

Interaction of Embodied Cognition across Cultures

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Abstract

The paradigm of embodied cognition spans various cognitive processes and functions which can be empirically observed as well, including understandings of space and time, visual consciousness, concepts, memory, the understanding of other minds, and moral cognition. This formulates an enquiry in the role of culture. The following article attempts to create a foundation between Embodied cognition and culture; by asking whether the latter can include more complex sentiments, beyond individual actions and behaviours. By laying emphasis on the intrinsic impact of culture on the human body; and contextualising embodied cognition with culture; we can see how cultures differ in how often and in what circumstances people feel certain psychological states.

The study also dives into the various levels of embodiment by creating a linkage between the physiological parts and mindset. There is a gap in the understanding of how culture can determine an individual's mental processes. Therefore, the article also mentions a few negative associations between the two variables.

Introduction

Historically, the fields of philosophy, science and psychology have taken a range of approaches to the nature of the human experience. In general, dominant views in the philosophy of mind and cognitive science have considered the body as peripheral to understanding the nature of mind and cognition. Traditional cognitive science has conceptualized central cognitive processing, in abstraction from bodily mechanisms of sensory processing and motor control. The idea of creating artificial intelligence is based in this idea, that cognitive processes are separate from the body within which the cognitive capacity is situated.

The theory of embodied cognition challenges dominant paradigms in traditional cognitive science, namely the computational and representational theories of mind. Embodied cognition is rooted in the premise that cognition is deeply dependent upon features of the physical body of an agent, that aspects of the agent's body beyond the brain play a significant causal or physically constitutive role in cognitive processing. The most ground-breaking paradigms emerged from the discipline of cognitive linguistics, with Lakoff and Johnson's work on metaphors and language, in their 1980 work *Metaphors We Live By* – in which the human experience is described as intricately bound up with large scale metaphors. These metaphors and the human experiences they stand for are shaped up by the kinds of bodies we have that mediate between agent and world, and actively structure much of human cognition as well. The paradigm of embodied cognition spans various cognitive processes and functions which can be empirically observed as well, including understandings of space and time, visual consciousness, concepts, memory, the understanding of other minds, and moral cognition.

Following from this, the question of the role of culture arises. While there exists research on embodiment of fundamentally affective and cognitive reactions, can it include more complex sentiments, beyond individual actions and behaviours? The notion of situated embodiment highlights the idea that the intimate link between body and its associated mental representations is not random, but can be informed by cultural norms, values, and habits in a given context (Gibson, 1979; Varela, Thompson, & Rosch, 1991). Research in the domains of Anthropology and Sociology define culture as a complex whole which includes knowledge, belief, art, law, morals, custom, and any other capabilities and habits acquired by man as a member of society (Tylor 1920 [1871]: 1), and is a product of psychological, social, biological, and material factors (Beldo 2010).

Culture & Bodily Experience

The majority of anthropologists emphasize the intrinsically social and cultural character of the human body. Marcel Mauss (1950) argued that acquired habits and somatic tactics, what he called the “techniques of the body,” incorporate all the “cultural arts” of using and being in the body and the world. The body is at the same time the original tool with which humans shape their world and the substance out of which the world is shaped (Mauss, 1950; Csordas, 1994). Bourdieu (1977) expanded this idea to develop a more structuralist argument that explains how body habits generate cultural features and social structure. He employed the Latin term *habitus* to characterize the way the body, mind, and emotions are simultaneously

trained, and used this concept to understand how social status and class position become embodied in everyday life (Bourdieu, 1984). Habitus also explains how moral virtues are acquired through the coordination of bodily acts and social demeanor with emotional states, thoughts, and intentions (Mahmood, 2001).

Culture influences behaviour through social structures and normative influence, developing mindsets through definitions of unacceptable and acceptable actions, through ritual and reinforcement. Culture dictates many aspects of bodily existence - through encouraging certain ways of sitting, standing, walking, eating, praying, gazing, hugging, relaxing, washing, and so on. And as Bourdieu (1977, p. 94) notes, in so doing, they are “treating the body as a memory; they entrust to it in abbreviated and practical form...the fundamental principles of...culture.” He writes: “nothing seems more ineffable, more incommunicable, more inimitable, and therefore, more ‘precious, than the values given body, made body by the transubstantiation achieved by the hidden persuasion of an implicit pedagogy, capable of instilling a whole cosmology, an ethic, a metaphysic, a political philosophy, through injunctions as insignificant as ‘stand up straight’ or ‘don’t hold your knife in your left hand.’” (Bourdieu, 1977, p. 94). The physical movements of our body promote or predispose us to adhere to certain mindsets, and these mindsets can be associated with relatively complex and nuanced judgments about the world and moral behaviour.

