Attention

What Is Attention?

Definition

- Attention is the process by which the mind chooses from among the various stimuli that strike the senses at any given moment
  - allows only some info to enter into consciousness

Related Concepts:

- Alertness
- Concentration
- Selectivity
- Control

Big Issues in Attention

Facts that drive attention research

- We are bombarded by more information than we can attend to
  - Selective Attention
  - Divided Attention
  - Automaticity
- Some tasks can be performed with little, if any, attention

Orienting

We don’t passively see or hear

- We actively look and listen

Different ways to orient to a stimulus

- Overt Orienting
- Covert Orienting

Attentional Gaze

- Attention can be drawn to a particular location independent of where our eyes are looking or our ears are oriented

Orienting

Orienting aligns attention with the visual field, either overtly through eye movements or covertly without any eye movement.

Spatial Neglect—Ignoring stimuli in the visual field opposite a lesion in one hemisphere of the orienting network.

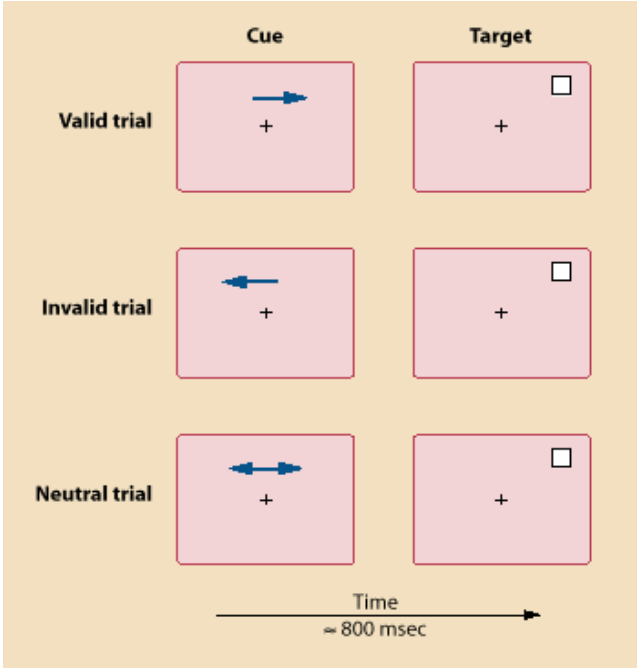
Cuing Attention

Give people a cue where a target will appear in the visual field

Manipulate the kind of cue

- Valid Cue
- Neutral Cue
- Invalid Cue

How does cue affect performance?



