A SEMANTIC-TYPOLOGICAL STUDY OF FOOD-RELATED VOCABULARY AND THE THREE-STAGE SEMANTIC CHAIN

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ABSTRACT

The results of this study employ semantic typology and cognitive linguistics to investigate the semantic evolution of fundamental food terminology in Mandarin Chinese (including primary dialects and colloquial variants), as well as in English, French, German, Italian, Thai, and Indonesian. The study introduces and empirically evaluates a three-stage semantic chain model that follows food terminology from physiological experience to psychological desire, and subsequently to social, emotional, and symbolic realms. This semantic chain appears in both standard and non-standard forms, illustrating typological similarities and cultural creativity and diversity. The study demonstrates the influence of language and culture on metaphorical extension, offering cross-linguistic evidence for its cognitive mechanisms. The results enhance semantic typology, comparative semantics, and conceptual metaphor theory, with ramifications for language education, intercultural communication, and AI semantic modelling. The article concludes by addressing limitations in data and methodology while proposing avenues for future research.

1. INTRODUCTION

"Food and eating" represent essential human survival requirements and form a vital basis for social organisation, cultural activities, and collective cognition. Throughout civilisations, food is acknowledged as a fundamental component influencing both social and emotional existence. The Book of Rites (Liji•Liyun) asserts, "Food and sexual desire are the greatest of human desires," emphasising the profound connection among food, desire, emotion, and motivation. In Western philosophy, Maslow's (1943) hierarchy of needs similarly situates the need for appetite and the need for belonging at the foundation of the human motivational pyramid, highlighting the interaction between physiological and psychological requirements.

Proverbs from both Eastern and Western cultures, including the Chinese adages 'Well-fed and warm, one thinks of lust' and 'Poverty breeds theft,' as well as the German saying 'Voller Bauch studiert nicht mehr gern' ("A full stomach does not like to study anymore"), illustrate the relationship between material circumstances, emotions, and social conduct. These observations demonstrate that the semantics of food are deeply rooted in personal experience and cultural norms.

In addition to physiological and social roles, food and taste-related lexicon are integral to language and cognitive systems. Multiple cross-linguistic investigations have demonstrated that terms signifying "sweet," "bitter," "spicy," and "sour" are often metaphorically applied to abstract realms such as emotions, moral evaluations, and interpersonal dynamics (Lakoff & Johnson, 1980; Kövecses, 2005; Majid & Levinson, 2011; Zhou & Tse, 2020).

For example, "sweetness" is frequently correlated with happiness and pleasure, whereas "bitterness" is linked to sorrow and regret—a pattern well-documented across numerous languages (Lakoff & Johnson, 1980, 1999; Majid & Levinson, 2011). In both Spanish and English, the terminology for "spicy" or "hot" sometimes encompasses connotations of excitement or sexual allure (Torres Soler, 2021).

These patterns validate the fundamental premise of conceptual metaphor theory: that abstract conceptual domains are systematically organised through concrete sensory experiences (Lakoff & Johnson, 1980; Kövecses, 2005).

Nonetheless, although these metaphorical expansions demonstrate cross-linguistic similarities, they also exhibit significant cultural and regional differences. Majid and Levinson (2011) note that the language representation of sensory experiences

merges typological convergence with culturally unique innovation.

The choice of source domains for the same target idea differs markedly across cultures (Yang, 2021), and sociolinguistic studies demonstrate that vocabulary serves as a crucial medium for regional and communal identification (Chambers & Trudgill, 1998). In Chinese dialects and colloquial variants, culinary terminology often holds profound social significance (see Section 4.2.5).

The emergence of digital corpora has offered novel instruments for examining semantic evolution and metaphorical innovation. Resources like COCA (Davies, 2009) and CLICS (https://clics.clld.org/) facilitate the examination of cross-language polysemy and metaphorical patterns, thereby fostering the integration of typological and cognitive linguistic methodologies.

Despite significant progress in theoretical studies, empirical investigations into the semantic evolution and metaphorical invention of food-related lexicons across various languages and dialects remain comparatively scarce, particularly those that encompass both standard Mandarin and its dialectal variants. An in-depth examination of these routes enhances the theoretical framework of semantics and offers practical benefits for domains such as sentiment analysis and semantic modelling.

1.1. Research Questions and Objectives

In light of the aforementioned theoretical and empirical context, this work examines the following fundamental questions:

1. Universality of the Semantic Chain: Do fundamental food-related lexemes across various languages and their dialects universally demonstrate a semantic chain that progresses from physiological experience to psychological desire, and subsequently to social, emotional, and symbolic significances?
2. Typological Similarities and Cultural Distinctions: What typological patterns and local cultural variances may be identified across languages within the three-stage semantic chain model?
3. Embodied Cognition and Cultural Adaptation: In a multilingual situation, how does the semantic network of food terminology illustrate the cognitive processes of embodied experience and the trajectories of cultural adaptation?

This study proposes and empirically tests a three-stage semantic chain model for food-related vocabulary, positing that core food terms in various

languages experience progressive extensions from (1) physiological experience, through (2) psychological desire, to (3) social, emotional, and symbolic meanings.

This study aims to systematically compare the semantic chain pathways across different languages and their varieties, providing empirical insights into lexical semantics, typology, and cognitive linguistics, as well as theoretical references for applications in education, translation, cross-cultural communication, and semantic modelling.

2. LITERATURE REVIEW

2.1. *Theoretical Foundations of Semantic Typology*

Semantic typology seeks to uncover universal patterns and cross-linguistic variations in the categorisation and organisation of fundamental lexical domains. Following the seminal research of Berlin & Kay (1969) on fundamental colour terminology, typological methodologies have been extensively utilised in semantic domains including anatomical terms, familial relationships, and spatial orientation (Greenberg, 1990; Woolford, 1984; Traugott & Dasher, 2002). These investigations consistently demonstrate that semantic evolution typically follows recurrent paths, while also exhibiting distinctive modifications influenced by cultural and linguistic frameworks.

