Synesthetic Metaphors in Korean Compound Words

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Abstract

The present study, as a follow-up research of Jo (2017), continues to test Ullmann's (1963) theoretical framework of "hierarchical distribution" through synesthetic data retrieved from Korean compound words. Namely, this study intends to judge the reliability and generalization of previous results found in synesthetic data from Korean National Corpus, and furthermore to explore the characteristics of synesthetic phenomena in compound words which have not been yet touched upon in this field. The data are gathered through the manual inspection with respect to the materials of Korean WordNet and *Standard Korean Grand Dictionary*, which are both used for the source of compound synesthesia, together with compounds from the author's intuition. As a result, Korean compound word synesthesia faithfully confirms the conclusion of Jo's (2017) study of Korean parsed corpus synesthesia which strongly supports Ullmann's (1963) synesthetic hierarchy, from the point of view of frequency tendency. The compound-word synesthesia, however, has some specificities in regards of source and target of the mappings. In other words, the role of vision is maximized as the source, while minimized as the target, and there appears no source domain in olfaction and audition.

Keywords: synesthetic metaphors, Korean compound words, hierarchical distribution, source, target

1. Introduction

In the field of linguistics, synesthesia is approached in terms of metaphor (Williams, 1976; Huang, 2015). It means that a perceptual experience of one sense is understood by lexical expressions associated with another, such as "warm color". The pioneering researcher of synesthetic metaphors is S. Ullmann (1963), who analyzed synesthetic examples from the 19th century poetic writings written in English, French, and Hungarian. Concerning the "panchronistic" natures of synesthetic mappings, Ullmann (1963) proposed his theoretical framework of "hierarchical distribution", arriving at a conclusion of three general tendencies of synesthetic transfers: firstly, the directional tendency of "touch → heat → taste → smell → sound → sight",[1] which is called "hierarchical distribution" since the transfers tend to move physically from the "lower" to the "higher" sensory domains; secondly, the source domain tendency that the most frequent source domain of transfers is touch, the lowest level of sensation; thirdly, the target domain tendency that the most frequent target domain for synesthetic transfers is sound rather than sight.

Following Ullmann's (1963) study on the synesthetic directionality, Williams (1976) investigated the synesthetic transfer patterns in ordinary language. While Ullmann's (1963) research is for synchronic data from poetry, Williams's (1976) approach focuses on diachronic data from vocabulary, namely, the historical change of meanings of synesthetic adjectives in daily English (together with some evidence from other Indo-European languages and Japanese as well). Based on his analysis of 65 English adjectives, Williams (1976) posited that the diachronic semantic change displays a highly regular movement. For instance, "dull" came out as an adjective for touch, extended to color and sound, and later to intellect or knowledge (Takada, 2008). The same pattern is also displayed in other Indo-European languages and Japanese. In summary, the findings of Williams (1976) on synesthetic metaphors in ordinary language support Ullmann's (1963) framework of "hierarchical distribution".

Day (1996) examined synesthetic occurrences collected from the printed and electronic texts of English, and proposed a "general distribution" of synesthetic metaphors, as shown in the following: touch → taste → temperature → smell → sound → sight. It signifies that the synesthetic metaphor transfers at large go from the "lower" to the "higher" sensory modes in the same manner as the findings of Ullmann (1963) and Williams (1976). In the meanwhile, Shen (1997), in terms of cognitive poetics, explored the directional tendency of mapping for Hebrew synesthesia based on the literary analysis of modern poetry and two psycho-linguistic experimental data. His results strongly confirmed Ullmann's (1963) observation about the synesthetic hierarchy. That is to say, the synesthetic expressions in Hebrew tended to map lower perceptions on to higher ones in their hierarchical order. Via the notion of "accessibility", Shen (1997) suggested that the "low to high" transfer comes from the general cognitive constraints where "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". He also pointed out that sight and sound are less accessible because they do not involve any direct contact with the perceived entity. To verify the "universal" validity of the synesthetic hypothesis claimed by Ullmann (1963) and Williams (1976), Yu (2003) analyzed synesthetic data extracted from literary works written by current Chinese writer, Mo Yan, based on a "cognitive perspective". The results of the research demonstrated that Chinese synesthesia basically complies with their general schemes in metaphoric mappings as well.