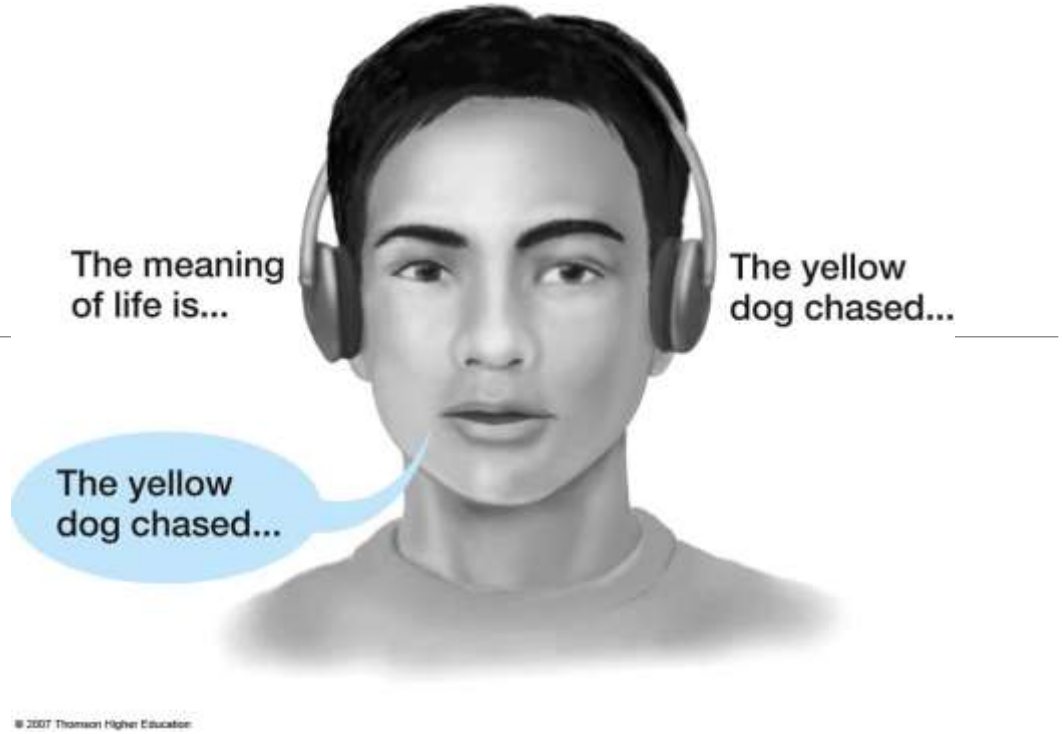
Selective Attention

Ability to focus on one message and ignore all others

Process one stimulus while ignoring another.

- Research method: dichotic listening
  - One message is presented to the left ear and another to the right ear
  - Participant “shadows” one message to ensure he is attending to that message

Dichotic listening method



In the shadowing procedure, a person repeats out loud words they have just heard.

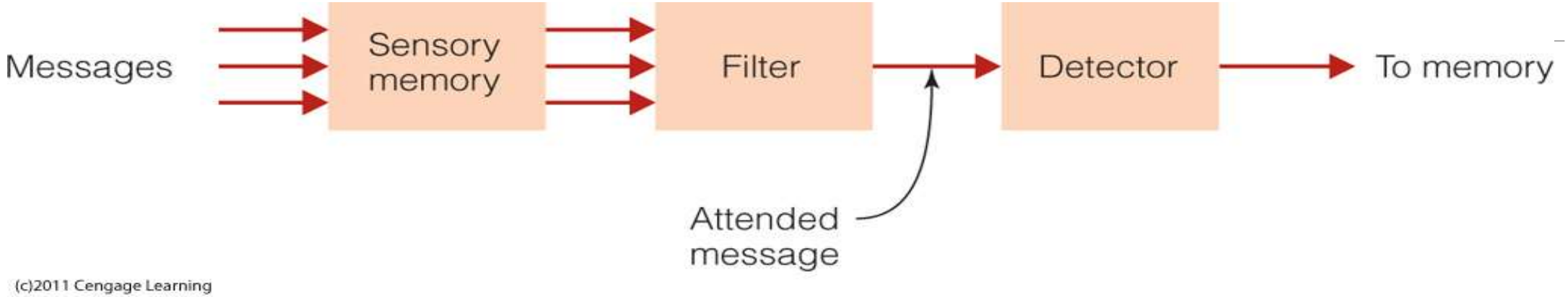
But they are required to shadow only the attended message (the message given to his left ear) and ignore the unattended message (the message given to his right ear).

