Benefits of cognitive psychology research paper

Education, Learning

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Abstract

Cognitive psychology entails the processes of learning and thinking and eventual improvement of one’s existence and understanding in the long-term. Some of the items that are studied under cognitive psychology include perception, memory, language and thinking. As humans we receive a lot of sensory information and hence rely on our brains to process this information and that directly affects how we behave. Through advancement in technology, understanding cognitive psychology has become easy and, therefore, utilizing its benefits. Perceptions and conceptions enable us to understand ourselves. Appreciating one’s strengths leads to the process of improving on one’s weaknesses. Dreams reveal desires, hopes, fears; subconscious thought. Through assessing dreams, people can work through their issues and come out victorious. Perceiving objects, abstract or real, leads to the formation of relationships in one’s mind that encourages faster

and accurate understanding of the external and internal environment. Cognitive psychology stands to benefit and improve people's lives only if further research and public interest is geared toward it.

Keywords: Generality Constraint, heuristics

Cognitive psychology focuses on how human beings process information by looking at how information that comes to them and how it leads to a response. Cognitive psychologists study internal processes such as perception, attention, language, and memory. Cognitive psychology in the 1950s became important especially because of dissatisfaction with the behaviorist approach which has an emphasis on external behavior rather than internal process (McLeod, 2007).

Dreams

Calvin Hall was a behavioral psychologist who explored the cognitive dimensions of dreaming. His theory was that dreams are thoughts that get displayed in the mind as visual concepts. Hall explained that dreams are an embodiment of someone's thoughts, and they give a visual expression to conceptions (Hurd, 2009). Dreams reveal a structure of how people envision their lives and can be learned by studying them. Hall suggested the main cognitive structures that dreams reveal entail conceptions of self, others, world, penalties, and conflict.

Conceptions of self are how people appear to themselves and their roles in their lives. The self emerges from a list of parts or roles the dreamer has in a sequence of dreams. Conception of others is how someone perceives the people in their life and how they react to their needs. Just like in conception of self, the conception of other people is exemplified in the parts they play in

the dreams (Hall, 1953). Conception of the world happens to be a construct of the dreamer. If the dreamer perceives the world to be cold then, this conception may be cold weather and rocky scenery. A dreamer identifying the world as disorderly could dream of thunderstorms, battles, and raging seas. A person who thinks of a peaceful world may have dreams that are in serene natural settings.

Dreams show a person’s conceptions of obstacles affecting impulse gratification. The hurdles are his conscience prohibitions and can appear in a dream like obstacles such as walls, locked doors or appearance of an authority figure that interrupts the dreamer’s pleasures. If impulse gratification occurs, the dreamer can conceive the penalty they will receive for the transgression. The interpretation of obstacles and penalties in the dream help one understand the superego. Dreams may also give a person’s view of their problems, with the view undistorted as in reports made when awake. It shows ways that a one perceives their conflicts, and that determines their behavior and comprehension of human conduct (Hall, 1953).

Attention

Attention is selectively concentrating on a single environmental aspect and ignoring other things. It is the process of preferentially responding to a stimulus or a range of stimulus. Attention is one of the most concrete topics within psychology since it is tied closely to perception.

In the 1850s to 1900s, there was a major debate on whether it is possible to attend to two things at once also called split attention. Some thinkers felt that they could do so while others felt that they could not which is a

disagreement that could only be resolved through experimentation. In 1900s to 1950s, the dominant psychological paradigm was behaviorism. Behaviorism was rooted in positivism that rejects the study of making assumptions about processes that cannot be observed directly such as cognition. The current research on attention involve determining the source of the signals that generate attention and the effects of the signals between attention and extra cognitive processes like memory (Similima, 2011).

The most used models in evaluating patient's attention with different neurologic pathologies is the hierarchic model. There are five different kinds of activities in the model that include focused, sustained, selective, alternating and divided attention. Focused attention is the ability to respond to specific, auditory and tactile stimuli. Sustained attention is the ability to maintain steady behavioral response in a continuous and repetitive activity. Selective attention refers to the capacity to maintain a behavioral or cognitive set in the occurrence of distracting or competing stimuli. Alternating attention is the capacity for mental flexibility that allows a person to shift their focus of attention and move between tasks that have different cognitive requirements. Divided attention is the ability to respond to multiple tasks or demands simultaneously.

Attention can be differentiated according to its status, overt or covert. Overt attention is focusing sense organs to a stimulus source while covert attention is mentally concentrating on a precise stimulus. There are several factors that influence attention including intensity of the stimulus, habit, change of stimuli, and the frequency of repetition.

Attention splits the field of experience into margin and focus. Events

perceived clearly are at the focus of experience while those that we perceive dimly and we are vaguely aware of their presence are the items in the margin of attention (Similima, 2011). Focus and margin are constantly shifting. Something that at the focus for one moment may be in the margin in the next, and that in the margin may become the focus.

