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An Analysis on Conceptualizations of "Anger" in English and Chinese Based on Embodied Semantics

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Abstract: It is revealed that there are far more somatic sensory expressions of "anger" in Chinese idioms than in the English counterparts. Justifies the holistic view about body and mind underlying the traditional Chinese medicine through seeking evidence from interoceptive neuroscience. According to the cutting-edge theories of emotions, represented by James-Lange's theory of bodily reaction to feelings, interoception theory and Mayer's brain-gut axis theory, to name only a few, those interior organs such as well as gastrointestinal tracts are almost all involved in the production and perception of feelings. As a matter of fact, an emotion consists of four components, namely, cognition, feelings, bodily reactions and behavior. based on related theories such as brain-gut axis, "anger" evokes the physiological response activates the corresponding brain regions through the interconnection between brain and gut, which also justifies the holistic view on body, brain and emotions lying in traditional Chinese medicine.

Keywords: embodied semantics, conceptualization of "anger", brain-gut axis, interopception theory

Introduction

"Anger" is one of the prototypical emotions, which has a practical research value which always accompanied by uncontrollable behavioral response and total physical response. Anger is a multi-dimensional emotion that includes not only emotional experience, but also cognitive and behavioral response to situations that provoke anger.

In Chinese, there have many idiomatic expressions using the body part or viscera as a basis for their emotional terms, for examples, *nu mu er shi* (stare at someone or something with anger), *nu cong xin qi*(literal meaning: anger raise from heart; meaning: when you get angry, you will be bold enough to do anything), *da dong gan huo* (literal meaning: the liver-fire burns; meaning: very angry), *fei qi zha le* (literal meaning: lung blows up; meaning: a vivid way to express one's rage), *gan dan yu sui* (literal meaning: liver and gallbladder, both break; meaning: be extremely angary), *qi fen tian ying* (literal meaning: the air with anger is full of chest; meaning: be filled with righteous indignation), all refer to states of "anger". However, few of their English counterparts use viscera or body parts to express "anger". In English, for examples, "anger, infuriate, lose one's temper, lose control…, fly into rage, etc.," are wildly used to express above Chinese emotional terms. A few conceptualizations of "anger" in English mentioned the body part, they are only related to "hair, teeth", such as "hair stands on end, gnash the teeth…". This raises the further important question of why this happens.

For inheritance and innovation, this thesis discusses "anger" from the aspects of embodied emotion theory, brain-gut axis theory and Interoception theory. The thesis tries to have a reflection on traditional Chinese medicine (TCM) and find neuroscientific evidence for explanation of somatic conceptualization of "anger" that traditional Chinese medicine (TCM)

gave. The development of embodied semantics not only gives semantic research scientific support, but also provides direct and clear explanations for understanding of meaning. So, this thesis will contribute to our better understanding of the study of conceptualization of "anger".

1. Conceptualization and "anger"

"Conceptualization" is a concept of cognitive linguistics that refers to the concept that a word is activated in the brain of the speaker and the hearer and depends on the pattern and content of the psychological process[1]. Cognitive linguistics believes that the formation of concepts is not a reflection of mirror image of objective things in human brain, but the result of interaction between the human brain and objective things. The conceptualization of emotions is the psychological representation and neural processing process in the brain when people experience an emotion. Anthropologists and linguists often speculate on how people of a particular language and cultural group form concepts about the external world and their own emotions through the language they use, such as the usage of words and how they are organized to be a sentence. (Because the cognition of body part is different in Chinese and English, so in this thesis we use Chinese pinyin to express somatic conceptualization in Chinese).

