A Corpus-Based Contrastive Study of the Conceptual Metaphors of Warmth and Coolness in Chinese and English

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Abstract: *In this study, four representative Chinese and English temperature word "warm", "cool", "wen" and "liang" were searched respectively in BCC and COCA, aiming to find out what are the characteristics and differences and the reasons for these differences of the target domain of the metaphor of warmth and coolness in English and Chinese. The results show that there are 12 and 10 conceptual metaphors with warmth as the source domain in Chinese and English respectively, and 10 and 7 conceptual metaphors with coolness as the source domain in Chinese and English respectively. In both English and Chinese, there are some common and unique metaphorical expressions. In addition, the universality of human experience, common cognitive mode, synesthesia and the increased communication lead to some similar metaphorical expressions in Chinese and English, whereas the subjectivity of human cognition and different cultures lead to some differences in temperature metaphor. This study provides evidence for Lakoff and Johnson's claim that metaphor is based on our physical experience and has a good reference value for promoting the comparison of language and culture in English and Chinese.*

Keywords: Warmth and coolness, Conceptual metaphor theory, Corpora, Contrastive study.

1. Introduction

Metaphor and temperature concepts have always been the focus of linguistic research. The traditional view holds that metaphor is only a common language phenomenon and a figure of speech. The book *Metaphors We Live* by started the metaphor research from a cognitive perspective. In this view, metaphor is not only a linguistic phenomenon, but also a way of thinking widely used in our life, which is a great challenge to the traditional related theories. This is the first formal and systematic explanation of conceptual metaphor theory in cognitive linguistics. It marks the historic transformation of metaphor from rhetoric to cognitive fields and the beginning of the peak of metaphor research. The essence of metaphor is to map the structure and characteristics of one thing to another. It is the interaction between two things that have something in common (Saeed, 2000).

Temperature is a basic and important attribute of human external environment and plays a key role in the process of constructing abstract concepts. With the emergence of cognitive linguistics, the study of temperature concepts has been developed, including a lot of efforts from different angles. However, previous studies rarely focus on the contrastive study of temperature concepts in different languages from the perspective of conceptual metaphor. Corpus-based research is less, and the analysis of temperature concepts is more general, lack of systematic and specific analysis. In addition, previous scholars' research on temperature concepts mostly focused on the description of phenomena, rarely from phenomena to interpretation. Within the framework of conceptual metaphor theory, this paper makes a corpus-based contrastive study of two pairs of metaphors of temperature terms - warmth and coolness in English and Chinese and explains the reasons for differences between metaphors of them.

2. Literature Review

2.1 Metaphorical Studies on Temperature Terms

Temperature concepts are widely used in our daily conversation and daily life. Researchers all over the world try to study temperature concepts in terms of different perspectives. Some researchers have studied temperature sensation concepts from the aspect of metaphor. Over the past few decades, the metaphorical study of color and taste words has developed rapidly, and the metaphorical study of temperature concepts has also become more and more popular.

Kövecses (2000) found that not only the heat and fire images as the concept of source domain are sometimes used to express anger, love and desire, but also the metaphorical source domains of warmth and coldness are mapped to happiness and sadness respectively. Wu (2006) used the method of metaphor to make a cognitive study of cold feeling words in ancient and medieval times. Her research reveals the deep mechanism and potential rule of the meaning of temperature concepts. Gao and Yan (2008) believed that human experience of temperature and its metaphorical expression are derived from image schema. These metaphors play an important role in the Chinese conceptual system and are closely related to the temperature experience in human daily life. Kövecses (2010) investigated some of the most common sources and target domains of metaphor. He believes that "hot" and "cold" are not only the common source domain, but also the extremely basic human experience. He puts forward that we often use the temperature domain to compare our attitude towards people and things. Qin and Li (2014) believed that metaphor system, as a cognitive mechanism, generates many non-temperature concepts and forms a unique reasoning mode. In addition, the system not only limits people's understanding of the concept of temperature metaphor and its application and the expression of metaphor, but also urges people to create more concepts of temperature metaphor and its metaphorical expressions.

2.2 Contrastive Studies on Temperature Terms

Xu (2001) believed that contrastive research can promote the deepening of the whole linguistic research. Some other scholars have made a contrastive study on the temperature concepts between two languages.

