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Divergent conceptualization of embodied emotions in English and Chinese languages

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Abstract: Empirical and theoretical advances in human neuroscience have led to a reappraisal of the relationships between mind, brain and body, the implications of which are particularly relevant to understanding emotions, which is revealed to be embodied owing to the facts that they are on the one hand primarily arise from the internal bodily states controlled by interoceptive system, on the other they give rise to physiological reactions and physical action evoked by autonomic nervous system. More specifically, when considering the 'embodied mind' (i.e., how mental processes are inescapably contextualized by their location within the body), the brain, instead of the 'master' of the body, is increasingly revealed to function as the 'servant', with its primary goal to maintain the body's homeostatic integrity. This is achieved through the control of interoceptive information concerning body's physiological state, initially as 'simple' organ-level homeostatic reflexes and then through higher-order coordination across organ-systems allowing 'allostatic policies' to predict and maintain future health of the integrated whole 'biological-self'. In this context, motivational and emotional feelings arise from interoceptive signals that accompany (motivational and emotional) internally-directed physiological responses, and externally-directed behaviors. Emotion concepts are thus the categorized embodied outcomes of bidirectional brain-body interactions and may arguably be differentiated into afferent interoceptive processes,

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i.e., from body to brain, and efferent/autonomic processes, i.e., from brain to body. When comparing emotion words used in Chinese and English languages, afferent/interoceptive processes seem to dominate conceptualization of embodied emotions in Chinese, while the efferent processes feature more commonly in English. The presence of distinct conceptual systems relating to emotions may, according to the linguistic relativity hypothesis as well as the theory of constructed emotion, significantly shape the distinct values and 'national character' of Chinese and English–speaking cultures. Correspondingly, it is argued that, in the expression of affective traits, Chinese-speaking people are biased towards being more receptive, reflective and adaptive, whereas native English speakers may tend to be more reactive, proactive and interactive. These patterns also encompass functions historically ascribed to bodily organs by traditional Chinese and ancient Greek medicine.

Keywords: emotion；conceptualization；interoception；afferent；efferent

1.0 Emotional language and the body: Interoceptive cognitive theory challenging the traditional body-brain views

Reference to the body, particularly when describing mental processes of emotion, notably embodied emotional experiences is a feature shared across languages. Differences in how mental concepts are embodied have led to the proposal that there are three broad categories of languages, namely, abdominocentrism, cardiocentrism and cerebrocentrism (Sharifian et al.,2008). Here, Basque, Indonesian, Kuta, and Malay are suggested to be abdominocentric languages, in which the abdomen or stomach is implied to be the central organ for mental activities. East Asian languages, including Chinese, Japanese and Korean, fit into the cardiocentric languages, in which the heart is referred to as the locus for emotional and cognitive processing. English, Dutch, Northeast New Arabian, Persian, and Tunisian Arabic are among those labeled as cerebrocentrism languages, locating mental processes to the head and brain. Such interesting claims are yet to be supported by compelling scientific evidence.

Within cognitive psychology and neuroscience, the embodiment of mental processes has

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increasingly been recognized, i.e., 'brains are in bodies' (Barrett, 2020). Moreover, a shift in perspective challenges the notion that brain, is the 'master' or 'commander-in-chief' of the body, as generally assumed by standard philosophy of mind and cognitive science. Instead, the brain is viewed as the 'servant' of the body, with the primary function of maintaining homeostasis (Damasio, 2018, 2021). This revolutionary framing of the brain-body relationship has broad and potentially radical implications for how we understand mental processes and the intricate, multi-dimensional relationship between language, culture, mind, emotion, brain and body (Zhou et al., 2021). Fundamentally, the brain is proposed to support the whole body by predicting or inferring the energy needed to manage future circumstances effectively, grounded on the imperative of maintaining long-term homeostatic equilibrium through responses informed by interoceptive input from the internal organs, weighed against expectations (beliefs) and previous experience. This energy-budgeting function is the essence of allostasis, in which the brain automatically predicts, prepares for, and calculates the energy to be expended by the body before an event actually happens. Here, biological resources that maintain the homeostatic order of the body, such as the supply of water, salt, and glucose, have primacy (Barrett, 2020; Clark, 2016; Sterling, 2020). Thus, within the framework of control theory, or cybernetics, the brain works to keep the equilibrium of essential variables in the body through minimizing or reducing the free energy or surprise arising from the prediction errors (Friston, 2010; Petzschner et al., 2021; Seth, 2013; Seth & Friston, 2016; Seth et al., 2011) The allostatic notion about brain-body interaction or 'inference coding system' therefore works in a top-down manner (Barrett, 2020).

In line with this updated view on the brain-body relationship, recognizing the interplay of top-down expectations with bottom-up sensory signaling from the body, the embodiment of emotion concepts across cultures and languages (e.g., Chinese and English) merits reexamination. The present paper will first review how the embodiment of emotions is mapped through afferent (interoceptive) and efferent (autonomic) channels. Second, the words (listed within relevant thesauri) used to describe so-called 'basic' emotions like *fear, anger, sadness* and *joy* will be compared between Chinese and English languages to explore how embodiment is used in the conceptualization of emotions. Finally, the distinct ways in which Chinese and English languages embody emotional concepts will be examined as an account of how perceptions about the

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stereotypical differences cultural values and 'national personalities' may be constructed regarding Chinese and English-speaking people from their respective conceptions of the body (Kuriyama ,1999 ; Perlovsky, 2009).

2. The distinct embodying processes in generating emotion concepts

The embodiment of emotion concepts can be broadly parsed along in two neural axes: First, afferent body-to-brain 'interoception', encompassing the signaling and representation of changes in physiological state translated within the brain into feelings states of subjective emotional experience and awareness. Second, the efferent route from brain-to-body whereby physical actions and autonomically-mediated physiological changes are engendered in the body by emotions. Thus, these two embodying processes involved in emotional experience differ in the opposite direction of the flow of neural signals from and to the body.

The term 'interoception' refers to the neural signaling and representation (both unconscious and conscious) of signals pertaining to the internal state of the body, encompassing sensations of pain, temperature, bloating, itch, hunger, thirst, muscle burn, joint ache, sensual touch, flushing, visceral urgency, nausea, that originate in activation of receptors within the visceral tissues of the body including nociceptors, thermoreceptors, osmoreceptors, and metaboreceptors (Craig, 2015).