Human beings experience emotions both physically and psychologically. In addition, unlike other animals, human beings can not only feel emotions but also express emotions. Emotional expression can be either physically, for examples, when people is angry, their heart rate will fasten, their blood pressure will raise and they will be out of breath or can be psychologically, that is, conceptualization of "anger" (through language). When something happens that makes "anger" occur, at this time, it is still a chaos, we may firstly have some physiological response and physical manifestations, such as you may stare at something or someone, be out of breath, your check become rosy, your heartbeat become rapid or jumping, etc., but before "anger" is conceptualized, we cannot name what happens to us and we cannot name what we feel. Therefore, conceptualization transforms these feelings into a tangible emotional concept through metonymy, metaphor, cognitive scenes and cultural scripts, thus forming an emotional concept system, and then generating an emotional vocabulary system that ultimately shapes different emotional experiences. Since a reflection of our emotional concept system is language, the test of emotional vocabulary expression related to "anger" is the key to reveal the conceptualization of "anger" in any particular culture.

2. Differences of somatic conceptualizations of "Anger" in English and Chinese

We can find that compared with somatic conceptualizations of "anger" in Chinese that have *zang* organs, their counterparts in English almost have no visceral words such as heart, liver, lung or gallbladder, etc. There is only *hen zhi ru gu* (literal meaning: hate someone or somebody in the bone) has one counterpart, that is "Hate sb's gut" mentioned "gut". As for those Chinese expressions with hair, tooth, eye, bone, chest or blood, we can observe that only hair, tooth or blood are mentioned in few of their corresponding English expressions, while other body parts in Chinese like *xiong qiang* (thorax), *qiao* (aperture on the face), *ying* (breast), *du pi* (belly) are not mentioned in English, because these expressions are Chinese only, different cultural environment and cultural background shape different cognitive pattern. In Chinese culture, we, Chinese regard human body as a container and conceptualization of "anger" in Chinese is more somatic, while in western countries, after the 18th century, the perception of the body was replaced by the concept that "the body is a machine." The idea that "the emotions were thought to flow in the body" was abandoned. Therefore, the somatic expressions of "anger" become less and less in English.

It can be found that there are a large number of words in Chinese that use body parts or internal organs to conceptualize "anger". It is revealed that there are far more visceral sensory expressions of "anger" in Chinese, especially in Chinese idioms than in the English counterparts. Even has, it only related to hair or tooth, not internal organs.

3. Explanations for differences from a reflection on TCM: based on the neuroscientific evidence

"Huang Di Nei Jing" is one of the earliest medical books that recorded a wealth of knowledge about emotion. *"Huang*

Di Nei Jing" is the earliest classic work of Chinese medicine. It is not only a valuable legacy of Chinese medicine, but also a valuable ancient documentary of our history of studying the psychological thoughts of the Pre-Qin period. It records a wealth understanding of the emotions of human beings. *"Huang Di Nei Jing"* is divided into *"Su Wen"* and *"Ling Shu"*. The emotion theory in *"Nei Jing"* has important guidance value for modern medicine and modern psychology.