Sensory language (e.g., colour, form, taste) is especially susceptible to abstraction, transitioning from tangible perceptual experiences to the articulation of emotions and value assessments (Williams, 1976; Majid & Levinson, 2011). The Natural Semantic Metalanguage (NSM) approach, utilising a collection of universally shared "semantic primes," has significantly enhanced comparative studies of lexical meaning (Goddard & Wierzbicka, 2021).

A recent quantitative cross-linguistic typological study (Norcliffe & Majid, 2024) indicates that perception verbs and associated vocabulary typically exhibit a semantic expansion progression from "physiological experience" to "psychological meaning" to "social extension."

This discovery corroborates the semantic chaining theory, which posits that lexical meanings progress unidirectionally along chains closely tied to human experience (Viberg, 1984, 2001; Kowalczyk, 2019). Norcliffe and Majid (2024) argue that the semantic chain mechanism elucidates linguistic universals and provides a theoretical framework for understanding semantic evolution and cultural diversity.

2.2. *Comparative Semantics and Historical Semantic Change*

Western comparative semantics theories (e.g., Geeraerts, 2010) have revealed consistent patterns and universal trajectories by identifying mechanisms such as metaphor, metonymy, and semantic broadening/narrowing, frequently utilising historical documents, dictionaries, and corpus analysis. In China, the concept of "comparative semantics" is rooted in historical-comparative linguistics, which seeks to uncover universal mechanisms of semantic extension, transfer, and change through cross-linguistic and diachronic studies. Pioneering scholars such as Zhou, Wang, and Wu established the foundation for historical semantic comparison in Chinese.

Particular academics (e.g., Huang, 2012) have methodically analysed the semantic evolution of fundamental Chinese vocabulary about cognates in Sino-Tibetan and other languages, uncovering consistent patterns and principles. This method emphasises the necessity of examining both internal mechanisms of semantic expansion (including metaphor, metonymy, and grammaticalisation) and cross-linguistic and cross-cultural impacts. The method has produced notable outcomes in semantic fields including kinship terms, body parts, and clothing (Huang, 2012, 2013, 2016; Huang & Zou, 2019; Wu & Long, 2020; Huang & Zhang, 2022; Xu, 2023; Wu, 2024), and is particularly relevant for analysing multi-stage semantic chains such as "food–desire–feeling."

2.3. *Food, Desire, and Emotion: Typological Pathways and Metaphorical Chains*

Studies in psychology and linguistics have established consistent cognitive and semantic associations between food, desire, and emotion (Maslow, 1958; Deci & Ryan, 2000; Stults-Kolehmainen, 2023).

Numerous linguistic studies indicate that food-related vocabulary not only articulates direct physiological needs but also—through metaphor, idiom, and other devices—conveys intricate psychological meanings such as greed, craving, longing, and sexual desire (Huang & Zhuo, 2010; Zhang, 2013; Gathigia et al., 2018; Kowalczyk, 2019; Vanessa Lee, 2019; Yang et al., 2021; Huang & Zhang, 2022; Wu, 2022; Puspitaningsih, L., 2024; Du & Chen, 2024).

Cross-linguistic analyses indicate that numerous global languages metaphorically convey psychological and social meanings through lexicon

rooted in culinary experiences (Berrada, 2007; Buck, C. D., 2008; Croft, 2009; Fadwa et al., 2025).

Typological research indicates that metaphorical extensions of food language, particularly the verb "eat," are crucial for comprehending both universal and culturally specific components of metaphor (Newman, 1997; Taljard & Bosman, 2014; Jia & Wu , 2017; Yang, 2021). Although other languages display analogous metaphorical systems, notable disparities persist in the particular substance, frequency, and cultural implications of these phrases.

These findings establish a robust basis for the cross-linguistic comparison and semantic evolution studies concerning food-related terminology discussed in this study. In conclusion, cross-linguistic investigations of the "food–desire–feeling" semantic chain are at the forefront of semantic typology, comparative semantics, and cognitive linguistics.

Notwithstanding prior progress in clarifying the mechanisms of semantic extension and the interplay between language and cognition, there remains a deficiency of studies that concurrently:

1. Synthesise data from Classical Chinese, Modern Mandarin, dialects, and other prominent language families and varieties;
2. Develop and empirically evaluate a multi-stage semantic chain model;
3. Methodically investigate both universality and cultural specificity in semantic evolution.

This study aims to rectify existing gaps by methodically comparing food-related lexicons across seven principal languages and their variants, empirically evaluating the three-stage semantic chain model, thereby enhancing both semantic typology and metaphor theory, while providing empirical insights for language instruction, cross-cultural communication, and semantic modelling in artificial intelligence.

3. THEORETICAL FRAMEWORK AND RESEARCH METHODS

3.1 Theoretical Framework

This study synthesises insights from semantic typology, comparative semantics, and the conceptual metaphor theory of cognitive linguistics to propose a three-stage semantic chain model (physiological experience, psychological desire, social symbolism), systematically analysing the semantic evolution of food-related vocabulary in a multilingual context.

This comprehensive perspective enables the examination of both typological universals and culture-specific characteristics, while clarifying the intricate interplay among language, cognition, and

social context.

3.1.1. Semantic Typology

Semantic typology examines both the universal frameworks and the variation of fundamental semantic areas among languages. Research indicates that lexemes in various languages frequently exhibit metaphorical chains that transition from tangible, physiological sensations to psychological and social realms (Kowalczyk, 2019; Ravjir, 2024; Ge, Silva, & Oliveira, 2025).

This pattern corresponds with the semantic chaining model in typology, illustrating the overall progression from concrete to abstract meaning.