[1] This sign "A → B" signifies that A (the source) is mapped onto B (the target) between sensory domains, A modifying B. In the study of Ullmann (1963), the term "mapping" is not used, but instead he uses the term "transfer". Also, the term of "target" do not appear in the original report, but instead "destination" or "recipient" is employed. Additionally, concerning the sensory domains utilized, Ullmann (1963) selected six senses including "heat" separated from "touch", as seen in the above. That is why some scholars simplify his hierarchy into "touch → taste → smell → sound → sight".

Until now, the linguistic subjects examined for synesthetic phenomenon have been steadily expanded from English to other languages such as Italian, Hebrew, and Chinese, as Ullmann (1963) and Williams (1976) presenting probable universal principles in the process of synesthetic association both require broader investigations of more linguistic samples so that their theories can be built up universally. Despite that, many languages, including Korean, have been still remaining to be dealt with. In this respect, the present study reported in this article, as a follow-up research of Jo (2017), continues to test Ullmann's (1963) theoretical framework of "hierarchical distribution" through the synesthetic data retrieved from Korean compound words. In other words, focusing on the issue of the directionality of linguistic synesthesia rather than that of its motivation, this study intends to judge the reliability and generalization of the previous results found out in the synesthetic data coming from Korean National Corpus (KNC), and furthermore to explore the characteristics of synesthetic phenomena in compound words which have not been yet touched upon in this field.[2]

In what follows, this paper presents a brief literature review of the tendencies of synesthetic mappings in Korean ordinary language reported in Jo (2017) in the second section. The research methods including data collection are then presented in the third section, and the results analyzed are laid out in the fourth section, followed by a general discussion. In the last section, the conclusion of the current study is given along with a summary.

2. Literature Review: Synesthesia in Korean Ordinary Language

Several research works that have addressed Korean synesthetic phenomena so far based on Ullmann (1963) or Williams (1976), have not yet showed a certain clear and comprehensive directional order of synesthetic transfers or their obvious findings regarding that (e.g., Yoon, 1970; Park, 1978 for Korean poetic synesthesia, and Chung, 1997; Lee, 2015 for Korean daily language synesthesia). In this situation, Jo (2017) attempted to clarify the regularities and features of Korean synesthesia based on the clear-cut data via the corpus-based approach. Exactly, he investigated synesthetic data extracted from the KNC parsed corpus[3] and compared the findings with those from Ullmann (1963). The overall result of synesthesia collected from the Korean parsed corpus is arranged below in Table 1. It demonstrates an overview of corpus work upon Korean synesthetic occurrences.

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

Table 1. Overall synesthetic transfer route in KNC, proposed by Jo (2017)[4]

Below is the overall distribution of synesthetic mappings among sensory modes in KNC. This data is substantial information on Korean conventional synesthesia retrieved from corpus.

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

Table 2. The distribution of synesthetic mappings among sensory domains in KNC (TOKEN), presented by Jo (2017)

Accordingly, from the synesthetic data presented in Table 2, Jo (2017) set up the overall synesthetic transfer route in Korean ordinary language as follows:

Touch → Taste → Smell → Sight → Hearing

Figure 1. Overall synesthetic transfer route in KNC, proposed by Jo (2017)

Of course, this is based on the frequency of mappings, according to which the "forward" tokens account for 85% and the "backward" ones just account for 15%. Based on these results, the researcher suggested conclusively that the directional order of Korean synesthesia generally corresponds to the directions from Ullmann (1963) and Williams (1976), and that the most frequent source and target domains of the synesthetic transfers investigated are in accordance with Ullmann's (1963) findings, as touch and

[2] To the author's knowledge, there are no previous studies upon compound words with respect to synesthesia yet.