"Su Wen Yin Yang Yin Xiang Da Lun" explained the relationship among emotion and aspiration, five directions and five *zang*-viscera (the joint name of *xin, gan, pi, fei, shen*) and five directions of aspiration is controlled by five *zang* organs (the joint name of *xin, gan, pi, fei, shen*). It can be seen that the seven *qing* (emotions) are caused by the functions of the organs. *"Su Wen"* said that the reason of the superposition of five vital essences is the deficiency of five *zang* organs (the joint name of *xin, gan, pi, fei, shen*). When one of the five *zang* organs (the joint name of *xin, gan, pi, fei, shen*) is excessive, the emotion which controlled by it can be showed out. One will become irate because of the excess of liver-*qi*. The functions of the five *zang* organs (the joint name of *xin, gan, pi, fei, shen*) have their own characteristics, such as "the lung governs *qi* (breath), performs respiration." The human body inhales the air through the lungs and exhales the turbid air to maintain life activities, so *qi* (breath) and lung are closely related. While "*Nei Jing"* emphasizes that the "anger" is born in the five *zang* organs (the joint name of *xin, gan, pi, fei, shen*), it also expounds the relationship between anger and *qi* (breath) and blood. *Qi* (breath) and blood are the material basis of anger. *"Su Wen Tiao Jing Lun"* said that "excess of the blood leads to anger" [2], pointing out how much blood is related to anger. At the same time, this article also discusses the correlation between emotion and *qi* (breath) and blood from the perspective of *qi* (breath) and blood operation. At the same time, this article also discusses the correlation between emotion and *qi* (breath) and blood from the perspective of *qi* (breath) and blood operation. For examples, "blood is *yin, qi* (breath) is *yang,* and the upstream phenomenon of blood and the superinverse of *qi* (breath) are two basic reasons of 'anger'" [3]. *"Su Wen Si Shi Ci Ni Cong Lun"* also said the superinverse of *qi* (breath) is the basic pathogenesis of the diseases caused by anger. It is clearly pointed out in *"Su Wen"* that the emotions are metamorphosed by the five *zang* organs (the joint name of *xin, gan, pi, fei, shen*). In the theory of traditional Chinese medicine (TCM), kidney is the mother of liver, so we can threat the kidney to cure the liver disease caused by "anger" which embodies the interrelationship among liver, kidney and "anger". According to the theory "liver govern anger", "anger" is born from the liver-*qi*. If liver-*qi* is too strong and distributing is too much, it often leads to *gan qi shang ni* (liver-*qi* reversal), and there are emotional changes such as become easy irritable and exciting. *"Ling Shu"* said that "The main reason of fear is the lack of liver-*qi* while for 'anger' is the excess of liver-*qi"*. *"Su Wen Zang Qi Fa Shi Lun*": "Hepatopath are easy to be angry." Wang Mengying in Qing dynasty had mentioned that: "the origin of emotions should be liver"[4]. *"Nei Jing"* believes that slightly angry, in some cases, is good for distributing and relief of liver-*qi*, but rage and wingding could make liver-*qi* reverse, blood overflowing and the face becomes red, what's more, people could lose control. In addition, gallbladder-*qi* disorder makes people prone to anger, so there has "Gallbladder is also closely related to 'anger'" in *"Su Wen Xuan Ming Wu Qi"*. "Anger" is hyponym of liver and it could hurt liver. So irritating people are prone to have liver disease, people with liver disease are often tempered. And "disease of liver can transfer to the spleen and the disease of spleen can transfer to the liver". Thus, the existences of spleen-*qi* or liver fire in Chinese such as are not difficult to understand. There has "anger is harmful to liver-*qi* and liver-blood, meanwhile, anger is hard to control and easy to become the etiological factor" in *"Bi Hua Yi Jing"* of Jiang Handun which stresses the relationship between "anger" and hepatic blood from a pathological point of view. *"Su Wen Bing Neng"* said that "anger" is not only the pathological factor but also the symptom. "Anger" can trigger a series of manic and crazy behaviors. It combines people's mental activities, emotional activities and physiological response in different parts of human body. According to "*Nei Jing*", there have some descriptions of "anger" which are as follows: anger is based on the morphologic change of liver and gallbladder, and leads to the bluish complexion, thin and weak, few words. It's characterized by the superinverse of *qi* (breath). In the clinic, the main symptoms are stagnation of liver and gallbladder, excess of *qi* (breath), abnormal movement of *yin* and *yang*, *qi* (breath) and blood. And anger does great harm to *yin* and *qi* (breath), liver and kidney. It can be seen that in the traditional Chinese medicine concept, internal organs, blood, body parts and "anger" are inseparable. This obviously gives a clear explanation of why there has a great number of somatic conceptualization of "anger" in Chinese, such as *da dong gan huo*

