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A Map to Locate COLD HEART of Chinese and English

Abstract. The "physical heart" of people around the world is very similar, and this would result in the universality of metaphorical thinking, but the conceptualization of a "mental heart" can differ cross-culturally. This study contributes to the issue of universality vs. intercultural variability of conceptualizations regarding abstract concepts within the framework of Conceptual Metaphor Theory (CMT). COLD HEART-related metaphors were analyzed via qualitative and quantitative analysis of data collected from two authoritative corpora—Center for Chinese Linguistics (CCL) and Corpus of Contemporary American English (COCA). Results reveal that the universal bodily experience accounts for the shared source domain for a COLD HEART metaphor. However, the shared metaphor HEART IS TEMPERATURE displays variations in detail. To construe COLD HEART-related metaphors in Chinese, we should mainly take a "patient view" to investigate the response from others which indicates the passiveness and less pronounced ego-centrality, while an "agent view" is generally adopted to study "cold heart" in English that focuses on the apathy to others which means that a human's own initiated mind or attitude is the locus. These findings suggest that cultural variance in individualism vs. collectivism motivates different conceptualizations of COLD HEART.

Keywords: COLD HEART metaphor, corpus-based method, Conceptual Metaphor Theory, contrastive study

1. Introduction

As demonstrated in the work by HØystad (2009, 7), "the heart is the main symbol of what it means to be a human being". The significance of the heart is conspicuous. Humans cannot live without the heart beating; thus, the heart as a part of the body could stand out in representing a person rather than other organs. It is acknowledged that the "physical heart" is a muscular organ that functions as a blood pump for the circulatory

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system, which should be the same among humans irrespective of nationalities and various cultural backgrounds (Zhou and Jiang 2020, 98). However, the constant and shared conceptualization of the heart changes its use to embody the various interests and salient focus of cultures (Sheridan 2018, 3407). Body-related lexical units are widespread in English and Chinese. This paper is centered on "mental heart", which may differ from culture to culture or even vary diachronically within the same cultural community.

Skara (2004, 189) states that "It seems that one of the most important objects of knowledge is one's body. We could say that we do not see things as they are; we see things as we are". Hence, a body metaphor is not a mere rhetorical device, since it is a cognitive approach that we use to comprehend abstract domains. There are various metaphorical interpretations that derive from the same somatic part considering different conventions. Based on analysis from Gutiérrez Pérez (2008, 25), the conceptualizations of HEART include CONTAINER FOR EMOTIONS, OBJECT OF VALUE, CENTRAL AND INNERMOST PART, etc., but sub-types of the categorization vary from language to language. To be specific, it is commonplace in our culture to associate the heart with several materials. Temperature is one factor granted to the heart based on metaphorical uses. Searle (1995, 324) observes that humans construe emotional state as heat, and not emotional as cold. The negative connotation stored in "cold heart" is widely accepted, but the origin of coldness is not the same across cultures.

In this paper, I endeavor to carry out comprehensive corpus-based research of "cold heart" metaphors in Chinese and English from Conceptual Metaphor Theory (CMT) founded by Lakoff and Johnson (1980), in which metaphor is construed as "understanding and experiencing one kind of thing in terms of another" (Lakoff and Johnson 1980, 5). Metaphor is omnipresent in daily language use instead of artistic and poetic expressions in literature exclusively (Grady 1997, 11). This is because metaphor is not a pure ornament to language but serves to reason and cognize the world through source and target domains. The source domain consists of familiar and readily comprehensible entities, while the target domain comprises abstract, less delineated concepts (Kövecses 2020, 5). Grady (1997, 5) also states that the physical structure and the interaction with the environment and other humans facilitate the cognitive association to construct meanings. Hence, CMT justifies that the comparative analysis of body metaphors across languages reveals the potential universality and differences in conceptualization.

Quantitative and qualitative methods are both applied to study data from two corpora: Center for Chinese Linguistics, Peking University (henceforth CCL), and Corpus of Contemporary American English (henceforth COCA). For this research, the objective is twofold: firstly, I will focus on the ways to conceptualize "cold heart" in Chinese and English, and identify their similarities and uniqueness; secondly, motivation for the universality and variation will be investigated.

The structure of this paper is as follows: After the introduction, Section 2 is a literature review. Section 3 involves the methodology of the research. Section 4 describes the quantitative and qualitative analyses of the corpus data. Section 5 and 6 concludes the main findings of the studies.

2. Literature Review

The body presumably is a common source to lay the foundation for developing metaphors, and culture motivates the construction of metaphorical projections between components of sensory experience and subjective experiences. Metaphors, in other words, are rooted in physiological experience but altered by cultural context (Yu 2008, 247). This is why the conceptualization of the same organ, the heart, has potential universalities and variations across languages. Musolff (2010, 75) also states that metaphorical meaning is inseparable from cultural context.