[3] The study by Jo (2017) basically followed Strik Lievers et al.'s (2013) methods to extract synesthetic data from KNC. The way can be summarized as follows: firstly, for the sense-related word lists, the lexical items are compiled, subdivided by five sensory domains respectively in terms of POS categorization of verb (V), adjective (A), and noun (N), which start from the intuition and the relevant literature and are expanded via some available electronic resources such as Korean WordNet and web dictionaries in KNC; secondly, as for the synesthesia extraction from the corpus, a simplest method that just lists all the sentences containing at least two perception-related words is applied to this KNC parsed corpus unlike Strik Lievers et al.'s (2013) methodology, given the fact that this simplest way can possibly collect the largest number of candidate sentences and the candidates will be affordable for the final manual checking because the corpus is not big relatively; lastly, to sort out "true" synesthesiae, it is necessary to do a hand work inspection of the extracted candidate output.

[4] Offering further elaborations, "TP" means 100 tokens of synesthetic occurrences finally detected from "EPS", i.e., 1,250 candidate sentences where true synesthesia could be found. As obviously recognized in the percentages of "TP/EPS" and "TP/TCS", the rarity of synesthesia in quantity in ordinary language is verified, although it is very common in daily use.

sound each.[5] Also, Jo (2017) pointed out that there can exist a "delicate cultural dependency" with regard to Korean synesthesia, interpreting that the difference of the proportion between the most and second frequent source sensory domains is very slight as the following:

"This situation can imply that together with the tactile domain, touch, the sense of taste takes up a significant position in Korean or Asian cultural context, and so people in the cultural circle more often tend to describe something in terms of gustation or tactility, compared with western people."

As aforementioned in relation to Korean synesthesia, Jo's (2017) study is probably the "first" attempt for the setup of the directionality of Korean synesthetic mappings based on an obvious and extensive database. Thus, his model for Korean synesthetic metaphors still needs to be confirmed by subsequent examinations with another synesthetic data

3. Methodology

3.1 Sensory Domains

There is no agreement among scholars over how many sensory modalities there exist, and they can vary depending upon the researchers' perspective and classificatory criteria (Strik Lievers et al., 2013; Strik Lievers, 2015). Most of synesthetic studies now follow the Aristotelian five-sense system of touch, taste, smell, sight, and hearing (cf. Cytowic, 1989; Shen, 1997; Strik Lievers, 2015).

The study reported in this paper selects the general Aristotelian five sensory modes for the harmonious comparison with the results from Jo (2017). The details including sensory domains and organs are displayed below:

Sensory domain	Sub-categorical sensory mode	Sensory organ	Sensory object
Touch	contact, temperature/heat, pain, hardness, tightness, humidity, texture, pressure, etc.	hands and skin	physical and non-physical entities (e.g., toys, water, wind)
Taste	sweetness, saltiness, spiciness, sourness, bitterness, etc.	tongue	physical entities (e.g., food, drinks)
Smell	quality, quantity, intensity, etc.	nose	smell and fragrance
Sight	dimension (size, length, height, width, depth, thickness, etc.), color, form/shape, appearance, etc.	eyes	visible entities (e.g., buildings, clouds, sky, smoke, rainbows)
Hearing	quality, quantity, intensity, etc.	ears	sound and voice

Table 3. Five sensory domains and relevant information

3.2 Taxonomy

In order to facilitate the understanding and convenience of analysis of synesthetic expressions in linguistics, it is necessary to try to internally classify their types in brief. In terms of formational structure, synesthetic metaphor can be divided into three types such as lexical level synesthesia, phrasal level synesthesia, and sentential/syntactic level synesthesia.[6] At the lexical level of linguistic synesthesia, again, there can be two sub-types, namely, single word synesthesia and compound word synesthesia.[7]

The previous study by Jo (2017) for Korean conventional synesthesia focuses on the phrasal and syntactical synesthetic instances, whereas the present study deals with synesthetic examples from compound words at the lexical level.