Afferent fibers then transmit interoceptive signals through the spinal cord and via cranial nerves (mostly the vagus nerve) first to the brainstem, where they interact extensively with efferent autonomic centers that can elicit a nearly instantaneous physiological response to implement homeostatic autonomic control (Craig, 2008). As the interoceptive signals ascend in the brain, they are projected to multiple nuclei within the periaqueductal gray (PAG), the parabrachial nucleus (PBN) , the nucleus of the solitary tract (NTS), the thalamus (notably the Ventromedial Nucleus), and insular cortex (IC) (Duquette, P. & Ainley, 2019, p. 4) and then are processed and translated into subjective motivational and affective (pleasant or unpleasant) feelings that motivate individuals (consciously or not) to approach or avoid (Craig, 2008; Duquette, Patrice, 2017) so as to guide and maintain homeostatic equilibrium. This essential role of interoception in motivating actions to ensure bodily homeostasis is enabled by 'predictive processing' (Clark, 2016; Craig,

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2015; Critchley & Garfinkel, 2017; Sterling, 2020; Strigo & Craig, 2016).The predictive processing framework argues that the brain infers (probabilistically or on Bayesian basis) the likely cause of changes in sensory information by testing perceived sensory data against its own predictions ('beliefs' of 'priors'). Although commonly applied to sensory information about the external world, predictive processing is also applied to internal physiological state wherein predictions about interoceptive information are generated from an internal model of the homeostatic state of the body. When sensory data do not match the prediction, this generates prediction errors (sensory surprise). The brain seeks to minimize prediction error by modifying its internal model (through learning) or modifying the source of the sensory data through actions (these can be autonomic responses).

Thus, autonomic efferent drive maintains the homeostasis of organism not only by generating contextual responses to changing incoming interoceptive bodily cues, but also acts allostatically in anticipation of physiological challenges signaled by external motivational and emotional cues. Predictive coding is argued to be one instantiation of the more general free energy principle (Friston, 2010): Minimizing the free energy of internal state in order to avoid sensory surprise is equivalent to minimizing interoceptive prediction error. Active inference, i.e., targeted action on the external (via behaviour) or internal environment (via autonomic responses) will diminish uncertainty and facilitate the reduction of free energy (Parr et al., 2022) . The actions/autonomic responses equate to sensory predictions. Ultimately, the structural and dynamic physiological integrity of a person/organism is ensured by maintenance of physiological state within set bounds by engaging integrated interoceptive control and autonomic actions that resist the tendency towards disorder evoked by ever-changing external conditions (Ashby, 1956; Friston, 2010, 2013) .

The ascending interoceptive sensations and motivations interact with descending predictions that manifest as autonomic responses to produce 'homeostatic emotions' (Craig, 2008), or 'background emotions' (Damasio，1994), maintaining 'core affect'(Barrett, 2017; Russell & Barrett, 1999). Emotions can thus be defined as the combination of bodily sensation (feelings), motivational drive and autonomic sequelae (Strigo & Craig, 2016) that emerge from interoceptive embodiment and integration with concurrent exteroceptive sensory information (Seth & Friston,

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2016). Here, interoception is the physiological substrate for feeling states i.e., the subjective sensations of emotions, whose signals pass along the afferent, ascending neural fibers from the body to the brain, while the autonomic and motor responses responsible for the physiological and behavioural expression of emotions are conveyed through the efferent, descending neural routes from the brain to the body. Interestingly, the dominant way in which embodiment is operationalized in the conceptualization of emotions appears to diverge in Chinese and English languages along these afferent vs efferent pathways. Here, we will compare the embodiment of four 'basic' emotions, i.e., *fear, anger, sadness* and *joy,* in these two languages.

3. Divergent embodiment underlying the 'basic' emotions in Chinese and English

Although abundant embodied emotion words, i.e., words describing the emotion concepts via bodily parts, physiological changes, and reactions, can be found in both Chinese and English , they are characterized with reverse direction in the flow of neural signals between the brain and the body: Notably, the afferent route appears much more frequently in Chinese conceptualization and verbalization of emotions, while the efferent pathway in emotion processing is more commonly highlighted in English. In other words, the sensory processes governed by interoceptive systems underpinning subjective awareness of emotions are given prominence in Chinese descriptors of affective state, while action-related and autonomic bodily responses expressing emotions preoccupy English emotion concepts. To explicate this point, the words labeling the four so-called 'basic' emotions, namely, *fear, anger, sadness* and *joy* will be collected from thesaurus and compared between Chinese and English.

3.1 The varied embodiment in *fear* in Chinese and English

In both Chinese and English, many words describing *fear* make reference to the physical reactions and expression of autonomic bodily responses (e.g., change in heart rate, temperature, sweating and shaking of body). Nevertheless, there appear to be more emotion words in general usage in Chinese compared to English that are coded with reference to interoceptive physiological changes and sensations attributed to specific internal organs (mainly heart, gallbladder, and liver)

Preprints (www.preprints.org) | NOT PEER-REVIEWED | Posted: 26 May 2022 doi:10.20944/preprints202205.0359.v1

to express *fear*.

The following Chinese words or idioms expressing *fear* are with reference to physical reactions or reflects controlled by the autonomic nervous system:

- **Fear as changes in complexion**: MIAN WU REN SE (face without human's color): as pale as death; DA JING SHI SE (losing color out of immense shock): turn pale with fright; JING KONG SHI SE (losing color out of shock and fright): pale with fear; LIAN SE FA QING (face in blue color): be over-scared; LIAN SE SA BAI (complexion is deadly pale): turn pale with fright...

- **Fear expressed in eyes and mouth:** MU DENG KOU DAI (eyes staring and mouth stupefied): stunned; MU DENG KOU JIANG (eyes staring and mouth frozen): dumbstruck; CHENG MU JIE SHE (eyebrows rising and tongue tied): stare dumbfounded; CHENG MU ER SHI (raising eyebrows to see): stare at with wide eyes; ZUI CHUN FA BAI (white lipped): frightened with lips turn pale or colorless...

- **Fear as changes in hair and bone:** MAO GU SONG RAN (with one's hair and bones horrified/with one's hair standing on end): shivers or be bloodcurdling; HAN MAO DAO SHU (with hair erected): very frightened; GU HAN MAO SHU (bone chills and hair stands up): make one's blood run cold; JI LIANG GU MAO LIANG QI (send chilly *qi* up somebody's spine): absolutely terrified...

- **Fear as changes in skin:** QI JI PI GE DA (with chicken bumps): goose bumps...

- **Fear in excretion of body fluids (e.g., sweat, urine, etc.):** XIA DE PI GUN NIAO LIU (so frightened that one's fart roll and urine flow): scare the shit out of someone/be frightened out of one's wits/piss one's pants (in terror)/wet one's pants in terror; ZHI MAO LENG HAN (cold sweat runs out): sweat bursts out in fear; NIE YI BA HAN (pinch a handful of sweat): break into a sweat with fright [fear]'/be breathless with anxiety or tension; YI SHEN LENG HAN (be wet with cold sweat): be wet with cold sweat/be soaked in cold and clammy perspiration/be in a cold [icy] sweat/break out in cold sweat/cold sweat breaks out all over one's body/one's body is covered with chilly sweat...

