality hypothesis of linguistic synesthesia. Based on synesthetic data from the Sejong Corpus and gustatory adjectives, this study found that Korean synesthesia shows language-bound variations with three different types of mappings (i.e., unidirectional, reciprocal, and biased), which are frequency- and rule-based. This finding challenges the cross-linguistic universality of the mapping directionality of linguistic synesthesia. As for the mapping mechanism of linguistic synesthesia, this study supports the embodiment theory in terms of language-specific variation. Additionally, it has been proposed that linguistic synesthesia is a special type of metaphor based on both rules and frequency. Finally, this study suggests that linguistic synesthesia displays universal directionality at a general level and language-bound variation at a specific level.

Keywords

synesthetic metaphor, mapping directionality, Korean, universality, variation

Introduction

Synesthesia phenomena refer to spontaneous neurological stimuli where “sensory events in one modality take on qualities usually considered appropriate to another” (Marks, 1982, p. 15). For instance, some synesthetes see a certain color when they hear a specific sound (Ramachandran & Hubbard, 2001). In the field of linguistics, synesthesia is mostly addressed in terms of metaphoric processes (Geeraerts, 2010; Williams, 1976)—a perceptual event of one bodily sensation is understood by linguistic expressions connected with another, such as bitter sound. Linguistic synesthesia has been discussed across genres and languages (Jo, 2019; Shen, 1997; Strik Lievers, 2015; Ullmann, 1957; Williams, 1976; Yu, 2003; Zhao, 2018).

In his seminal work on linguistic synesthesia, Ullmann (1957) proposed a theoretical framework of “hierarchical directionality” as a probable universal hypothesis, which shows a linear hierarchical directional pattern of metaphoric transfers between sensory domains (Tsur, 1992). Williams (1976) proposed a slightly different model for linguistic synesthesia, in which cross-modal linear-hierarchical directionality is also described. Further, Williams (1976) claimed a cross-linguistic universality of the mapping directionality in linguistic synesthesia, indicating the unidirectional tendencies of synesthetic transfers between senses based on “a rule-governed semantic change” (Williams, 1976, p. 473). His claim has been supported by other researchers (e.g., Day, 1996; Shen & Cohen, 1998; Shen & Eisenman, 2008; Wise, 1997). However, Strik Lievers (2015) suggested that the directionality of linguistic synesthesia could be understood based on frequency rather than a rule-based constraint, although her research has confirmed Ullmann’s (1957) conclusion. Recently, Zhao et al. (2019) has reported more complicated directional patterns of synesthetic transfers through a corpus-based investigation into Mandarin Chinese, challenging the universal hypotheses of mapping directionality in linguistic synesthesia proposed by Ullmann (1957) and Williams (1976).

In this light, this study investigates linguistic synesthesia in the Korean language to discuss the validity and generalizability of the established universality theories (Ullmann, 1957; Williams, 1976) and the newly reported results of recent studies (e.g., Strik Lievers, 2015; Zhao et al., 2019). Furthermore, the nature of linguistic synesthesia—whether it is an authentic metaphor—is discussed based on the results of this study. Previous studies on linguistic synesthesia are

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largely grounded in Indo-European languages, including English, Hungarian, Italian, and French (e.g., Erzsébet, 1974; Strik Lievers, 2015; Ullmann, 1957; Winter, 2019; Wise, 1997). However, we also find studies on linguistic synesthesia in several other languages such as Hebrew (e.g., Shen, 1997; Shen & Cohen, 1998) and Mandarin (e.g., Xiong & Huang, 2016; Zhao et al., 2018). Therefore, Korean, as a language isolate, can provide good evidence for highly debatable issues of the universality and unidirectionality of linguistic synesthesia.

Korean is included in one of the world’s most mysterious languages when it comes to the problem of origin and affiliation. What makes the linguistic affiliation of Korean hard to set up seems to be its long-term history of contact with Japanese and Chinese; thus, some linguists indicate certain similarities between Korean and Japanese or between Korean and Chinese. However, many studies still classify Korean as a language isolate with the issue of its origin and affiliation unresolved (Sohn, 2001). In this sense, Korean is a good language sample to understand linguistic synesthesia regarding its applicability and generalizability. This study could contribute to the development of Korean linguistics, where this topic has rarely been studied (Jo, 2018), and the field of synesthesia research and comparative language studies.

To achieve the goal of this research, I analyzed extensive conventional synesthetic data gathered from the Korean Sejong Corpus. Further, I have examined the historical meaning shifts of some Korean sensory lexicons for additional data based on Williams’s (1976) and Zhao et al.’s (2018) methodology.

**Literature Review**

As the pioneering work of linguistic synesthesia, Ullmann (1957), examining nineteenth century poetic works written in English, French, and Hungarian, concluded that there exist three general tendencies in synesthetic associations. First, most synesthetic mappings exhibit a particular directional tendency, as shown in Figure 1.

The sign of “A → B” in Figure 1 indicates that A as the source is mapped to B as the target among the sensory modes, B being modified by A. In his study, transfer was preferred to mapping in the use of terms, and destination or recipient was utilized in place of the target. Further, he separated heat from touch, thus choosing six sensory modalities. However, Ullmann (1957, p. 278) pointed out that “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.” That is why some researchers simplify his model to “Touch → Taste → Smell → Sound → Sight.” According to Ullmann (1957), this route shows a unidirectional hierarchical distribution of sensory domains between the source and the target. In other words, the possible mapping directions between senses are only from the left (i.e., touch) to the right (i.e., sight), as shown in Figure 1. Second, based on the first tendency, it was suggested that touch, as the lowest sensation, was the most frequent source modality. Finally, Ullmann explained that the sense of sound—not sight—became the most frequent target for mappings. Subsequently, he argued that these would be universal principles of synesthetic phenomena across cultures and languages.

Following Ullmann’s (1957) study of linguistic synesthesia, many scholars have attempted to test the universality of his hypothesis based on their poetic/literary data (e.g., Day, 1996; Erzsébet, 1974; Jo, 2018; Shen, 1997; Yu, 2003) or conventional data (e.g., Jo, 2019; Strik Lievers, 2015; Williams, 1976; Wise, 1997; Zhao et al., 2018). In particular, Williams’s (1976) study has attracted considerable attention—he explored the historical change of meanings from sensory adjectives in daily English. While most studies, including Ullmann’s (1957) research, is restricted to synchronic data from poetry or corpora with the standard “adjective-noun” combinations, Williams’s (1976) study focuses on diachronic data from lexicon. For instance, the lexeme dull as a sensory adjective came from touch, expanded to color and sound, and then to understanding or knowledge (Williams, 1976). In conclusion, his results confirmed Ullmann’s (1957) theory with slight variations (Winter, 2016; Zhao et al., 2018), as shown in Figure 2. In Williams’s data, vision was divided into two sub-categories of color and dimension, and the olfactory sense did not interact with the visual and auditory senses. Based on his results, Williams (1976) argued that the mapping directionality of linguistic synesthesia is cross-linguistically universal and that synesthetic transfers between senses are unidirectional based on a rule-bound constraint.