Niemeier (2003, 199) defines four categories of conceptualizations of HEART (HEART AS A METONYMY FOR THE PERSON; THE HEART AS A LIVING ORGANISM; THE HEART AS AN OBJECT OF VALUE; THE HEART AS A CONTAINER) based on various degrees of explicitness of metonymization rooted in metaphorical expressions involving HEART from Roget's Thesaurus, dictionaries, and corpus study. The most perceivable metonymic motivation for counterparts of HEART-related metaphors is HEART AS A METONYMY FOR THE PERSON. She states that "Heart is the most salient body part in the folk model understanding of emotions". Inspired by such metonymic-based metaphor, Qian (2016, 134–136) further investigates HEART in Chinese and English through a comparison of four-word Chinese idioms, phrases collected from *Modern Chinese Dictionary* (1999), and English expressions from Roget's Thesaurus. The similarity in the metonymization of the heart (HEART AS A METONYMY FOR THE PERSON) in Chinese and English is proved in her study.

Regarding temperature, Gutiérrez Pérez (2008, 40–41) compares HEART metaphors in three Romance languages (French, Italian and Spanish) and two Germanic ones (English and German). She summarizes that the English expression "to have a cold heart/to be coldhearted" is equivalent to the German "*kaltherzig sein*", while there is no such an equivalent as exact adjectival compound used in the Romance languages. Zhao (2012, 10–11) also investigates COLD HEART-related metaphors, and she mentions that "In English, the unfeeling, callous qualities of a cold personality may be represented in various manners. There is the traditional *cold-hearted*, polar opposite of *warm-hearted*". She further illustrates phrases depicting a cold personality in Chinese based on the degree of cold-heartedness that one possesses. However, she does not attempt to address the difference between *cold-hearted* in English and *hánxīn* (*寒心* lit: cold heart) in Chinese.

Concerning core lexical items used to talk about temperature, there is a generally accepted central set "*hot*, *cold*, *warm*, and *cool",* which has been systematically studied in emotion metaphors. Deignan (1999, 336) also admits that these four terms are representative gradations of temperature, since many scholars have investigated temperature mappings accordingly. Based on the same basic division of temperature, Ren (2006, 15–66) inspects lexicons of temperature sensations in modern Chinese, English, Japanese, and Korean from data retrieved from authoritative reference books and dictionaries. Through contrastive analysis, she (2006, 66) finds that the correspondence of four central temperature terms between Chinese and English is strongest,

especially in the expressions related to the basic categorization of temperature sensations and metaphorical implications. To be specific, there is a relatively systematic correspondence regarding the division of temperature in the two languages: cold-*lěng* 冷<cool-*liáng* 凉<warm-*wēn* 温<hot-*rè* 热. At the same time, the semantic extension of words representing low temperature denotes indifference in both languages, and words of high temperature manifest the high intensity of the sensory experience. Besides, both Chinese and English employ "cold-*lěng* 冷" and "warm-*wēn* 温" to describe the color (Ren 2006, 52–54).

From a diachronic perspective, Wu (2006, 1–36) thoroughly studies prototypical terms in Chinese from low temperature related semantic field: *hán* 寒(frigid), *lěng* 冷 (cold), and *liáng* 凉(cool). She points out that although *leng* 冷(cold) emerged rather late compared with the other two characters, the basic meaning it carries is broader since both *han* 寒(frigid) and *liang* 凉(cool) are included in it. Expressions containing *han* (frigid) are used predominately to denote the low temperature in ancient China, while *leng* (cold) is dominant today in referring to coldness. This is why prevenient research tends not to differentiate *han* (frigid) and *leng* (cold), and translates them into one general term "cold" in English. According to Wu (2006, 19), *han* (frigid) represents an extremely low temperature, while *liang* (cool) denotes a slightly low temperature. *Leng* (cold) shows a very low temperature that is weaker than *han* (frigid) or it can manifest coldness in general as a broad term.

In this paper, instead of dismissing the existence of *han* (frigid) or simply conflating it with *leng* (cold), the selection of central terms of low temperature is aligned with Wu's opinion (2006, 19). The trichotomy of low temperature (Figure.1) enriches a more fine-grained analysis of conceptual metaphors derived from the temperature schema. In this way, COLD HEART metaphor is based on a hierarchical structure including "coldest heart", "colder heart", and "cold heart", which is against the generalized categorization of "cold heart" as a whole in the previous research. To summarize, HEART research attracts increasing attention from scholars, but understanding COLD HEART in depth to include the gradation of coldness needs to be more exploited. Most study makes no distinction between "cold", "cool", and "frigid", and only the negative connotation related to indifference is identified as the focus of commonality in comparative analysis, without the detailed variations in conceptualizing COLD HEART in different languages. Such a knowledge gap is filled in this research.

Chinese	*hán* 寒	*lěng* 冷	*liáng* 凉
English	frigid	cold	cool

Figure 1. The trichotomy[1] of low temperature in descending order

[1] Cold-related words involved in this paper are core terms per se with an original and basic description of a cold feeling rather than expressions derived from temperature-related verbs and nouns, such as freezing (freeze), chilly (chill), and icy (ice).