Lei and Qin (2013) analyzed the metaphorical domains of the word "hot" in English and Chinese from a cognitive perspective. They discussed the metaphorical mappings of "hot" in English and Chinese, which have similarities and differences. They believe that we understand and expand abstract concepts by using specific "hot" concepts, which is based on our experience and interaction with "hot" in the environment. Feng and Zhou (2014) studied the conceptual metaphors of "cold" in Chinese and English, and explained the reasons for the similarities and differences, such as geographical environment, physical characteristics, cognitive ability, response to external stimuli, etc. Wang (2015) used conceptual metaphor theory to make a contrastive analysis of temperature concepts in Russian and Chinese. Her research mainly focused on social life, psychology and physiology. Although some phenomena and conceptual metaphor theories have been reflected in previous studies, the collected data and explanations for these phenomena are still insufficient. Their conclusion lacks a strong factual basis.

2.3 Corpus-based Contrastive Studies on Temperature Terms

Previous studies were conducted from a specific single resource (such as literary works, advertising, biography, etc.). Most of the previous studies were reflective and mainly based on theoretical interpretation. However, the evidence that cognitive linguistics should rely on is not only introspective, but also more empirical evidence, such as psycholinguistic test results, language acquisition data, diachronic and synchronic data (from native speakers or corpus data) (Brdar-Szabo & Mario, 2012).

In recent years, the rapid development of corpus linguistics has opened up a new way to study language. Lei and Qin (2013) conducted a corpus-based contrastive study of Chinese and English temperature concepts "*re*" and "hot", and reached the following conclusions: the temperature domain of the two languages has both similarities and differences. Based on the corpus, Zhang (2017) summarized and pointed out that "*gou*" and "dog (s)" have four metaphorical scopes, and explored the internal mechanism behind these expressions. Zhao (2020) proposed a corpus-based contrastive study of "deep/shallow" spatial metaphors in English and Chinese, and explored the universality and cultural differences behind them.

Previous studies on temperature concepts have achieved some good results, while the contrastive study of two languages based on conceptual metaphor is very limited. Even if some scholars try to study Chinese and English temperature concepts from the perspective of comparison, they do not collect enough data about temperature terms, because their research is based on dictionaries rather than authoritative and specific corpora. In addition, most scholars take "cold" and "hot" as their research objects, ignoring the following two basic temperature concepts: warmth and coolness.

Therefore, this study attempts to conduct a corpus-based contrastive study of metaphors of Chinese and English basic temperature terms - warmth and coolness, so as to have a perfect understanding of the cognitive rules of Chinese and English expressions and thinking system through full and real data. The research questions are as follows:

1) What are the similarities and differences in the target domain of warmth and coolness metaphors in English and Chinese?

2) What are the reasons for the similarities and differences between warmth and coolness metaphors in English and Chinese?

3. Methodology of the Study

Considering the reliability of the research data, this study uses two auxiliary tools: the corpus Beijing Language and Culture University Corpus Center (BCC) (http://bcc.blcu.edu.cn/) and Corpus of Contemporary American English (COCA) (https://www.english-corpora.org/coca/). And the word "warm", "cool", "*wen*" and "*liang*" are searched in the corpus as query items respectively. Sinclair (1991) believed that observing a large amount of real data is a feasible language description method. These corpora contain more comprehensive vocabulary classified by concept than any previous publication, so they provide new possibilities for corpus-based contrastive study of warmth and coolness metaphors in Chinese and English. For example, BCC covers literature, newspapers, science and technology, ancient Chinese and other fields. In order to ensure that every sentence has the chance to be searched, this study adopts the method of systematic sampling. Relevant examples of warmth and coolness are selected through systematic random technology. This paper lists 46 representative warmth and coolness metaphorical expressions in English and Chinese. All English sentences are from COCA, and all Chinese examples from BCC.

4. Results

4.1 Comparison Between Metaphors of Warmth and "*wen*"

When the temperature rises gradually, people will feel warm, which is a basic physical experience. In both Chinese and English, there are many conceptual metaphors with warmth and "*wen*" as the source domain. This part will classify and analyze the target domains of these metaphors through examples in COCA and BCC corpora.

