IT351: Human Computer Interaction
Assignment

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Sensory memory can be divided into subsystems called the sensory registers: such as iconic, echoic and haptic.

Iconic Memory

Iconic memory is the visual sensory memory register which stores visual images after its stimulus has ceased. While iconic memory contains a huge capacity, it declines rapidly. Information stored in iconic memory generally disappears within half a second (depending on the brightness).

Experiment

Close your eyes for one minute, and hold your hand about 25cm from your face and then open and close your eyes. You should see an image of your hand that fades away in less than a second

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Echoic Memory

Echoic memory is the sensory memory for incoming auditory information (sounds). The information which we hear enters our organism as sound waves. These are sensed by the ears' hair cells and processed afterwards in the temporal lobe. The processing of echoic memories generally takes 2 to 3 seconds.

Experiment

Clap your hands together once and see how the sound remains for a brief time and then fades away.

Haptic Memory

Haptic memory involves tactile sensory memories procured via the sense of touch through the sensory receptors which can detect manifold sensations such as pain, pressure, pleasure or itching. These memories tend to last for about two seconds. It enables us to combine a series of touch sensations and to play a role in identifying objects we can't see. E.g. Playing a song on guitar, sharp pencil on the back of hand.

Experiment

An experiments using a device developed in the laboratory to study the human fingertip's discrimination and memory for softness perception. According to the pilot study, soft objects were easier to identify than hard ones. When subjects touched objects, the number of times seemed to be from 2 to 6. For most, the touch frequency ranged from 0.3 to 1.3 Hz. In Exp. 1, the method of constant stimuli was used to study the human fingertip's stiffness difference threshold for haptic perception. The estimated difference threshold averaged over 24 subjects was 33 N/m. And, the stiffness difference thresholds for most people were in the range of 20 N/m to 40 N/m. In Exp. 2, the haptic memory span was discussed according to the recall experiment. Human haptic memory span lay between three and four items.

Refer to the BELOW matrix of alphabets.

X	**B**	**S**	**T**
D	**H**	**M**	**G**
R	**L**	**W**	**C**

Show this matrix to a set of respondents for around 10 seconds only. Then ask them to recall and draw the same matrix on a paper.

Number of participants: 25

a) Average Characters recognized = 7.3 (60.8%)
b) Average Locations recognized = 5.2 (43.33%)

Now for another set of respondents do not show them the matrix. Instead read the letters to them row-wise in HIGH, MID and LOW tone respectively for row1, row2, row3.

Number of participants: 25

a) Characters recognized = 8.4 (70%)
b) Locations recognized = 6.1 (50.8%)

Analysis of Sensory Memory

Iconic memory: Also known as visual sensory memory, iconic memory involves a very brief image. This type of sensory memory typically lasts for about one-quarter to one-half of a second.

Echoic memory: Also known as auditory sensory memory, echoic memory involves a very brief memory of sound a bit like an echo. This type of sensory memory can last for up to three to four seconds.

Haptic memory: Also known as tactile memory, haptic involves the very brief memory of a touch. This type of sensory memory lasts for approximately two seconds.