Preprints (www.preprints.org) | NOT PEER-REVIEWED | Posted: 26 May 2022 doi:10.20944/preprints202205.0359.v1

- **Fear as body quivering:** XIA DE HUN SHEN FA DOU (tremble from head to foot with fear): be all of a tremble/tremble with every inch of one's body/trembling all over/ trembling in every limb out of fear...

In Chinese, visceral words like 'heart'(xin), 'gallbladder' (dan), and 'liver'(gan) are often used for expressing *fear.* For example:

- **Xin (heart): XIN** YOU YU JI (hear still fluttering): have a lingering fear/be still in a state of shock; CHU MU JING **XIN** (touch the eyes and shock the heart): strike the eyes and rouse the mind/shocking/startling;
- **Dan (gallbladder):** HUN FEI **DAN** SANG (spirit flies and gall is lost): strike terror in one's heart;
- **Dan and Xin (gallbladder and heart): DAN** PO **XIN** JING (gall broken and heart startled): startled; **XIN DAN** JU LIE (the heart and gall are broken into pieces): be frightened out of one's wits/be heart-broken and terror-stricken/lost in great astonishment; be so frightened that one's heart and galls burst; terror-struck; **XIN** HAN **DAN** LUO (heart is frozen and gall falls to the ground) : be extremely terrified/terror-stricken...
- **Gan and Dan (liver and gallbladder)**: **GAN DAN** JU LIE (One's liver and gall both seemed torn from within): extremely frightened/heart-broken or terror-stricken/overwhelmed by grief or terror...

In sum, across multiple Chinese idioms, the expression of *fear* is embodied via agitation and trauma (such as shaking, trembling, dropping, tearing, splitting, and losing) of the internal organs like 'heart' , 'gallbladder', and 'liver' often with reference to physical sensations attributed to these visceral organs (such as startled, panic, broken, cold, frozen, chilly, weak, frightened and timid) .

Comparable terms in English

The following are the English words describing *fear* from *Roget's 21st Century Thesaurus:*

alarm, apprehension abhorrence, ***agitation****, angst, anxiety, aversion, awe, chickenhearted,* ***cold feet****,* ***cold sweat****, concern, consternation, cowardice,* ***creeps****, despair, discomposure, dismay, disquietude, distress,*

Preprints (www.preprints.org) | NOT PEER-REVIEWED | Posted: 26 May 2022 doi:10.20944/preprints202205.0359.v1

doubt, dread, faintheartedness, foreboding, fright, funk, horror, ***jitters****, misgiving, nightmare, panic, phobia, presentiment, qualm, recreancy, reverence, revulsion, scare, suspicion, terror, timidity,* ***trembling****,* ***tremor****,* ***trepidation****, unease, uneasiness, worry* (Kipfer, 2005, p. 337)

The above words in bold, including *agitation, cold feet, cold sweat, jitters, trembling, tremor, trepidation,* are related to physiological reactions controlled by the action of the autonomic nervous system.

Below are the synonyms of 'fearful' in *Roget s 21st Century Thesaurus:*

alarmed, apprehensive aflutter, afraid, aghast, agitated, anxious, ***chicken****,* ***chickenhearted,*** *diffident, discomposed ,disquieted, disturbed, fainthearted, frightened,* ***goosebumpy****,* ***have cold feet****, hesitant,* ***in a dither****, intimidate,* ***jittery****,* ***jumpy****,* ***lily-livered,*** *mousy,* ***nerveless, nervous, nervy, panicky, perturbed,*** *phobic, pusillanimous,* ***quivery****,* ***rabbity****, running scared, scared,* ***shaky, sheepish****, shrinking, shy, skittish, solicitous,* ***spineless****, tense, timid, timorous,* ***tremulous,*** *uneasy, unmanly,* ***weak-kneed****, worried, yellow* (Kipfer, 2005, p. 337)

However, only a few English words for *fearful* refer to internal organs, including: *chickenhearted, fainthearted,* and *lily-livered,* yet more words are associated with bodily parts including *goosebumpy*，*have a cold feet, nerveless, nervous, nervy, spineless* and *weak-kneed.* Words directly connected with physiological activation are *agitation, cold sweat, jittery, jumpy, quivery, shaky,* and *tremulous.* By contrast, there are fewer English idioms that are used to describe *fear* with reference to internal visceral organs such as belly, liver, lung, heart, and stomach. For instance,

- **Heart**：*Make someone's* ***heart*** *leap, one's* ***heart*** *gallop,* ***heart*** *in the boots,* ***heart*** *stood still,* ***heart*** *pounding, strike fear into the* ***hearts*** *of , terror into somebody's's* ***heart****,* ***heart*** *in one's month*；
- **Belly**：*I have a* ***yellow belly*** *slider* (Cited from https://www.sketchengine.eu/skell) ("Lexical Computing," 2003)；
- **Liver** ： *The Government are still* ***lily-livered*** *in that respect*. (Cited from https://www.sketchengine.eu/skell)；

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- **Lungs：** *There's the time I saw a flash of light outside the cab I was riding in, and I screamed at the top of my **lungs**, bracing myself for the impact of the plane that was about to hit*. (Cited from https://www.sketchengine.eu/skell);
- **Stomach ：** *There are butterflies in my **stomach.*** (Cited from https://www.sketchengine.eu/skell) ("Lexical Computing," 2003)

The words expressing *fear* with the reactions of the bodily parts such as hair, feet, eyebrows, tongue, bones, blood, nerves, and etc. are as follows:

- **Hair:** curl one's **hair**, make someone's **hair**, make one's **hair** stand on end, **hair**-raising, one's **hair** stand still...
- **Feet：** get cold **feet**...
- **Tongue：** **tongue**-tied, **tongue** stand still...
- **Bone：** **bone** chilling...
- **Blood：** **blood** curdling...
- **Nerve：** **nerve**-wracking...

