Embodied Cognition From the Perspective of Vygotsky’s Socio-cultural Theory

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Embodied cognition is an approach to cognition that departs from traditional Descartes’ mind-body dualism for its emphasis on bodily interactions with the environment. The paper firstly describes three distinctive features of embodied cognition. Furthermore, from the perspective of philosophical methodology, the paper outlines Vygotsky’s socio-cultural theory and his contributions to the development of cognitive science. Three basic themes of Vygotsky’s writings are specifically described: genetic forces as a foundation of the study of mind, social origin of higher mental functioning, and mediation of sign systems in inter-mental and intra-mental functioning. Against the background of Vygotsky’s sociocultural theory, we further discuss the interface between embodied cognition and Vygotsky’s socio-cultural theory. It is claimed that bodily states and body-environment interactions are closely connected to sense-making. Embodied cognition should emphasize on the unity of body, mind, and cultural environment. Finally, the paper concludes with the influence of sociocultural theory on the study of embodied cognition.

Keywords: embodied cognition, Vygotsky, socio-cultural theory

1. Introduction

Throughout the centuries, countless philosophers and scientists kept debating on the relationship between mind and body. Descartes, the first to formulate the mind-body problem in the form in which it exists today, supported the idea of mind-body dualism. He reached this conclusion by arguing that the nature of the mind (that is, a thinking, non-extended thing) is completely different from that of the body (that is, an extended, non-thinking thing), and therefore it is possible for one to exist without the other (Wilson 2017). In the proceeding development, the notion of the disembodied cognition such as the computational and representational theories of mind flourished. Of particular note in this description of traditional cognitive science is the insular nature of thought (Shapiro 2007, 339). However, it is challenged by the embodied view on cognition. The embodied cognition framework highlights the importance of bodily process, such as action, for

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all cognition (Guan & Meng, 2013). The bodily process is rooted in society and culture. The central thought put forward by embodied cognition is in a manner analogous to Vygotsky’s socio-cultural theory. Vygotsky’s cognitive theory has far-reaching influence upon the western cognitive development. We would further illustrate the primary coverage of two ideas and share the contemplation concerning the interfaces between embodied cognition and socio-cultural theory.

2. Embodied Cognition

Cognition is embodied when it is deeply dependent upon the features of the physical body of an agent, that is, when aspects of the agent’s body beyond the brain play a significant causal or physically constitutive role in cognitive processing (2011). Put it more specifically, there are three distinctive features for embodied cognition. First, the steps in a cognitive process, from the perspective of embodied cognition, might emerge from the physical attributes of the body (Shapiro 2007, 340). Proponents for embodied cognition argue that stimulation from bodily properties has a significant impact in perception and judgement. For example, one holding a cup of warm water seems to describe persons as having a warm personality. It is proved that hands’ feeling of physical temperature could affect the cognitive processing as well. Secondly, it tries to account for body’s contribution to the content of cognition, which needs to pay attention to Lakoff and Johnson’s engagement in the analysis on metaphors. Metaphor, as a figure of speech, makes an implicit comparison between two unrelated things but shares some common characteristics. For example, we describe that time is money or the eye is the window of the soul. According to Lakoff and Johnson, almost all of our concepts derive originally from the use of metaphorical reasoning: We learn something new only by understanding it in terms of something more familiar (Shapiro 2007, 341). Therefore, metaphor serves as the foundation of the basic form of abstract thinking. At the same time, some commonly used metaphors often closely tie abstract sense-making to concrete bodily experience (Leung 2011, 591). Among these concepts, human’s understanding of orientational metaphor especially stems from the facts with bodies. Consequently, metaphorical reasoning might depend crucially on the physical properties of body (Leung 2011, 593). A third assumption is that embodied cognition puts forward the integrated system of cognition, brain, body, and environment. The claim is this: The forces that drive cognitive activity do not reside solely inside the head of the individual, but instead are distributed across the individual and the situation as they interact (Wilson 2002, 630).