3.3 Data

For Korean compound word synesthesia, the data will be gathered through the manual inspection with respect to the materials of Korean WordNet [8] and *Standard Korean Grand Dictionary*[9], which are both used for the source of compound synesthesia, together with compounds from the author's intuition.[10] Due to the time limit, the current study could not exceed 50 instances. Williams's (1976) diachronic study on lexical level synesthesia is based on the examination of 65 adjectives, making use of *Oxford English Dictionary* and *Middle English Dictionary*.

This exploration upon compound word synesthetic metaphors might contribute to developing a new significant research issue in the field of lexical semantics as well as expanding the research area of linguistic synesthesia.

[5] As shown in Table 2, tactition is the source in 37%, and audition is the target in 50%.

[6] Examples of phrasal and syntactic synesthesia: "cold color", "warm words"; "It smells salty", "It sounds sweet". These types are in general known as the structurally most common synesthetic metaphors.

[7] For examples of single word synesthesia, refer to Williams's (1976) survey on the historical semantic shift of English adjectives from one sensory modality to another.

[8] Access: http://www.wordnet.co.kr/. For further information with reference to Korean WordNet, refer to Chagnaa et al. (2007), Choi and Kim (2008), or Moon (2010) among others.

[9] Access: http://stdweb2.korean.go.kr/main.jsp.

[10] The analyses of compound words in this study are mainly based on compound verbs combining with auxiliary verbs such as *tay-ta* (touch) or *po-ta* (see). Although it is widely accepted that theses auxiliary verbs already went through grammaticalization (Sohn, 2001), such cases are also considered as synesthesia here in this study in terms of examples such as "noisy color". Yoon (1970) mentioned them as synesthetic phenomena in his research as well.

4. Results and Discussion

4.1 Results

The total number of the compound-word synesthesiae found is forty-five (tokens), with forty-three types.[11] The overall distribution of synesthetic mappings among sensory modes in Korean compound words is illustrated below in Table 4:

Target / Source	Touch	Taste	Smell	Sight	Hearing	Total
Touch	0	3	2	1	8	14
Taste	0	0	5	1	7	13
Smell	0	0	0	0	0	0
Sight	2	5	1	0	10	18
Hearing	0	0	0	0	0	0
Total	2	8	8	2	25	45

Table 4. The distribution of synesthetic mappings among sensory domains in Korean compound words (TOKEN)

As showed in Table 4, in the transfers of synesthetic phenomena in Korean compound words, the predominant sensory source mode is sight and the predominant target is hearing. More precisely, the visual domain acts most frequently as the source in 18 of the 45 collected synesthesiae, followed by the tactile domain in 14, while the auditory domain becomes the largest target in 25, followed by the gustatory and olfactory domain in the same number of 8 respectively.

The representative examples of Korean compound-word synesthesia are as follows[12]:

(1) Touch → Taste
먹어대다
mek-e-tay-ta
eat-P-touch-P
'keep eating'

(2) Touch → Smell
맡아대다
math-a-tay-ta
sniff-P-touch-P
'keep sniffing'

(3) Touch → Sight
쏘아대다
sso-a-tay-ta
glower-P-touch-P
'keep glowering (at someone)'

(4) Touch → Hearing
외쳐대다
oychi-e-tay-ta
shout-P-touch-P
'keep shouting'

(5) Taste → Smell
a. 쓴내
ssu-n-nay
bitter-P-smell
'bitter smell'
b. 단내
ta-n-nay
sweet-P-smell
'sweet smell'

(6) Taste → Sight
쓴웃음
ssu-n-wusum
bitter-P-smile
'wry smile'

(7) Taste → Hearing
쓴소리
ssu-n-soli
bitter-P-sound
'criticism (or bitter remark)'

(8) Sight → Taste
먹어보다
mek-e-po-ta
eat-P-see-P
'try eating'

(9) Sight → Hearing
a. 가려듣다
kali-e-tut-ta
select-P-listen-P
'listen selectively'
b. 잔소리
ca-n-soli
small-P-sound
'nagging (or nagging voice)'