3. Methodology

3.1 Research Questions

1) What are the similarities of the COLD HEART metaphor between Chinese and English?
2) What are the differences of the COLD HEART metaphor between Chinese and English?
3) What is the motivation for the universalities and variations?

3.2 Data Source

The data collected and analyzed derives from two inclusive corpora: CCL and COCA. CCL is a representative online corpus aiming to serve theoretical linguists and applied linguists. It consists of three subcategories: modern Chinese corpus, classical Chinese corpus, and Chinese-English sentence-aligned parallel texts corpus. There are over 700 million Chinese characters in total. The data presented in this research only stems from the Modern Chinese Corpus (linguistic data from 1949 till now). Aside from the sizeable collection, it covers a wide range of data from various genres including newspapers, literature works, translations, academic works, movies, TV programs, etc.

COCA designed by Professor Mark Davies at Brigham Young University is, by far, probably the most widely-used corpus of English. It is composed of more than one billion words of data with an annual increase of 25 million words since 1990, which ensures the considerable quantity and timeliness of data. As for the distribution of coverage, it mainly has five types: spoken language, fiction, popular magazines, newspapers, and academic texts.

These two corpora are comparable in that both are extensive and monolingual. "Extensive" indicates that the collected data is not limited to a specific genre, but from various categories. In terms of "monolingual", it shows that the data is solely American English or Chinese.

3.3 Data Collection

In this study, the examples are selected by searching out "cold heart" related lexical units, containing "heart" with modifiers "frigid", "cold," and "cool" in CCL and COCA. In Chinese, "cold heart" includes "*han xin寒心/xin han心寒, xin leng心冷/ leng xin冷心*, and "*xin liang心凉/ liang xin 凉心*". In English, "frigid heart", "cold heart," and "cool heart" manifest COLD HEART. There is no limitation on genres. Considering the objectivity, length of the paper, and size of related concordances, all data is manually examined including the examples associated with "cold-hearted" (with the most concordances, 627).

3.4 Identification of Metaphor

Once the collection of "cold heart" from corpora is finished, it is necessary to find the COLD HEART metaphor among concordances. MIP (Metaphor Identification Procedure) announced by Pragglejaz Group (2007, 1–39) is applied in this study. As illustrated in example (1) below, the whole procedure contains four main steps: 1) Grasp the thesis in the entire text. 2) Break the text into lexical units. 3) Establish the meaning in context and retrieve the basic meaning of each lexical unit. 4) Determine the consistency of contextual meaning and basic meaning. If they are consistent, there is no metaphorical use of the lexical unit. Otherwise, there is metaphor if the overridden meaning in context can be understood through the basic lexical meaning. To improve the data credibility, the procedure of metaphor identification is repeated three times by the researcher, and an invited collaborator also analyzes the collected data thoroughly.

Mandarin (Chinese, Sino-Tibetian) (Center for Chinese Linguistics PKU corpus)

(1) 这话真让人心寒

Zhe hua zhen rang ren xin han

This utterance really make people heart frigid

'This utterance really makes people sadly disappointed."

The lexical units are *this*, *utterance*, *really*, *make*, *people*, *heart*, *frigid*. It is found that the contextual meanings are as follows: *this* means the sentence that is referred; *utterance* indicates something said by someone; *really* denotes the high intensity of emotion experience; *make* refers to the causative relation between the utterance and the feeling of hearers; *people* are human beings; *heart* indicates the feeling and emotion; *frigid* means sadly frustrated. In these contextual meanings, *heart* and *frigid* override their basic meanings. The agony triggered by disappointment is manifested instead of the low temperature of the heart. Despite the inconsistency between basic meanings and contextual meanings, the latter can be comprehended through the former. Hence, *heart frigid* is metaphorically used in this concordance.

4. Results

4.1 COLD HEART in Chinese

Rank	Chinese metaphors	COLD HEART-metaphor sentences		Percentage	
1. **寒 hán (frigid)**	心寒 (heart frigid)	280	552	35.76%	70.50%
	寒心 (frigid heart)	272		34.74%	
2. **凉 liáng (cool)**	心凉 (heart cool)	137	149	17.50%	19.03%
	凉心 (cool heart)	12		1.53%	
3. **冷 lěng (cold)**	心冷 (heart cold)	68	82	8.68%	10.47%
	冷心 (cold heart)	14		1.79%	
Total			783		100.00%

Figure 2. The number of sentences containing COLD HEART metaphor in CCL

1. Disappointment

As the most frequently used "cold heart" metaphorical lexical expressions in Chinese, *xin han心寒* (lit. heart frigid) and *han xin寒心* (lit. frigid heart) mainly aim to depict the sadness caused by huge disappointment. Although according to *Modern Chinese Dictionary* (2016, 513, 1454), *xin han* is an adjective to indicate that "being disappointed and sad", while *han xin* is a verb that means "saddened by disappointment", based on my observation of collected data in CCL, these two expressions are widely used interchangeably and not confined to only one part of speech. These two expressions as well as *xin leng* and *xin liang* can be used as adjectives and verbs. Among metaphorical expressions in Figure 2, distress triggered by disappointment or disillusion is the most referred target domain of COLD HEART metaphor in Chinese.