4.1.1 Common Target Domains of Warmth and "*wen*"

(i) Vision Domain

The word "warm" is used not only for temperature, but also for distinguishing between warm and cold tones in color. There are many such expressions in Chinese and English, such as the expression of "warm tone" and "温色调" in the following two sentences. This reveals that the warm source domain can be mapped to the visual domain.
(1) The sun had dropped low on the horizon and the light had developed a warm tone.
(2) 仅就季节而, 冬季用暖色调,夏季用冷色调,春秋两用温

色调.

(Just for the season, use warm colors in winter, cool colors in summer, and warm colors in spring and autumn.)

(ii) Auditory Perception Domain

The warm voice expresses the speaker's psychological state, respect for others and friendly attitude towards others. Based on the co-occurrence of this physical experience, we can get the metaphor-AUDITORY PERCEPTION IS WARMTH. The phrases "warm voice" and "温和" in the below two sentences are all linguistic expressions of this conceptual metaphor.

(3) she said to me, her dark, warm voice tracing the nerves between my brain and my heart.
(4) 她以温和的语气再次劝她,眼底有着一丝恳求.
(She advises her again in a gentle tone, with a hint of supplication in the bottom of her eyes.)

(iii) Smell Domain

When the "warm" source domain is mapped to the smell domain, it means sweet and strong fragrance. Therefore, we can understand the metaphor SMELL IS WARMTH through our metaphorical cognitive mechanism.

(5) She flatironed both of us every day that summer, filling the afternoons with the warm smell of steam and burning.
(6) 菩提花的温香仍旧不断从凉爽的空气中传来.
(The warm fragrance of bodhi flowers is still coming from the cool air.)

For example, in the sentence (5), the temperature of the flatiron is very high, so the steam has a warm smell. Feeling the fragrance of Bodhi flowers in the cool air is as beautiful as feeling warmth. As a result, we have the word "温香" in sentence (6).

(iv) Environment Domain

A warm environment is a harbor that can make us feel happy and relaxed. Based on this common physical experience, we can get a metaphor in both Chinese and English – ENVIROMENT IS WARMTH. Thus, when the source domain of warmth maps to the environment, the field of warmth and "wen" are used to describe the comfortable atmosphere.

(7) Anna smiles at the warm family scene, perhaps remembering her own father.
(8) 在这样一种温馨气氛中,儿子很快就入睡了.
(In such a warm atmosphere, the son soon fell asleep.)

Like the sentence (7), a harmonious family atmosphere will make people feel happy, which makes it easy to recall happy things in the past and their kind relatives. In addition, through example (8), we can understand that a warm environment always makes people feel at ease, which is the state that many people have been pursuing.

(v) Emotion Domain

The warm temperature can make people feel comfortable, and the warm embrace of family and friends will also bring us safe and warm psychological feelings. Therefore, as shown in the following two sentences, the metaphorical meaning of warmth can be used to express our pleasant and satisfactory emotion.

(9) A warm feeling you get when loved one's are with you.
(10) 她们母女有一股出自内心的温柔,我觉得温馨.
(They have an inner tenderness, I feel warm.)

(vi) Character Domain

People's character can also be conceptualized metaphorically under the domain of temperature due to its connection with emotion. Based on our perception and understanding of the external world, the metaphor CHARACTER IS WARMTH is formed. When the source domain of warmth is mapped to the character domain, it means kind, gentle, and sincere people.

(11) And I've always found her a perfectly, extremely warm person.
(12) 她既不丑、也不老,容貌清秀,性格温婉、体贴,只除了有些怕生.
(She is neither ugly nor old. She has a beautiful face, gentle and considerate character, except that she is afraid of strangers.)

For instance, in the sentence (11), a friendly person brings us a warm feeling. And in sentence (12), "温婉" is also used to describe a person's friendly and gentle character.

(vii) Attitude Domain

Showing a moderate degree between coldness and enthusiasm, "*wen*" and warmth can be used in attitude domain. People tend to be more receptive to someone's expression if he has a sympathetic and modest attitude. When the source domain of warmth is mapped to the attitude domain, it means someone's friendly and enthusiastic attitude, and it allows us to enjoy a good mood.

(13) Much as I appreciate the warm welcome that I never received, we're a little busy at the moment.
(14) 我温和地劝他不要抽了,但他却不听我的话.
(I gently advised him not to smoke, but he didn't listen to me.)