Embodied Cognition in context of Culture

Given the extent of influence cultural practices and norms have on the individual, it is important to situate the study of embodied cognition in a socio-cultural context (Schubert & Semin, 2009). The study of embodied cultural cognition represents a conceptual leap from embodied cognition by recognizing the cultural affordances that underlie the emergence of certain embodied phenomena (Cohen & Leung, 2009; Cohen, Leung, & IJzerman, 2009). It is possible that the embodiment of some socio-cognitive phenomena in the form of bodily simulations and conceptual metaphors is more prevalent in some cultures than others; it is also possible that the same socio-cognitive phenomena are embodied in culturally specific bodily simulations and conceptual metaphors. This perspective of embodied cultural cognition that acknowledges and theorizes cultural variations in embodiment resonates with the proposition of situated embodiment.

The idea of an association between embodied cognition and culture is supported by variations in bodily behaviour and world views across different cultures. Mauss’s “techniques of the

body” as mentioned earlier is based in the idea that while human beings have similar bodies around the world, they use them differently – the behaviours of walking, eating, standing, and washing, among others greatly vary. As these techniques of the body pre-dispose one to certain psychological states, cultures differ in how often and in what circumstances people feel certain psychological states as a function of how often and in what circumstances different techniques of the body are used.

Some examples of the way embodiments pre-dispose an organism to certain feelings include the way walking or standing with one’s head down inclines one towards feelings of submission, being “puffed up” with chest full and shoulders square inclines one towards feelings of power or dominance, moving quickly inclines one towards feelings of higher arousal (anxiety, fear, excitement, and so on); or, as Zajonc and Markus (1984) suggest, stiffening up and tightening one’s body possibly aids in inhibiting one’s emotions. The body is thus a key element of cultural transmission, because the actor’s body manifests cultural values, models them for observers, and creates or reinforces the appropriate psychological state for the actor through processes of physiological feedback and self-perception (Bem, 1972; Stepper & Strack, 1993). Therefore, embodied cognition attests not merely to the link between our body and mind, but also to the bodily experiences in a culture substantiated by meaningful imperatives, expectations, and norms (Gibson, 1979; Varela et al., 1991). In other words, the body–mind linkage is informed or motivated by one’s cultural experiences in such a way that “social constructions are given bodily basis and bodily motivation is given socio-cultural substance” (Kövecses, 2000, 14)

Levels of Embodiment

Maleej, in his 2004 studies on expressions of anger, identified three kinds of embodiment: physiological embodiment, culturally specific embodiment, and culturally tainted embodiment. *Physiological embodiment* refers to metaphors used in expression, which map target (the emotion of anger) and source concepts (a liquid in a container) are mapped – for example, in expressions like “I am filled with anger”, or “my blood is boiling with anger”. These metaphors were fairly common across different languages - American, Chinese, Japanese, Hungarian, Polish, and Tahitian, (Kövecses, 1995; Lakoff, 1987; Lakoff & Kövecses, 1987), and describe a relevant part of the body where anger manifests and a physiological change occurs as a result of the emotion (e.g. heart rate rising, pulse quickening).

On the other hand, *culturally specific embodiment* is evident in conceptual metaphors which do not entail a body part that changes with the experience of anger but does reference concepts that are particular to a given culture. In this case, an example would be “he broke my bones into smallbits / joints” and “he reduced my flesh into crumbs” (Maalej, 2004). These expressions exemplify culturally specific embodiment because the described body parts are not physiologically involved in anger (e.g., bones, flesh versus heart and blood in physiological embodiment), but is culturally relevant. For example, the feast of sacrifice during the Muslim pilgrimage visit to Saudi Arabia has the ritual of sacrificing a sheep, breaking its bones into pieces, and cutting its flesh into crumbs. These bodily representations are then experientially tied to the expression of anger largely understood in the Tunisian culture.