From the selected concordances below, it is unexpected factors like cheat, slander, or indifference that make the victim's heart cold, since the presupposed supportive attitude from others or positive results fail to realize. The cause of "cold heart" is disappointment, which cools the yearning or fails to bring about assumptive satisfactory results. *Xin han/han xin* embodies an "outside-in" causality, because the negative change of emotion is caused by an agent or a cause external to the entity; this is why over 60% of sentences including *xin han/han xin* in CCL are in explicit causative versions as example (1a) from my research, in which the resultant sadness of patient is activated by causative verbs *shi使*, *jiao叫*, *jiao教*, *ling令*, *rang让*. However, causative verbs are not the prerequisite to embody the "outside-in" schema attached to COLD HEART in Chinese as (1b) exemplifies.

(1)

a. "... ...她辜负了我的信任，真令我[*寒心*]，从今后我还敢对谁好……"

" ... She betrayed my trust, (which) really makes me [disappointed and sad] (lit. *frigid heart*). From now on, who will I dare to be nice to... ..."

b. 同学们一再呼吁放宽限制，可校方仍一味坚持原则，同学们[*心寒*]了。

Students have repeatedly appealed for easing restrictions, but the school still insists on the principle, students [saddened by disappointment] (lit. *heart frigid*).

From data in CCL, as for the causative versions of sentences, apart from *leng xin* and *liang xin* which lacks causality, although less than one quarter of concordances including *xin leng* and *xin liang* collocate with causative verbs as displayed in (2a), the deep-rooted "outside-in" causality in expressions do not fade like in (2b). From example (2), it is the response, behavior, or results originating from an agent that invokes disappointment and frustration, since the anticipated treatment or outcome contradicts the reality. In other words, COLD HEART in Chinese is saliently based on a patient perspective.

(2)

a. 试验棚到了收获季节,结果令人[*心凉*]: 两个大棚,竟只产出了两方便袋双孢菇。

It came to the harvest season of test greenhouses, and the results made people [discouraged and disappointed] (lit. *heart cool*): the two greenhouses, only yielded two plastic bags of agaricus bisporus.

b. 我们要支持有贡献的人，不能让有贡献的人老是吃亏，最后变得[*心冷*]。

We need to support those who contribute, and we can't let those who contribute always suffer, and eventually become [discouraged and disappointed] (lit. *heart cold*).

In a fine-grained way, compared with *han寒* (frigid), *leng冷* (cold) and *liang凉* (cool) indicate a lower level of coldness. This is why *han xin/xin han* in the selected concordances emphasize heartbreaking feelings or distress caused by disillusion, while *xin leng心冷* (lit. heart cold) and *xin liang心凉* (lit. heart cool) manifest a weaker sadness derived from disappointment. It is discouragement and/or disappointment instead of agony that results from adverse outcomes. According to *Modern Chinese Dictionary* (2016, 513, 792, 814, 1454) and *Xinhua Dictionary* (2020, 177, 295), both "disappointed" and "heartbreaking" are key components to elaborate the meaning of *han xin/xin han*, while "cold heart" metaphor with *leng* and *liang* embody "discouraged" and/or "disappointed" feeling.

2. Fear

Following FEAR IS COLD, *han xin/xin han* manifests a terror-stricken state as instantiated in example (3). According to *Modern Chinese Dictionary* (2016, 512) and *Xinhua Dictionary* (2020, 177), *han* (frigid) is closely related to fear, especially in idioms, considering that the temperature of a human in a nervous and scared state would decrease due

to changed blood circulation (Qi and Li 2014, 73). It is believed that people normally shiver when encountering frightening moments, like the reaction caused by chilliness. This leads to the conventionalized idioms of *han* in Chinese, *xin han dan zhan/chan 心寒胆战/颤* (lit. heart frigid and gallbladder quiver) in the sentence (3a) which is the most representative four-word idiom regarding COLD HEART metaphor. From sentences in (3), *han xin*, *xin han*, and *xin liang* are polysemous although fear fails to prioritize for conceptualization of COLD HEART in Chinese compared with disappointment.

(3)

a. 不过，日前莫斯科警方采取的“捕兽夹子—1 号”行动，确实使盗车贼[*心寒*胆战]。

However, the “Animal Trap-No. 1” action taken by the Moscow police a few days ago has indeed made car thieves [scared] (lit. *heart frigid* and gallbladder quiver).

b. 那个老头为逃避兵役，自己弄了一块大石头把自己的胳膊砸断，别的不说，该股狠劲就叫人[*寒心*]。

In order to avoid military service, that old man got a big stone to break his arm, leaving aside other things, this ruthlessness makes people [scared] (lit. *frigid heart*).

c. 特别当他说到杀人犯时她就有一种[*心凉*肉跳]的感觉。

Especially when he talked about murderers, she got a [scared] (lit. *heart cool* and flesh quiver) feeling.