4.2 General Discussion

Based on the synesthetic data reported in Table 4, the linear model for synesthetic associations in Korean compound words can be displayed as the following:

Touch → Taste → Smell → Sight → Hearing

Figure 2. Overall synesthetic transfer route in Korean compound words

In the above frequency-based model, the mappings in the direction of the arrow occupy approximately 82%, while those in the counter direction of the arrow take up approximately 18% of the total mappings. The proportions are similar to those of the earlier synesthetic data from KNC parsed corpus. In the synesthetic metaphors from compound words, there is no case transferring to all other

[11] See Appendix for the entire synesthetic expressions from Korean compound words.

[12] In this paper, each Korean language example will be described at four levels: first, *Hangul* as Korean writing system, second, phonetic transcription by *Yale Romanization*, third, gloss literally in English, and fourth, English translation. In addition, the notation for gloss in lexical analysis is simplified with P as particle.

domains from smell and sound, as showed in Table 4. The illustration in Figure 2, hence, can be again described fine-tuned below:

↗ Smell
Touch → Taste
↘ Sight → Hearing

Figure 3. Overall synesthetic transfer route in Korean compound words, re-adjusted

The above directional tendency is in line with the results of Ullmann (1963) and Williams (1976). In particular, it is more similar to that of Williams (1976), given that dimension and color in his adopted sensory domains are combined together into vision. For their comparison, below is the synesthetic hierarchy proposed by Williams (1976):

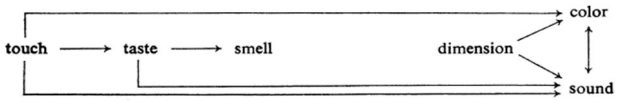

Figure 4. Synesthetic transfer route of Williams (1976)

In this respect, the directionality of the Korean conventional synesthesia including both corpus and compound word synesthetic data conforms to the Ullmann's (1963) theoretical framework of "hierarchical distribution".

However, with regard to the frequency of the source and target of the mappings, the compound-word synesthesia shows somewhat a different aspect to Ullmann's (1963) hypothesis. That is, the largest source here is not touch (about 31%) but sight (40%), which does not match with Ullmann's (1963), and the largest target is sound (about 56%), which matches with his theory. Specifically, the distributions of the source and target sensory domains in synesthetic mappings from Korean compound words are summarized below.

Sight	Touch	Taste	Hearing	Smell
40	31	29	0	0

Table 5. Source sensory domains in frequency-decreasing ordering in synesthetic mappings from Korean compound words (%, approximately)

Hearing	Smell	Taste	Sight	Touch
56	18	18	4	4

Table 6. Target sensory domains in frequency-decreasing ordering in synesthetic mappings from Korean compound words (%, approximately)

Here, it is necessary to compare two above results to the corresponding ones of KNC synesthesia in Jo (2017) and English/Italian synesthesia in Strik Lievers (2015):

Touch	Taste	Sight	Hearing	Smell
37	33	20	7	3

Table 7. Source sensory domains in frequency-decreasing ordering in synesthetic mappings from KNC (%), presented by Jo (2017)

	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

Table 8. English and Italian source sensory domains in frequency-decreasing ordering (%), adapted from 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

Table 9. Target sensory domains in frequency-decreasing ordering in Korean, English, and Italian (%), adapted from the data presented in Strik Lievers (2015) and Jo (2017)

From the above, the visual modality in Korean compound-word synesthetic metaphors is certainly noticeable in the midst of the situation following the "general" ordering by and large. In other words, the role of sight is maximized as the source, while minimized as the target. Also, we can recognize that touch and taste play a considerable role as the source, as displayed in Table 6. On top of that, another noticeable point here is that there is no source domain in smell and hearing, which can provide an interesting research topic in relation to the understanding of the cause, e.g., whether its cause is connected to the matter of the grammatical and combinational structure emerging from the lexical level of synesthesia. It is hard to jump to a conclusion from the above data yet for now, and so they need to wait for follow-up studies via more synesthetic examples.

