

Module Code: ECAP4003
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Part A - Compare and contrast two theories of memory (750 words)

The contents of this assignment will be to compare and contrast two theories of memory, the theories will include the working memory model and the multi-store model of memory, by studying the strengths and weaknesses each have and identify what they have in common.

The importance of memory is crucial for everyday living as we use it in situations when we don't even think we're retaining information "Memory is the superior (logical or intellectual) cognitive process that defines the temporal dimension of our mental organization. It is our ability to encode, store, retain, and then recall information and past experiences".

(Savage,2018) being work related for example if you worked in a restaurant you need the Ability to remember to recall orders and need the capability to know what the customer is asking you for, in any education facility the ability to be able to revise is really important when it comes to being successful and when it comes to home life being able to remember birthdays, making lists of things you need etc.

This essay will discuss firstly The Multi-Store Model of Memory proposed by Atkinson and Shiffrin in 1968, this model is a structural model meaning that memory as a whole includes a number of elements or structures which can be connected, specifically with the Atkinson and Shiffrin model they proposed that memory itself consists of three stores being a sensory register, short term memory (STM) and long term memory (LTM), information passes from store to store in a straightforward way and has been described to be lot like a computer with a input, process stage and output. (Jones lecture 2).

The information is discovered by our senses and enters the sensory memory and if attended to, it enters the short term memory, once repeated it then enters the long term memory however if it's not been repeated it will almost be immediately forgotten (Groome,2014) The strengths of this model is that it gives us a good understanding of the structure and process of the STM which gave future researches the chance to carry out more investigations to make it more valid. (Jones, lecture 2).

The multi store model of memory has been criticised for focusing too much on rehearsal, while it's an important aspect of the model to move short-term memory, it is not the only way to move the information, this means that the model is not detailed enough in its explanation of how information is moved to long-term memory without repetition, Aswell as this, the model oversimplifies short-term memory, which was shown through several finding, including the fact it contributes to the working model (Baddeley and Hitch, 1974) which showed that STM is made up of lots of different stores for different types of information. This means the multi-store model of memory can't fully explain how we process information as it showcased that STM is a complete store. (Emily P, 2022).

The Working Memory Model on the other hand proposed by Baddeley and Hitch in 1974 assumed that information comes from our surroundings and is processed first by a parallel series of sensory memory systems, including the iconic and echoic memory processes, from here information flows into the short term memory, which formed a crucial part of the system, not only feeding information in and out the long-term store, but also acting as a working memory which was responsible for selecting and operating strategies for rehearsal and serving a workspace. (Baddeley, 2010) It was developed as a result of STM memory not being useful in explaining how memory processes were used in problem solving, showcasing the central executive which drives out all the systems/gives out data, the phonological loop which is in charge of written and spoken material, the episodic buffer and the visuo-spatial sketch pad which stores information as a visual form, the phonological loop retains speech for 2 seconds if not repeated it fades away and translates visual information into speech to be deposited in the phonological store (Groome, page 143-150).

To conclude, there are many similarities between the two models, both models state that we take in information through our senses, they also agree that this sensory information is short-term memory which is limited in duration and capacity they also discuss the role of rehearsal of information in the STM to store it in the long-term memory. Both have also been criticized for being hypothetical and not based on biological evidence. Additionally, neither of the models explains why memories become distorted and are often different in the way they describe short-term memory. The multi-store model illustrates STM as a single store, but the Working Memory Model explains short-term memory as having three components to it. Furthermore, the working memory model explains short-term memory in slight detail while the multi-store model just laid out general steps of memory.

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Part B – Outline at least one theory of attention and how we perceive objects around us (1250 words)

The second part of this assignment will be discussing one theory of attention and one theory of perception explaining how we pay attention and how we perceive objects around us, to do so this essay will focus on the theory by Gibson in 1966 about his approach to perception also gestalt as a theory and the theory of attention made by Broadbent and Treisman in 1958 and 1977.

To begin attention is the ability to focus on a specific object or part of a conversation in each environment while ignoring others (Styles, 2005) Once the brain gathers details from the surrounding environment, attention allows a person to choose something that they want to be their centre of attention. According to scientists, there are different types of attention such as; focused attention, sustained attention, selective attention, alternating attention and divided attention. One example of attention would be if you walked into a night club and your phone rings your brain will subconsciously focus on that rather than the background noise as it is most important.