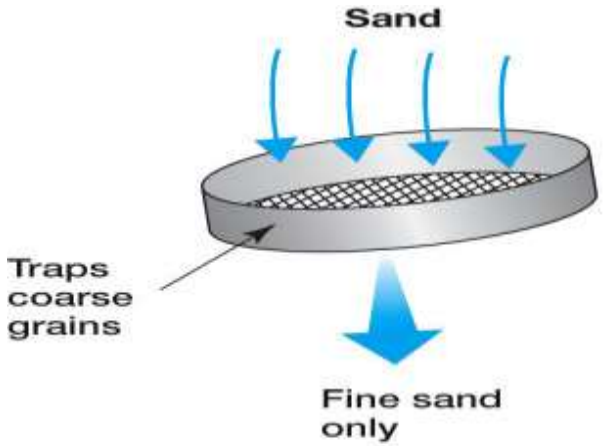
Selective Attention

Results of dichotic listening

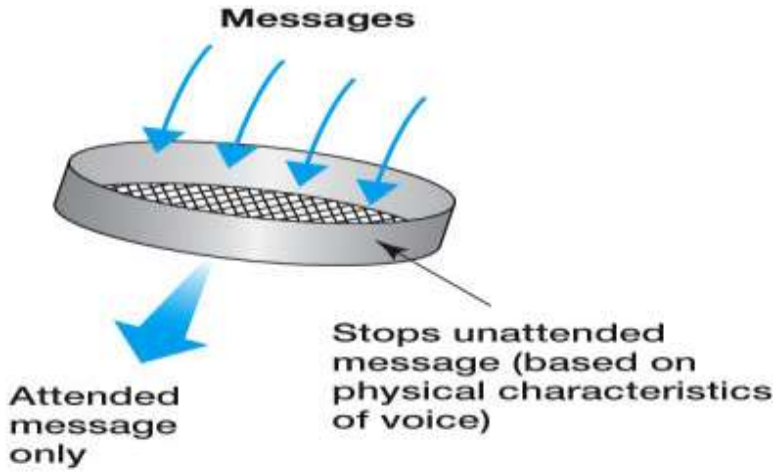
- Participants could not report the content of the message in unattended ear

Broadbent's filter model of attention.





(a)



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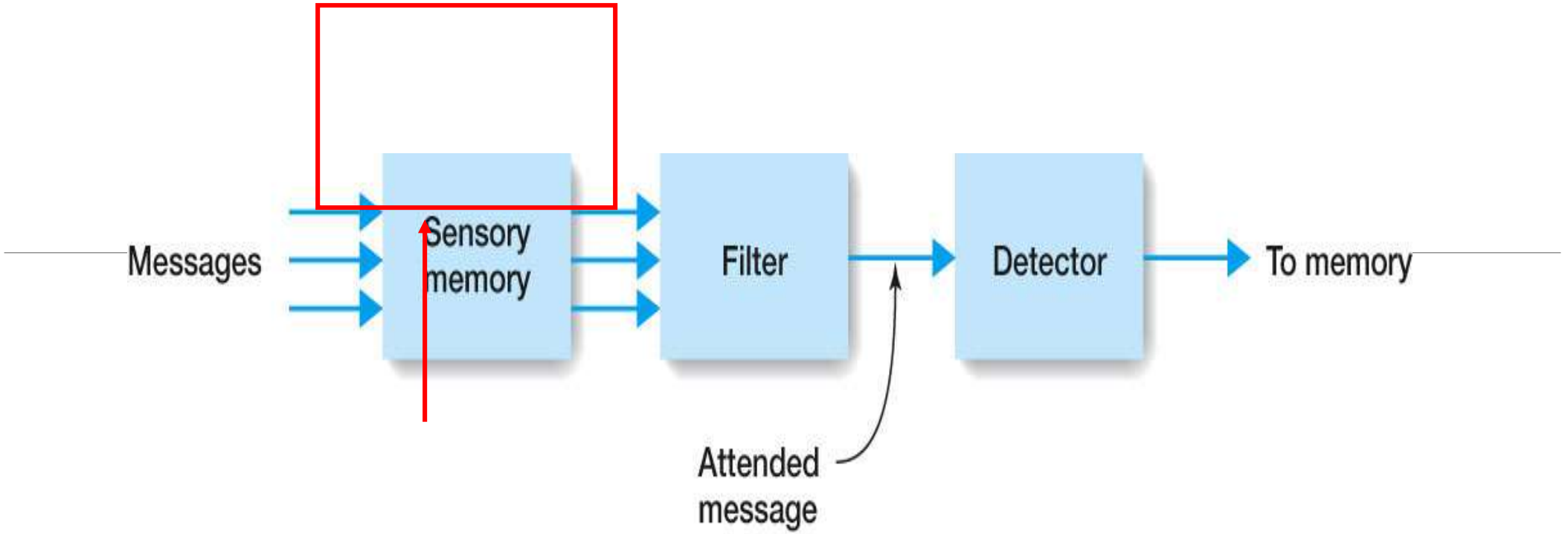
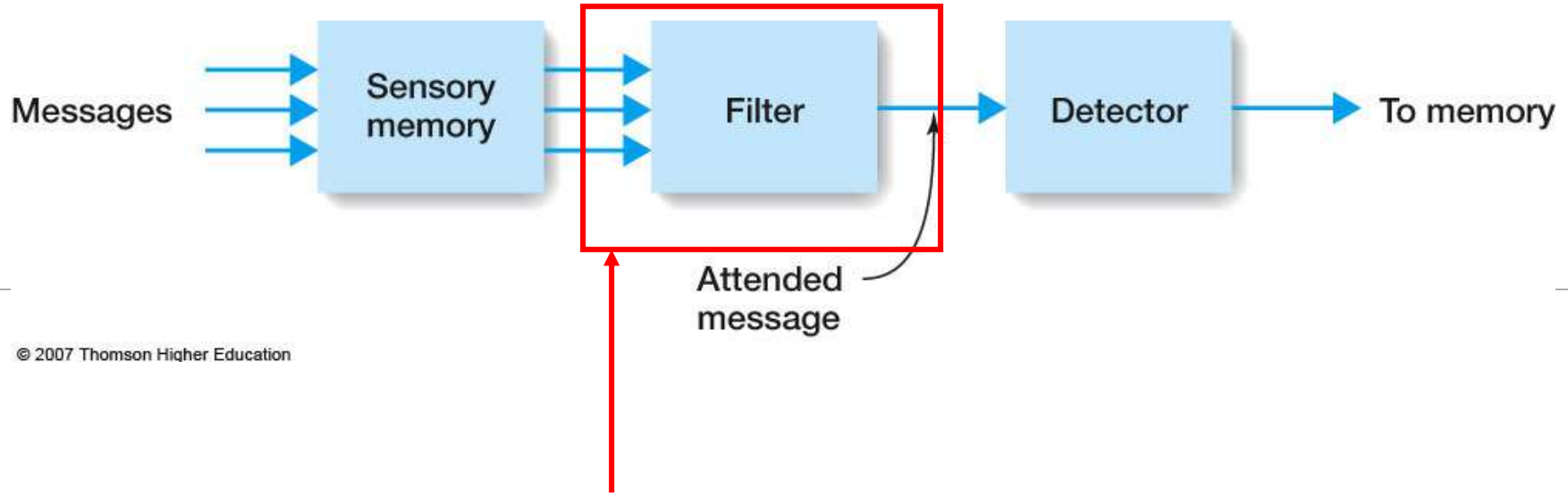