3.1.2. Comparative Semantics

Comparative semantics applies the techniques of historical-comparative linguistics to the realm of word meaning, emphasising the processes of semantic change across languages and throughout time (Huang, 2012).

This study, adopting a theoretical perspective, examines and contrasts the semantic evolution of fundamental lexemes such as "hungry," "thirst," "eat," "sweet," "bitter," "spicy/hot," and "sour" across different languages to uncover universal patterns and culture-specific trajectories within semantic chains.

3.1.3. Cognitive Linguistics and Conceptual Metaphor Theory

Cognitive linguistics emphasises the embodied nature of meaning, positing that metaphors in language systematically organise abstract notions by referencing tangible physical experiences (Lakoff & Johnson, 1980, 2003). Experiences related to food and hunger frequently function as source domains for abstract notions such as "desire," "emotion," and "social relations" (Kövecses, 2005).

This study, informed by conceptual metaphor theory, posits that languages universally demonstrate progressive semantic mappings from the physiological to the psychological and subsequently to the social domain, and empirically evaluates the applicability and limitations of this model through comparative analysis.

3.2. Research Methods

The study employs a mixed-methodology approach, integrating qualitative cross-linguistic comparison with quantitative corpus analysis to ensure systematic examination and representative conclusions.

3.2.1. Data Selection

The primary data consist of essential food and taste-related lexemes from seven languages: Mandarin Chinese and its dialects/colloquial variants, English, French, German, Italian, Thai, and Indonesian. Data sources include:

- Authoritative bilingual dictionaries:
  - Chinese: Xiandai Hanyu Cidian [Modern Chinese Dictionary] (Institute of Linguistics, Chinese Academy of Social Sciences, 2016)
  - Chinese dialects: Dictionary of Chinese Dialects (Xu & Ichiro, 1999)
  - English: English-Chinese Dictionary (Lu, 2007)
  - French: New Century French-Chinese Dictionary (Chen, 1998)
  - German: New German-Chinese Dictionary (Zhang et al., 1999)
  - Italian: Modern Italian Dictionary (Zhang, 2011)
  - Thai: New Thai-Chinese Dictionary (Shao, 2020)
  - Indonesian: New Indonesian-Chinese Dictionary (Lian, 1997).
- Major corpora and databases:
  - Chinese: https://corpora.lessicobeniculturali.net/en/
  - English: https://corpora.lessicobeniculturali.net/fr/
  - French: https://www.frantext.fr/repository/frantext-agregation/search/concordance?mode=simple
  - https://corpora.lessicobeniculturali.net/fr/
  - German: https://www.dwds.de/r
  - https://corpora.lessicobeniculturali.net/fr/
  - Italian: https://corpora.lessicobeniculturali.net/fr/
  - Thai: https://www.arts.chula.ac.th/ling/tnc3/
  - Indonesian: https://kbbi.kemdikbud.go.id/

Additionally, the CLICS³ cross-linguistic colexification database (https://clics.clld.org/) was used to expand and verify the breadth and accuracy of the cross-linguistic semantic analysis.

3.2.2. Selection of Core Lexemes

This study examines the conceptual domains of "hungry, thirst, eat, sweet, bitter, spicy/hot, and sour." For each language, the definitions and metaphorical implications of these terms are methodically arranged, considering dialectal, colloquial, and idiomatic usages. To guarantee typicality and representativeness, all examples are sourced from credible dictionaries and real corpora.

3.2.3. Semantic Chain Analysis and Typological Generalization

The study generalises the progressive semantic model of food-related terminology through cross-linguistic comparison and systematic tracking over three stages: "physiological – psychological – social." At every stage, both cross-linguistic universals and innovations peculiar to domains or cultures are examined. The primary findings are presented in tables, typological maps, and illustrative examples.

3.2.4. Analysis of Metaphorical Mechanisms

Within the framework of cognitive linguistics, this study investigates in depth how food-related experiences, as source domains, structure abstract target domains such as desire, emotion, and social evaluation through metaphor. Wherever possible, analysis is grounded in corpus-based evidence rather than subjective intuition, thereby strengthening the empirical analysis of metaphorical mechanisms and cross-cultural comparison.

By integrating the above theoretical frameworks and methods, this study aims to systematically reveal the universal pathways and innovative mechanisms underlying the semantic evolution of food-related vocabulary from typological, cognitive, and sociocultural perspectives, thus providing a robust empirical foundation for cross-linguistic semantics and metaphor research.

4. RESULTS AND ANALYSIS

4.1 Analytical Framework and Data Structure

This study examines fundamental food-related lexemes—such as "hungry, thirst, eat, sweet, bitter, spicy/hot, and sour"—focusing on their semantic evolution and metaphorical trajectories across seven languages (Mandarin Chinese and its major dialects, English, French, German, Italian, Thai, and Indonesian). This study employs a cross-linguistic comparison method grounded in the three-stage semantic chain model" to delineate the evolution of word meanings from physiological experience to psychological desire, culminating in societal, emotional, and symbolic realms. To ensure scientific rigour and replicability, all data and findings are presented in standardised tables and figures, with data sources specified in Section 3.2 and the appendix.

4.1.1. Data Selection and Coding

Data sources comprise reputable monolingual and bilingual dictionaries, academic corpora, and additional web resources for each language. The

research team individually organised and classified data for each language/dialect, emphasising high-frequency metaphorical usages in prominent contexts. All lexemes are tagged based on their position along the semantic chain model and are additionally categorised by register (standard/dialect/slang) and genre (written/oral/proverb, etc.).

4.1.2. Rationale for Language Selection

This study encompasses languages from the Sino-Tibetan (including Thai, which is occasionally categorised as Tai-Kadai), Austronesian (Indonesian), and Indo-European families, thereby ensuring typological diversity and enabling the identification of significant cross-linguistic similarities and culture-specific innovations. The selection of data was contingent upon available

resources and the language proficiency of the study team, prioritising Chinese dialects and slang to rectify the underrepresentation of these varieties in international typological research (Ansaldo & Szeto, 2025).