4. *Leng冷*: Apathy

From *Modern Chinese Dictionary* (2016, 792) and *Xinhua Dictionary* (2020, 286), *leng* (cold) is an adjective to depict a disposition that is not sympathetic and gentle. *Leng xin* (cold heart) means indifference and apathy that an agent generates based on his or her own volition to treat others in a distant manner, which displays an “inside-out” schema, so there are no causative versions in this expression as instantiated in (4a). However, only less than 1.8% of COLD HEART metaphor in CCL manifests apathy or callousness, in which *leng xin* (cold heart) is predominantly included to show the indifferent character. Apart from *leng* (cold), surprisingly, one concordance contains *liang xin* (cool heart) from example (4b) also describes unconcern, but it is a vanishingly rare target domain of this lexical unit since it is the only example out of collected data in CCL. The conceptualization of COLD HEART metaphor in Chinese from the agent’s perspective is relatively peripheral.

(4)

a. 但规章制度是无情的，[*冷心*铁面]，管理中突出了一个“严”字。

But the rules and regulations are ruthless, being [callous] (lit. *cold heart* and iron face), the word “strict” is highlighted in the management.

b. 基层工作是难，但带着感情去做，复杂问题就会变简单；如果[冷面*凉心*]去工作，简单问题也会变复杂。

Work of street-level bureaucracy is difficult, but if done with care, complex problems will become simple; if work with [apathy] (lit. cold face and *cool heart*), simple problems will become complicated.

5. Liang凉: Tranquilizing and purification

According to traditional Chinese medicine theory, *liang* (cool) or *han* (frigid) is an intrinsic property of food or herbs and this categorization has nothing to do with temperature. For example, duck and bitter gourd belong to cool-natured food which can calm emotions and detox the body, while paprika and lychee are hot-natured. The conceptual metaphors based on Chinese medicine theory exert a profound impact on the mindset and actions of Chinese (Gao and Yan 2008, 8). In terms of COLD HEART metaphor, 83.33% of *liang xin* (cool heart) in CCL is conceptualized as a healing effect on the heart as shown in example (5). Although *han* (frigid) is also attached to the property of food and herbs, *han xin/xin han* does not display a relation with Chinese medicine, as the extreme coldness of the heart is prioritized to activate. *Liang xin* (cool heart) is Chinese language specific, despite its minimum frequency in CCL, with only 1.53%.

(5)竹叶[*凉心*]而清肺。

Bamboo leaves [tranquilize and purify the heart] (lit. *cool heart*) and clear the lungs.

4.2 COLD HEART in English[2]

Rank	English metaphors	COLD HEART-metaphor sentences		Percentage	
1. cold heart	cold heart	104	627	16.46%	99.21%
	cold-hearted	501		79.27%	
	cold-heartedly	7		1.11%	
	cold-heartedness	15		2.37%	
2. cool heart	cool heart	4	5	0.63%	0.79%
	cool-hearted	1		0.16%	
	cool-heartedly	0		0%	
	cool-heartedness	0		0%	
3. frigid heart	frigid heart	0	0	0%	0%
	frigid-hearted	0		0%	
	frigid-heartedly	0		0%	
	frigid-heartedness	0		0%	
	Total		632		100%

Figure 3. The number of sentences containing COLD HEART metaphor in COCA

[2] "cold heart": cold heart/cold-heart/coldheart/heart cold, cold hearted/cold-hearted/coldhearted, cold heartedly/cold-heartedly/coldheartedly, cold heartedness/cold-heartedness/coldheartedness ("cool heart" and "frigid heart" are calculated in the same pattern).

1. Apathy

Cold-hearted as the only lexicalized word among selected COLD HEART-related expressions in English, with its different parts of speech strikingly dominates the most frequently used term, accounting for over 99% of total concordances in COCA. According to the definition from *Longman Dictionary of Contemporary English* (2015), *cold-hearted* means "behaving in a way that shows no pity or sympathy".

Referring to (6), *cold-hearted* and its derived variations contain a negative connotation to describe one's lack of empathy. Despite their inconspicuous proportion, *cool heart* and *cool-hearted* contain similar connotations as *cold-hearted* but in a less intensive way, which is exemplified in (7). There is a lack of emotional support for others and a socially isolated state is created as coldness refers to less interaction and distant manners with even an unfriendly attitude. Although terms containing temperature and "heart" are closely connected with characteristics that humans possess, it is not necessary to restrain *cold-hearted* to the description of personality only as instantiated in example (8). Apart from the evaluation of actions like judgment, *cold-hearted* is also used as a modifier to the noun to mirror the property of ruthlessness and little involvement in interpersonal relationships attached to it. To illustrate, the "economic question" in (8b) and "business risk" in (8c) are deficient in the consideration of the feelings of receivers or participants and filled with indifference.