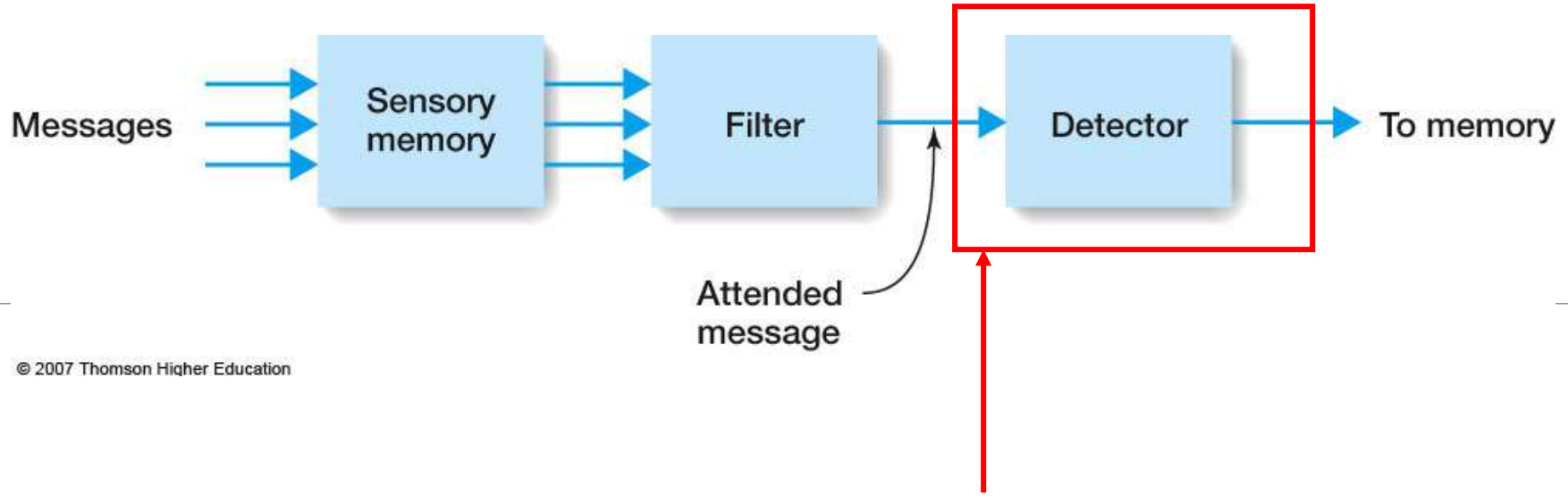
Sensory memory

- Holds all incoming information for a fraction of a second
- Transfers all information to next stage