4.2. Typological Evidence for the Three-Stage Semantic Chain Model

4.2.1. Stage One: Physiological Experience

In all examined languages, the fundamental meanings of essential food-related lexemes pertain to physiological conditions or behaviours (such as hungry, thirst, eat, and basic taste perception), illustrating the universality of human fundamental requirements. At this juncture, meanings are tangible and embodied, lacking metaphor, and function as a cognitive basis for future semantic expansions.

Table 1: Cross-Linguistic Comparison of Core Food-Related Lexemes (Basic Physiological Meaning).

Language	Hungry	Thirst	Eat	Sweet	Bitter	Spicy/Hot	Sour
Chinese	E (342)	Ke (739)	Chi (171)	Tian (1296)	Ku (753)	La (771)	Suan (1250)
English	hunger (922)	Thirst (2111)	Eat (584)	sweet (2044)	Bitter (185)	spicy/hot (1940/913)	Sour (1925)
French	Faim (1059)	Soif (2484)	manger (1669)	Doux (848)	amer/sucré (109/2539)	Épicé (965)	Acide (30)
German	hunger (785)	Durst (367)	Essen (476)	Süß (1572)	Bitter (241)	scharf (1368)	Sauer (1358)
Italian	Fame (548)	Sete (1416)	Mangiare (890)	Dolce (473)	Amaro (60)	piccante (1116)	Aspro (115)
Thai	Hǐw (767)	krà.hǎ:j (27)	Kin (59)	wǎ:n (759)	kʰǒm (82)	pʰèt (450)	prîaw (430)
Indonesian	Lapar (374)	Haus (227)	Makan (415)	Manis (422)	Pahit (468)	Pedas (484)	Asam (33)

Table 2: Cross-Linguistic Examples of Words for "Hungry" and "Sweet".

Language	Example	Translation /Source
Chinese	1. Du zi hen e. 2. Zhe xi gua zhen tian.	1. I'm very hungry. (342) 2. This watermelon is very sweet. (1296)
English	1. Many died of hunger in the streets. 2. Sugar cane tastes sweet.	–
French	1. À midi, je commence à avoir faim. 2. Doux comme le miel.	1. By noon I am hungry. (1059) 2. Sweet as honey. (846)
German	1. Hunger haben. 2. Ein süßer Wein.	1. To be hungry. (785) 2. A sweet wine. (1572)
Italian	1. Voleva mangiare allora che la fame veniva. 2. Un frutto molto dolce.	1. He only wanted to eat when hungry. 2. A very sweet fruit.
Thai	1. Lû:k jaŋ rú: sùk hǐw tʰǔŋ mɛ́: tɕà pʰɔ̂ŋ kin nom. 2. Wǎ:n mǔaŋ ná:m pʰûŋ.	1. The child still feels hungry even after milk. (767) 2. As sweet as honey.(772)
Indonesian	1. Perutnya sudah lapar. 2. Kue itu terlalu manis.	1. His stomach is hungry. (374) 2.That cake is too sweet. (422)

Note: All examples are derived from prevalent expressions in each language, with corresponding dictionary page numbers provided when relevant; some are sourced from corpora. These examples underscore the explicit physiological significance of food terminology in stage one, devoid of metaphorical embellishment.

4.2.2. Stage Two: Psychological Desire and Metaphorical Extension

Lexemes associated with food often function as metaphors for psychological need, yearning, greed, and analogous abstract ideas. All languages display highly grammaticalised patterns, such as 'Ru ji si ke'

("as if famished or thirsty"), 'hunger for/thirst for,' and 'avoir soif de,' which indicate a pronounced inclination towards metaphorization. Taste descriptors (sweet, bitter, sour, spicy) often correlate with emotional and attitudinal dimensions, exhibiting cross-linguistic patterns such as "sweet = pleasure," "bitter = suffering," "sour =

jealousy/loss," and "spicy = stimulation/passion." This phase also incorporates intricate metaphors related to consumption, such as "digesting knowledge" or "a difficult pill to swallow."

Table 3: Metaphorical Extensions from "Physiological" to "Psychological/Desire" Domains.

Language	Vocabulary	Extended/Compound Usage	Example Phrase(s)	Notes
Chinese	ji ke	ru ji si ke, ke wang	1.ta dui zhi shi ru ji si ke. (He hungers and thirsts for knowledge.) 2.ke wang cheng gong (to thirst for success)	Literary, colloquial, idiomatic
English	hunger/thirst	hunger for, thirst for	1.hunger for adventure 2.thirst for knowledge	Highly grammaticalized; frequent
French	faim/soif	avoir faim/soif de	avoir soif de réussite (to thirst for success)	Frequent in literature/speech
German	hunger/durst	hunger nach, durst nach	hunger nach Liebe (hunger for love)	Compositional, productive
Italian	fame/sete	avere fame di, avere sete di	1.avere fame di successo (to be hungry for success) 2.avere sete di giustizia (to thirst for justice)	Metaphorical, unrestricted
Thai	hǐw / krà.hǎ:j	krà.hǎ:j kʰwa:m sǎmrèt	kʰǎw krà.hǎ:j kʰwa:m sǎmrèt. (He thirsts for success.)	Normative, colloquial
Indonesian	haus	haus akan cinta	dia haus akan cinta (thirsty for love.)	Direct metaphorical use

4.2.3. Stage Three: Social, Emotional, and Sexual Extensions

Food vocabulary has a profound influence on social connections, power dynamics, emotions, and sexuality, as evidenced in idioms, slang, and dialectal innovations (see Table 4). Examples encompass Mandarin 'chi dou fu' (to flirt/harass), 'chi du shi' (to monopolise); English 'eat out' (slang: oral sex), 'piece of the pie'; German 'scharf' (sexy/stimulating); Italian 'piccante'; and French 'épice,' all of which utilize culinary experiences as a metaphorical foundation for intricate social and emotional significances. At this juncture, metaphorical phrases become significantly culture-dependent and geographically inventive, providing an essential avenue for comprehending the social roles and cultural peculiarity of language.