On the other hand, perception is the ability to become aware of one's environment by creating meaning from what is obtained by our sensory organs including eyes, skin, smell and taste buds (Styles, 2005). It is when we become aware of recognizing and observing what we see but through our senses, it is also the process by which the cognitive system constructs an central representation of the outside world which could be different to reality, which essentially means for example if you were to hear a dog or cat noise your automatically going to image that animal in your head when in reality that may not be what you can hear.

We have several different senses to be able to perceive the world around us, which includes Vision using our eyes, audition using our ears, taste using our tongue, smell using our nose, touch using our skin, equilibrioception which is when we use our ears for balance and sense of gravity, thermosetting which we use our skin to sense temperature and nociception which is our overall pain senses.

To begin this essay will discuss Broadbent's filter model of attention (1958) which was said that we take attended and unattended information from the outside world and input it into the sensory store and put it into a selective filter, which then rejects unattended information at an early stage of processing, named the bottle neck. Whatever information not understood or not selected is information we can't recall, the information we do recall then enters higher level processing and enters the working memory (Jones, lecture 4).

“The feature-integration theory of attention suggests that attention must be directed serially to each stimulus in a display whenever conjunctions of more than one separable feature are needed to characterize or distinguish the possible objects presented”. (Treisman, 1980)

Treisman proposed a new way of looking at attention which assumed that features came first in perception which was named feature-integration theory (Treisman, Stryker & Gelade, 1977) where features are registered early, automatically across the visual field, while objects are identified separately at a later stage of the process which requires focused attention. The theory assumed that the visual scene is initially coded along several separable dimensions such as colour, orientation, spatial frequency, brightness and direction of movement, any features which are present in the same centre of attention are combined to form a single object, which created the separable features into unitary objects “With memory decay or interference, the features may disintegrate and “float free” once more, or perhaps recombine to form “illusory conjunctions” (Treisman, 1977)”.

They proposed without focused attention, features cannot be related to one another which posed a problem in explaining phenomenal experience, there was no way that we could carry on perceiving an object without also giving it a colour, size, brightness and location. Helped by the top-down processing of unattended features they can utilize experience and contextual information even when attention is focused elsewhere. However, when lacking focused attention and effective constraints the process could be formed on a random basis and could give rise to “illusory conjunctions.” (Treisman, 1977).

Moving on to the theory of perception done by Gibson in 1966, he invented the bottom-up approach to perception which meant we worked upwards from fundamental sensory inputs at the bottom towards the higher more cognitive levels which included bottom-up processing taking sensory information and then assembling and integrating it giving yourself the question what am I seeing? Sensual data is seen as rich enough to permit direct perception without need for any higher level of cognitive processing, which he believed occurred through detection of environmental invariances, however his theory cannot explain why perceptions are sometimes inaccurate and cannot account for perceptual errors and can neither explain natural accruing hallucinations.

Gestalt on the other hand, which emerged in the 20th century, meaning essence or shape of an entity's complete form in German, argued that an individual may miss something when paying attention and perceiving objects which means if you miss something, you may never see the whole picture, much like when having a conversation or watching a movie, it won't make sense if a section has been missed. Supporters of this view said that there were 7 laws to perception and that there was one underlying principle which was *pragnanz*, meaning good figure in English, the laws included the law of proximity/grouping, objects near each other tend to be grouped, law of similarity, items that are similar tend to be together, law of closure, objects that are not complete can be seen as a whole, law of symmetry which was symmetrical images perceived collectively even in spite of distance, law of figure-ground segregation which was the fact we can see an object from the background and split it into two parts and law of continuity which meant we tend to see objects as whole smooth continuous patterns, instead of only seeing one shape, this is where *pragnanz* comes into play as our brain is simplifying it for us. (Jones, lecture 4). However, this theory did get criticised as it describes but does not explain why these principles exist, there is no model or account of perceptual processing and there is no reference to the depth of perception.

To conclude, attention and perception both depend on each other. Perception uses our senses to interpret what we feel, hear, taste and touch into visual codes so that we can understand our surroundings before taking any action on attending anything, when attention picks up images and determines what the mind will focus on depending on what our interests are (Styles, 2005) Through studying the theories about perception and attention I have found that each have a unique approach to the topic however each have their criticism of what their lacking, with the Broadbent model it was effective but very simplistic, with the Treisman model of attention it was much more in depth of an explanation and focused on much more

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aspects of attention and illusions, compared to the perception theory by Gibson he had a different view of cognitive processing and so did the Gestalt theory, which was a much more in depth explanation of different levels of perception as shown through the laws and explained how we perceive things differently in different situations, much like solving puzzles and mind games, it's all about how we perceive things in order to work something out correctly.

References

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