The above examples may help us understand this metaphor. In English, the word "warm" often collocate with welcome, reception and applause to express attitude. While in Chinese, there are more expressions like "温和", "温柔" and "温顺".

(viii) Relationship Domain

A warm or hot environment can bring us pleasure and love, and close relationships with family and friends will also bring greater happiness. Therefore, naturally, based on similarity, we can understand the metaphor RELATIONSHIP IS WARMTH according to the below two examples.

(15) We understand it's a relationship of respect, not a particularly warm relationship.

(16) 列文决没有想像到他和他妻子之间除了温存、尊敬和爱的关系以外还能够有别的关系.

(Levin never imagined that there could be any relationship between him and his wife other than warmth, respect and love.)

(ix) Behavior Domain

People will repeat some behaviors or perform a series of warm-up activities before starting an important task. When we do these activities, our body temperature rises. Based on this co-occurrence of physical experience, we can get an effective metaphor BEHAVIOR IS WARMTH. From the example (17), warm can be an action, and "温习" in the other sentence means the behavior of reviewing.

(17) Take another bottle and warm it to 150 degrees F. Then open it. You get a jet of water because carbon dioxide is escaping.

(18) 这些话,今天我把它补记下来,准备时时温习.
(I'll record these words today and prepare to review them from time to time.)

4.1.2 Specific Target Domains of Warmth

Warmth has a specific target domains in English, that is distance domain. Below is one typical example.

(19) If your first guess is actor Michael Fassbender, for playing the title role in Steve Jobs, good guess! You're getting warm -- but that answer is still wrong! More hints: This young actor's range is pretty impressive, since he's appeared in dramas, comedies, thrillers and even a somewhat comic horror film.

In the above example, you're getting warm means that the respondent is still a certain distance from the correct answer. That is to say, warmth can be mapped to the distance domain, indicating close to the target or correct answer.

4.1.3 Specific Target Domains of "wen"

(i) Degree Domain

As can be seen from the following example, in Chinese, "wen" can be used as an adverb to modify verbs, emphasizing the moderate rise and fall of stocks, prices or other aspects of finance. Because as a temperature word, warmth is originally ranked between the hot and the cold, indicating a medium state. Based on this similarity, temperature is also mapped to a relatively medium range when expressing the degree.

(20) IDC预计,今后几年,数码相机市场将只能保持温和增长.
(IDC expects that the digital camera market will only maintain moderate growth in the next few years.)

(ii) Attribute Domain

Proper intake of warm food can help people drive away the cold and restore health. After summing up the clinical experience, the "four natures" are proposed as one of the most typical theories of traditional Chinese medicine, which consist of the "cold", "cool", "warm" and "hot",. Therefore, when the warmth source domain is mapped to the attribute domain, it represents the natures of mild and warm food materials and herbs. We can understand this metaphor from the below sentence.

(21) 桔皮晾干后久存叫陈皮,性温、味甘、理气消痰.
(Orange peel is called "chenpi" after drying for a long time. It is warm in nature, sweet in taste, regulating qi and eliminating phlegm.)

(iii) Disease Domain

Wind-Warm Syndrome in the following sentence is a particular term of traditional Chinese medicine. This kind of disease always appears in spring and winter, and the onset is urgent. As a result, a particular conceptual metaphor DISEASE IS WARMTH occurs in Chinese.

(22) 藿香主要用于治疗温病发热、呼吸道感染、流感等.
(Agastache rugosus is mainly used to treat warm diseases, respiratory tract infections, influenza, etc.)

Table 1: Target Domains of Warmth and "Wen"

Specific Target Domains of "wen"	Common Target Domains of warmth and "wen"	Specific Target Domains of warmth
Degree Domain Attribute Domain Disease Domain	Vision Domain Auditory Perception Domain Smell Domain Environment Domain Emotion Domain Character Domain Attitude Domain Relationship Domain Behavior Domain	Distance Domain

Through the above analysis, we can conclude that there are nine target domains shared by "wen" and warmth as the source domain, and there is only one target domain unique to warmth, that is distance domain. What's more, there are three target domains unique to "wen", which respectively are degree domain, attribute domain and disease domain.

4.2 Comparison Between Metaphors of Coolness and "liang"

This section also uses corpus-based comparison method to further analyze the characteristics of the metaphorical projection range of Chinese and English temperature words coolness and "liang".