Table 4: Metaphorical Extensions of Food Lexemes in Social, Emotional, and Sexual Domains.

Language	Vocabulary	Social/Emotional Extension	Sexual/Slang/Idiom	Dialect/Regional Examples
Chinese	chi	1.chi du shi (to take all the benefits for oneself) 2.chi kui (to suffer a loss) 3.chi xiang huo (protection money)	1.chi dou fu (to take liberties with someone) 2.tou shi (to have an affair) 3.chi cu (to be jealous)	Liuzhou 'chi xiang huo' Jinan 'tou leng fan chi' (to have sex before marriage)
English	rapacious	greedy for	eat out (slang), greedy for attention	
French	grignoter	manager à tous les râteliers (to have a finger in every pie)	histoire épicée (erotic story)	manger la laine sur le dos (to eat the wool off someone's back)
German	Fressgier	die Suppe alleine auslöffeln (to eat the soup alone)	scharf (strong sexual desire), scharfe Frau (sexy woman)	
Italian	mangiare	mangiare a sbafo (to eat for free)	piccante (erotic/spicy), una storia picante(a spicy story)	
Thai	kin	kin rû:ap (to monopolize)	[lên tɕ̂ɛ̂m tɕ̄ɛ̌:] (sexual slang)	ʔa: ka:n kin rû:ap (the act of taking everything for oneself)
Indonesian	rakus	serakah (greed)	manis (sexual connotation)	dia manis banget (She is very sweet.)

4.2.4. Taste Vocabulary and Metaphorical Evaluation

Taste descriptors ("sweet," "bitter," "spicy," "sour") are universally employed as metaphors for emotional, psychological, and social assessment

across prominent languages (refer to Table 5). Cross-linguistic patterns exhibit notable consistency: sweet correlates with happiness/pleasantness (colexification indicates 21 languages equate sweet with tasty, 11 with fragrant, and 10 with good); bitter corresponds to pain/suffering (56 languages link bitter with salty, 12 with sharp, and 3 with difficult); spicy signifies stimulation/passion; sour relates to

jealousy/sadness (50 languages associate sour with bitter, 18 with salty, and 3 with rotten). Nonetheless, particular idioms, collocations, and usage frequency reveal distinct regional and cultural variations. Taste metaphors serve as a fundamental resource for articulating human emotions and social interactions, illustrating both cognitive universality and cultural variety.

Table 5: Cross-Linguistic Metaphorical Evaluation of Taste Vocabulary.

Language	Sweet (happiness/pleasant)	Bitter (pain)	Spicy (stimulation/desire)	Sour (bitterness/jealousy)	Typical Expressions
Chinese	tian mi (sweet and happy)	1.ku tong (pain) 2.ku ming (having a hard life)	1.huo la la (hot and spicy) 2.la mei(sexy girl)	1.cu tan zi (a jealous person) 2.xin suan (sorrowful)	1. sheng huo hen tian (life is very sweet.) 2.chi ku tou (to suffer a setback) 3.chi cu (to be jealous)
English	sweet love	bitter truth	hot date	sour grapes	a sweet girl, hot love
French	vie douce (pleasant life)	expérience amère (bitter experience)	histoire épicée (spicy story)	remarque acide (cutting remarks)	1.une vie douce (a pleasant life) 2.histoire amère (a painful story)
German	süße liebe (sweet love)	bittere erfahrung (bitter experience)	scharf (sexy)	1.sauer sein (to be angry) 2.eifersüchtig (jealous)	1.süße Zeit (a sweet time) 2.scharfe frau (sexy woman)
Italian	dolce vita (sweet life)	esperienza amara (bitter experience)	picante (racy, saucy, juicy)	acido (sarcastic)	1.dolce ragazza (sweet girl) 2.storia picante (spicy story)
Thai	făn wǎːn (sweet dream)	kʰǒm kʰuːìn (painful and distressing)	pʰèt rɔ́ːn (pungent and hot)	ʔaŋ nùn prîaw (sour grapes)	1.tɕʰiː wít wǎːn (a sweet life) 2.ʔaŋ nùn prîaw má naːw wǎːn (to disparage what one cannot obtain out of jealousy.)
Indonesian	kenangan manis (pleasant memory)	pahit getir (painful)	kritik yg pedas (sharp criticism)	pahit asam (painful)	1.hidup yang manis (a sweet life) 2.pengalaman pahit (a bitter experience)

4.2.5. Diversity of Dialects and Slang

Beyond standard languages, metaphorical innovation and dynamism are particularly evident in dialects and slang. Chinese dialects, for example, feature vivid terms such as 'tou shi' (literally "to pilfer food," which in many southern dialects means "to engage in infidelity or have an affair"), and 'chi xiang huo' (which traditionally means "to live off temple offerings," but in some regions like Liuzhou has evolved into a euphemism for "soliciting bribes or extorting protection money"). Other examples include 'suan bu liu liu' (meaning "sour" or "jealous"). In English slang, expressions such as 'beef' (conflict) and 'cheesy' (corny or insincere) are prevalent; French includes phrases like 'avoir la dalle' (to be very hungry) and 'avoir la pêche' (to be in high spirits); Neapolitan Italian features the saying 'chi mangia sulo s'affoga' (he who eats alone drowns). These cases show how localities and social groups cultivate distinct metaphorical systems rooted in shared cognitive foundations but colored by specific social experiences. In semantic typology, it is essential to consider non-standard and regional varieties; otherwise, significant and novel phenomena may be overlooked.