Culturally tainted embodiment includes a physiological experience, but significantly rooted in culture through culture-specific items such as practices and habits and by cultural knowledge. An example would be the phrase “I found him growling like a camel” and “he entered in a dust storm” (Maalej, 2004). As part of the Tunisian cultural knowledge, camels are known for their anger and spitefulness, thus an anger experience is scaffolded onto this knowledge about camels. Dusty and violent desert storms are typical in the Arab region, thus the description of an angry person entering in a dust storm with no self-control is scaffolded onto this ecological knowledge.

The link between physiology and mindset

Culture’s role is not simply one of encouraging certain body compartments that pre-dispose us to think and feel certain ways. Cultural schemas, rules, and scripts also guide the way a bodily compartment leads to a particular mindset, among a number of different possible mindsets. For instance, research shows that while running is associated with fear, it is also associated with excitement, pursuit, and simple exercise. (James, 1884) People may stand straight, upright, and hold their body tense to maintain self-control and stifle emotion (Zajonc & Markus, 1984) or they may do so to make themselves look bigger and more domineering or (in contrast) they may even do so as a sign of deference to a superior. In this manner, while actions lead to predispositions towards mindsets, the choice of cognition activated by an action is guided by situational context and cultural norm, through increasing the chronic accessibility of certain schemas. When researchers try to study these, they prime the hypothesized cognition not through words, but through related actions. For instance, in a

study that sought to investigate a difference between particularist and universalist mindsets, the schemas were activated through having the participants “hug” a cushion, or sit in a stiff and rigid upright position, and were then presented problems such as someone in their family committing theft, and were asked what their responses would be. The cultural context here showed that schemas for familial affiliation were activated at a higher rate within those individuals who belonged to a collectivist culture when they were made to hug the cushion.

Different Dimensions of Embodied Cognition

As described earlier, the evidence for embodied cognition guided by culture lies in cross-cultural variations in cognitive functioning. This is done through an analysis of language and metaphor, through interviews, and through task-based experiments that require a demonstration in which cognition is expected to manifest. Research of this nature has demonstrated a wide range of concepts which are pre-wired hard embodiments.

Time Perception

Time and space often go hand in hand, with representations of each existing through mapping of the other. In English, there is a front/back orientation of the future and the past respectively, which has been observed through speakers’ physical movements as well. Studies show that Mandarin speakers use these horizontal spatiotemporal metaphors, as well as vertical ones – with up denoting an earlier time and down denoting a later one. (Boroditsky, 2001). Further, the use of different spatiotemporal metaphors to talk about time is largely learned, as it was found in follow-up studies that (i) Mandarin speakers were more biased to think about time vertically if they started learning English later in life, and (ii) after receiving a short training to think about time vertically, English speakers, like Mandarin speakers, also were able to conceptualize time vertically. Relatedly, Nuñez and Sweetser (2006) investigated the spatial construals of time in

Aymara, an Amerindian language system. Speakers of the Aymara language model time exactly opposite to English speakers, with the future being ‘behind the ego’ and the past being ‘in front of the ego’ – based on the idea that the past is in front because it is known, and therefore a speaker can ‘see’ it, as opposed to an unknown future. (Nuñez & Sweetser, 2006). Together, both the Mandarin and Aymara conceptual metaphors for time offer good examples of how the fundamental concept of time could be grounded in different spatially embodied experiences largely shaped by language, an important cultural product.

Gender

Cultures do not only limit to national cultures but also encompass the culture collectively shared by the people in a gender group. Therefore, it is an easy linkage between the two genders seeing the social reality differently and the experience of a certain bodily state infused with gender-related expectations. Regarding gender-specific embodiment, the findings of gender variability in the embodiment of power offer excellent illustrations. In two studies, Schubert and Koole

(2009) showed that men making a fist activated an empowered explicit and implicit self-concept

as exemplified in their perceived self as being more assertive and socially esteemed – and the complete opposite in women. Another series of studies provided a more focussed approach, finding that the act of making a fist activated power-related concepts in both genders. However, it was an embodiment of powerful gesture for men and an embodiment of powerless gesture for women. (Schubert, 2004; see also IJzerman & Cohen, 2011). For men, the fist was associated with higher hope for control in hypothetical situations and the perception of an ambiguously acting male target as more kind and less hostile, again, the opposite of the pattern displayed by women. The researchers explained the difference as a result of socialization of gender roles in cultural context, with men culturally expected to use bodily force to gain power and control over others and women culturally expected to refrain from using bodily force unless it becomes their last resort. Therefore, unlike men who tend to associate physical coercion with having power, women tend to associate physical coercion with power loss, fear, and diminished control (Schubert, 2004).