The embodied words labeling *fear* that are controlled by the autonomic nervous systems are *gape, dumbstruck, stunned,* and *paralyzed.* It has been previously noted that the embodied expression of *fear* in English is typically that of physical agitation, including increased heart rate, dry mouth, pale face, stomach tension, sweating, shrinking sensations in skin and (involuntary) release of bowels or bladder (Kövecses ,1990). These somatic reactions increase in intensity with increasing subjective fear: For example, physical agitation (e.g., *He was **shaking/trembling** with fear.*), blood leaves face (e.g., *She **turned pale.** / You are **white** as a sheet.*), shrinking sensations in skin (e.g., *That man gives me the **creeps**./A shriek in the dark gave me **goosebumps**.*), hair straightens out (e.g., *The story of the murder made my **hair stand on end**./That was a **hair-raising** experience.*), inability to move (e.g., *I was **rooted to the spot**./He was so terrified he **couldn't move.***), drop in body temperature (e.g., *Just the face of the monster was enough to make my **blood run cold.** /I heard a **blood-curdling** scream.*), inability to breathe (e.g., *She was **breathless /gasped** with fear.),* inability to speak (e.g., *I was **speechless**/dumb with fear.*), (involuntary) release of bowels or bladder (e.g., *I was scared **shitless** when I saw the man with the knife coming towards me./I was almost **wetting** myself with fear.*), sweating (e.g., *The **cold sweat** of fear broke out.*),

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dryness in the mouth (e.g., *My **mouth was dry** when it was my turn./He was scared **spitless.**)* (Kövecses, 1990, p. 70-73) .

The embodied terms for describing *fear* in English are dominated by reference to the heart and the stomach. For example, increases in heart rate (e.g., *His heart **pounded** with fear./My heart began to **race** when I saw the animal.*), lapses in heartbeat (e.g., *His **heart stopped/miss a beat** when the animal jumped in front of him.*), nervousness in the stomach (e.g., *He got **butterflies in the stomach.**/A cold fear gripped him in the **stomach*** (Kövecses, 1990).

The above examples demonstrate that there are many embodied words in both Chinese and English expressing *fear*. Although in both languages, such embodied emotion expressions for *fear* refer to internal bodily sensations and to physiological reactions controlled autonomically, words relating internal organs are used to a much greater extent and more systematically in Chinese when compared to English (Zhou et al., 2021). This increased granularity and transparency of using internal organs such as 'heart' , 'gallbladder' and 'liver' to label *fear* in Chinese, may be attributed to the strong influence of traditional Chinese philosophy and medicine when compared to the paucity and piecemeal use of interoceptive words (e.g., belly, stomach, lung and liver) in contemporary English (Zhou et al., 2021).

3.2 The embodied conceptualization of *Anger/Angry* in English and Chinese

In Chinese, the majority of the words and idioms labeling *anger* are embodied, which means they are related to specific bodily sensations and actions, including facial expressions, skin complexion, physical reactions and/or behaviors encompassing changes or agitation within visceral organs notably heart, liver, and lungs. In addition, there are numerous *anger* words that refer to natural phenomenon words such as *qi* (air), fire, wind and thunder.

- **Anger in facial expressions, bodily reactions (controlled by the autonomic nervous system) and/or behaviors:** CHI MIAN (red faced) : catch fire, ZHE MIAN (with reddish brown face) : very angry, YUN RONG (an angry look): in a sulk, NU SE (an angry look) : wear an angry look/look black, LI SE (harsh countenance): stern, YAO YA (grit one's teeth): grind one's teeth in anger, QI DE LIAN SHA BAI (face is deadly pale with angry *qi*) : get red with anger, LIAN HONG BO ZI CU (with one's face red and neck swollen) : one's face turns

Preprints (www.preprints.org) | NOT PEER-REVIEWED | Posted: 26 May 2022 doi:10.20944/preprints202205.0359.v1

crimson [red] with anger/be red to the tip of one's ears/blue in the face/flush with agitation [fury]/get red in the face from anger or excitement/red in the face and fuming/turn red in the gills), ZHA MAO (with hair stands up): blow up, CHEN MU E WAN (stare angrily and wring one's wrist) : angry and courageous，HENG MEI LENG YAN (flattened eyebrows and cold face): frown and look coldly, JI ZHI NU MU (point one's fingers at somebody and stare at him with angry eyes): point and look at somebody furiously, CHEN MU QIE CHI (staring the eyes and gritting the teeth): staring and gritting with anger, FA ZHI ZHI LIE(with hair standing up and eye sockets tearing): boil with anger, LIU MEI DAO SHU (willow-leaf shaped eyebrows rose) : raise one's eyebrows in anger...

- **Anger as the agitation of *qi* inside the body:** QI DE TIAO JIAO (with so much *qi* that one stamps): stamp one's feet with anger, FA PI QI (*qi* in the spleen exploded): lose temper, SHENG QI (generating *qi*): anger/get angry, SHENG MEN QI (generating silent *qi*): be in a sulk, NU QI (angry *qi*): anger/rage/fury, OU QI (be repressed with *qi*): sulk or repressed grievances, NU QI CHONG CHONG (angry *qi* rush out): huff and puff/in a fit of spleen/in a great rage/in a huff/seethe with anger, QI FEN TIAN YING (the breast is filled with angry *qi*) : be filled with indignation**...**
- **Anger as the feeling of physical changes in the visceral organs (governed by interoceptive systems):** NU CONG XIN TOU QI, E XIANG DAN BIAN SHENG (anger springs from the heart, and evil grows to the gall): be furious and nurse thoughts of revenge, DA DONG GAN HUO (violently stirred the liver fire): fly into a rage/ hit the roof), JI HUO GONG XIN (acute fire attacks the heart): burn with anger, FEI QI ZHA LE (the lungs exploded with *qi*): burst with rage...

Comparable terms in English

The synonyms for 'anger' in *Roger's 21st Century Thesaurus* are listed here:

annoyed acrimony, animosity, annoyance, antagonism, ***blow up***, ***cat fit*** *, chagrin,* ***choler*** *, conniption, danger, disapprobation, displeasure,* ***distemper,*** *enmity, exasperation, fury,* ***gall*** *, hatred, hissy，****fit****,* ***huff*** *,* ***ill humor*** *, ill temper, impatience, indignation, infuriation, irascibility，ire, irritability, irritation, mad, miff, outrage, passion, peevishness, petulance,* ***pique****, rage,* ***rankling*** *, resentment,* ***slow burn****,* ***soreness*** *,* ***stew****,* ***storm****, tantrum, temper, tiff, umbrage, vexation, violence* (Kipfer, 2005, p. 35).

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The synonyms of 'angry' are,

affronted, annoyed, antagonized, ***bitter****,* ***chafed****,* ***choleric*** *,* ***convulsed****, cross, displeased, enraged,* ***exacerbated****, ferocious, fierce, fiery,* ***fuming*** *, furious,* ***galled****, hateful,* ***heated, hot, huffy****, ill-tempered, impassioned,* ***incensed*** **,** *indignant,* ***inflamed****, infuriated, irascible, irate, ireful, irritable, irritated, maddened,* ***nettled****, offended ,outraged, piqued, provoked, raging, resentful, riled,* ***sore****,* ***splenetic*** *,* ***storming****, sulky, sullen,* ***tumultuous****,* ***turbulent****, uptight, vexed, wrathful* (Kipfer, 2005, p. 36).