Williams’s (1976) proposal has been confirmed by other follow-up studies, including those of Wise (1997), Yu (2003), Shen and Eisenman (2008), and Gil and Shen (2008). Shen (1997), for instance, attested to the linear hierarchical models of Ullmann (1957) and Williams (1976) by analyzing 130 examples of linguistic synesthesia in Hebrew modern poetry. Additionally, he performed psycho-linguistic experiments to confirm the cognitive constraints of synesthetic mapping hierarchy, which normally predicts the basic rule of conceptual metaphor—the transfer from the more concrete to the
more abstract concepts (Lakoff, 1987; Lakoff & Johnson, 1980, 1999). Strengthening their observations, Shen (1997) proposed, “a mapping from more ‘accessible’ or ‘basic’ concepts onto ‘less accessible’ or ‘less basic’ ones seems more natural and is preferred over the opposite mapping” (p. 51). He also pointed out that audition and vision are less accessible because they do not engage in direct touch with the perceived object. This is supported by the theory of embodiment, in which more embodied concepts are transferred to the less embodied concepts based on their involvement (Gil & Shen, 2008; Shen & Eisenman, 2008).

Nevertheless, Strik Lievers (2015) presented a different view of the interpretation of synesthetic directionality. She claimed that the directionality of linguistic synesthesia should be construed as frequency-based rather than rule-based, conducting a study on English and Italian synesthesia based on large-scale general language corpora. Employing the semi-automatic extraction method proposed by Strik Lievers et al. (2013), she obtained approximately 1,000 synesthesia examples for both English and Italian. She clearly manifested that Ullmann’s proposed hierarchy reflects a frequency-based tendency rather than an absolute unidirectionality, as there are also a few exceptions—reverse cases in synesthetic mapping directions. Meanwhile, her use of the large-scale non-poetic corpora for the research on linguistic synesthesia was a trial to overcome the possible uncertainty and variability from traditionally used poetic data as well as retrieving many more synesthetic samples (Strik Lievers, 2015). With the recent rapid growth of corpus and computational language sciences, the investigation of conventionalized synesthesia data (including perception verb data highly related to linguistic synesthesia) from large-scale corpora has been noted (Krishna, 2022; Winter, 2019; Zhao, 2018; Zhao et al., 2018).

However, several recent studies on linguistic synesthesia of Mandarin Chinese have reported somewhat different findings—more complicated tendencies of source and target mapping (e.g., Huang & Xiong, 2019; Zhao, 2018; Zhao et al., 2018, 2019; Zhao & Huang, 2015). In particular, Zhao et al.’s (2019) study reported that their corpus-assisted observation of linguistic synesthesia in Mandarin showed three different kinds of directionality: (1) rule-based unidirectionality in which reverse transfers were not found, such as the relationship between touch and sound; (2) the frequency-based biased directionality in which two-way transfers between sensory domains were attested but displayed an unequal distribution of the two directions, such as the interrelation between touch and sight; and (3) the bidirectionality where there were no directional preferences between senses, such as the interaction between touch and taste. Zhao et al. (2019) conclusively asserted that “Thus, the directionality of linguistic synesthesia cannot be interpreted as rule-based or frequency-based exclusively. In addition, this study finds that linguistic synesthesia shows language-specific variations for directionality tendencies [. . .].” (p. 1).

Little research exists regarding linguistic synesthesia in Korean (Jo, 2019), although there are many studies on Korean metaphors from the conceptual metaphor theory perspective (Kim, 2022; Noh, 2009). Most previous studies on Korean synesthetic phenomena have never shown clear results based on objective synesthetic data, mainly focusing on literature reviews or specific synesthetic usages (e.g., Chung, 1997; S.-M. Lee, 2015; G. Park, 1978; Yoon, 1970). Recently, Jo and Jhang (2019) and Jo (2019) have attempted to display a general mapping pattern of Korean synesthesia based on obvious synesthetic datasets. Although these studies shed light on the understanding of Korean synesthetic directionality without any doubt, they are both grounded on considerably small data samples—90 tokens of poetic synesthesia for Jo and Jhang (2019) and 100 tokens of conventional synesthesia for Jo (2019). Further, neither study has conducted systematic comparisons of synesthetic directionality tendencies between Korean and other languages (e.g., Indo-European languages, Chinese). They failed to show various mapping directions by simplifying source-target synesthetic transfers with more or less values into a linear sequence and hardly discussed relevant issues of linguistic synesthesia, such as universality and variation, interpretation, and motivation. This study fills these gaps in the literature. Essentially, the findings are compared to those of recent studies on Mandarin Chinese synesthesia, as well as Ullmann (1957) and Williams (1976).

There is no agreement among researchers regarding the classification of sensory modalities (Cacciari, 2008; Strik
This study adopts the classical Aristotelian five-sense system—touch, taste, smell, vision, and sound—as widely accepted in this field (e.g., Cytowic, 1989; Jo, 2019; Shen, 1997; Strik Lievers, 2015; Zhao, 2018). However, some studies have modified the classification. For instance, Ullmann (1957) separated “heat” from “touch,” and Williams (1976) divided “vision” into “dimension” and “color.”

### Method and Data

#### Corpus Data

In this study, as mentioned above, everyday language is the data source for Korean synesthesia, and synesthetic data were gathered from the Sejong Corpus (https://ithub.korean.go.kr/user/main.do). The Sejong Corpus as a large-scale general language corpus includes raw corpora of modern written and spoken Korean, North Korean, old Korean, etc. It also comprises parallel, morph-tagged, POS-tagged, and sense-tagged corpora and a parsed corpus (Kang & Kim, 2004) and is comparable to the British National Corpus (BNC; Aston & Burnard, 1998). Among them, the parsed corpus of modern written Korean was chosen for the study, because it is only syntactically analyzed and the contents comprise daily linguistic data such as newspapers and essays. To meet the research objectives, extensive phrase/sentence-level synesthetic occurrences (e.g., sweet sound, his voice is so warm, etc.) were collected from the Sejong Corpus based on the methods used by Jo (2019) and Strik Lievers (2015).