5. Conclusion

From the above discussion upon the directional tendency of Korean synesthesia, in sum, the result from Korean compound word synesthetic data faithfully confirms the conclusion of Jo's (2017) study of Korean parsed corpus synesthesia which strongly supports Ullmann's (1963) synesthetic hierarchy, from the point of view of frequency tendency with no absolute restriction such as uni-directionality. The compound-word synesthesia, however, has some specificities in regards of source and target of the mappings. Namely, the role of vision is maximized as the source, while minimized as the target, and there appears no source domain in olfaction and audition.

For future works, accordingly, additional investigations into Korean compound word synesthesia are required with more synesthetic data in order to clarify the unique features. Also, to further affirm the tendencies of Korean synesthesia, the research of synesthetic data from Korean poetry should be conducted, given that Ullmann's

(1963) "universal" hypotheses emerged from a series of explorations into poetic language. Additionally, the issue of motivation with regard to synesthetic metaphor remains to be addressed, in particular, in terms of providing a bridge between neuro-scientific approach to synesthesia and linguistic approach to synesthesia.[13]

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7. Appendix

Korean synesthetic expressions from compound words (TOKEN)

TOUCH → TASTE
1. 먹어대다 Keep eating
2. 마셔대다 Keep drinking
3. 빨아대다 Keep sipping

TOUCH → SMELL
4. (냄새 등) 맡아대다 Keep sniffing
5. 풍겨대다 Keep giving off (odor)

TOUCH → SIGHT
6. (시선 등) 쏘아대다 Keep glowering (at someone)

TOUCH → HEARING
7. (음악 등) 틀어대다 Keep playing (music)
8. 외쳐대다 Keep shouting
9. 불러대다 Keep singing (or calling)
10. (악기 등) 불어대다 Keep blowing (wind instruments)
11. 외워대다 Keep reading out loud (to memorize)
12. 읊어대다 Keep reciting
13. 소리치다 Yell
14. 고함치다 Shout

TASTE → SMELL
15. 쓴내 Bitter smell
16. 단내 Sweet smell
17. 쉰내 Rancid smell
18. 짠내 Salty smell
19. 비린내 Fishy smell

TASTE → SIGHT
20. 쓴웃음 Smirk (or wry/bitter smile)

TASTE → HEARING
21. 귀먹다 Deaf
22. 귀머거리The deaf
23. 쓴소리 Criticism (or bitter remark)
24. 쉰소리Hoarse sound
25. 쉰목소리 Hoarse voice
26. 고언 (苦言) Exhortation (or pungent remark)
27. 감언 (甘言) Flattery (or sweet talk)

SIGHT → TOUCH
28. 만져보다 Try touching (see how it feels)
29. 대보다 Try touching (see how it feels or how it measures)

SIGHT → TASTE
30. 먹어보다 Try eating
31. 마셔보다 Try drinking
32. 빨아보다 Try sipping
33. 맛보다 Try tasting
34. 맛보기Tasting

SIGHT → SMELL
35. (냄새 등) 맡아보다 Try sniffing

SIGHT → HEARING
36. (소리 등) 들어보다 Try listening (to sounds)
37. 외쳐보다 Try yelling
38. 읊어보다 Try reciting
39. 외워보다 Try memorizing
40. 소리쳐보다 Try shouting
41. 불러보다 Try calling
42. (악기 등) 불어보다 Try blowing (wind instruments)
43. 새겨듣다 Listen carefully
44. 가려듣다 Listen selectively
45. 잔소리 nagging (or nagging voice)

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[13] "Neurological studies focus on synaesthesia as a special neuro-cognitive condition while linguistic studies focus on synaesthesia as conventionalized linguistic device. Hence studies of synaesthesia in these two fields rarely overlap. There is an urgent need to provide a bridge between these two approaches." (Huang, 2016, p. 111)

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