4.2.6. Overview of the Model

The evidence in this section consistently corroborates the three-stage semantic chain model for food-related vocabulary, which involves a sequential progression from physiological experience (fundamental meaning) through psychological desire (emotional meaning) to social, emotional, and sexual symbolism (metaphorical meaning) (refer to Figure 1). To avoid overlap and ambiguity between psychological desire and emotional meaning, this study provides clearer operational definitions:

- Psychological desire refers to mental states related to motivation, pursuit, and drive, focusing on the dimension of "wanting or craving," e.g., ru ji si ke de xue xi ("hunger for knowledge").
- Emotional meaning emphasizes the expression of emotions and attitudes, focusing on the dimension of "feeling or evaluation," e.g., tian mi sheng huo ("sweet love"), ku ming ("bitter truth").

This distinction increases the precision of the three-stage semantic chain and prevents conflation between stages, thereby enhancing the operability of cross-linguistic comparison. However, the table 6 and figure 2 illustrates the transition from physiological experience to psychological desire, and further to emotional, social, and sexual-symbolic meanings. The selected examples come from Chinese, English, French, German, Italian, Thai, and

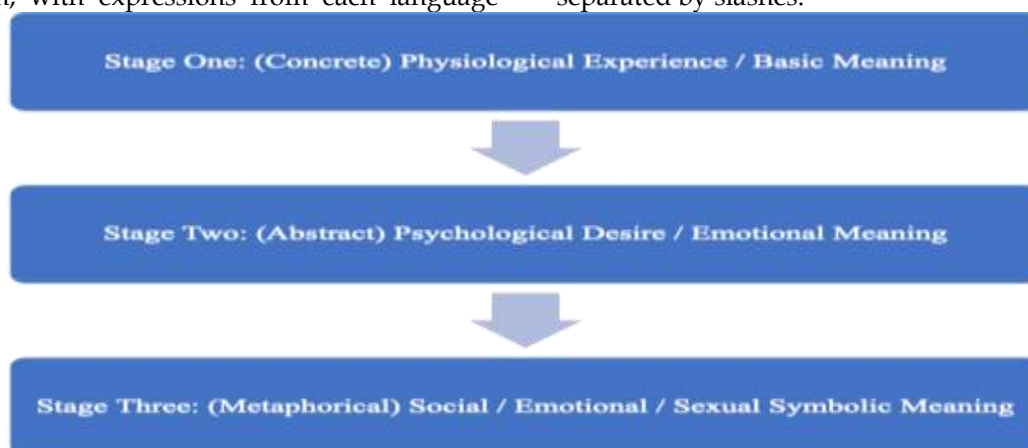Indonesian, with expressions from each language   separated by slashes.

Figure 1: The Three-Stage Semantic Chain Model for Food-Related Vocabulary.

Table 6: Cross-linguistic Comparison of the Three-stage Semantic Chain.

| Stage	Chinese	English	French	German	Italian	Thai	Indonesian
Physiological Experience	e、ke、chi	hunger, thirst, eat	faim, soif, manger	Hunger, Durst, essen	fame, sete, mangiare	hǐw, kràˋ.hǎːj , kin	lapar, haus, makan
Psychological Desire	ji ke、ru ji si ke	hunger for, thirst for	avoir soif de	Hunger nach, Durst nach	avere fame di	kràˋ.hǎːj kʰwaːm sǎmrèt	haus akan cinta
Social, Emotional, and Sexual Symbolic Meaning	chi du shi (to take all the benefits for oneself)	greedy for	manger à tous les râteliers (to have a finger in every pie)	scharf (strong sexual desire), scharfe Frau (sexy woman)	mangiare a sbafo (to eat for free)	kin rûːap (to monopolize)	serakah (greed)
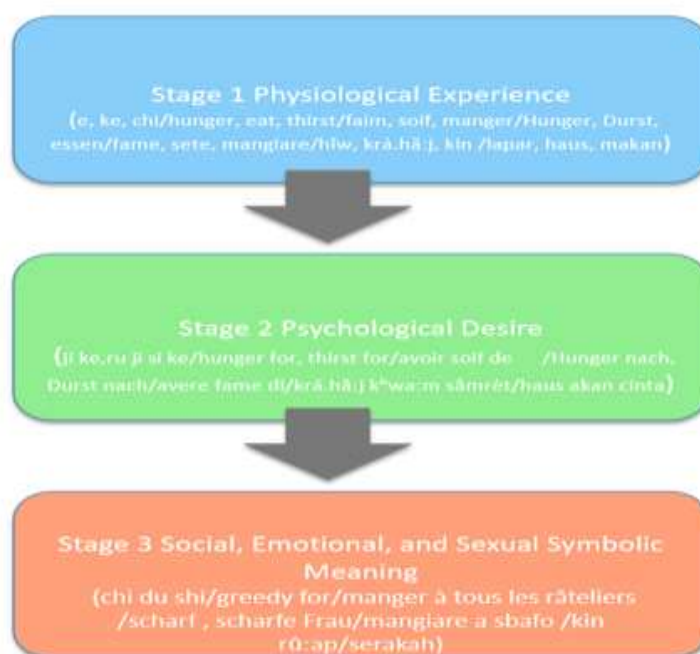
Figure 2: A cross-Linguistic Semantic Network of Food-related Terms.

4.3. Typological Universals and Variation

4.3.1. Universal Patterns

The universality of the three-stage semantic chain is validated: all languages demonstrate semantic extensions from "food → desire → emotion/social," and metaphorical associations for taste terms (sweet = good, bitter = bad, spicy = passionate, sour = mean/jealous) exhibit significant consistency across languages, reflecting fundamental principles of embodied cognition theory.