4.2.1 Common Target Domains of Coolness and "liang"

(i) Auditory Perception Domain

Cold places may cause us to feel uncomfortable. We also feel sad when others speak to us in a cold, sarcastic voice. Based on this similarity, we can map the source domain of coolness to the auditory perception domain.

(23) A tiny Greek church with a sparsely populated graveyard clings to the declivity above us, and from far below comes the faint cool sound of waters foaming round the foot of the hills.
(24) 青年只能顺着古丝绸之路流浪,把优美凄凉的歌声传遍了所有他路经的地方,最后传回到帕米尔高原他的故乡.

(The young man could only wander along the ancient Silk Road, spreading the beautiful and desolate songs all over the places he passed by, and finally back to his hometown on the Pamir Plateau.)

For example, in sentence (23), the voice will be more ethereal in open places, not to mention the sparsely populated cemetery. Therefore, in such an environment, the sound of water makes people feel cool. In addition, according to sentence (24), "*liang*" can reflect the ethereal and miserable voice, which is also the reflection of young people's mood in the process of wandering.

(ii) Smell Domain

When the source domain of coolness is mapped to the smell domain, it means cool fragrance. Such a smell will make us relax and happy.

(25) She wove her arms around his neck, breathing in the faint, cool smell of his aftershave.
(26) 奶油和冰淇淋似的,又甜又凉,涂在面包上,很有一种清凉的气味.
(Cream is like ice cream. It's sweet and cold. When it's coated on bread, it has a cool smell.)

Take sentence (25) as an example. In this context, the smell of aftershave is also the smell of the person she loves. This gives her a sense of intimacy and security and makes her happy. What's more, like sentence (26), cream itself is cold and tastes sweet. Therefore, cool is an appropriate way to describe its smell.

(iii) Attitude Domain

Some facial expressions, behaviors and tone make people feel cold. Take the phrase "风凉话" in sentence (28) as an example. When the wind is cool or even cold, people don't like blowing because it may cause people to catch a cold. Therefore, when the cool wind is used to modify words, it also expresses hard and sarcastic words. And in terms of example (27), it is obvious that the word "cool" can also express people's attitude, as a result, coolness in English and Chinese can be mapped into attitude domain.

(27) While Wallace has said only nice things about his former team since joining the Dolphins, he expects a cool reception from fans when he returns to Heinz Field.
(28) 基思很想回敬他几句风凉话,但还是忍住了.
(Keith wanted to return him a few sarcastic remarks, but he still held back.)

(iv) Emotion Domain
Research shows that part of our emotions is related to temperature. Most of us can't stand living in very cold places. Based on this co-occurrence of physical experience, we can get an effective metaphor EMOTION IS COOLNESS.

(29) When your eyes met mine, I knew that I had better play it cool – I'm doing my best trying to resist.
(30) 随着故事的发展,我越发觉得悲凉、痛心.
(With the development of the story, I feel more and more sad.)

Take sentence (29) as an example, when the psychological state calms down, people's body temperature will also decrease, so when describing people's calm mood, the word "cool" is a good choice. And in Chinese, we have words like "悲凉" to express sad feelings.

(v) Character Domain

People who live in a cold and cool environment for a long time are more likely to form a calm or cold character. Therefore, based on this physical experience, the metaphor-CHARACTER IS COOLNESS is formed in human mind. In the following two sentences, coolness and "*liang*" are mapped to the character domain.

(31) Family legend had it that even as a child I was always cool and calm.
(32) 他虽个性孤僻,却非天性凉薄之人.
(Although he is lonely, he is not an innate cool man.)

4.2.2 Specific Target Domains of Coolness

(i) Vision Domain

In a cool environment, our mood will change from excitement to calm. For example, "Blue" in sentence (33) is the coldest color in the cool color, when a person sees a cool color, his mood will gradually calm down. Based on this similarity, we can get the metaphor VISION IS COOLNESS.

(33) Blue is a cool color, and many shades of blue have a calming effect as well.

(ii) Evaluation Domain

At the end of the 20th century, the term "cool" was regarded as a calm and anti-mainstream attitude. Since then, people's views on this word have changed. Its usage has also increased, and it has evolved into something we can enjoy. Therefore, when the source domain of coolness is mapped to the evaluation domain, it means a good image, thing or experience.