To extract synesthetic data from the designated corpus, as Strik Lievers et al. (2013) noted, setting up a list of perception-related lexemes as the first step is extremely important for successful and correct retrieval of linguistic synesthesia from the corpus. Strik Lievers (2015) made lexical lists with 425 lexemes for English and 442 lexemes for Italian, and Jo (2019) used 417 perception-related lexemes for his corpus-based study. This study collected 500 sense-related lexical items, such as feel, cold, warm, salty, smell, face, etc., subdivided into nouns, adjectives, and verbs for each of the five senses, as summarized in Table 1.

The Korean sense-related words were obtained based on self-introspection, relevant literature, and web dictionaries. Specific examples are presented in (1).

### Table 1. The Perception-Related Word List.

|        | Touch | Taste | Smell | Sight | Hearing |
|--------|-------|-------|-------|-------|---------|
| Noun   | 41    | 35    | 28    | 73    | 59      |
| Adjective | 62   | 41    | 11    | 52    | 11      |
| Verb   | 22    | 8     | 12    | 25    | 20      |
| Sub-total | 125  | 84    | 51    | 150   | 90      |
| Total  | 500   |       |       |       |         |

The parts-of-speech (POS) categorization into noun, adjective, and verb for the lexical items is because the three parts of speech are usually engaged in synesthetic connections (Strik Lievers et al., 2013). The more we gather sense-related words, the more we can collect synesthesia samples. However, the perception-related word list and the classification should be made carefully considering the efficiency of the study. This is because the extracted candidate output from the corpus needs to be manually inspected sentence by sentence to confirm the final “true” synesthesia.

Special attention should be paid to the classification of lexical items into each sense modality in that a perception-related lexeme could be categorized into multiple sensory domains depending on the context (for further understanding of multisensory adjectives, refer to Lynott and Connell (2009) and Winter, 2019). Furthermore, it is not always easy to determine the sensory domains of the target words related to perception. For instance, danjoropda 단조롭다 (“monotonous/simple”) in Korean could be classified under “sound” due to the sense of its Chinese characters. However, the word was classified under “sight” in this study, because it is generally connected with its synonym dansunhada 단순하다 (“simple”) in Korean dictionaries. Even if mat 물 (“water”) can be under both touch and taste depending on the context, it was put under “taste” in my list as the noun is more combined with the word mat 맛 (“taste”) for the gustatory domain in native speakers’ intuition. Likewise, jindong 진동 (“tremble/vibration”) was put under “hearing” in my study—it is used more commonly with the word sori 소리 (“sound”) than with words relevant to touch or sight. Additionally, baram 바람 (“wind”) went under “touch” for synesthesia in this list, while sori 소리 (“sound”) was of course categorized under hearing for a synesthetic connection. The sensory domain classification of perception-related lexical items varies according to the researchers’ standards and views.

The second step for extracting synesthetic metaphors from the Sejong Corpus, as Jo (2019) explained, was to list every sentence, including at least two sense-related lexemes, so that the greatest number of candidate sentences can be gathered. Finally, the retrieved candidate output was manually inspected line by line to find out “true” synesthesia.

### Diachronic Lexical Data

For another Korean synesthetic data, this study attempted to examine lexicalized synesthesia in Korean based on Williams’s (1976) and Zhao et al.’s (2018) study—diachronic semantic shifts of the Korean sensory lexicon, focusing on gustatory adjectives. Traditionally, the tactile sense is construed as more concrete/embodied than other senses such as gustation, olfaction, vision, and audition (e.g., Jo, 2019;
Table 2. The Overall Results of Korean Synesthesia Extracted From the Sejong Corpus.

| Total corpus sentences | Extracted candidate sentences | True synesthesia |
|------------------------|-------------------------------|------------------|
| 43,828                 | 4,155                         | 315              |

Shen, 1997; Shen & Eisenman, 2008; Yu, 2003). However, the standard view to deal with the sense of tactility as the most basic sensory modality has recently faced a challenge, where several findings that taste precedes touch in synesthetic directionality or taste has equal status with touch as a source domain have been reported (see Huang & Xiong, 2019; Zhao et al., 2018, 2019). This is why we should examine gustatory vocabulary here in more detail.

Further, another reason this research focused on adjectives from the gustatory domain concerns the comparative clarity of selected categories and lexicon. Although the gustatory sensation involves various stimuli rather than simple stimulation of the tongue, scientific data usually present five typical categories: “sweet,” “salty,” “sour,” “bitter,” and “umami” (Green, 1996; Mourtis & Styrbak, 2004; Spence, 2002; Stillman, 2002). Korean people typically adjust to this basic categorization (Maeda, 1978; H. Park, 2016; Rhee & Koo, 2017). In Korean culture, flavors of food in five major categories—“sweet,” “salty,” “sour,” “bitter,” and “spicy”—are traditionally accepted (S.-M. Park, 2016; Rhee & Koo, 2017). In Korean culture, flavors of food in five major categories—“sweet,” “salty,” “sour,” “bitter,” and “umami.” Moreover, “spicy” is scientifically defined as the sense of touch entailing temperature and pain (Green, 1996).

Therefore, in order to examine representative gustatory adjectives in a broader scope, this paper made use of eight classes of taste in total based on Rhee and Koo’s (2017) research of Korean gustatory terms: “sweet,” “salty,” “sour,” “bitter,” “umami,” “spicy,” “fishy,” and “bland.” The Korean representative taste adjectives/words from these categories—dalda 달다 (“sweet”), jjada 짜다 (“salty”), sida 시다 (“sour”), ssuda 쓰다 (“bitter”), gosohada 고소하다 (“umami”), maepda 맵다 (“spicy”), birida 비리다 (“fishy”), and singgeopda 싱겁다 (“bland”—reflect most Korean taste terms in meaning. This is because the Korean taste vocabulary in each category, as Rhee and Koo (2017) displayed, is systematically extended and reproduced, closely connected to the lexemic parts of each representative adjective.

The eight gustatory words were analyzed in terms of etymology and historical semantic change based on the Korean Grand Dictionary (https://stdict.korean.go.kr/main/main.do) and the Urimalsaem Dictionary (https://opendict.korean.go.kr/search), as well as the relevant literature. In Mandarin Chinese, for example, mei 美 (“beautiful, tasty”) can be analyzed etymologically and diachronically regarding its synesthetic meaning shift, as in the following Example (2) [see Zhao et al., 2018, Handian Dictionary (http://www.zdic.net/), and Hantology (http://hantology.ling.sinica.edu.tw/)].