Embodied lexical expressions of *anger* are commonly conceptualized with physical experiences as heat, burning, fuming, explosions, bodily injuries, and choleric bodies, for example:

- **ANGER IS THE OUTPUT ENERGY ACCUMULATED IN THE BODY AS INTERNAL HEAT:** *heated, hot，slow burn，incensed，stew, blow up, fuming, inflame...*
- **ANGER IS BODILY INJURY OR UNPLEASANT BODILY SENSATIONS:** *fit, rankling, inflamed, convulsed, exacerbated, nettled, chafed, sore，bitter...*
- **ANGER IS PHYSIOLOGICAL SENSATION AND CHANGES IN THE VISCERAL ORGANS:** *choler, gall, ill humor, choleric, galled, splenetic...*

Within the English-speaking North American culture, *anger* has been proposed to be metaphorically and metonymically conceptualized as output energy accumulated in the body as internal heat (Kövecses, 1990; 2000). This may originate in a Western cultural understanding of physics, in which *'emotional effects are understood as physical effects. Anger is understood as a form of energy'* (Kövecses, 1990, p. 61). Thus, input energy accumulates within a body until it reaches a pressure point at which the energy erupts as steam, externally radiating heat, and agitation that may pose a danger to others.

However, within the same formulation, it is acknowledged that the 'lexical approach' toward mental structure, i.e., speculating about the mentalization of emotions via the word used in a particular language (Kövecses, 1990), is likely to reflect more received 'folk theories', rather than the logic of scientific cognitive theories, particularly the updating modern affective neuroscience, even though Kövecses (1990) acknowledged with those influential psychologists (e.g., Ekman,

 doi:10.20944/preprints202205.0359.v1

1992; James, 1884; Schachter & Singer, 1962) by claiming that physiological reactions and bodily changes such as heat, internal pressure, redness of the face and neck area, agitation, are the essential components of angry emotion (and interfere with normal perception and reason), for example:

- **ANGER IS BODY HEAT：** Don't get *hot under the collar*. Billy's a *hothead.* They were having a *heated* argument. When the cop gave her a ticket, she got all *hot and bothered*.
- **ANGER IS INTERNAL PRESSURE：** Don't get a *hernia*! When I found out, I almost *burst a blood vessel*. He almost had a *hemorrhage*.
- **ANGER IS REDNESS IN FACE AND NECK AREA：** She was *scarlet* with rage. He got *red* with anger. He was *flushed* with anger.
- **ANGER IS AGITATON：** She was *shaking* with anger. I was *hopping* mad. He was *quivering* with rage. He's all *worked up*. She's all *wrought up*.
- **ANGER IS INTERFERENCE WITH ACCURATE PERCEPTION：** She was *blind* with rage. I was beginning to *see red*. I was so mad I *couldn't see straight* (Kövecses, 1990, p. 52).

Such theoretical logic is, however, somewhat obsolete and at odds with new evidence and emerging theories within affective neuroscience which highlight the fundamental, imperative role of interoception in emotional experience.

The comparison of the embodied expressions of *anger* between Chinese and English demonstrates both similarities and differences in the two cultures. On the one hand, in each language, facial expression, hair, teeth, eyes, eyebrows, alongside physiological responses such as rising of bodily temperature and redness of face, are regarded as essential components of emotional experience (Kövecses, 1990). On the other hand, Chinese and English languages differ in the following aspects: Firstly, the way in which *anger* is typically conceptualized in English suggests a process that involves increasing temperature within a **fluid** inside the body leading to (implicitly through the evaporation) the build up of pressure within the container (the body) and finally to the explosion of the container out as a result of over-pressure. Anger is construed more as the agitation of *qi* (in gas or air state) in Chinese. This difference in the conceptualization of *anger* may be attributed to distinct philosophical traditions of China and the West, in particular

 doi:10.20944/preprints202205.0359.v1

with regard to fundamental assumptions concerning the mind-body relationship (Zhou et al., 2021).

In Traditional Chinese Medicine and philosophy, everything in the universe is proposed to originate from the ever-changing and volatile Primordial *Qi*. In contrast, early in the Western tradition, in the writings of Hippocrates, disease was associated with the imbalance or the bodily disturbance from the natural state of the body. In his *On the Nature of Man*, Hippocrates proposed the Theory of Four Humors, in which blood, phlegm, yellow bile, and black bile were the four elementary components of human bodies, and the imbalance or disproportion of the humors in the body may cause disease. Thus, a healthy state is conceived as the right balance in the intensity and quantity of the humors within the body. If one humor is insufficient or in excess, or if it is dispersed in the body and fails to mix with the others, disease will result (Lindberg, 2007). Thus, in accordance with the theory of Traditional Chinese Medicine, the embodied words expressing *anger* that refer to heart, liver, lungs and other internal organs and to the flowing or circulation of *qi* between these internal organs, are in compliance with the conception of mind-body relationships within Chinese philosophy (Maciocia, 2015; Zhou et al., 2021), while reference to bile and spleen in English can be traced back to the historical origin of Western medicine (Lindberg, 2007; Sigerist, 1932).

3.3 The embodied conceptualization of *sadness/grief* in Chinese and English

Comparison of how *sadness* or *grief* are conceptualized in Chinese and English languages shows that: (1) There are far more words using tears and snot to express *grief* in Chinese than in English (merely with the more general word ‘weep’). (2) *Sadness* and *grief* terms in Chinese, draw reference to trauma to and pain in internal organs (notably heart, lung, liver, intestine, blood and even all five viscera); embodied *grief* in English is typically constrained to the heart. (3) The expression of *sadness* in Chinese idioms uses many *sadness*-related behaviors including, wailing, lamenting, thump one’s breast and stamp one’s feet, and lamenting to heaven and knock one’s head on earth; these are rarely mentioned in English emotional language. (4) In Chinese, body parts associated with *sadness* or *grief* include bone, bone marrow, skin, eyes and etc., while English lacks this specificity and granularity using the general word ‘hurt’ . (5) As for gustation,

 doi:10.20944/preprints202205.0359.v1

bitter and sour are the flavors for *sadness* in Chinese, while only bitter is used in English. (6) In terms of temperature sensing (thalposis), there are numerous words connected with coldness or chilliness in Chinese to express *sadness*. And frequently, the compound emotions produced by cold and other emotions such as QI CAN (miserable=cold+wretched), QI LIANG (bleak=cold+cool, desolate), QI QIE (plaintive=cold+sad), QI KU (miserable=cold+bitter), QI WANG (desolate=cold+disappointed), QI SHANG (melancholy=cold+hurt); QI MI (gloomy=chilling+sorrowful); QI CHUANG (wretched=chilling+mournful), BEI LIANG (desolate=sad+chilling). In contrast, in English, these feelings are expressed with discrete abstract words like bleak, desolate, sorrowful, mournful, miserable and so on and so forth.