Filter

- Identifies attended message based on physical characteristics
- Only attended message is passed on to the next stage



Detector

- Processes all information to determine higher-level characteristics of the message

Broadbent's Filter Model

Early-selection model

- Filters message ***before*** incoming information is analyzed for meaning

Verifying Broadbent's filter model

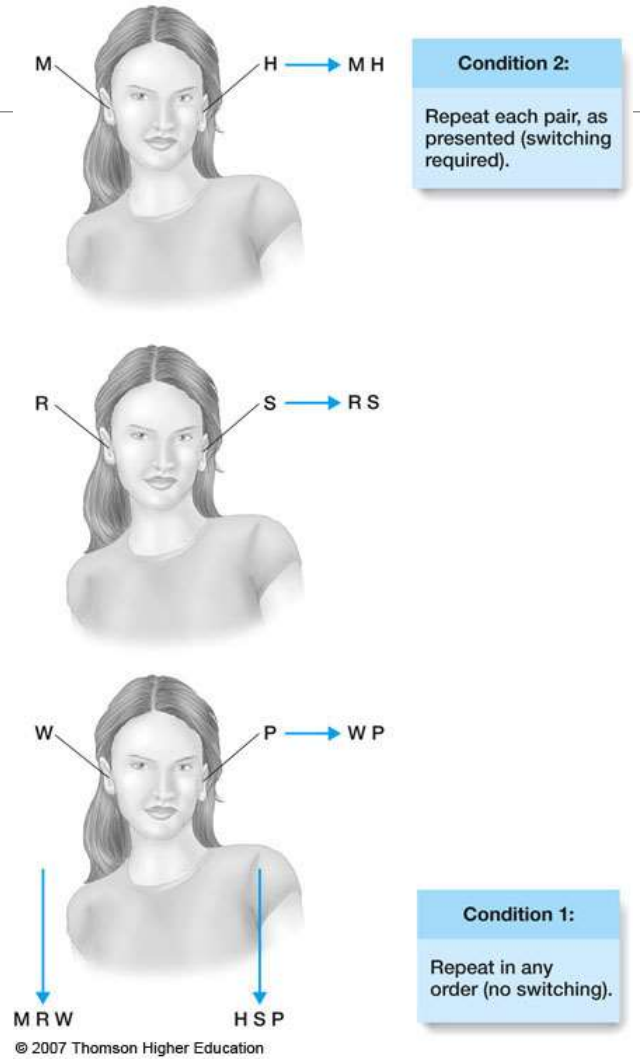
Broadbent's (1958) "split-scan" experiment