3. Socio-cultural Theory

On the traditional view, cognition is cut off from the world in the sense that cognitive processes operate only on symbolic deliverances from the sense organs (Shapiro 2007, 339). Lev S. Vygotsky, one of the prominent philosophers and psychologists, develops the idea of socio-cultural theory. Socio-cultural theory emphasizes the contributions of social and cultural effects on cognitive development. Vygotsky argues for the uniqueness of the social milieu and regards sociocultural settings as the primary and determining factor in the development of higher forms of human mental activity such as voluntary attention, intentional memory, logical thought, planning, and problem solving (Turuk 2008, 245).

It is concluded by Wertsch three seminal ideas form the basis of Vygotsky’s SCT: (1) an emphasis on developmental or genetic analysis as a means to understand certain aspects of mental functioning; (2) the claim that individual mental functioning has social origins; and (3) an emphasis on the mediated nature of human action (1991, 25).
3.1. Genetic Forces as a Foundation of Study of Mind

Genetic analysis in Vygotsky’s approach is motivated by the assumption that it is possible to understand many aspects of mental functioning only if one understands their origin and the transitions they have undergone (Wertsch 1991, 19). In Vygotsky’s words, “…we need to concentrate not on the product of development but on the very process by which higher forms are established” (Vygotsky 1978, 63-64). Vygotsky focused his analysis on human’s mental development on four types of genetic domains: (a) phylogenesis which concerns evolutionary development of human’s mental development in the use of mediational tools; (b) social-cultural history which emphasizes on the historical influences on human’s behavior; (c) ontogenesis which argues the integration of natural, cultural, and social effects of development; (d) micro-genesis which focuses on specific psychological processes that occur during a single session or over a span of time. Vygotsky also made specific assertions about the interrelationship of these genetic domains. The approach enables to distract attention to multiple factors involved in development instead of the sole factor of biological development. Particularly, social factors and the introduction of new forms of meditational means are associated with these qualitative transitions (Ozdemir 2011, 300). The essence of the shift can be explained in the following propositions specially as the social origin of higher psychological processing and the role of mediation.

3.2. Social Origins of Higher Mental Functioning

For Vygotsky the mental functioning is derived from the social surroundings. The environment was taken to mean “the socially organized world of culture created by the individual who developed, in the process, his latent forces and abilities” (Yaroshevsky 1989, 19). Vygotsky differentiates two kinds of psychological functions: elementary mental function and social, higher psychological one. And he formulates his general genetic law of cultural development as follows, “any function in the child’s cultural development appears on the stage twice, on two planes, first on the social plane and then on the psychological, first among people as an intermental category and then within the child as an intramental category” (Vygotsky 1966, 44). In other words, intra-mental categories are those higher psychological functions which are inherently rooted in society. Consequently, the higher mental function originates from internationalization of social relations which are outside of the individuals. The internalization of socially rooted and historically developed activities is the distinguishing feature of human psychology, the basis of the qualitative leap from animal to human psychology (Vygotsky 1978, 74).

3.3. Mediated Action

Vygotsky’s definition of signs as “artificially created stimuli” whose purpose is to simulate behavior, to form new reflex connections in the human brain, brings us very close to the concept of culture (1966, 29). As indicated by Vygotsky, the internalization of cultural forms of behavior involves the reconstruction of psychological activity on the basis of sign operations (1978, 74).

The influence of Marx and Eagles is evident, especially in Vygotsky’s discussion of use of tools in the emergence of labor activity (Wertsch 1991, 30). Like material tools used in labor activity, psychological tools play an essential role in mental life. The fundamental assumption under sociocultural theory is the fact that human mental activity is fundamentally mediated by tools and signs. Natural behavior is attributed to the two-part stimulus-response formula, which represents a direct reaction to the task. Whereas compared to the elementary functions, the structure of sign operations creates a new relation by requiring an intervening link as
a second order stimulus which is drawn into the operation fulfilling a special function. As stated above, the symbolic tools or signs which are created by human culture take effect on mediating and regulating the relationship with others and with ourselves. Furthermore, this sign also possesses the important characteristic of reverse action, that is, it operates on the individual, not the environment (Vygotsky 1978, 39). The dual process of shaping and being shaped through culture implies that humans inhabit “intentional” (constituted) worlds within which the traditional dichotomies of subject and object, person and environment, and so on cannot be analytically separated and temporally ordered into independent and dependent variables (Cole 1996, 103). In consequence, the higher mental functioning is regarded as the product of mediated action.

