Imagery and cognitive mapping research paper example

Sociology, Communication

Introduction

The use of imagery and cognitive maps in enhancing memory and learning has been a subject of interest for many psychologists since the establishment of the first psychological laboratory by Wundt (Goldstein, 2010). Although other theories have gained more popularity in the field of learning, imagery and cognitive mapping continue to be the subject of many studies and to be used in developing ways to enhance learning.

In this regard, this paper provides a brief discussion on imagery and cognitive mapping, their applications, how they improve long-term memory, and how they are enabled by mirror neurons.

Definitions and Applications of Imagery and Cognitive Mapping

According to Goldstein (2010), mental imagery is " experiencing a sensory impression in the absence of sensory input" (Goldstein, 2010, p. 289). This is similar to the definition provided by Richardson (as cited in Frontera, 2007) who indicated that mental imagery referred " to all those quasi-sensory or quasi perceptual experiences of which we are self consciously aware and which exist for us in the absence of those stimulus conditions that are known to produce their genuine sensory or perceptual counterparts" (Frontera, 2007, p. 313). On the other hand, cognitive mapping is the process of creating " internal representations of perceived environmental features or objects and the spatial relations among them" (Colledge, 1999, p. 6).

There are many applications for mental imagery and cognitive mapping. One is in learning, particularly in memorization, or when a person is trying to

commit something to memory, such as the face of a new acquaintance or the license plate number of a car. Another is in navigation, that is, when a person tries to find their way in trying to reach their destination (Iaria, Palermo, Commiteri & Barton, 2009). As well, Warner & McNeil (1998) suggest that mental imagery and mental perception can potentially enhance the effectiveness of physical therapy by means of asking patients to create mental images of successful results. This is similar to the way that athletes use mental imagery to enhance sports performance where imagery is used to practice skills and enhance the development of such skills (Frontera, 2007).

How Imagery and Cognitive Mapping can Improve Long-term Memory

With the enhancement of long-term memory being one of the most common applications of imagery and cognitive mapping, one reason provided for such is that, according to the imagery theory, the perception process reduces raw spatial information into a simpler and more organized format, which is then stored in memory (Nelson, 1996). Once the information needs to be retrieved, the mind can easily reassemble the information in order to form quasi-pictorial images.

On the other hand, the dual-coding theory proposes that a map causes the “ primary activation of the imagery system and the secondary activation of the verbal system” (Nelson, 1996, p. 231). This theory implies that, although the processing of visual and verbal information occurs independently of each other, the systems that are responsible for the processing of such information are interconnected. In particular, while an imagery system uses

a hierarchical structure for organizing simplified images where the information output is in a spatial format, a parallel verbal system is responsible for processing all non-visual information, which is also organized into a higher-ordered sequential structure.

The Role of Mirror Neurons with Regard to Imagery, Cognitive Mapping, and Information Transfer

As suggested by Rizzolatti and his colleagues (Corballis, 2010), mirror neurons enable humans to understand the actions that other people perform through the mapping of actions that the observer can perform on their own. This is akin to the proposition made by the imagery theory, which implies that mental imagery and cognitive mapping result when the perception process breaks down raw information into simpler forms, which are then stored in long-term memory and reassembled when retrieved. Mirror neurons function in the same manner in that they simplify information into a form that the person can easily understand. These simplified forms are converted into cognitive maps, which, when retrieved, come in the form of mental images.

As well, the mirror neurons in humans are capable of responding to both transitive and intransitive acts (Corballis, 2010), that is, to both physical and symbolic objects, which again implies that they are capable of responding to mental imagery. Moreover, mirror neurons are believed to function with other structures of the brain, which would be akin to the dual-coding theory, which posits that both the imagery and verbal systems are responsible for the enhancement of long-term memory through mental imagery and cognitive mapping.

In addition, the discovery of the mirror system implies that cognition results from one’s bodily interactions with the world where “ cognition depends on the kinds of experiences that come from having a body with particular perceptual and motor capacities that are inseparably linked and that together form the matrix within which memory, emotion, language, and all other aspects of life are meshed” (Corballis, 2010, p. 26).

Conclusion

This paper provided some definitions of mental imagery and cognitive mapping as applied in psychology. The paper also provided some of their common applications. In addition, the imagery and dual-coding theories were discussed as explanations to how imagery and cognitive mapping enhance long-term memory. Finally, the paper discussed how mirror neurons facilitated imagery, cognitive mapping, and information transfer.

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