(34) I think it's pretty cool to dress up your car for Halloween.

Like Sentence (34), owning a pretty car is a cool thing, which makes people happy.

4.2.3 Specific Target Domains of "*liang*"

(i) Attribute Domain

People's proper intake of cold food can help eliminate irritability, reduce inflammation and relax the intestines. Therefore, when "*liang*" is mapped to the attribute domain, it means that kind of food is good for health. However, as mentioned above, this classification of the nature of food comes from traditional Chinese medicine, so this metaphorical expression is only available in Chinese.
(35) 瓜果也是必不可少的,特别是有凉性、清热功能的食物.
(Melons and fruits are also essential, especially cool and heat-clearing food.)

(ii) Disease Domain

If we stay in a cool or cold environment for a long time, we will tremble and even get sick. Therefore, when the "*liang*" source domain is mapped to the disease domain, it means that we may catch a cold and need to take care of ourselves. From the below sentence, we can see that the linguistic expression about "*liang*" is used in Chinese to express this meaning.

(36) 他嘱我路上小心,夜里警醒些,不要受凉.
(He told me to be careful on the road and be alert at night so as not to catch cold.)

(iii) Environment Domain

When the source domain of "*liang*" is mapped to the domain of environment, it means that we are surrounded by cool or cold atmosphere and almost intoxicated by it. According to the example (37), the word "荒凉" can express this conceptual meaning.

(37) 这些小山和他以前走过的任何一座小山相比, 显得更光秃、荒凉、低矮.
(These hills looked more bare, desolate and low than any hill he had ever walked before.)

(iv) Relationship Domain

Staying in a cool place for a long time can lead to loneliness. Therefore, when the "*liang*" source domain is mapped to the relationship domain, the meaning of "*liang*" extends from "low temperature" to "cold relationship".

(38) 人在高处,或许有很多人奉承你.一旦人走茶凉,亦无人过问.
(When people have high social status, there may be many people flattering you. Once you lose your position, no one cares.)

In the above sentence, "人走茶凉" means the weak relationship between people.

(v) Quantity Domain

In Chinese, people like to use the temperature term "*liang*" to describe the amount of products. When the "*liang*" source domain is mapped to the quantity domain, it means that the crop harvest is poor or people have few products, just like expressed in sentence (39).

(39) 且闻彼地山田荦确, 瘠水寒, 物产凉薄.
(I've heard that the mountains are covered with gravel, the soil is barren, the climate is cold, and the products are thin.)

Environment Domain	Attitude Domain	Evaluation Domain
Relationship Domain	Emotion Domain	
Quantity Domain	Character Domain	

Through the above analysis, we can conclude that coolness and "*liang*" as the source domain share nine target domains, and only two target domains are unique to coolness, namely vision domain and evaluation domain. In addition, "*liang*" has five unique target domains: attribute domain, disease domain, environment domain, relationship domain and quantity domain.

In conclusion, as can be observed from Table 1, nine target domains are shared in temperature term warmth and "*wen*". But the metaphorical projection range of temperature term "*wen*" is wider than that of warmth. Chinese temperature term "*wen*" maps to 12 domains, while English word warmth maps to 10 domains. In addition, in terms of warmth, mapping from temperature to distance is unique. Different from warmth, mappings from temperature to disease, attribute and degree are unique for temperature term "*wen*".

In addition, different from warmth and "*wen*", as can be observed from Table 2., five target domains are shared in temperature term "*liang*" and coolness. Similarly, the metaphorical projection range of temperature term "*liang*" is wider than that of coolness. Chinese temperature term "*liang*" maps to 10 domains, while English word coolness maps to 7 domains. As for temperature term coolness, mappings from temperature to vision and evaluation domain are unique. Different from it, mappings from temperature to attribute, disease, environment, relationship and quantity domain are unique for "*liang*".

4.3 Reasons for Similarities

It is found that there are many similarities between metaphors of warmth and coolness in English and Chinese. These similarities come primarily from the universality of human experience, common cognitive mode, synesthesia and increased communication.

4.3.1 The Universality of Human Experience

Lakoff and Johnson (1980) argued that concepts are formed through our body, brain, and experience of the world, and only through them can the concepts be understood.

