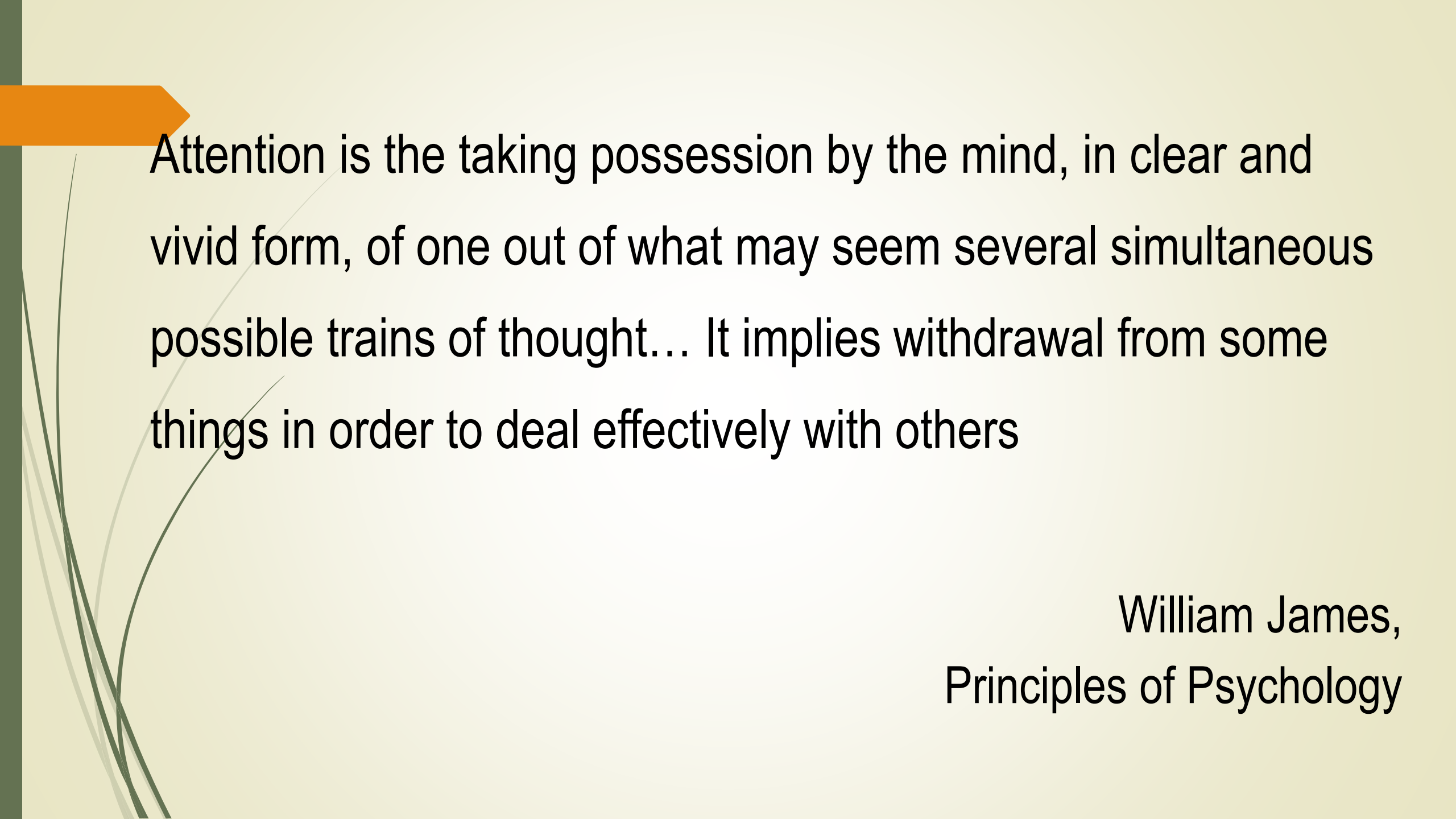





Lecture 3: Attention

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Attention is the taking possession by the mind, in clear and vivid form, of one out of what may seem several simultaneous possible trains of thought... It implies withdrawal from some things in order to deal effectively with others

William James,
Principles of Psychology

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- Attention is the means by which we actively process a limited amount of the enormous amount of information available through our senses, our stored memories, or other cognitive processes. It includes both conscious and unconscious processes.
 - How we actively process specific information present in the environment
 - Attention allows you to tune out information, sensation and perception that are not necessarily relevant at that moment but instead focus your energy on the information that is important
 - Attention refers to the concentration and focusing of mental effort