4.3.2. Differences and Innovations

Every language exhibits significant variations in metaphorical grammaticalization, stylistic expression, and the associated semantic domains. Chinese excels at compounding and formulating idioms, characterised by particularly vivid dialects and slang. English and German, on the other hand, emphasise phrasal constructions. French and Italian, meanwhile, prefer established written collocations. The disparities originate from linguistic structure, cultural traditions, and social environment, and are partially influenced by language interaction. This variability amplifies the model's explanatory capacity, illustrating the dual impact of human cognition and cultural community.

4.4. Evaluation of Results and Data

This study utilises multilingual and multidialectal data to validate the universality and cultural heterogeneity of the three-stage semantic chain model for food-related vocabulary, thereby corroborating the expectations of typological, comparative semantic, and cognitive metaphor theories. The findings underscore the need for caution when transmitting metaphors across languages in cross-linguistic instruction and translation. All tables and examples are derived from reputable dictionaries, significant corpora, and established research. Subsequent research may augment the dataset and utilise quantitative and sociolinguistic methodologies to elucidate the influences of area, age, gender, and other characteristics on metaphor usage, thereby enhancing the systematic comprehension of the food metaphor semantic chain.

5. DISCUSSION

5.1. Validation of the Theoretical Model and Empirical Significance

This research rigorously corroborates and enhances the three-stage semantic chain model of food-related lexicon, utilising data from seven languages and their principal dialects/varieties. Table 1–5 and the illustrative examples in Section 4 comprehensively depict the semantic evolution of fundamental lexemes, such as "hungry, thirst, eat, sweet, bitter, spicy/hot, and sour" across physiological, psychological, and social aspects. In all analyzed languages, core vocabulary at the initial stage consistently signifies direct physiological experiences (refer to Table 1); at the subsequent stage, extensively grammaticalized metaphorical expressions of intense desire, such as 'ru ji si ke' ("as if famished or thirsty") and "hunger/thirst for," are commonly observed (Table 3);. In contrast, at the final stage, meanings broaden into social, attitudinal, and even sexual realms, featuring highly culture-specific metaphors (Tables 4 and 5). The aggregated multilayered data offer substantial empirical evidence for the model's universality and stratification.

Section 4.2.4 illustrates that the affective and symbolic applications of taste vocabulary across languages, as evidenced in the Chinese expressions 'tian mi sheng huo' ("sweet life") and 'chi ku' ("to endure hardship"), the English phrases 'sweet love' and 'bitter truth,' the French terms 'vie douce' and 'expérience amère,' and the German expressions 'süße liebe' and 'bittere erfahrung,' exhibit significant typological similarities. It not only validates the fundamental discoveries of the "embodied metaphor" hypothesis in cognitive linguistics (Lakoff & Johnson, 1980; Kövecses, 2005) but also enhances the empirical basis of cross-linguistic comparative semantics. Through extensive data synthesis, we can outline the complete trajectory of semantic growth in food terminology from a systematic, cross-cultural perspective.

5.2. Typological Universals and Cultural Modulation

5.2.1. Cross-Linguistic Universality

The results demonstrate that the triadic semantic chain of "physiological experience–psychological desire–social emotion/symbolism" is evident in almost all the languages and dialects examined. For instance, "eat," "hungry," and "thirst" consistently retain their physiological fundamental meanings in Table 1; however, in Table 3, they are figuratively expanded to include psychological desires, motivation, and emotions. "Sweet" is intrinsically connected to happiness and pleasant feelings, whereas "bitter" is significantly correlated with pain and negative sentiments; these metaphorical value orientations are explicitly detailed in Table 5 of

Section 4.2.4. This universality underscores the shared mechanisms of human cognition and offers strong cross-cultural evidence in support of the hypothesis that embodied experience functions as a primary source domain.

5.2.2. Cultural Differences and Local Innovation

Notwithstanding the previously indicated similarities, the study also uncovers notable disparities in the particular manifestation of metaphors among languages and their dialects/slang. For example, as demonstrated in Section 4.2.5, Chinese dialects and slang exhibit a diverse range of culturally specific and inventive expressions, including 'tou shi', 'chi xiang huo', 'chi hei shi' ("to eat black food," denoting "to receive dirty money"), 'tian shui' ("sweet water"), and 'la huo' ("spicy goods," colloquially referring to attractive women). Conversely, English, French, Italian, and other Western languages frequently employ distinct culinary terms or cooking-related behaviours to create unique metaphors (e.g., "couch potato," "cheesy," "histoire épicée," "piccante," etc.). This "diversity within commonality" suggests that although cognitive mechanisms supply the fundamental components for metaphor, their specific manifestation is significantly influenced by sociocultural context, nutritional frameworks, value systems, and grammatical conventions. For instance, Chinese phrases like 'chi dou fu' ("to take liberties with someone" literally "to eat tofu"), 'chi cu' ("to be jealous," literally "to eat vinegar"), and the Southwestern dialectal 'tian shui' ("sweet water") frequently lack clear counterparts in Western languages, For example, the Thai expression "grapes are sour" clearly originates from Western fables, but after taking root in Thai culture, people creatively incorporated lemon—an important element in everyday Thai cuisine—into the saying, resulting in the new proverb "grapes are sour, lemons are sweet."creating what are termed "cultural gaps." Another example is the Thai expression 'ʔaŋ nùn prîɐw (grapes are sour),' which clearly originates from western fables, but after taking root in Thai culture, people creatively incorporated lemon—an important element in everyday Thai cuisine—into the saying, resulting in the new proverb 'ʔaŋ nùn prîɐw má naːw wǎːn (literal meaning: grapes are sour, lemons are sweet; figurative meaning: to disparage what one cannot obtain out of jealousy.)'