In short, comparatively, Chinese people tend to conceptualize *sadness* via physical perceptions (including exteroception and interoception), in addition to emotional behaviors, actions and facial expressions, while in English, the lexicalization and conceptualization of *sadness* or *grief* are more impoverished, with a more limited range of words describing physical sensations, postures, behavioral and facial expressions.

3.4 The embodied conceptualization of *joy/happiness* in Chinese and English

The comparison of the concept of *joy* or *happiness* between Chinese and English shows that: (1) *Joy* is conceptualized as smile, laughter, uncontrollable crazy behavior, celebration, excitement, and energetic mental state in both languages. (2) Each language use tactile sensations (e.g., itching) to describe *joy*. (3) Many Chinese idioms describing *joy* are underpinned by concepts of beaming, glowing, and radiance, for example, SHEN CAI YI YI (with shining and beaming spirit): beaming, GUANG CAI ZHAO REN (radiant with glamour and charm): glamorous and charming, and MAN MIAN CHUN FENG（the whole face in spring breeze): overjoyed or beaming with joy. Likewise, in English, *joy* is conceptualized as glowing, radiance, beaming of the face or body.

Nevertheless, there are variations in the conceptualization of *joy* between the two languages：(1) In Chinese, *joy* is mainly described with facial expressions (e.g., the stretching, lifting and stirring of eyebrows and eyes), postures and gestures (e.g., the shaking, stamping and dancing of hands, feet and head), bodily sensations including both somatosensation (e.g., itching) and interoception (e.g., KAI XIN (open heart): joyful, XIN HUA NU FANG (flowers in the heart are in full bloom): be elated or overjoyed). While, *joy* or *happiness* is less likely to be described with

 doi:10.20944/preprints202205.0359.v1

physical sensations, except for the itching and redness of the skin and the relaxation of heart (e.g., heartening and lighthearted) in English. (2) *Joy* is metaphorized as the abundance, fullness, freshness, smooth flowing and stable state of *qi* inside the body in Chinese, while it is often conceptualized as the lifting, flying or floating of body in the air in English.

In sum, the comparison of the four 'basic' emotions in Chinese and English indicates that :

(1) Chinese uses more interoceptive words to describe emotions than in English. The Chinese emotion words with reference to the sensation and agitation of internal organs is not only abundant but systematic, likely due to the pervasive influence of the Traditional Chinese Medicine and philosophy. Whereas, the adoption of interoceptive terms to describe emotions is not only far less common in English, but also lacks granularity and systematicity (see also (Zhou et al., 2021).

(2) Under the influence of Traditional Chinese Medicine and philosophy, many Chinese emotion words are associated with *qi*, while in English, emotion like *anger,* under the impact of the ancient theory of humors, is viewed as the changing energy of fluid inside the body and the increase in its temperature, vaporization, expansion and explosion.

(3) There are far more emotion words and phrases using bodily sensory-motor systems like facial expressions, bodily movements and internal and external sensation in Chinese than in English, in which emotions are more likely to be conceptualized with nuanced abstract concepts (Zhou et al., 2021).

(4) Generally, 'coldness' or 'chill' is metaphorically projected to the concept of *sadness* in Chinese. This cold sensation when combined with other feelings, generates more complex emotions such as bleakness, desolation, sorrowfulness, mournfulness, misery and melancholy. In contrast, the sense of being chilled is more directly connected with *fear* in English.

In short, the interoception-centered embodiment of emotion concepts and their lexicalization in Chinese encapsulate the holistic body-mind-emotion relationship of Traditional Chinese Medicine and philosophy (Maciocia, 2015; Zhou et al., 2021). In contrast, a more dichotomous model of body-mind interaction underpins the assumptions of Western philosophy regarding the role of the body in emotion.

So what might be the impact of this divergence in embodied emotion concepts in Chinese and English to the everyday perception and experience of emotions? Moreover, do such linguistically diverse conceptual systems for emotions correspondingly shape or nurture distinct

 doi:10.20944/preprints202205.0359.v1

cultural values expressed by groups of Chinese and English language users as suggested by the Sapir-Whorf hypothesis and the theory of constructed emotion (e.g., Barrett, 2017; Lindquist, 2016; Perlovsky, 2009)? We propose a tentative hypothesis that the prominence given in Chinese to interoception, i.e., the cerebral sensory representation of inner bodily processes and the feeling states that are generated through this afferent body-to-brain route in the conceptualization of emotions, places bodily sensations underlying emotions in the foreground for the mind to receive, process and adapt to. In contrast, the prominence given in English to physical actions controlled by the autonomic nervous system and to reactive behaviors transmitted along the efferent brain-to-body pathway, implies that the bodily reactions are the principal expression of the embodiment of emotions and are subject to the overarching control by the brain (and mind). In this latter context, across Western culture, the brain is viewed as the 'master' or 'commander-in-chief' that plays a steering and directing role in emotion, while the body is reactive and subservient to the brain's wishes within this affective brain-body dynamics.

Arguably, the idiosyncratic embodiment of emotion concepts in the two geoculturally remote languages (i.e., Chinese and English) may be attributed to their distinctive conceptions of the body out of their distinct cultural or civilizational origins. In other words, the divergence in how the body is conceived can primarily explain structural and systematic variation in the embodied conceptualization of emotions between English and Chinese (e.g., Pelovzky 2009). Next, we will delve into the impact of conceptions of the body to the embodiment of emotion concepts across local cultures and the characterization of cultural values and personalities.

4. **Conceptions of the body and the culture-loaded embodiment of emotion concepts**

The conception of the body is argued to be a construction of specific cultures rather than being universal across cultures and languages (Kuriyama , 1999): The body is arguably construed as 'muscles' across Western cultures, it is conceived as interconnected meridians (i.e., tracts and points of acupuncture) in Traditional Chinese Medicine. Accordingly, cultural or linguistic idiosyncratic notions of the body may, to some extent, shape distinctive emotion concepts, and furthermore, characterize the values and personalities of those cultures (Kuriyama, 1999).