Perception

Perception and cognition are highly interrelated. There are similarities between visual perceptual representations and cognitive representations in terms of structural properties and content. Perceptual information guides a person’s decisions and actions and tends to shape a person’s beliefs. On the other hand, knowledge influences the way a person perceives the world. There is no clear distinction between the realm of perceptual abilities and cognitive abilities (Tacca, 2011).

Visual perception is a form of perception that helps analyze the similarities. Visual processing comprises of different stages: early, intermediate, and late vision. Early stages of the visual system processes such as border detection and detection of basic features occur. The information reaches the intermediate stages where it gets combined into a temporary representation of an object. In the later stages, the temporary object representation is matched with previous objects shapes stored in the long-term visual memory which helps identify or recognize the visual object. Early visual processes are independent of cognitive factors while late visual stages are influenced by knowledge. A person has conscious access to the information represented in the late vision, and it can get exploited for action planning and thinking. Philosophers refer to this stage as the personal level. The early visual stages

occur at the sub-personal level, and a person is not usually aware of the information being processed (Tacca, 2011). The degree of the representational awareness in the intermediate stage is usually identified with the phenomenal consciousness.

Cognitive information influences perceptual processes, and cognitive processes depend on perceptual information. Cognitive tasks stem from perception and rely on perceptual mechanisms for their processing. Study shows that functions associated with cognition have their basis in perceptual systems. The hypothesis is that the concept gets represented by means of simulation at the sensory level of experience to which the concept truly applies (Tacca, 2011). Though it seems that cognitive and perceptual representations influence each other, they are different kinds of representations.

Visual cognition and perception process information differently in terms of structure and content. Cognitive states have a propositional combinatorial structure that satisfies the requirement of Generality Constraint. Generality Constraint is the ability of a human being to entertain thoughts they have never had before based on the fact that they have entertained components of the new thoughts in preceding situations. For instance, a person thinking the sky is gray, and the car is red can also think that the sky is red, and the car is gray despite having never thought of this before. The new thought depends on the person’s conceptual ability to conglomerate learned.

Language

Cognitive scientists have for a long time questioned the separation of language and cognition in terms of mental faculties and whether language

emerges from general cognitive abilities. There are many common questions related to this topic (Harris, 2006). The relationship between language and cognition, whether people who speak different languages think differently and if there is a certain level of cognitive development that is required for language acquisition are some of the questions.

Two diverse interpretations on the relationship between language and cognition exist. One approach proposes that general purpose processes and mechanisms provide a foundation for all varieties of human intelligence. It can be referred to as General purpose cognition. Examples of possible universal processes are the ability to induce a category from exposure to examples and the ability to mentally complete a known pattern just by seeing a piece of it. Researchers have used Artificial Intelligence to show that the same principles that explain general problem-solving also explain certain aspects of language acquisition and processing (Harris, 2006).

The second approach of conceptualizing human cognition emphasizes the differences between language and other abilities. Many distinct domains of cognition exist and must be learned separately using different mental mechanisms. The approach is referred to as the modularity of cognition. It may seem contrary to the interdisciplinary spirit of cognitive science. Much of the explanation on this approach comes from findings in neuropsychology that show that distinct areas of the brain serve distinct functions such as vision, language processing, memory, and motor coordination. The two approaches to the architecture of cognition have evolved considerably with the history of cognitive science.

Problem-Solving

Problem-solving is the mental process a person goes through to discover, analyze, and solve problems. It involves all the steps in the problem process that include discovering the problem, decision to tackle it, understanding the problem, researching available options and tackling action. There are a number of different mental processes that are at work during problem-solving. They include perceptually recognizing the problem, representing the problem in memory, considering relevant information to the current problem, identifying different aspects of the problem and labeling the problem.

The diverse approaches to problem-solving include behaviorist approach, Gestalt approach, and the cognitive approach. Researchers on the behaviorist approach argued that problem-solving was a reproductive process (Cognitive Psychology, 2009). Organisms faced with a problem apply behavior that has been successful on a previous occasion. Successful behavior was believed to have been arrived at through a process of trial and error.

Problem space theory is a cognitive approach to problem-solving. According to this theory, people solve problems by searching in a problem space. The problem space contains the initial state, the goal state and other possible states in between. The actions that people take to move from one state to another are referred to as operators. For example, in a puzzle, the problem space consists of the initial, desired, and the possible arrangements of tiles that can be gotten when solving the puzzle (Wikidot, 2009).

The problem space can be very large, so the main issue is how people choose their operators given their limited working memory capacities. In

most problems, people possess domain knowledge that helps them decide what to do. In other cases, the selection of operators is guided by cognitive shortcuts also known as heuristics. One of the simplest heuristic is repeat-state avoidance or backup avoidance where an individual prefers to avoid actions that would backtrack to the previous problem state. It is unhelpful when a person has taken inappropriate actions and is required to go back a step or more. Another heuristic is difference reduction or hill-climbing. It is where an individual takes an action that leads them to the biggest similarity between current state and goal state. The most sophisticated heuristic is means-ends analysis. Like difference reduction, this heuristic looks for an action that minimizes the difference between the goal state and the current state. It also specifies what to do if that action cannot be taken for any reason.

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