Consciousness

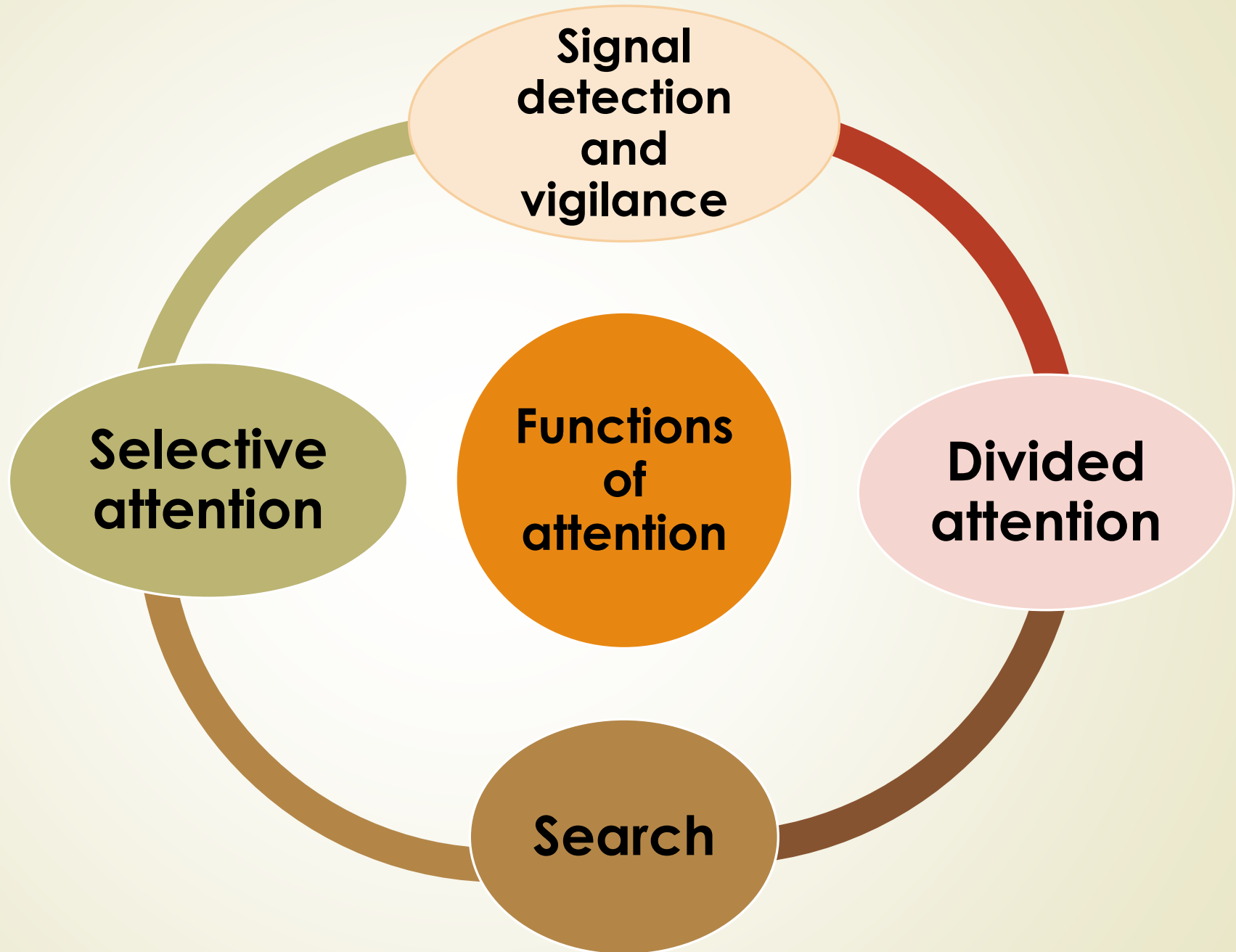
Consciousness includes both the feeling of awareness and the content of awareness, some of which may be under the focus of attention



Example: Your individual awareness of your unique thoughts, memories, feelings, sensations and environment





Conscious attention serves three purposes in cognition:

- 1.** it helps in monitoring our interactions with the environment, through such monitoring, we maintain our awareness of how well we are adapting to the situation in which we find ourselves
 - 2.** it assists us in linking our past (memories) and our present (sensations) to give us a sense of continuity of experience. Such continuity may even serve as the basis for personal identity
 - 3.** it helps us in controlling and planning for our future actions. We can do so based on the information from monitoring and from the links between past memories and present sensations
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- 1. Signal detection and vigilance:** We try to detect the appearance of a particular stimulus. Air traffic controllers, for example, keep an eye on all traffic near and over the airport.
 - 2. Selective attention:** We choose to attend to some stimuli and ignore others, example when we are involved in a conversation at a party.