(6)

a. Romney is such a callous man with a *cold heart* made of coal.

b. Are you so *cold-hearted*... you won't allow a daughter to kiss her father goodbye?

c. ...and if she *cold-heartedly* doesn't care what people think, then if she married Andy for money she'll be gone soon.

d. It usually only succeeds in reaffirming my *cold-heartedness*. But every now and then, one appeals to me for some reason...

(7) His *cool heart*, in addition to leaving little place for romance, is not warmed by the presence of his children.

(8)

a. I guess they made the *cold-hearted* political judgment that they could cover it up for two months until after the election.

b. So the *cold-hearted* economic question is this: what are the costs and benefits of same-sex marriage?

c. After a lawyer charged that the company had taken a "callous, *cold-hearted* business risk", an Alaska jury responded by hitting the company with $5 billion in punitive damages.

Cold-hearted and its different parts of speech significantly display an "in-outside" causality, since an agent's own volition is the origin of a callous attitude to the external entity, which initiates a self-made apathetic state that estranges the agent from friends,

family, or other surrounding people. It is free will that determines cold-heartedness imposed on patients. As for inanimate nouns shown in (8), the pattern of causality is still applicable, because instead of subjective volition as the trigger of indifference, apathy becomes an intrinsic characteristic associated with these nouns to indicate inconsideration and little mercy. Subjectivity is pervasive in COLD-HEART metaphor in English. Hence, there is only less than 2% of concordances from COLD-HEART metaphor in COCA that are causative (Figure 4).

Pattern	Total sentences	Percentage
Causative sentences	7	1.11%
Non-causative sentences	625	98.89%
Total	632	100%

Figure 4. The figure of COLD HEART metaphor sentence patterns in COCA

2. Cool: Composure

It is noticeable that in concordance evidence below, *cool heart* denotes calm, which derives from the conceptualization of "cool". According to Qi and Li (2014, 72), owing to a moderate rate of blood circulation in an environment with a lower temperature that is marginally less than body temperature, emotion is relatively under control. As a result, "cool" is attached to composure. Compared with "cold" in an even lower temperature which causes great discomfort and further freezes objects to even engender alienation, "cool" is a mild term to collocate with "heart" in a description of the state or personality to control emotion well.

(9)
Kapera Smythe: I'm falling! Please, open the hatch. I'm not strong enough to hold on.
Ooee: Don't do this to me, Kapera. I trusted you. Keep your mind on what you have to do! Keep a *cool heart*!

Albeit *cold* and *cool* indicate both mature management of emotional swings and apathy (Deignan 1999, 328), there is a conspicuously imbalanced distribution of frequency regarding the target domain of COLD HEART metaphorical words in COCA. To be specific, *cold* takes up the leading position of collected data, and indifference is intimately attached to it, while the indication of calmness is missed in *cold-hearted* concordances. It is *cool* that embodies calmness with an extremely small percentage of data collected from the corpus. The motivation for this biased projection is from conceptual embodiment. As illustrated by Lakoff (1987, 12), "The idea that the properties of certain categories are a consequence of the nature of human biological capacities and of the experience of functioning in a physical and social environment". In the conceptualization of COLD HEART, firstly, from a metaphorical perspective, HEART IS TEMPERATURE that is perceived by human beings through bodily-based sensorimotor,

the stimuli from low temperature are differentiated according to bodily experience rather than a metaphysical understanding of coldness. Unlike *cold*, *cool* is often used to describe pleasantly low temperature, which explains calmness stored in the conceptualization of *cool heart* since a positive connotation is in this comparatively lower temperature. Furthermore, considering that the lower the temperature, the harder the object, which causes numbness or being less functional, human beings tend to believe that composure is exercised in a relatively lower temperature that allows controlled movement instead of uncontrolled trembling. Another reason is the "head-heart" dichotomy in English (Niemeier 2008, 349–372), calmness is conceived as more directly related to rationality rather than emotion, so it is *cool-headed* instead of *cool-hearted* that is lexicalized to denote composure and *cold-hearted* overtly embodies indifference. Secondly, from a metonymic view, HEART AS A METONYMY FOR THE PERSON, the callous attitude mirrors a rather solid and cold tactile sensation. Seeing that apathy is a derogatory term and the suffering of patients who are treated callously is conspicuous due to unfeeling manner, the colder temperature is ideal to depict such indifference that apparently challenges the tolerance of human beings just as the lower temperature against acceptable temperature range of human body.

5. Findings

5.1 Universality and variation of COLD HEART in CCL and COCA

5.1.1 Universality of COLD HEART in CCL and COCA

5.1.1.1. Target domain: apathy

The sensation of reduced temperature is projected to indifference and a lack of sympathy in both Chinese and English. This negative personality is manifested through metonymy-based metaphor:

1) HEART AS A METONYMY FOR THE PERSON

The feature of the heart stands for the disposition of the person, such as *cold-hearted* and *leng xin* (cold heart). Heart is considered the seat of emotion, and its coldness is conceptualized as a personal trait.