Other examples of conceptual metaphors with embodiments range from temperature and social affiliation to visual perceptions of leadership – any human experience which differs based on cultural norm is likely to be embodied uniquely as well. Religion is also deeply influential, as a philosophical code accompanied by prescribed rituals and behaviour patterns, many of the religious ideals are experienced through embodied cognition, such as fasting, gendered behaviours, the act of prayer itself, etc. which I have not gone into depth to, given the constraints on time and length for this paper.

Totem Embodiments

So far, the embodiments described involve various paths from bodily action to affective and cognitive reactions and then to further complex representations. A *totem embodiment* is a bodily action with a causal chain proceeding directly to complex representations, with the affective and cognitive reactions already wired in our brains. Totem embodiments make use

of body compartments that operate at a purely symbolic level, having no inherent meaning except that which is commonly recognized within a culture. An example of this would be the Christian act of crossing oneself, or the Hindu *mudras* (hand gestures) – actions which these may evoke or affirm ideals, identities, and complex representations for properly socialized group members, but have no effect on those outside the group. Therefore, the cognitive mechanisms for totem embodiments are entirely different from those which are pre-wired in nature. Some interesting considerations involve that of how these embodiments are built up over time, as they do not take advantage of any pre-wired tendencies. Hence, they require frequent repetition and ritual, and are learnt both directly and vicariously. (Konner, 2002). In contrast to pre-wired embodiments, it is more difficult for people to access the unobservable psychological states that accompany them if the learning takes place by imitation alone. If pre-wired embodiments are rooted in evolution, it makes sense that they be associated with psychological states that are relevant to survival and reproductive fitness, and therefore totem embodiments can be far less constrained in their associations. This arbitrariness then serves as a marker of group identity, since different groups are unlikely that any two unrelated groups will develop the same sorts of association between certain actions and certain complex psychological states. In the absence of a contribution to adaptive ability, the purpose served by totem embodiments is likely to mark and reinforce actors' feelings of identity and solidarity (see, for example, Fiske (2004) on the modes for constituting relations of kin-like solidarity), and need to be strongly repeatedly reinforced through ritual and ideology, and socialization forces, to persist.

Limitations and areas for further research

Critical research in the field of embodied cognition suggests that might be used to explain negative associations as well – with certain body postures enabling an individual to feel righteous or comfortable with performing a transgression, as opposed to other postures which could trigger schemas of altruism. Another approach is that of reactance – the use of priming language could theoretically induce an opposite effect as well, based on other mechanisms studied in great detail in psychology. The extent to which an action influences a specific affect and consequent thought process is not clearly quantified or even established. An interesting avenue of research would be within that of bicultural individuals, who may have two distinctly different frames of reference to draw upon for a given bodily action. In cases like these, research could be used to understand how one frame becomes dominant over the

other, or if different cultural frames exert different power on the individual based on situational context.

Additionally, the embodied cognition perspective acknowledges that both actual physical bodily states (hard embodiment) and the psychological representation through mental models of these bodily states (soft embodiment) ground the processing of cognitive and social stimuli. However, hard embodiments tend to be studied more often, and in greater depth, given the observability of an experience described. Hard embodiments manifest in language as conceptual metaphors that utilize to phenomena that are universally experienced by the human body, but linked with specific cultural context. However, the extent of the influence of culture on soft embodiments is a domain in which further research is required. Soft embodiment poses a challenge in that it represents something of a compromise position between hard embodiment and psychology's usual approach to studying culture. That is, it considers the body, but is situated primarily "in the head"—focusing on mental representations rather than on the actual physical comportment of the body. The field of psychology is often described as focused on "the neck up", which leaves out an understanding of how physical bodies create, instantiate, model, and transmit our attitudes, emotions, and values. There is a gap in the understanding of how culture can determine an individual's mental processes, even though we know it does so – an example being egocentric versus interaction-centric mental points of view between western and Asian cultures. The anthropological emphasis on practice, ritual, and what people actually do with their bodies captures this in a way that a psychology of the head does not – providing insight into how a cultural idea and behaviour that is seemingly external, reaches a place of situation within the mind. The approaches taken by each field are lacking different ways of methodology and theory, which leads researchers to suggest an integrated social-cultural psychology, rather than any one approach – as it is the conjoint product of the body's actions and the mind's representations that create both the pre-wired and totem embodiments of encultured human beings. (Leung et al, 2011)

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