As a result, everything we know seems to come from our daily interactions with our bodies and environments, which mimic the way we store conceptual information in our brains and generate language. The objective world around human beings is almost the same, which not only makes our perception of the world, but also makes our psychological feelings have

Table 2: Target Domains of Coolness and "*Liang*"

Specific Target Domains of "*liang*"	Common Target Domains of coolness and "*liang*"	Specific Target Domains of Coolness
Attribute Domain	Auditory Perception Domain	
Disease Domain	Smell Domain	Vision Domain

many similar points. Therefore, some metaphors, especially those with the same cognitive basis at the general level, are universal (Tao, 2017). In addition, Chinese and Westerners have the same physical characteristics because they have the same sensory organs. From a biological and physiological perspective, we may react to temperature changes in the outside world in the similar manner. That is to say, even people in different nations can own similar psychological feelings and may have similar psychological feelings about the same object. For instance:

(40) The females are shaped like the male but are a duller grey brown color and have only warm red accents on the tips of their crest, wings and bill.
(41) "红云飞"顿时成了市场上的抢手货.夏初,天气渐暖,这个厂又推出温色调"黄云飞".
("Hong Yunfei" immediately became a hot item on the market. At the beginning of summer, the weather is getting warmer, and this factory launched a warm tone "Huang Yunfei".)

From the above two sentences, we can know that the expression of "warm tone" exists in both Chinese and English, and this concept is shared by peoples of two countries. The reason for this phenomenon is that color and temperature, as an objective existence, do not change due to geographical location. Therefore, there are similarities in human perception of them, and there are many similarities in related metaphorical thinking and language expression.

4.3.2 The Common Cognitive mode

Lakoff and Johnson (1980) held the idea that metaphor is one of the basic modes of cognitive mode, which is based on people's experience. People tend to understand complex and abstract things through simple and concrete things. Both Chinese and Westerners recognize and understand things based on this common cognitive mode. Therefore, an important basis of "similar temperature metaphor" is that English and Chinese people have a common cognitive mode, structure and mechanism, which can be used to feel external stimuli and form subjective reactions. Based on these conditions, English and Chinese seem to cross ethnic, regional and class boundaries and form similar temperature metaphors. Below are two typical examples:

(42) Get as much information from as many sources as you can, cool down and vote according to your own conviction.
(43) 告别医院的那一天,我心里好忧伤,有一种流离失所的凄凉.
(On the day when I said goodbye to the hospital, I felt so sad and desolate.)

People's emotion is an abstract state. Both Chinese and English people are used to understanding the abstract concept of mood with a more specific concept of temperature. Although they use different languages, they all use simple concrete things to describe abstract things.

4.3.3 The Universality of Synesthesia

Synesthesia is a phenomenon involving the connection between one feeling and another. From the perspective of linguistics, synesthesia, as a metaphor, affects a sensory form

by stimulating another sensory form. Synesthesia is common and natural in Chinese and English temperature metaphors. Both English and Chinese have synesthesia metaphors. Such as "温言" and "warm sound" in the below two examples, in which "wen" and "warm" both belong to the domain of tactile sense, but it can be mapped to the domain of auditory perception domain.

(44) I made a warm sound and squeezed his hand. "That was Sean," I said.
(45) 我开车门坐进去,只见那男的温言劝她,两人一直走远.
(I open the door and sit in. I see the man gently advise her, and they keep going away.)

4.3.4 The Increased Communication

According to Kövecses (2005), when an abstract entity is metaphorically conceptualized in similar ways by different languages and cultures, the possibility of "one language borrowed the metaphors from another" should be considered. There are some similar temperature metaphors in Chinese and English, which are directly related to the cultural exchange and language contact between the two countries.

Research shows that the development of one language is inseparable from other languages. In the process of economic globalization, countries have established closer economic ties, strengthened interdependence and more frequent language exchanges. Therefore, thanks to the constant and increasing mutual communication, it is normal that there are many similarities in the metaphorical thinking about warmth and coolness in Chinese and English.

4.4 Reasons for Differences

This part will focus on the subjectivity of human cognition and culture to illustrate the reasons why there are different metaphorical thinking about warmth and coolness in Chinese and English.