5.3. Theoretical Contribution and Academic Value

This study enhances the integration of semantic typology, comparative semantics, and cognitive metaphor theory by systematically testing the three-stage semantic chain model using cross-linguistic and cross-dialectal data. This study uniquely integrates Mandarin, Chinese dialects, slang, and non-standard varieties into its analytical framework, addressing the prior oversight of non-standard Chinese and enhancing our comprehension of the mechanisms driving language variation and innovation. The study employs a data-driven, multi-level comparative methodology to elucidate the universality of semantic evolution in food vocabulary, while also documenting innovations and negotiations within dialects and communities, thereby providing a practical framework and novel pathways for exploring metaphor and linguistic variation.

5.4. Limitations and Future Directions

This study encompasses seven principal languages along with particular dialects and slang; nonetheless, it is constrained by data sources, resource limitations, and spatial restrictions, leading to inadequate representation of low-resource, endangered, or ancient languages. The study primarily relies on qualitative comparison and typological generalisation, lacking extensive quantitative analysis and automated techniques. Future studies should expand data coverage to include languages from Africa, the Americas, Australia, and other regions, while integrating corpus linguistics and AI technology for the automated extraction and diachronic frequency modelling of metaphorical terms. Moreover, the "three-stage model" may be applied to additional semantic domains, including family terminology, anatomical references, and spatial orientation, to evaluate its universality and theoretical robustness. These initiatives will enhance a more systematic, quantitative, and multidisciplinary integration of typology and cognitive linguistics.

5.5. Practical Implications and Prospects for Application

This study's findings provide valuable contributions to theoretical linguistics, typology, and cognitive metaphor research, while simultaneously opening new pathways for multilingual education, cross-cultural communication, emotional computing, and artificial intelligence. The proposed three-stage semantic chain model demonstrates both theoretical significance and practical utility.

In AI semantic modeling, the model can encode mappings such as "sweet = positive emotion" and

"bitter = negative emotion" to enhance multilingual sentiment analysis and NLP systems. For instance, it enables the alignment of the Chinese phrase chi ku ("to endure hardship") with the English expression bitter truth under the same negative emotional category, thereby improving semantic recognition across languages.

In translation practice, the model clarifies metaphorical levels and prevents literal mistranslations. A well-known example is chi cu ("to eat vinegar"), which should not be directly rendered but translated as "jealousy." Such cases illustrate how the layered semantic chain can guide translators in capturing the intended figurative meaning.

In intercultural and second language education, the model helps learners uncover the metaphorical extensions and cultural foundations of target languages. For example, comparing English sweet girl with Chinese tian mi sheng huo ("sweet life") highlights both universal semantic associations and culture-specific expressions, deepening learners' cross-linguistic awareness.

Taken together, these applications show how the three-stage semantic chain not only enriches theoretical inquiry but also strengthens practical outcomes in AI, translation, and education.

6. CONCLUSION

This study, rooted in the theoretical frameworks of semantic typology, comparative semantics, and cognitive linguistics, has performed a systematic comparative analysis of fundamental food-related lexemes—such as "hungry, thirst, eat, sweet, bitter, spicy/hot, and sour"—across Mandarin Chinese (including various dialects), English, French, German, Italian, Thai, and Indonesian. This study proposes and empirically tests the three-stage semantic chain model, demonstrating that core terms universally evolve progressively from concrete physiological experience to psychological desire, and ultimately into the realms of society, emotion, and symbolism, applicable to standard languages as well as dialects, slang, and non-standard varieties. This semantic chain is well documented in conventional written forms. It is also ingrained in diverse dialects and colloquial registers, illustrating the universality of embodied cognition and the intricate interaction of cultural modulation.

The study successfully addresses the three core questions raised in the introduction:

1.   Universality of the Semantic Chain

Empirical evidence from various languages indicate that food-related lexemes typically evolve through a "physiological–psychological–social/symbolic" three-stage continuum, demonstrating significant universality and structural coherence.

2.   Typological Universals and Cultural Specificities

Although the routes of meaning expansion in the three-stage model exhibit notable cross-linguistic uniformity, each language, dialect, and slang variant demonstrates unique local innovations and cultural adaptations regarding phrases, collocations, and idioms. Affective mappings, such as sweet equating to happiness or pleasantness and bitter to pain or difficulty, exhibit significant typological universality, whereas expressions like 'chi xiang huo' (which traditionally means "to live off temple offerings," but in some regions like Liuzhou has evolved into a euphemism for "soliciting bribes or extorting protection money"), 'tou leng fan chi' ("to steal cold rice," meaning to have sex before marriage), or 'couch potato' demonstrate pronounced regional and cultural specificity.

3.   Embodied Cognition and Cultural Adaptation

Food-related experiences furnish the embodied cognitive basis for the formation of abstract notions. Simultaneously, several linguistic communities exhibit intricate patterns of cultural modulation and adaptation in metaphor innovation and expression, resulting in a dynamic and diverse metaphorical ecology.

This paper's systematic comparison and theoretical modelling enhance the fields of semantic typology and cognitive linguistics while providing a new viewpoint on the interplay between language, cognition, and socio-cultural context. The three-stage semantic chain model clarifies how languages systematically utilise food and taste experiences to metaphorically create abstract meanings, such as emotion, attitude, and desire, offering a structured framework and methodological paradigm for analysing cognitive universals and cultural diversity.

Notwithstanding specific constraints in data coverage and quantitative analysis, the theoretical framework and empirical results presented in this study provide a robust basis for subsequent research on metaphor evolution, cross-linguistic comparison, and their implications in artificial intelligence, machine translation, and associated domains. The continuous progress in linguistic technology, data resources, and research methodologies will enhance the explanatory capacity of the three-stage semantic chain model in theoretical validation, cross-linguistic transfer, language cognition, and AI semantic modelling, fostering a more profound

comprehension of the interactive mechanisms among language, cognition, and culture.

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