2) HEART IS AN OBJECT/TEMPERATURE

In concordance with evidence from CCL and COCA, heart is perceived as an object with a sensible temperature. The generally invisible visceral organ is materialized by this means to "project the cognition of 'cold' from the temperature domain to the attitude domain, thereby expanding the meanings to "indifferent and unfriendly" (Lin 2019, 174).

5.1.1.2. Gradation

The different intensity of negative emotion is consistent with the gradation of low temperature, which means that the degree of coldness denotes the strength of emotion regarding the same target domain, such as *xin han/han xin* (lit. heart frigid/frigid heart) and *cold-hearted* contain a more intensive tone than *xin leng*/*xin liang* and *cool-hearted* respectively.

Moreover, in terms of unfriendliness manifested through COLD HEART metaphors, the most frequently referred temperature is *leng* and *cold* as the gradient between the coldest temperature and coolness, which are also pertinent to the general categorization of reduced temperature in Chinese and English. The popularity of "cold" eases the conceptual processing of COLD HEART. Since the temperature of an object as an intrinsic property is directly perceived by sensory organs, which resembles the process that the personality of human beings is recognized through received reply or treatment, the intersubjectivity in the projection of COLD HEART regarding the callous attitude derives from the perception of externalized property of entities. Thus, the word related to the temperature at a basic level is more effortlessly to be understood with the least divergence, which hardly causes dispute over criteria for slight coldness (cool) or extreme coldness (frigid), and also improves the economy of conceptualization. The word formation of *leng xin* and *cold-hearted* takes the advantage of general use of "cold", hence, strengthening the compatibility of cue validity of COLD HEART.

5.1.2 Variation of COLD HEART in CCL and COCA

5.1.2.1 Perspective

The patient view is adopted in the processing of COLD HEART in Chinese while the perspective of the agent is applied in the conceptualization of COLD HEART in English as illustrated in Figure.5. To be specific, *han xin/xin han/xin leng/xin liang* depicts bitter disappointment dominantly triggered by external factors such as a cheat, betrayal, alienation or the absence of expected outcomes, reaction, and treatment. Feeling *han xin* is a result of the action taken by others or unexpected results, which are out of the control of the person being *han xin*, so it is a patient perspective that activates the conceptualization of COLD HEART in Chinese. External factors are in the active status, while people being *han xin* are rather passive to heavily weaken the autonomy of their emotions since the volition of others is emphasized and decisive. However, in English, *cold-hearted/cool-hearted* is a personality or the callous attitude, which is related to the level of care for others or emotional connections with surroundings. COLD HEART in English focuses on the human's own initiated mind and disposition, and ego-centrality is overtly performed as people being *cold-hearted* are agents who show no sympathy or understanding to others.

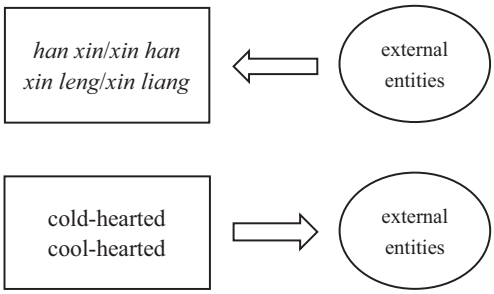

Figure 5. Different perspectivization of "cold heart" in Chinese and English

5.1.2.2 Prototypical coldness of COLD HEART

Figure2 and Figure 3 illustrate that *han* (frigid) and *cold* take the leading position in the frequency of actual use of COLD HEART in Chinese and English respectively. *Han* represents the lowest temperature according to the trichotomy of low temperature in this paper, which reflects the intense coldness attached to the heart. It is the reply or reaction from others that breaks the harmony and leads to severe injury to the heart. In this way, such negative treatment or a lack of care that challenges the harmonious relationship to bring about *han xin* is considered a "cruel" action causing huge discomfort to the patient as the lowest temperature tortures people. The polysemy of *han xin/xin han* can also be explained, given that "fear" is an intense emotion that is stimulated by danger, shock, or threat, and *han* as the coldest temperature collocated with *xin* (heart) is used to depict such numb feelings resulting from fear. As for *xin liang*, it means fear as well because *liang* (cool) is attached to the intrinsic property of an entity in Chinese medicine theory, which denotes the striking impact exerted on emotion through a complete change of the nature of the heart.

However, *frigid heart*-related collocations are missing in COCA, while *cold heart*-related expressions are predominant. The popularity of *cold* in English data embodies being indifferent or not sympathetic is an action that causes negative feelings to others, but it is not an excessively poor performance, just as *cold* is perceived in a general categorization of reduced temperature.