(2) Mei (美): Vision (big sheep) → Gustation (tasty) → Vision (beautiful) → Audition (good voice)

Williams (1976) included nine English taste adjectives in his lexical synesthesia investigation—sweet, dulcet, mellow, brisk, acrid, tart, eager, austere, and sour. However, the word brisk is doubtful for gustatory meaning due to its etymology of taste (Zhao et al., 2018). Williams’s (1976) study about meaning changes of English sensory adjectives over time showed a linear hierarchical tendency of synesthetic mappings (see Figure 2), which is comparable to the results of this study. Additionally, the results of Korean lexical synesthesia are compared with those of Korean Sejong Corpus synesthesia, along with the findings of recent studies on Mandarin synesthesia and Ullmann (1957).

Findings and Discussion

Synesthesia From the Sejong Corpus

Based on the methodology mentioned above, I collected 315 synesthesia tokens from the Sejong Corpus. The overall results are summarized in Table 2, which provides a quick outline of corpus work on Korean synesthesia. As shown in Table 2, 4,155 candidate sentences, where authentic synesthesia can be expected, were detected from the corpus, and 315 synesthetic instances were finally retrieved from them (4,155 candidates) by manual checking.

A total of 130 Korean synesthesia types were identified in 315 synesthetic tokens collected from the Sejong Corpus. The distribution of types and tokens of Korean Sejong Corpus synesthesia based on source domains is shown in Table 3. Compared with the previous work of Jo (2019) for the mapping directionality of Korean conventional synesthesia, the data sample size is much larger than that provided in his work. In other words, the total number of tokens in this study is more than double that (100 tokens) of Jo (2019), and the total number of tokens is approximately 60% larger than that (83 types) found in Jo’s study. Thus, this study utilizes a more inclusive set of data for Korean conventionalized synesthesia, which allows us to conduct an exhaustive investigation into linguistic synesthesia.

More specifically, Table 4 shows the distribution of the entire Korean synesthetic mappings in the Sejong Corpus among sensory domains, which is grounded in the type frequencies. The reason for counting types instead of tokens here was that it could show a more exact pattern of synesthetic mappings. This is because counting by type can filter out the effect of a few high-frequency usages. Jo’s (2019)
study utilized tokens to analyze Korean synesthetic transfers, which was probably due to the small difference between the total number of tokens (100) and types (83). Additionally, most previous studies of linguistic synesthesia employed the frequency of tokens to count synesthetic mappings between senses rather than type (e.g., Shen, 1997; Strik Lievers, 2015; Ullmann, 1957), which might be partly due to the considerably small number of types found or researchers’ limited attention to synesthesia type. Zhao et al.’s (2019) study of Mandarin Chinese synesthesia used 199 Mandarin sensory adjective types collected from the Sinica Corpus.

As shown in Table 4, 17 mapping pairs were discovered for 20 possible synesthetic connections from the five sensory domains. In other words, the other three mapping pairs—the transfers from smell to touch, smell to taste, and hearing to touch—have not been found in the Sejong Corpus synesthesia. Further, the cells in Table 4 are filled with different (more or less) values—certain associations are stronger or more active than others. Moreover, some cases are reverse in terms of Ullmann’s (1957) mapping directionality, such as the “sight to touch” synesthesia, although the numbers are relatively low. Table 4 shows the Fisher’s exact test, and the results demonstrated that the row and column categories are not independent and have significant connections [Table Probability (p) < .0001, Pr ≤ p: .00005].

Based on the values in Table 4, I calculated the synesthetic mapping relativity between interactive sensory modalities with the number of types in a specific mapping divided by the total number of types between two senses. Between touch and taste in the Sejong Corpus synesthesia, for instance, the mapping relativity of touch to taste in types was 62.5% (5/8), while that of taste to touch was 37.5% (3/8). Additionally, the synesthetic transferability was calculated in types based on Table 4, following Zhao et al. (2018). That is, a total of 130 synesthetic types were found in the Korean Sejong Corpus, of which touch occupied 49 types as source, showing 5 mappings from touch to taste. Therefore, the synesthetic transferability from touch to taste was 10.2% (5/49).

Through the analyses of the relativity and transferability of the Sejong Corpus synesthesia, I found three types of mapping directionalities of linguistic synesthesia in Korea: unidirectional, reciprocal, and biased mappings. First, Table 5 shows the unidirectional mappings in Korean synesthesia, which only have synesthetic mappings in one direction between two sensory domains, without mappings in the inverse direction. In other words, the synesthetic transfers from touch to smell, touch to hearing, and taste to smell are unidirectional, without any transfers in the reverse direction, as shown in Table 5. The examples in (3) to (5) represent unidirectional transfers in Korean Sejong Corpus synesthesia.

(3) Budeureoun keophyang 부드러운 캔피향 “smooth coffee aroma” [TOUCH → SMELL]
(4) Budeureoun moksori 부드러운 목소리 “soft voice” [TOUCH → HEARING]
(5) Gosohan naemsae 고소한 냄새 “delicately-flavored smell” [TASTE → SMELL]

Second, the reciprocal mappings found for Korean synesthesia, which occur in both directions between two senses without any clear preference, are those between touch and taste, smell and hearing, and sight and hearing, as shown in Table 6. In other words, contrary to the biased mappings displayed in Table 7, reciprocal mappings do not show any dominant preference in either relativity or transferability. The relativity and transferability of the mapping from touch to taste, for instance, were 62.5% (5/8) and 10.2% (5/49), while those from taste to touch were 37.5% (3/8) and 6.5% (3/46), respectively. Hence, I observe that this mapping relationship between touch and taste is equal in Korean synesthesia. Similar to the touch-taste transfer tendency, the transfers in smell and hearing as well as in sight and hearing can also be regarded as reciprocal mappings based on the relativity and transferability in Table 6. The examples in (6) to (11) represent reciprocal transfers in Korean Sejong Corpus synesthesia.

(6) Budeureoun mat 부드러운 맛 “smooth taste” [TOUCH → TASTE]
(7) Sseudisseun neukkim 쓰디쓴 느낌 “bitter feeling” [TASTE → TOUCH]
(8) Hyanggiroun eumseong 향기로운 음성 “fragrant voice” [SMELL → HEARING]
(9) Jindonghaneun naemsae 진동하는 냄새 “vibrating smell” [HEARING → SMELL]
(10) Danjoroun ullim 단조로운 음림 “monotonous ringing” [SIGHT → HEARING]
(11) Yoranhan momjit 요란한 몸짓 “loud gestures” [HEARING → SIGHT]

Third, biased mappings of linguistic synesthesia were found in Korean Sejong Corpus synesthesia. As seen in Table 7, four pairs of senses present two directions of synesthetic mappings between sensory modalities with a clear preference. For instance, synesthetic transfers between touch and sight show that transfers from touch to sight occur much more frequently than those from sight to touch. Thus, a biased directional tendency is attested for Korean synesthesia.

