

CGS601

Assignment-4

Nikhil Mehta
190549

In the answer below, we will try to summarise the theories that we learnt in the lectures and also try to analyze the theories in detail. Our focus will be on theories of selective attention. We assume that we are familiar with the basic terms such as filter and bottleneck theories. We will analyse Broadbent's model, Treisman's attenuation model, late selection models etc. Let us get started with the Broadbent's model:

Broadbent's Model :

This theory is given by Donald Broadbent which was based on the research done by Kenneth Craik. Donald suggested that the human brain has limited capacity to process information and as we receive a lot of information from outside, he suggested that the information which will be processed is selected early on in the perceptual process. Limited capacity was the basis of proposing the "early selection" model. As stated in lectures, he used the Dichotic listening test to prove his assumptions. Broadbent also emphasised that the incoming stimuli is split into two channels, attended and unattended channels. The information which was not selected initially is said to remain in the sensory buffer store for a short period of time and if not processed in that small time, will decay rapidly.

This theory was able to explain the then basic findings by Cherry, the unattended message being rejected based on the filter .

Broadbent's theory is not able to explain the cocktail party effect because if it is filtered initially it will be impossible to analyse it further. The theory has been criticized as early participants were unaware of shadowing, also participants reported that it is a chance that the other message were analyzed but they forget it later. Treisman, who was Broadbent's Phd student, stated that this model did not account for findings such as time requirements of shifting attention.

Modern research has shown that physical features heavily influence to separate the relevant stimuli from the irrelevant stimuli supporting

broadbent's research. The further research which was based on this model indicated that we have filters but are more sophisticated than the ones explained by broadbent.

Treisman's Attenuation Model:

Anne Treisman was a Phd candidate under Broadbent and the model by Treisman agrees with Broadbent's theory of initial bottleneck filter but it states that the unattended information is attenuated and is not wholly eliminated from consideration. She carried out a number of dichotic listening tests and found that attention is immediately and automatically shifted to the other ear as soon as the stories were shifted to other ears. The fact that we tend to hear the meaningful information from the unattended information, helped Anne to conclude that the remaining information is also processed at some level discarding the Broadbent's theory which filters out the unattended information completely. Treisman suggested that the difference between attended and unattended information starts at perceptual level but rather than complete loss, its information is attenuated or gets weakened. This weakened information goes through preliminary analysis and if it contains some highly important or meaningful information, it is passed through the filter (Eg: Cocktail party phenomenon). There is a recognition threshold for an input which is defined as the amount of activation required to perceive the attenuated information which depends on many factors such as context, personal experiences, emotions etc.

This model almost explains all the findings of Broadbent such as explaining and also some findings which were not explained by Broadbent such as Cocktail party syndrome. But the shortcomings still remain as the process of attenuation or differentiation of information at perceptual level was not specified in a well defined manner and was somewhat vague. All the results relied on participants' statements and maybe there are points where attention is shifted to the other channel for a short span of time as participants were not sure about this.

Late Selection Models:

Late selection model or response selection model was proposed by Deutsch and Deutsch suggested that in experiments like dichotic tests, all information is processed from the unattended ear as well, not discarding

information completely. But it says that the information which is related to the task is considered for conscious awareness. The difference between Treisman and this model is that selection of information is taken after meaning rather than selecting information before meaning as in the case of Treisman. This is able to explain Broadbent's drawbacks and almost all observations of Treisman as well. All the input is processed equivocally and filter here acts as an attenuator at later stage marking information as more useful or less useful after considering its meaning. Gray and Wedderburn in 1960 showed from dichotic experiments that information from unattended ear can have relation with attended information and participants can merge them strengthening the late selection theory. No selection on the basis of physical features takes place, all input is also cross-referenced with semantic contents of long term memory and this assessment decides the importance of information.

We observed why Treisman theory was needed as Broadbent was not able to explain some findings and similarly late selection model accounted for some observations which were not explained by Treisman. There are more models of explanation such as memory selection models, multimode model of attention, capacity model of attention and each has its pros and cons. Most historic and important ones are the ones we described above

References:

1. <http://detsndt.ac.in/nmeict-files/nmeict-los/edupsycho/ep17/17.9.1/>
2. https://en.wikipedia.org/wiki/Broadbent%27s_filter_model_of_attention
3. <https://www.verywellmind.com/what-is-selective-attention-2795022#theories-of-selective-attention>
4. https://web.uvic.ca/~dbub/Cognition_Action/Cog_Psych_Readings_files/Attention.pdf
5. <https://ecampusontario.pressbooks.pub/testbookje/chapter/attention/>
6. <https://www.simplypsychology.org/attention-models.html>