5.2 Factors leading to the universality and variation

5.2.1 Motivation for the universality

The similarities in COLD HEART metaphor in CCL and COCA are theoretically supported by embodiment. Considering that the biological function and structure of human beings are the same irrespective of nationalities and cultural backgrounds, it is not surprising that the bodily experience and conceptualization of temperature and heart contain commonalities. To be specific, objects in an environment with reduced temper-

ature leave the impression of coldness and hardness that imposes a negative and distant feeling on people. According to the similarity between the temperature domain and the emotion domain, COLD HEART is conceptualized as a generator of negative attitudes, especially indifference and apathy. Owing to analogy, "which is structured similarity with functional import" (Holyoak and Thagard 1997, 35–44), metaphor cognition from universal bodily experience is potentially ubiquitous across languages. As Kövecses (2005, 35) states, "If some kinds of conceptual metaphors are based on embodied experience that is universal, these metaphors should occur—at least potentially—in many languages and cultures around the world".

5.2.2 Motivation for the variation

It is acknowledged that the same bodily experience can be conceptualized differently across languages. According to Hofstede (1984, 149–150), mental programming is affected by the relations between self-concept and collectivity in society. Ogarkova and Soriano (2014, 164) also conclude that "Cultural variance on the individualism vs collectivism continuum has been empirically shown to impact the appraisal, conceptualization, expression, and regulation of the emotions". Mesquita & Powerell (2009, 107) investigated how "anger" is expressed differently in America and Japan from the perspective of cultural specificity. In individualism-oriented culture, anger is aggressive, overt, and more adversarial compared with collectivist culture. This is because independence and ego are the focuses of individualism, but interdependence and harmony in relationships matter more significantly in collectivism. Regarding variations of COLD HEART in Chinese and English, they inevitably stem from different cultures and philosophical thoughts.

As for cultural backgrounds, English-speaking countries such as the U.S.A., Australia, and the U.K., are considered representative individualistic countries (Hofstede 2001, 215), while China is commonly held to exhibit more pronounced collectivistic cultural tendencies. Triandis (1989, 509) defines those who "give priority to personal goals over the goals of collectives" as individualists, while collectivists tend to "either make no distinctions between personal and collective goals, or if they do make such distinctions, they subordinate their personal goals to the collective goals". Besides, he proposes that people with individualistic culture are idiocentric, and allocentric is used to describe people in a collectivistic society.

In terms of perspectivization of COLD HEART, since the heart stands for the person, which is closely related to self-concept, it is not surprising that the prototypical COLD HEART in English manifests idiocentricity that the origin of *cold-hearted* is from the individual themselves based on their volition. Furthermore, there is no harsh criticism over being indifferent to others, although the connotation of *cold-hearted* is not positive. While in Chinese, allocentricity is apparent in the conceptualization of COLD HEART, *han xin/xin han* emphasizes the aloof attitude of others or the disillusion of expected harmony or results. Coldness as a temperature that is changeable and carries

"indifference and unfriendliness"; it is believed that the decisive cause of COLD HEART in Chinese is not ego, but external factors, especially in-group members who are trusted to facilitate the intimate relationship. Just as Triandis (1989, 509) states, "In collectivists cultures, role relationships that include in-group members are perceived as more nurturant, respectful, and intimate than they are in individualistic cultures". This is why there is a pre-formed expectation like mutual understanding, support, or loyalty based on the integrity of ingroup, and the disillusion of it leads to a rather severe injury to patients since *han* is commonly used rather than *leng* and *liang*. In this way, *han* also indicates blame to "violators" who destroy the expected harmony. As elaborated by Triandis (1989, 509), collectivists are inclined to focus on the results of their actions on ingroup members. Hence, *han*, the coldest temperature is used to conceptualize the painful and numb feeling caused by unexpected reactions or results to explicitly denote the consequence.

6. Conclusion

This paper has attempted to identify the shared source domain and differences between COLD HEART metaphor in Chinese and English. Motivations for the similarities and variations are recapitulated as follows.

The universalities of COLD HEART in Chinese and English include the manifestation of a callous attitude through "coldness", a general term referring to the relatively low temperature, and correspondence of the gradation of coldness and the intensity of emotion, which results from universal bodily experience. In terms of variations, different perspectives in the projection of COLD HEART embody the salient discrepancy in collectivism and individualism, since COLD HEART in Chinese adopts a "patient view" while English-related expressions are "agent-driven". Furthermore, there is a culture-specific source domain of *liang xin* (cool heart) rooted in traditional Chinese medicine theory that depicts a healing property to detox and purify the heart.

Nevertheless, as with all such studies, there are limitations that offer opportunities for further research. Firstly, the quantities of collected concordances are restrained to focus on only basic coldness-related words which lack a more comprehensive inclusion of expressions derived from the low temperature, such as "freezing", "chilly" and "icy". Secondly, it is inevitable to involve subjectivity in the application of the MIP method, which weakens the objectivity of results to some degree. Hence, the challenge for future studies will be to conduct a more exhaustive analysis of COLD HEART based on a more objective approach to ensure the reliability of results.

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