4.4.1 The Subjectivity of Human Cognition

Clark (2016) stated that we create mental schemata of objects via the way in which we manipulate them. Human beings have subjective initiative and can actively perceive and change the world. Human nature and subjectivity are two important characteristics in the process of conceptualization. Subjectivity emphasizes that looking at things from different angles can highlight the different characteristics of things. In different groups, everyone uses different metaphors to express different views and different personal experiences. Language is the carrier of thinking. There are great differences in temperature metaphor between Chinese and British people due to their different cognitive abilities and ways of thinking.

4.4.2 Different Cultures

From some phenomena found in the metaphors of warmth and coolness in Chinese and English, it seems that the formation basis of some metaphors is not purely based on our physical experience, but from culture. Gibbs asserted (2011) the understanding of metaphorical thinking interacts with our cultural experience. Liu and Zhang (2018) believed that

researchers should pay more attention to the combination of main metaphors and culture in the study of metaphor. Therefore, the reasons for the differences between English and Chinese metaphors of warmth and coolness need us to find the root of specific culture.

Firstly, many Chinese poets like to use "*liang*" to express their sad feelings, which have a deep impression on the hearts of the Chinese people. This poetic culture of expressing emotion with "*liang*" has gradually affected people's thinking and the use of the word "*liang*". This usage is also gradually extended to the description of the environment.

(46)这样的天色映在巴黎泥泞的马路上,显得分外凄凉.
(Such a color of the sky reflected on the muddy roads in Paris, it was particularly desolate.)

In the linguistic expressions of metaphor ENVIROMENT IS LIANG, words such as "凄凉"、"荒凉" are often used in Chinese to describe the bleak and desolate environment. We have difficulties in finding such expressions in western languages, because different cultural traditions make their understanding of temperature metaphor is difficult to be consistent with that of Chinese.

Secondly, custom is also a part of culture, which also participates in the process of forming metaphor. From birth, people have been influenced by local customs. Westerners and Chinese have formed their own customs in the development of civilization. This leads to different expressions of warmth and coolness metaphors in English and Chinese. In English, warmth as the source domain can be mapped to the distance domain. This meaning comes from a traditional English children's game. One person is the questioner, and the others must guess the color of a particular object in the questioner's mind. The words "cold", "colder", "warm", "warmer", and "hot" are used to indicate how close a guess answer is to the correct one. But there is no this linguistic form in Chinese.

Lastly, the geographical characteristics of the Asian continent prompted the Chinese to develop agriculture. The long-term agricultural life provides them with a clear and sensitive temperature experience. Based on this physical experience, they can get an effective temperature metaphor ATTRIBUTE IS TEMPERATURE. Therefore, when the source domain of Chinese temperature term is mapped to the attribute domain, it means the attribute of food. This metaphor is also reflected in China's unique culture - traditional Chinese medicine. The four different medicinal properties of "寒、热、温、凉" are typical. This leads to a lot of metaphorical expressions in Chinese, such as "性温味甘", "凉性". Western medicine, which tends to carefully examine patients through various advanced instruments and equipment, does not have this conceptual metaphorical thinking.

Based on the above analysis, it was found that people's universal experience, common cognitive mode, synesthesia and the increased communication may lead to the similarities of metaphors of warmth and coolness in Chinese and English. However, the subjectivity of human cognition, poetic culture, custom and traditional Chinese medicine culture are the reasons for the differences between English and Chinese temperature metaphors.

5. Conclusion

After classifying and analyzing these data, it is found that metaphors related to "*wen*" and "*liang*" have a wider mapping domain in Chinese than in English. Specifically, "*wen*" has 12 target domains in Chinese and "*liang*" has 10 target domains in Chinese. In addition, both Chinese and English have common and their own unique metaphors. Concerning the reasons for the similarities and differences between warmth and coolness metaphors in English and Chinese. Primarily, common experience, common cognitive mode, synesthesia and the increased communication will lead to some same metaphorical thinking in Chinese and English. In addition, the subjectivity of human cognition and cultural differences will lead to the differences of metaphors in Chinese and English. This study will be helpful and enlightening for vocabulary learning in English and Chinese and translation between two languages.

However, due to the complexity of the metaphorical meaning of temperature word coolness and warmth, some examples in the data may be ignored or omitted in the process of contrastive analysis. Therefore, it is necessary to collect more data from other corpora and official websites and conduct more detailed research to obtain more data for a comprehensive understanding in the future study.

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