Vygotsky paid particular attention to semiotic mediators, from simple signs to complex semiotic system such as works of literature, which act as “psychological tools” in transforming natural impulses into higher mental processes (Kozulin 1990, 114-5). The signs that served as the auxiliary mediator are psychological tools and means of social interactions. Language (speech) as the most significant mediator plays a pivotal role in the mental life. In Vygotsky’s perspective, through the process of internalization, external or social speech is transferred into inner speech by means of regulating the child’s behavior, during which halfway house is the egocentric speech. Roughly speaking, the main idea is that we have to first learn to do things publicly—“externally”—with others before being able to do them “internally” (Jones 2009, 167).

4. Interfaces Between SCT and Embodied Cognition

The assumptions of embodied cognition are sometimes associated with those of Vygotsky, and there are indeed some interesting connections between the two ideas. Yet there are also major differences, which make two views complementary rather than identical.

The first implication is that what interweaves Vygotsky’s socio-cultural theory-based concepts and the claims of embodied cognition is the emphasis placed on interaction with the environment. As indicated by Clark, biological brains are first and foremost the control systems for biological bodies. Biological bodies move and act in rich real-world surroundings (1998, 506). Therefore, there is a growing commitment to the idea that mind must be understood in the context of its relationship to a physical body that interacts with the world (Wilson 2002, 625). What the embodied cognition focuses on is that substantive factors in the environment have influences on cognitive processing. Embodied view in cognition puts forward a holism of mind-body-environment relationship. In contrast, Vygotsky attached great importance to the socio-cultural factors on the development of mental functioning. He examined not only the individual functions, but their interrelationships with socio-cultural environment and other people. The theory underscores that cognition is situated in the social and cultural environment, which facilitates the integrated whole of mind-world-others. What’s more, an increasing number of scholars have been conscious of the limitations of traditional view on embodied cognition. As indicated by Varela et al., by using the term “embodied”, we mean to highlight two points: first that cognition depends upon the kinds of experiences that come from having a body with various sensorimotor capacities, and second, that these individual sensorimotor capacities are themselves embedded in a more encompassing biological, psychological, and cultural context (1991, 172-3).

This extended thesis stresses socio-cultural influences on cognitive processing, which is in accordance with theory of Vygotsky.

Secondly, whereas other theories also recognized the process of social interaction to be essential in driving development, Vygotsky took a step further to maintain that psychological functions themselves are inherently
social, viewing behavior and mind or social interaction and consciousness as aspects of a single system (Karim 2016). In contrast, embodied cognition puts less emphasis on the analysis of social interrelationship. Vygotsky’s declaration indicates that the process of internalization is a complicated one. The transformation of social behavior by means of mediational tools from inter-mental plane to intra-mental one requires the participation of two people or more. Therefore, the socio-cultural theory underscores the context in which practical activities occur.

Finally, embodied cognition overlooks the functions of sign. In comparison, Vygotsky paid particular attention to mediation through sign systems. A fundamental assumption underpinning sociocultural theory is the fact that human mental activity is a mediated process in which symbolic and sociocultural constructed artifacts, the most significant of which being the language, play an essential role in the mental life (Vygotsky 1978, 40). In contrast, embodied cognition typically places less emphasis on the role of representations i.e. semantically endowed symbols, in thought and action (Shairo 2007, 341).

5. Conclusion

Along with the overview of Vygotsky’s socio-cultural theory, we are aware of the inadequacy of the idea of embodied cognition. Based on the understanding of embodied cognition, we could go one step further and elaborate the superiority of Vygotsky’s sociocultural theory in genetic analysis, social origin, and mediational tools. In consequence, the study of Vygotsky’s socio-cultural thoughts can promote the social turning of cognitive science and embodied cognition.

Works Cited