Table 3. The Distribution of Tokens and Types of Korean Synesthesia in the Sejong Corpus.

| Source domain | Token | Type |
|---------------|-------|------|
| Touch         | 120 (38.1%) | 49 (37.7%) |
| Taste         | 108 (34.3%) | 46 (35.4%) |
| Sight         | 63 (20.0%) | 23 (17.7%) |
| Hearing       | 20 (6.3%) | 9 (6.9%) |
| Smell         | 4 (1.3%) | 3 (2.3%) |
| Total         | 315 (100%) | 130 (100%) |
synesthia in touch and sight. Likewise, the mappings between taste and sight, taste and hearing, and smell and sight demonstrate a biased directionality in Korean synesthesia, according to the data in Table 7. These are in contrast with the unidirectional and reciprocal mappings, as shown in Tables 5 and 6. Examples (12) to (19) describe the biased mappings for Korean synesthesia in the Sejong Corpus.

(12) Chadichan siseon 차디찬시선 “cold gaze” [TOUCH→SIGHT]
(13) Ppalgan teochi 빨간 터치 “reddish touch” [SIGHT→TOUCH]
(14) Neukkihan taedo 느끼한 태도 “oily attitude” [TASTE→SIGHT]
(15) Dachaeroun mat 다채로운 맛 “colorful flavor” [SIGHT→TASTE]
(16) Dalkomhan iyagi 달콤한 이야기 “sweet talk” [TASTE→HEARING]
(17) Teodeulseokhan mat 떨들썩한 맛 “noisy/bustling taste” [HEARING→TASTE]
(18) Hyanggiroun siseon 향기로운 시선 “fragrant gaze” [SMELL→SIGHT]
(19) Dachaeroun hyanggi 다채로운 향기 “colorful fragrance” [SIGHT→SMELL]

Therefore, based on the three types of synesthetic mappings found in the Korean Sejong Corpus, I can illustrate a general mapping directionality diagram for linguistic synesthesia in Korean, as shown in Figure 3. The sign “→” in Figure 3 indicates unidirectional mappings, the sign “—>” biased mappings, and the sign “↔” reciprocal mappings. Overall, Korean synesthesia in the Sejong Corpus follows a particular directional pattern, not random directionality, and does not support Ullmann’s (1957) linear model (Figure 1) or Williams’s mapping hierarchy (Figure 2).

### Table 4. Korean Synesthetic Mappings Between Sensory Domains by Types (See Tokens in Parentheses).

| Target source | Touch | Taste | Smell | Sight | Hearing | Total |
|---------------|-------|-------|-------|-------|---------|-------|
| Touch         | 0 (0) | 5 (12)| 5 (8) | 15 (30)| 24 (70) | 49 (120)|
| Taste         | 3 (5) | 0 (0) | 10 (23)| 13 (35)| 20 (45) | 46 (108)|
| Smell         | 0 (0) | 0 (0) | 0 (0) | 1 (1)  | 2 (3)  | 3 (4) |
| Sight         | 2 (3) | 1 (2) | 5 (7) | 0 (0)  | 15 (51) | 23 (63) |
| Hearing       | 0 (0) | 1 (2) | 1 (2) | 7 (16) | 0 (0)  | 9 (20) |
| Total         | 5 (8) | 7 (16)| 21 (40)| 36 (82)| 61 (169)| 130 (315)|

### Table 5. Unidirectional Mappings of Linguistic Synesthesia in Korean Sejong Corpus (%).

| Mapping       | Relativity (type) | Relativity (token) | Transferability (type) |
|---------------|-------------------|--------------------|------------------------|
| Touch → smell | 100               | 100                | 10.2                   |
| Smell → touch | 0                 | 0                  | 0                      |
| Touch → hearing| 100              | 100                | 48.9                   |
| Hearing → touch| 0               | 0                  | 0                      |
| Taste → smell | 100               | 100                | 21.7                   |
| Smell → taste | 0                 | 0                  | 0                      |

### Table 6. Reciprocal Mappings of Linguistic Synesthesia in Korean Sejong Corpus (%).

| Mapping       | Relativity (type) | Relativity (token) | Transferability (type) |
|---------------|-------------------|--------------------|------------------------|
| Touch → taste | 62.5              | 70.6               | 10.2                   |
| Taste → touch | 37.5              | 29.4               | 6.5                    |
| Smell → hearing| 66.6             | 60                 | 66.6                   |
| Hearing → smell| 33.4            | 40                 | 11.1                   |
| Sight → hearing| 68.1             | 76.1               | 65.2                   |
| Hearing → sight| 31.9             | 23.9               | 77.7                   |

### Table 7. Biased Mappings of Linguistic Synesthesia in Korean Sejong Corpus (%).

| Mapping       | Relativity (type) | Relativity (token) | Transferability (type) |
|---------------|-------------------|--------------------|------------------------|
| Touch → sight | 88.2              | 90.9               | 30.6                   |
| Sight → touch | 11.8              | 9.1                | 8.6                    |
| Taste → sight | 92.8              | 94.5               | 28.2                   |
| Sight → taste | 7.2               | 5.5                | 4.3                    |
| Taste → hearing| 95.2              | 95.7               | 43.4                   |
| Hearing → taste| 4.8               | 4.3                | 11.1                   |
| Smell → sight | 16.6              | 12.5               | 33.3                   |
| Sight → smell | 83.4              | 87.5               | 21.7                   |
The two previous proposals (see Figures 1 and 2), which are based on Indo-European languages, present a hierarchical directionality of synesthetic mappings with a unidirectional rule, claiming the cross-linguistic universality of the directionality principle in linguistic synesthesia. However, the results reported in this study (see Figure 3) are definitely different from their conclusions: (1) the synesthetic mappings between tactility and gustation in Korean are reciprocal, whereas those of Indo-European languages in Ullmann (1957) and Williams (1976) are unidirectional from tactility to gustation; (2) Korean synesthesia shows biased mappings from vision to olfaction, whereas linguistic synesthesia of Indo-European languages presents unidirectional transfer from olfaction to vision in Ullmann (1957) and no transfers between the two senses in Williams (1976); (3) the mappings between olfaction and audition are reciprocal in Korean linguistic synesthesia, but they are unidirectional from olfaction to audition in Ullmann (1957) and not existent in Williams (1976). Further, the relationship of synesthetic mappings between vision and sound is reciprocal in Korean, unidirectional from sound to vision in Ullmann (1957), unidirectional from dimension to sound, and bidirectional between color and sound in Williams (1976). Nevertheless, this issue could make no difference between Korean and Indo-European languages because the hierarchical position of sound and vision usually varies according to the different datasets in linguistic synesthesia (Ullmann, 1957). However, similarities were found in Korean and Indo-European linguistic synesthesia. That is, in this study, the tactile domain works most frequently as the source, with 37.7% (49/130), followed by the gustatory domain with 35.4% (46/130). The auditory sense was the most frequent target with 46.9% (61/130), followed by the visual sense with 27.7% (36/130), as displayed in Table 4. These results match with the results of Ullmann’s (1957) study.