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Embodied cognitive theories presume that the body is an essential constituent of mental activities. That is to say, our thoughts and mind are derived from and constrained by our physical attributes and capabilities-'No body, no mind' (Johnson & Rohrer, 2007). As a consequence, embodiment shapes the profile of knowledge and the way in which we understand meanings (Gibbs, 2006; Gibbs & Berg, 1999; Johnson, 2013). However, the specific nature of how the body *per se* is represented varies across different cultures (Enfield & Wierzbicka, 2002; Gibbs, 2006; Van Geert, 1995; Yu, 2008), rather than being universal, as assumed by some researchers (e.g., Kövecses, 1995). For instance, traditional Chinese philosophy is holistic in presuming that the body and *xin* (heart or mind) are integral or inseparable. Contemporary Western cultures typically take a more dualistic view and assumes the dichotomy of the body and the mind. Thus, concepts like *human*, *self,* and *agent* are construed different and show systematic and/or structural differences between Chinese and in Western cultures (Li et al., 2013; Tung, 1994; Yu, 2015; Ye, 2002). Furthermore, such differences may have archaic origins in concepts of the body from ancient Chinese and in ancient Greek medicine (Kuriyama ,1999): Chinese medical teachings emphasize the systematic, interrelated and interactive nature of the body distributed with the acupuncture tracts and points, with little attention to muscular detail. In the Western tradition, muscularity has been more of a preoccupation, yet the meridian tracts and points entirely escaped this particular anatomical vision of reality (Figure 1).

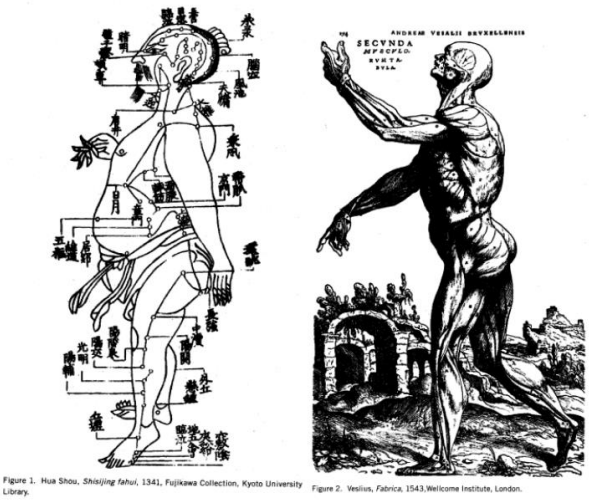

Figure 1. Hua Shou, *Shisijing fahui*, 1341, Fujikawa Collection, Kyoto University Library. Figure 2. Vesilius, *Fabrica*, 1543,Wellcome Institute, London.

Figure 1. The different conceptions of the body in Chinese and Greek medicine.

Comparing the left figure (from Huashou, Shisijing fahui, 1341) and the right one (from

 doi:10.20944/preprints202205.0359.v1

> Veslius, Fabrica, 1543), the two figures demonstrate their respective preoccupations with the body and also betray their lacunae. In Hua Shou, although the meridian tracts and points are featured, the muscular detail of the Vesalian man is missed; and in fact Chinese doctors lack even a specific word for 'muscle'. Muscularity was a peculiarly Western preoccupation. On the other hand, the tracts and points of acupuncture entirely escaped the Western European anatomical vision of reality (Kuriyama, 1999, p. 8)

Hence, the Chinese view of the body is argued to be less anatomical (and perhaps more functional) than the ancient Greek conceptions of the body (Kuriyama , 1999). The anatomical notion of muscles, distinct from flesh, tendons, and sinews, developed uniquely in ancient Greece in contrast to other old medical traditions i.e., Egyptian and Avurvedic, in addition to Traditional Chinese Medicine, that flourished for thousands of years without that same interest in anatomical inquiry and an emphasis on muscles (Kuriyama , 1999).

Galen observed two categories of bodily activity: Involuntary processes and voluntary actions. The former are the internal processes like digestion and pulsation over which we exert minimal direct control or influence, despite our intentions. Voluntary processes, in contrast, encompass activities like walking and talking, that are subject to our desire and intentions. For example, we can choose to do something like walking or running, during which we can change the speed of our movement and adjust the intonation of our speech because our muscles are the organs of voluntary action. Muscles, in short, enable us to act as a genuine agent, supporting self-awareness and volition. Thus, rather than passive containers of visceral organs enacting involuntary processes like digestion and pulsation, the primary identification of humans as muscular creatures implies that they are agents who execute intentional actions on the world (Kuriyama, 1999).

This distinction goes deeper when considering explanations of the causes of diseases: In Traditional Chinese Medicine, dysfunction of the internal organs is regarded as the first and foremost causes of diseases, expressed and accessed via external seven apertures on the human head and meridians on the body (skeletomusculature overlooked or unnoticed) (Kuriyama, 1999;

 doi:10.20944/preprints202205.0359.v1

Maciocia, 2015). Instead, ancient Greek explanations of the causes of diseases focus on the external muscular body, which epitomized the beauty of the human form, while the viscera were neglected, viewed as unclean as dead corpses. It was therefore, unnecessary to seek the causes of diseases from the inner body (Sigerist, 1932).

Thus, even though human beings broadly share the same physiology, structure and functions of the body, cultural differences in how the body is perceived and conceived differ radically across cultures: In ancient China, the body, the emotions, the mind and the spirit are understood as interdependent and interactive integral whole that can be unified and correspond with the reality and the universe. Yet, in the Western cultures, through an emphasis on anatomy dating back to ancient Greek medicine, the body is viewed as an object that can be observed and examined objectively, and treated as independent from the mind.

In sum, the historical preoccupation of Western thought with muscularity underpins the dichotomy between body and mind. By extension, physiological and behaviour can presumably be subsumed into two contrasting processes: One happens naturally or incidentally, and the other is 'controlled by the soul' (Sigerist, 1932).

The very concept of 'muscle' as the essential instrument for voluntary action is omitted in traditional Chinese culture especially when considering emotions. However, the physiological reactions evoked by the autonomic nervous system and associated voluntary physical actions, feature strongly in Western conceptualization of embodied emotions. Consequently, Chinese discourse or narrations generally underappreciate or unvalue many Western cultural themes, like free-will and self-awareness, linked systematically and conceptually to muscularity. There has perhaps been some consolidation of this stance, in the ancient Pre-Qin period of Chinese history (before 221 BC) a tall and well-built male physique was favoured as encouraging a strong military spirit. However, such aesthetic criteria had dramatically shifted in the opposite direction over the course of the Wei-Jin-North-South Dynasties (220-589 AD) until the fall of the Qing Dynasty (in 1912), when rather than advocating physical fitness, the image of a frail-looking or pale-complexioned scholar was regarded as the standard (even ideal) model for male physique. There is probably some debt owed to the mapping of *Yin-Yang* cosmology and Chinese feudalistic hierarchical system: Here, emperors represents *Yang*, while ministers *Yin*. Therefore for Emperors,

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ministers are expected to have slighter in physique and to ensure loyalty and prolong stability of their rule (Cheng, 2012; Wang, 2018).