(literal meaning: the liver-fire burns; meaning: very angry), *fei qi zha le* (literal meaning: lung blows up; meaning: a vivid way to express one's rage), *gan dan yu sui* (literal meaning: liver and gallbladder, both break; meaning: be extremely angary), *ling ren fa zhi* (literal meaning: make one's hair stand; meaning: to get one's hackles up), *chui hu zi deng yan* (literal meaning: blowing beard and stare; meaning: it is used to describe how furious somebody is), *nu qi tian xiong* (literal meaning: the air of anger is full of chest; meaning: be full of wrath), *lian hong bo zi cu* (literal meaning: face is red and neck becomes thick; meaning: blue in the face), *lian hong jin bao* (literal meaning: face is red and veins that stand out; meaning: red and tense with anger), etc. However, lacking of the support of modern science, traditional Chinese medicine (TCM) is hard for westerners to understand. With the development of embodied semantics and neuroscience, there has support for traditional Chinese medicine (TCM).

From the perspective of modern medicine, people's emotional changes through the brain, hypothalamus, limbic system and brain stem network structure, endocrine changes. It is closely related to the increase and decrease of blood sugar components and the rise and fall of heart rate and blood pressure.

Based on embodied semantics, the physiological response evoked by emotions shares common brain regions which conceptualize emotions in the brain. Therefore, whether it is cardiovascular reaction or visceral reaction evoked by emotions, the corresponding brain region is activated when the brain processes these conceptualizations. These areas include the anterior insula cortex, the right insula cortex, the right cingulate cortex, the somatosensory motor cortex, the prefrontal lobe, the deep limbic system, the basal ganglia, the anterior cingulate gyrus, the temporal lobe and the amygdala, etc.

Corresponding to the concept of five *zhi* (emotions) neuroscience has discovered that emotions and nerve center of visceral are closely related and interact with each other. Firstly, from the perspective of anatomy, the nerve center of emotions and internal organs are overlapping or quite close. Secondly, their relationship is reflected in the interaction between emotion nerve center and visceral nerve centers. The emotion centrum acts on the visceral centrum and affects the internal organs. Viscera also acts on the emotional centrum and influence emotions. The nervous system controls the five *zang* organs (the joint name of *xin, gan, pi, fei, shen*) through neuroendocrine. Hypothalamus is the nerve center of emotions and internal organs, while it is also a higher endocrine centrum. Tab. 1 shows neuroendocrine regulations counterparts of five *zang* organs (the joint name of *xin, gan, pi, fei, shen*). The hypothalamus combines nervous regulation and humoral regulation to regulate the endocrine activity. Thayer et al. found that the neural basis of emotional response relies mainly on the central autonomic network (CAN), because it not only can regulate adaptive visceral response, neuroendocrine and behavioral responses but also can cause disease[5]. Table.2 represents distribution of emotional and visceral nerve centers in the brain. On the other hand, too much anger could affect the corresponding neuroendocrine regulation, increasing secretion of glucagon and decreasing secretion of insulin. At the same time, hormones on hepatocyte regeneration and liver protection are removed, and the damage is enhanced[6].

Table 1 Corresponding neuroendocrine regulations of five zang organs[5]

Five *zang organs*	Five *zhi* (emotions)	Function	corresponding neuroendocrine regulations
xin	happy	Dominating nerve	sympathetic nerves--adrenal medulla, hypothalamus--pituitary gland-- Glandula thyr(e)oidea, hypothalamus-- pituitary gland-- pancreatic islets
gan	anger	Concealing blood and dominating diffusion	sympathetic nerves--adrenal medulla， hypothalamus-- pituitary gland-- adrenal cortex
pi	worry	Dominating transportation and transformation, blood	hypothalamus-- pituitary gland-- Glandula thyr(e)oidea；sympathetic nerves-- adrenal cortex;

		control	hypothalamus-- pituitary gland-- pancreatic islets
fei	sad	Domination *qi* (breath) and sending out the defending *qi* (breath) and the body fluid	sympathetic nerves--adrenal medulla, hypothalamus-- pituitary gland-- adrenal cortex
shen	fear	Storing essence and controlling water	hypothalamus-- pituitary gland—gonad; *xin—shen*-- *tian kui*—chong and ren channel--uterus,Renin—angiotensin--aldosterone,hypothalamus—ADH—Hypothalamus-- pituitary gland-- adrenal cortex