Interestingly, my findings of Korean Sejong Corpus synesthesia are analogous to those of Mandarin Chinese synesthesia proposed by Zhao et al. (2019). For an effective comparison between Korean and Mandarin synesthetic phenomena, Zhao et al.’s (2019) directionality model is presented in Figure 4. The most significant similarities of linguistic synesthesia between the two languages are bidirectional in touch and taste and biased directionality in vision and smell, as shown in Figures 3 and 4. These are contrary to the results of Indo-European languages suggested by Ullmann (1957) and Williams (1976). Nonetheless, there is an obvious distinction between Korean and Mandarin synesthesia. Koreans show reciprocal synesthetic mappings in smell and hearing, whereas Mandarin Chinese does not transfer between them.

In all, the transfer directionality tendencies of linguistic synesthesia in Korean based on the Sejong corpus include three types of synesthetic mappings: unidirectional, reciprocal, and biased mappings. Compared with Ullmann (1957) and Williams (1976), Korean synesthesia does not support the universal directionality principles of linguistic synesthesia grounded in Indo-European languages. Further, compared to Zhao et al. (2019), linguistic synesthesia in Korean still exhibits clear language-specific variation for synesthetic directionality, although transfer tendencies of synesthesia are remarkably similar between Korean and Chinese.

**Synesthesia From Korean Gustatory Vocabulary**

From the corpus-based approach to Korean synesthesia addressed above, I suggested a probable language-bound variation in linguistic synesthesia. This issue is now dealt with by the analysis of Korean lexicalized synesthesia. Table 8 shows the etymologies and historical semantic changes of eight representative Korean gustatory adjectives—dalda 달다 (“sweet”), jjada 짜다 (“salty”), sida 시다 (“sour”), sseuda 쓰다 (“bitter”), gosohada 고소하다 (“umami”), maepda 맛다 (“spicy”), birida 비리다 (“fishy”), and singgeopda 싱겁다 (“bland”)—in the form of lemma—which are summarized based on Korean dictionaries (i.e., Korean Grand Dictionary and Urimalsaem Dictionary) and relevant literature (i.e., Jang, 2020; Rhee & Koo, 2017; Yi, 2012).

As confirmed in Table 8, dalda 달다, starting with the meaning of “sweet,” metonymically extended to “delicious” and finally included the metaphorical sense of “good to hear.” Jjada 짜다 came from “salty” and gradually extended to “ungenerous” and “unpleasant” related to a person’s attitude and emotion. This did not display any five sense-related meaning extension in dictionaries, although a certain synesthetic expression such as jjannae 짜내 (“salty smell”) is
often used in daily life. *Sida 시다*, originating in “sour”-related old words such as *suida 시다* in the 15th century (Jang, 2020, p. 43), developed through “physical pain” to “impression” in its lexicem (i.e., *시다*-meaning). *Sseuda 쓰다* began with gustatory bitterness in meaning, had a semantic extension to “bodily or mental pain,” and was often used for such a sound-related sense as “candid remarks.” In particular, the meaning of *sseuda 쓰다* again extended to taste-related “without appetite” metonymically. The term *gosohada 고소하다* started with “savory taste” as its basic meaning, went through its semantic expansion into “interesting” modifying auditory vocabulary such as a story, and eventually arrived at the enlargement of meaning to “pleasant.” *Maepda 맵다* particularly seems to be from an etymol-ogy of “fierce” rather than a gustatory lexicon (“spicy”) according to Jang’s (2020, pp. 106–108) argumentation, later having the meaning of “spicy” as its basic nature. The adjective *maepda 맵다* showed the most diverse semantic change, ranging from “sharp” for tactile sense, “cold-hearted” for a person’s attitude, and “cold or physically painful” for tactile sense to “skillful” for a person’s behavior, “discerning” for visual sense, and “reasonable” for auditory sense. *Birida 비리다* came from “fishy” taste and has gradually expanded to olfactory “fishy” with smell, auditory “fishy” with voice, and then emotional “dissatisfied” over time. Finally, *singgeopda 싱겁다* was from “bland” and semantically enlarged to “dull” for audition and “stupid” for behavior or personality. The important examples regarding the abovementioned sensory adjectives’ polysemy are presented in (20) to (27).

The verb *sikeunhada 시큰하다* in (22b) is a sour-taste term categorized into the *sida 시다* class (Rhee & Koo, 2017).

### Table 8. Diachronic Meaning Change of Korean Gustatory Adjectives.

| Gustatory category | Term (adjective) | Etymology | Historical semantic shift |
|--------------------|------------------|-----------|--------------------------|
| Sweet              | *dalda 달다*     | sweet     | Sweet (taste) → delicious (taste) → good/willingly/good to hear (emotion/hearing) |
| Salty              | *jjada 짜다*     | salty     | Salty (taste) → stingy/ungenerous (attitude/personality) → unpleasant (emotion) |
| Sour               | *sida 시다*     | sour      | Sour (taste) → physically painful (touch) → impressed (emotion) |
| Bitter             | *sseuda 쓰다*   | bitter    | Bitter (taste) → physically/emotionally painful (touch/emotion) → bitter/candid remarks (hearing) → having no appetite (taste) |
| Umami              | *gosohada 고소하다* | savory | Savory (taste) → interesting story (hearing) → pleasant (emotion) |
| Spicy              | *maepda 맵다*   | fierce    | Fierce (behavior) → spicy (taste) → hard/sharp (touch) → cold-hearted (attitude/personality) → cold/physically painful (touch) → skillful (behavior) → discerning eye (sight) → reasonable words (hearing) |
| Fishy              | *birida 비리다* | fishy     | Fishy (taste) → fishy smell (smell) → fishy voice (hearing) → dissatisfied (emotion) |
| Bland              | *singgeopda 싱겁다* | bland | Bland (taste) → dull story (hearing) → stupid/inipid (behavior/personality/situation) |

(21) *Jjada 짜다* (“salty”)