Conceptions of the body can fundamentally mould peoples' view on emotions. The preoccupation of muscularity in the Western notion of the body may consequently explain the frequent use of the reactive or proactive verbs like 'combat', 'fight', 'overcome', 'prevent', 'conquer' , 'assuage' together with the negative emotion concepts, like *fear*, *anger* and *sadness* in English owing to the fact that the metaphor NEGATIVE EMOTIONS ARE ENEMIES underpins the conceptualization of negative emotions in English. Taking *fear* as an example, the notion that it should be battled is apparent:

- **Overcome fear:** *Cognitive behavioral therapy helping people* ***overcome fear****.*

(https://skell.sketchengine.co.uk/run.cgi/wordsketch_concordance?headword=fear-n;gramrel=verbs%20with%20%w%20as%20object;coll=overcome-v) ("Lexical Computing," 2003)

- **Prevent panic:** *Such symbols can play an important role in reassuring the public and* ***preventing panic****.*

(https://skell.sketchengine.co.uk/run.cgi/wordsketch_concordance?headword=panic-n;gramrel=verbs%20with%20%w%20as%20object;coll=prevent-v ("Lexical Computing," 2003)

- **Assuage fear:** *A letter from Superintendent Julian Field* ***assuaged the fears*** *of most members.*

(https://skell.sketchengine.co.uk/run.cgi/wordsketch_concordance?headword=fear-n;gramrel=verbs%20with%20%w%20as%20object;coll=assuage-v ("Lexical Computing," 2003)

This reactive/proactive framing of emotion is largely absent in Chinese where, arguably, the neglect of muscle with an aesthetic bias towards emaciation, together with a preoccupation with internal organs in Traditional Chinese Medicine has arguably led to the pervasive use of interoceptive words to describe emotions in Chinese language.

Incidentally, the abundance in Chinese emotion words with *qi* can be attributed to the influence of the Theory of *Qi* in Traditional Chinese Medicine. For example, XI QI YANG YAN*G*

 doi:10.20944/preprints202205.0359.v1

(voluminous joyful *qi*): beaming with joy, NU QI CHONG TIAN (towering *qi* rushes to the sky): one's wrath filled the sky/ be in a towering rage, CHUI TOU SANG QI (bow one's head and crestfallen *qi*): down in the dumps/ crestfallen /sing the blues /down in the mouth , YANG MEI TU QI (raise eyebrows and give vent to *qi*) : feel proud and elated, XIN PING QI HE (heart in peace and *qi* in harmony): even-tempered and good humored/ hearts-ease, SHENG QI LING REN (domineering *qi* and bullying others): domineering/airs and graces/overbearing, QI DING SHEN XIAN (stable *qi* and leisurely spirit means): calm and peaceful and so on and so forth. The bodily *qi* is generated through the coordinating movement and circulation between the internal organs like spleen, kidney, lungs and other organs (Sun & Zheng, 2018). Specifically, when the *qi* flows smoothly through the body, and the rise and fall, in and out of *qi* within the body are in a balanced and harmonious state, it is called 'harmonious *qi*' in Traditional Chinese Medicine. In contrast, when the circulation of *qi* is slowed, blocked or in wrong direction, it is called 'disharmonious *qi*', mainly manifested as 'stagnancy of *qi* activity' (the movement of *qi* being blocked), 'blockage of *qi*' (*qi* is blocked), 'circulation of *qi* in the wrong direction' (the rise of *qi* is too high or the fall is too low), '*qi* collapse' (the rise of *qi* is too high or the fall is too low), '*qi* exhaustion' (the over outflow of *qi* that it cannot be kept inside) and '*qi* closure' (*qi* cannot reach outside and is blocked inside) (Sun & Zheng, 2018).

Thus, from the perspective of Traditional Chinese Medicine, emotions are outcome of the movement and circulation of the essence and *qi* between internal organs in response to external stimulation. The essence of the five internal organs can correspondingly produce five kinds of emotional activities, for instance, the heart generates *joy,* the liver *anger* , the spleen *sorrow*, and the *kidney* fear (Maciocia, 2015; Sun & Zheng, 2018). Conversely, when the external stimulation is so intense that it causes excessive or persistent emotional fluctuation, this may lead to imbalance of *yin* and *yang qi* within the internal organs, and dysfunction of *qi*-blood circulation. For instance, over joyfulness impairs heart-*qi*, excessive anger impairs liver-*qi*, anxiety impairs spleen-*qi*, and fear impairs kidney-*qi* (Maciocia, 2015; Sun & Zheng, 2018).

In short, within Traditional Chinese Medicine, the internal organs, emotions and the conscious mind are viewed as interactive, interdependent and integrated facets of the same fundamental entity. Essential *qi* is stored in the five key internal organs i.e., heart, liver, spleen,

 doi:10.20944/preprints202205.0359.v1

lungs and kidney., that may engender the corresponding emotions of *joy, anger, pensiveness, sadness* and *fear* in response to excessive stimulation from the external environment. Immoderate expression of emotions may impair the balanced circulation of *qi*, which may in turn cause the visceral dysfunction. Conversely, within this framework, the inharmonious circulation of *qi* between the internal organs is proposed to give rise to emotional and mental disorders. Interestingly, these embodied theories of emotions parallel emerging findings from modern interoceptive neuroscience and affective science (Clark,2016; Damasio,2021; Gershon,1999; Mayer, 2016; Sterling, 2020; Tahsili-Fahadan & Geocadin, 2017).

Conclusion

Advances in neuroscience are constantly updating our knowledge about emotions. Current evidence from affective psychology and interoceptive neuroscience reveals that emotional feelings emerge from interoceptive signals that are integrated and represented in the specific interconnected brain regions (particularly in insula cortex) and translated into subjective awareness and heuristic emotional concepts with varying bodily transparency and cognitive granularity shaped by socio-cultural nuances (Zhou et al., 2021). Although in both, emotions are described with reference to bodily organs and physiological functions, we identify and highlight how the Chinese and English languages differ with respect to the distinct emphasis on afferent versus efferent neural supporting brain-body interaction, and argue that Chinese and English diverge in their embodiment of emotion concepts. Emotion concepts are translated into subjective feelings via representations of interoceptive states transmitted along afferent neural pathways. However, internal physical reactions controlled via efferent autonomic nervous pathways, and the overt physical and behavioural expressions of emotion, are foregrounded in English. As a consequence, this divergent conceptual systems of emotions within languages may foster and mould distinct cultural attitudes and narration toward emotions: Chinese speakers, as a whole, may be biased toward receptive, reflective and adaptive in how emotions impact lives and decisions, whereas for English speakers, and others who share the same Western philosophical tradition, may take more reactive and proactive stance in their affective behavior and representation.

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