Two letters were presented to two ears at the same time

M H

R S

W P



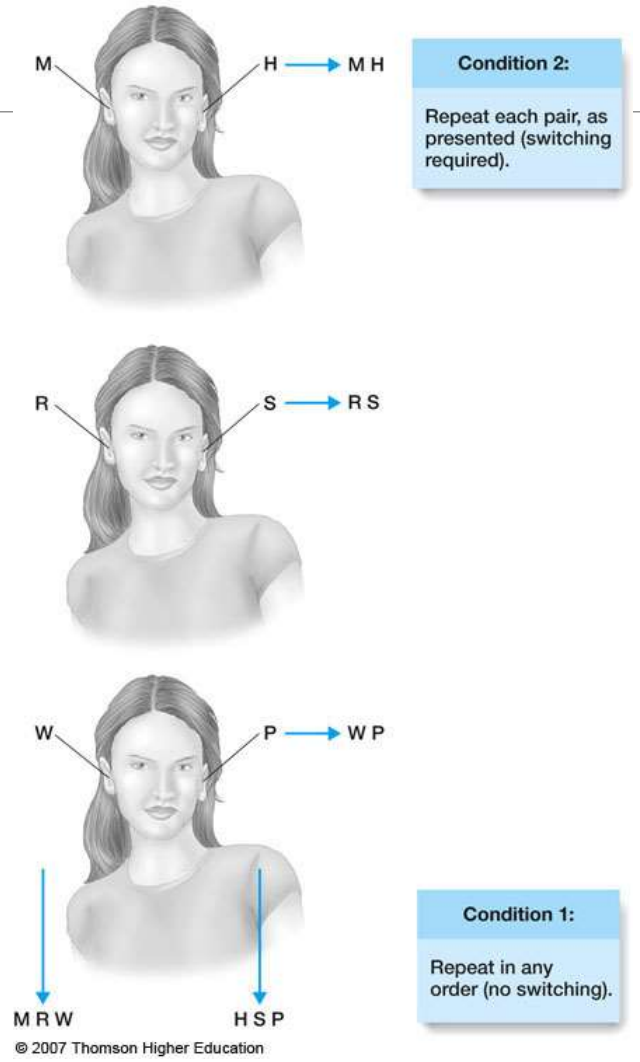
Condition 1: subjects were asked to report the letters in any order

Two letters were presented to two ears at the same time

M H

R S

W P

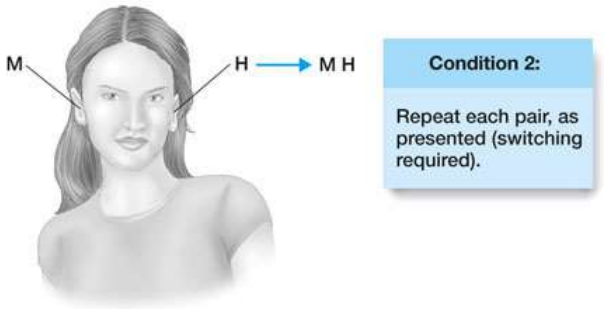


Condition 2: subjects were asked to report pairs of letters in the order each pair was presented.

Results

Condition 1: subjects were asked to report the letters in any order

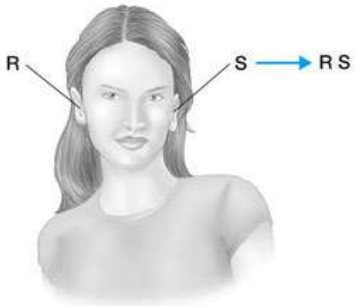
M H



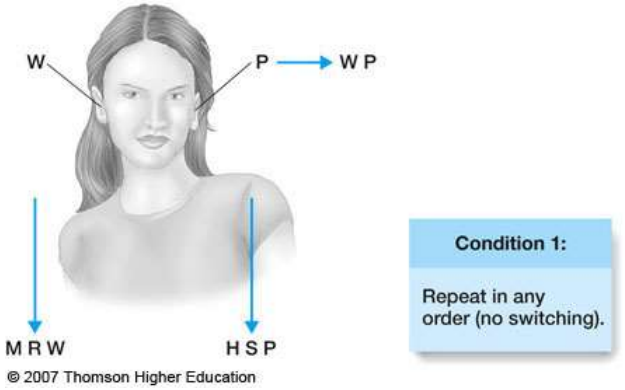
Accuracy → 65%

Subjects tended to report all letters presented to one ear (MRW) and then to the other ear (HSP)

R S



W P



Condition 2: subjects were asked to report pairs of letters in the order each pair was presented.

Accuracy → 20%

Broadbent's (1958) "split-scan" experiment

- Easy: report information from one ear and then the other
- Hard: Switching back and forth between ears
- It is difficult to switch attention between ears

1. In a _____ task, a person listens to an audiotape and hears two separate messages presented simultaneously to the left and right ears.

filter

dichotic listening

bionic listening

sustained attention

2. Broadbent, in proposing his filter theory of attention, argued that an attentional filter lets some information through and blocks out the rest. This filter is based upon:

the meaning of the message.

a physical characteristic of the message, such as its location.

the importance of the message.

the language of the message.

3. The _____ theory of attention states that there is a very limited amount of information that can be attended to at one time; unattended information is blocked out.

filter

attenuation

schema

cocktail party