- **a.** *Seonggyeogi jjada 성격이 짜다* “(his) personality is ungenerous” (*Korean Grand Dictionary*)
- **b.** *Yaksogeul jikiji mothan geoseul jjage yeogyeotda* 악소울 집지만 조거 죽겠다 “she felt sorry for not keeping (her) word” (Jang, 2020, p. 64)

(22) *Sida 시다* (“sour”)

- **a.** *Balmogi sida 발목이 시다* “(my) ankle hurts” (*Urimalsaem Dictionary*)
- **b.** *koga sikeunhada 코가 시큰하다* “(he) is moved to tears” (Jang, 2020, p. 50)

(23) *Sseeuda 쓰다* (“bitter”)

- **a.** *Sseudi sseun gotong 쓴 고통* “extremely bitter agony” (*Sejong Corpus*)
- **b.** *Eomeonui sseun jansori 어머니의 쓴 잔소리* “(my) mom’s bitter nagging” (Yi, 2012, p. 113)

(24) *Gosohada 고소하다* (“savory”)

- **a.** *Yennal yaejigo jjuu goshage jalhae jusyeonneunde* 염날 애기도 아주 고타하게 잘 해 주셨는데 “(she) also used to tell (us) an old tale very interestingly” (*Urimalsaem Dictionary*)

(25) *Maepda 맵다* (“spicy”)

- **a.** *Gyeoulbarami maepgo 겨울바람이 맵고* “the winter wind is so cold and” (*Korean Grand Dictionary*)
- **b.** *Maeun malsomssi 매운 눈으로* “with (his) discerning eyes” (Yi, 2012, p. 72)
- **c.** *Maeun malmsossi 매운 말씀씨* “(he is) good at speaking” (Yi, 2012, p. 75)

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(20) *Dalda 달다* (“sweet”)

- **a.** *Dalmyeon samgiko sseumyeon baenennnda* 달면 삼키고 쓰면 뱉는다 “swallow it when sweet, and throw it out when bitter” (*Korean Grand Dictionary*)

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(26) Birida (“fishy”)

a. Saengseonui birin naemsae 생선의 비린 냄새 “a fishy smell of the fish” (Korean Grand Dictionary)

b. Manimeun mokcheongi mopsi biryeotda 마님은 목청이 몽시 비렸다 “(my) madam has got a very fishy voice” (Urimalsaem Dictionary)

(27) Singgeopda 싱겁다 (“bland”)

a. Singgeoun sori 싱거운 소리 “a dull talk” (Korean Grand Dictionary)

Therefore, regarding linguistic synesthesia from Korean gustatory terms, the five sense-based synesthetic mappings produced by diachronic semantic shifts of the eight taste adjectives can be described as in Table 9. In this lexical data, the most frequent transfer is “Taste → Hearing,” and the second is “Taste → Touch.” No synesthetic connections existed in the term jjada 짜다 (“salty”) in Korean. Based on the metaphorical transfers in Table 9, a linear model for synesthetic connections in Korean gustatory adjectives is proposed, as shown in Figure 5.

Figure 5 illustrates a linear mapping hierarchy for Korean taste-term synesthesia, in which all the arrows are unidirectional with no counter direction, which is considerably different from the synesthetic directionalities from the Sejong Corpus in this study (see Figure 3). In particular, this model in Figure 5 shows the unidirectional transfers from taste to touch, while the Sejong Corpus synesthesia in Figure 3 displays the reciprocal mappings between touch and taste. Moreover, gustatory adjective synesthesia in Korean has no mappings between touch and smell and between smell and sight as well as unidirectionality from smell to hearing. However, the Sejong Corpus synesthesia exhibits unidirectional transfers from touch to smell and sight to smell and reciprocal transfers in smell and hearing, as seen in Figure 3. When it comes to the comparison with synesthetic phenomena of Indo-European languages such as English, French, and Hungarian, especially, the positioning of taste in the lowest sensory domain and the lack of touch-to-taste transfer in Korean lexical synesthesia are completely contrary to Ullmann’s (1957) generalization (Figure 1) and Williams’s (1976) conclusion (Figure 2). Both presented the firm status of the tactile sense as the most basic/embodied sensory modality in the synesthetic transfer hierarchy of “Touch → Taste → Smell.” Moreover, there is no mapping between touch and smell in Korean gustatory synesthesia but unidirectionality from touch to smell in Indo-European linguistic synesthesia. Furthermore, as shown in Table 9, the predominant sensory source domain of gustatory adjective synesthesia in Korean is gustation, which does not comply with Ullmann’s (1957) source domain tendency (i.e., touch). The predominant sensory target is audition, which confirms Ullmann’s target domain tendency. To summarize, in this study, Korean lexicalized synesthesia has shown particular mapping tendencies different from those of Korean Sejong Corpus synesthesia (Figure 5 vs. Figure 3). Additionally, with certain language-specific variations, the gustatory adjective synesthesia in Korean does not support the universal directional tendencies of linguistic synesthesia claimed by Ullmann (1957) and Williams (1976) based on Indo-European languages, although three of them demonstrate the linear-hierarchical unidirectionality of synesthetic mappings (Figure 5 vs. Figure 1/Figure 2).

**Table 9. Diachronic Synesthetic Mappings of Korean Gustatory Lexicon.**

| Gustatory category | Gustatory adjective | Synesthetic mapping |
|--------------------|---------------------|---------------------|
| Sweet | dald | Taste → hearing |
| Salty | jjada 짰다 | None |
| Sour | sida 시다 | Taste → touch |
| Bitter | sseuda 쓰다 | Taste → touch → hearing |
| Umami | gosohada 고소하다 | Taste → hearing |
| Spicy | maeبدا 맵다 | Taste → touch → sight → hearing |
| Fishy | binda 비리다 | Taste → smell → hearing |
| Bland | singgeopda 싱겁다 | Taste → hearing |

