Conceptual Metaphors in Food Reviews: LLM-Based Implications for Korean Discourse

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Abstract

This study analyzes conceptual metaphors in Korean restaurant reviews, focusing on how taste, service, and price are structured through systematic TARGET–SOURCE mappings. Using corpus annotation and Conceptual Metaphor Theory, we identify metaphor types and evaluate how Korean-specific metaphors affect LLM interpretation and performance under different prompt configurations.

This study examines how conceptual metaphors structure Korean restaurant review discourse, with a particular focus on food-taste expressions and their underlying TARGET-SOURCE mappings. Building on conceptual metaphor (Lakoff and Johnson, 1980, 2008) and Conceptual Metaphor Theory (CMT) (Ahrens, 2010), where concrete source domains provide cognitive structure for more abstract target domains (e.g. IDEAS ARE FOOD: *He devoured the book*; *We don't need to spoon-feed our students*), we investigate how Korean reviewers draw on a wide range of concrete experiential domains to evaluate taste, service, and price. Conceptual mapping is modeled as a systematic correspondence between a concrete source domain and an abstract evaluative target domain (McGlone, 1996; Türker, 2013; Choi, 2017; Kim, 2024). Because GenAI directly adopts these Korean-specific abstract target-domain meanings and, through negative transfer, incorrectly judges them as concrete, its interpretations often diverge from human intuitions.
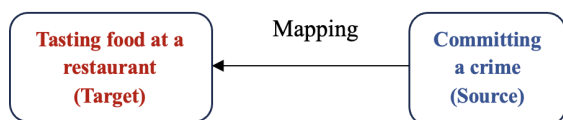

Figure 1: Conceptual mapping in a food review

A key observation in Korean discourse is that many food-related expressions do not directly talk about 'food as a physical entity', but instead denote 'the taste of food as the conceptual target'. Because Korean expressions often encode meanings implicitly, the intended abstract target remains partly covert in the surface form and is recovered through context. For instance, as in (1), what is evaluated is not the stew as an object but its taste, which is metaphorically mapped to the source domain CRIME.

(1)   Ccikay-ka pap.totwuk-ida.
      stew-   rice.thief-
      "(lit.)The stew is a rice thief; (met.) The taste of stew makes you eat up all your rice.'

Empirically, we adopt the Hwang (2024) Korean restaurant review dataset as our primary corpus. The data consist of 2,708 sentences with binary sentiment annotations (positive/negative), obtained by extracting restaurant names from Seoul's public Restaurant Business Permit Information, crawling Kakao Map reviews, segmenting them into sentences, and tagging sentiment.
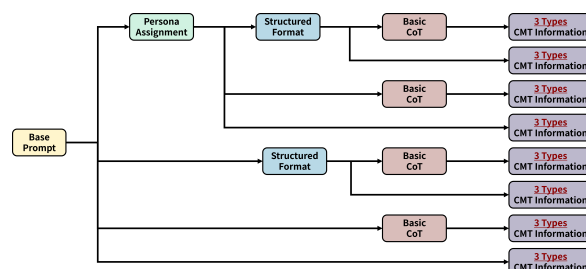

Figure 2: Cumulative prompt configuration tree

To anchor CMT analysis, we define ten evaluative target domains frequently occurring in review discourse: TASTE, KINDNESS, PRICE, FOOD, COST-EFFECTIVENESS, ATMOSPHERE, RESTAURANT, MENU, SERVICE, and ORDER. Using the Kiwi tokenizer, we identify 2,491 lexical items and select the top keywords per category, among which TASTE-, SERVICE-,

and MONEY VALUE-related items are the most prominent.

A three-stage manual annotation pipeline is then implemented. First, each sentence is assigned to one of the ten target domains (e.g., the price is reasonable → PRICE). Second, sentences are evaluated for the presence of conceptual metaphors. Third, metaphorical sentences are mapped into TARGET IS SOURCE format. This process yields 108 metaphorical expressions and 118 unique metaphorical mappings, with TASTE, SERVICE, and MONEY VALUE as central targets. Representative mappings are illustrated by naturally occurring examples:

(2) **TASTE IS A MENTAL STATE**

    a.   Talkthwikim-i cincca michy-ess-e-yo.
    fried.chicken- really crazy—POL
    "(lit.) The fried chicken really went crazy; (met.) The fried chicken is good.'

    TASTE IS A CRIME

    b.   Mas-i cwuk-i-n-ta.
    taste- ill—
    '(lit.) The taste kills (someone); (met.) The taste is amazing.'

    TASTE/PRICE IS OUT

    c.   Pwutay.cenkol-un mas-kwa
    army.stew-TOP taste-
    kasengpi-ka nemchye.hulu-n-ta.
    money.value- overflow–
    '(lit.) As for the army stew hotpot, taste and value-for-money overflow.; (met.) It's full of flavor and extremely cost-effective.'

According to the three-way distinction proposed by Lakoff and Johnson (1980), the metaphorical expressions identified in the corpus fall into structural, ontological, and orientational types. Structural metaphors conceptualize evaluative meanings through more familiar domains, and in Korean food reviews this appears primarily as personification, where non-human targets such as taste or price are described with human mental or psychological predicates, as in (2a). Ontological metaphors draw on concrete entities to express positive or negative qualities, as in mappings in (2b). Orientational metaphors, by contrast, rely on spatial schemas and movement, producing expressions in (2c) such as flavors or value "bursting out" (TASTE/PRICE IS OUT).

Finally, we outline an LLM-based methodological framework that integrates this linguistically grounded CMT annotation with Large Language Models. Three Korean-capable LLMs (EXAONE-4.0-32B, GPT-OSS-20B, Qwen3-30B-A3B) are evaluated under 32 cumulative prompt configurations combining task instructions, expert persona, structured XML-like tags, basic chain-of-thought reasoning, and different types of CMT information injection. This design allows us to assess how well LLMs identify metaphors and produce appropriate TARGET IS SOURCE mappings, and how factors such as structured prompts and domain-specific metaphor knowledge influence their performance. The study thus combines theoretical conceptual metaphors, corpus-based analysis, and LLM-based modeling to provide a detailed account of conceptual metaphors in Korean food review discourse and to lay the groundwork for extending this approach to other evaluative domains, including hospitals, institutions, and schools.

Acknowledgments

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