Table 2 Distribution of emotional and visceral nerve centers in the brain [5]

	Emotion center	Visceral center
brain	Insula and cerebral cortex (feel emotion) hippocampus(anger zone) cingulate cortex(anger zone) amygdala (emotion transmission)	Insula and cerebral cortex (special visceral feeling) Hippocampus cortex (cardiovascular center) cingulate cortex(cardiovascular center) amygdala(visceral activity) OFC (reduce blood pressure and slow down heart rate) anterior medial cortex(Parasympathetic nerves center)
hypothalamus	ventromedial hypothalamic nucleus(defence zone) dorsal thalamus(escape zone)	SON and PVN (center of liver and kidney) arcuate nucleus (center of spleen, kidney and liver)
brainstem	lateral(attacking area) brainstem structure (inhibit pain)	posterior lateral area(sympathetic center) brainstem structure (center of heart and lung)

Neuro-endocrine is capable to regulate visceral function, in addition to that, in recent years it has been found that the number of nerve cells in the viscera is close to the number in the brain, which can secrete a variety of neuropeptides and interact with the brain. To this end, neurobiologists refer to the internal visceral neuroendocrine system as the "second brain" of the human. The "second brain" is widely distributed in the stomach, intestine, pancreas, respiratory tract, urinary tract, and endocrine cells in the reproductive duct, also known as the diffuse neuroendocrine system (DNES). The interaction of "second brain" with the central nervous system is called "brain-visceral interaction" to maintain the coordination of visceral function, and various factors including mental factors can affect the "brain-visceral interaction". It can also cause visceral dyskinesia and paresthesia.

In Chinese philosophy, the concept of *yin* and *yang* describes how opposing or opposite forces that are seen as complementary and interconnected, and how they interact with each other to produce a unified whole. When applied to the brain-gut axis, we can treat our intestinal sensation as *yin* and the intestinal changes as *yang*. Just as *yin* and *yang* are two complemental standards of the same entity---brain-gut connections---feelings and reactions are both different aspects of the same brain-intestinal network which capable of reacting or functioning in two, usually opposite, directions, playing a vital role in our health, our emotions, and ability to make an intuitive decision [7].

Modern philosophical, cognitive semantics and cognitive neuroscience believe that mind and body are not two systems that are independent of each other, but that they interact, influence and infiltrate each other. Most researchers agree with the basic argument of embodiment. That is cognitive processing is influenced by the human body and brain is one of

the parts in this process. That is to say, the body's morphological structure, sensory system, motor system and the nervous system that characterizes the body affect people's cognitive processes [8][9].

4. Conclusion

In conclusion, traditional Chinese medicine (TCM) gave detail explanations about why somatic conceptualization is wildly used in idiomatic emotional expressions in Chinese. However, without the sustentation of neuroscience and theory of embodiment, it is still so abstract and unscientific for westerners to understand. Now, the brain-gut axis theory and embodied semantics provide supports for traditional Chinese medicine (TCM) and provide new insights into the study of somatic conceptualization of "anger" and through seeking evidence from interoceptive neuroscience, justifies the holistic view about body and mind underlying the traditional Chinese medicine (TCM).

As a matter of fact, an emotion consists of four components, namely, cognition, feelings, bodily reactions and behavior. And the bodily reaction, the visceral sensations are indispensable for the emergence of feelings. Based on related theories such as brain-gut axis, anger evokes the physiological response activates the corresponding brain regions through the interconnection between brain and gut, which also justifies the holistic view on body, brain and emotions lying in traditional Chinese medicine. In fact, it does not see that three-quarters of the brain regions are joint cortex, which can integrate, reorganize and create the channel-specific primary concepts. This is one of the root causes of the diversity of conceptualization of emotions between individuals and cultures.

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Conflicts of interest

The author declares no conflicts of interest regarding the publication of this paper.

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