**Figure 5.** The linear hierarchy of linguistic synesthesia in Korean gustatory adjectives.

Combining the Sejong Corpus and gustatory adjective synesthesia of this study together, linguistic synesthesia in Korean shows clear language-bound variations of mapping directionality, different from the results of Indo-European languages, such as English and Mandarin Chinese (e.g., Ullmann, 1957; Williams, 1976; Zhao et al., 2019). Korean synesthesia also exhibits certain variations for different datasets in Korean (see Figures 3 and 5). The differences in transfer directionality between the Sejong Corpus synesthesia and gustatory terms synesthesia may result from the different data samples (i.e., phrasal/sentential synesthesia from the Sejong Corpus vs. diachronic lexical synesthesia from gustatory adjectives) and the small data sample size of gustatory synesthesia.
This study of Korean synesthesia presents three types of mapping directionality: unidirectional, reciprocal, and biased mappings. According to a literature review, there has been a debate on whether the directional tendency of synesthetic transfers is rule-based or frequency-based. Thus, my results, which show mixed tendencies, do not exclusively follow either Williams’s (1976) rule-based unidirectional or Strik Lievers’s (2015) frequency-based directionality, supporting Zhao et al.’s (2019) claim that linguistic synesthesia mappings are complicated and can involve various types that are rule- or tendency-based. Furthermore, this issue concerns the motivations underlying linguistic synesthesia phenomena. In previous proposals, the neurological approach claims the physiological basis of synesthetic transfers (Simmonds-Moore, 2022), which predicts the universal hierarchy of cross-modal directionality of linguistic synesthesia without any variation (Marks, 1996; Rakova, 2003; Ronga et al., 2012; Williams, 1976). However, the embodiment-based approach assumes that linguistic synesthesia is motivated by our body and sensorimotor system, which can allow for certain language- and culture-bound variations within a particular hierarchy (Shen, 1997; Shen & Cohen, 1998; Shen & Eisenman, 2008; Popova, 2005; Yu, 2003). Additionally, Zhao et al. (2018) suggested that both the embodiment and the neurological ground are required to explain fully the synesthetic phenomena in Mandarin Chinese. Hence, this study supports the embodiment theory for the mapping mechanism of linguistic synesthesia—the study data on Korean synesthesia clearly show language-specific variations.

Now it should be considered how we can account for “frequency-based” mapping directionality of linguistic synesthesia. Conceptual metaphor theories assume that metaphors are based on rule-grounded mapping connections in terms of an embodiment framework in which abstract concepts are understood through more concrete concepts—our bodily motor functions or perceptions. However, the embodiment hypothesis can consider certain culture-based variations in time and space about how human beings metaphorize concepts (Gibbs, 2005; Lakoff & Johnson, 1980, 1999; Shore, 1996). Thus, the above question is definitely related to the nature of linguistic synesthesia—whether linguistic synesthesia is an authentic metaphor. Previous studies largely construe linguistic synesthesia as neurophysiological (Marks, 1996; Rakova, 2003; Ronga et al., 2012), metaphorical (Shen, 1997; Strik Lievers, 2015, 2017; Yu, 2003), or literal (Winter, 2019). This study supports the metaphor hypothesis for linguistic synesthesia, because the results reported in this study clearly show variations in the metaphorical mapping process between sensory domain sources and targets. However, how linguistic synesthesia as metaphor stands with frequency as well as rules remains an issue. This may be due to the following reasons: (1) the source and target domains of synesthetic transfer are both from sensory domains, which can make the relative concreteness or abstractness between source and target unclear; (2) such a sensory organ as the tongue shares different perceptions (e.g., touch and taste), which can cause confusion in the linguistic representation of synesthesia; (3) the creative or poetic synesthetic expressions can be produced in daily language and literary works, leading to various types of linguistic synesthesia. In this light, I conclude that linguistic synesthesia is a special type of metaphor.

Thus, another significant issue is how linguistic synesthesia as a special type of metaphor represents universality and variation across languages and cultures. Studies on the connection between language and culture have been increasingly noted. For instance, Tadayon and Khodi (2016) has recently addressed how ESL learners affect the target culture, taking the relationship of language, identity, and culture into account. When it comes to metaphor studies, according to Kövecses (2005), who studied the issue of the relationship between universal and cultural aspects of conceptual metaphors, specific examples from general metaphors (e.g., EMOTIONS ARE FORCES) are usually more culturally bounded, while metaphors at the more abstract level tend to structure thinking across the world. He compared English with Hungarian in metaphors with “life” as a target domain and concluded that Hungarians consider life as a “compromise” while Americans regard it as a “game” (Kövecses, 2005, p. 85). With regard to the synesthetic metaphor, based on my results (Figures 3 and 5) and other Indo-European and Mandarin proposals (Figures 1, 2, and 4), it seems to have a universal metaphorical mapping directionality from more embodied senses (i.e., touch and taste) to less embodied senses (i.e., smell, sight, and hearing) worldwide. Nevertheless, on a specific level, certain linguistic and cultural variations can be revealed within the two groups—more embodied sensory domains of touch and taste and less embodied sensory domains of smell, sight, and hearing.

Finally, it is notable what motivates Korean synesthesia’s variations compared with Indo-European languages. In this study’s data on Korean synesthesia, gustation and vision are salient senses in terms of English synesthesia (Strik Lievers, 2015; Ullmann, 1957; Williams, 1976). However, this issue requires considerable work as many areas, including sociology, history, and language sciences, need to be considered. For example, the prevalence of gustation is detected in everyday life expressions in Korean culture, such as “A delicious study” (a study-book’s title). According to Paek (2017), a taste lexicon is relatively detailed, abundant, and various in both old and modern Korean literature, compared to other senses. Moreover, food seems to be respected as “medicine” to Koreans rather than the food itself, as the old saying of “good meals will keep you healthy” goes (C. H. Lee, 2017). In this regard, various factors seem to be involved in the status of gustation as a significant and frequent source domain for metaphoric representation in Korean.
Conclusion

This study examined linguistic synesthesia in Korean based on data gathered from the Sejong Corpus and gustatory adjectives. The results of this study do not confirm the conclusions of Ullmann (1957) and Williams (1976), showing certain language-specific variations. Rather, the mapping directionality of Korean synesthesia is analogous to that of Zhao et al.’s (2019) study on Mandarin synesthesia, with three types of mappings: unidirectional, reciprocal, and biased. However, compared with Zhao et al. (2019), Korean synesthesia still has obvious language-specific variation for synesthetic directionality, where Korean Sejong Corpus synesthesia displays reciprocal synesthetic transfers between smell and sound, while Chinese synesthesia does not transfer between the two senses. Based on Korean synesthetic data, this study supports Zhao et al.’s (2019) claim that linguistic synesthesia transfers involve different types, both rule-based and frequency-based. Moreover, the results of this study also support the embodiment hypothesis regarding the transfer mechanism of linguistic synesthesia in terms of language-bound variation. Furthermore, it is suggested that linguistic synesthesia is a special type of metaphor grounded in both frequency and rule. Finally, the study of Korean synesthesia shows that linguistic synesthesia shows language/culture-bound variation at a specific level, along with universal directionality at a general level. Our future research will focus on how variations in linguistic synesthesia are revealed in each language and what motivates these variations.

Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: “This research was supported by the 2021 Korean Studies Grant Program of the Academy of Korean Studies (AKS-2021-R-107).”

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