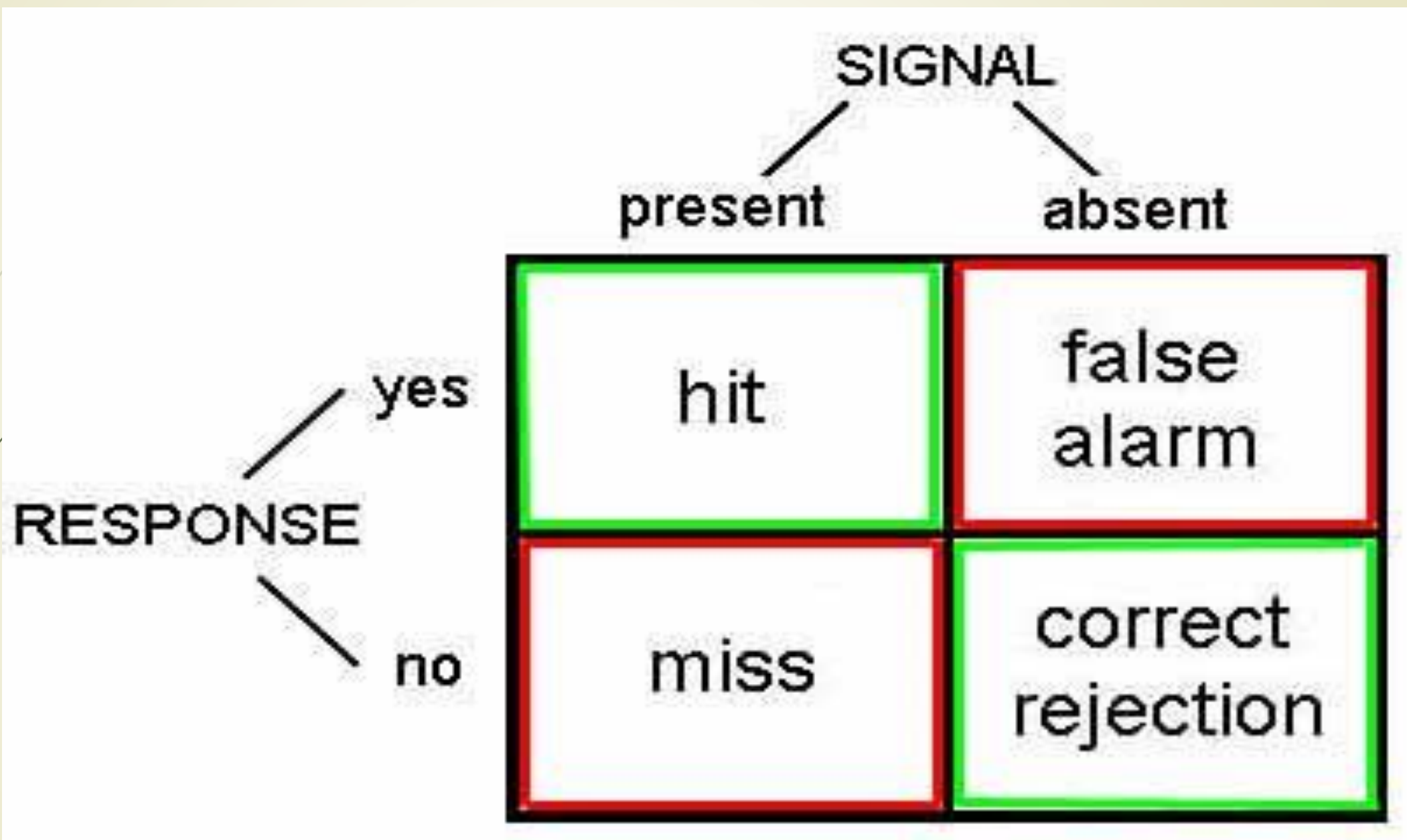
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- 3. Divided attention:** We prudently allocate our available attentional resources to coordinate our performance of more than one task at a time, example when we are cooking and engaged in a phone conversation at the same time
 - 4. Search:** We try to find a signal amidst distracters, - for example, when we are looking for our lost cell phone on an autumn leaf-filled hiking path.




Signal Detection: Finding Important Stimuli in a Crowd

Signal-detection theory (SDT) is a framework to explain how people pick out the few important stimuli when they are embedded in a wealth of irrelevant, distracting stimuli.

SDT is often used to measure sensitivity to a target's presence





1.Hits or “true positives” (correctly identifies the presence of a target)

2.False alarms or “false positives” (incorrectly identifies the presence of a target that is actually absent)

3.Misses or “false negatives” (fails to observe the presence of a target)

4.Correct rejections or “true negatives” (correctly identifies the absence of a target)



Example

Task instruction: Indicate when you see a pigeon

Hits: accurately identify the target stimuli/ a pigeon

False alarms: indicating the target when it is not there/
thinking you have seen a pigeon but it is a crow

Misses: not noticing the target/ you did not see the pigeon

Correct rejection: correctly identifying the absence of a
target/ there is a crow but not a pigeon

Vigilance: Waiting to detect a signal

- Vigilance - refers to a person's ability to attend to a field of stimulation over a prolonged period, during which the person seeks to detect the appearance of a particular target stimulus of interest.
- Paying attention over a long period of time to see a stimuli at any give time

Example: Participants were watching when a clock hand took a double step,

- substantial deterioration after half an hour of observation

Selective attention

- Cocktail party problem (Colin Cherry) - the process of tracking one conversation in the face of the distraction of other conversations.
- He observed that cocktail parties are often setting in which selective attention is salient

Examples

- Sir is lecturing but your friend is speaking to you. You may choose to listen to sir and take notes or listen to your friend and decide to read on the topic covered in the lecture later.
- You have one ear phone in and your friend brings in some gossip. You could disregard the music playing to the point it becomes background music or you may especially like the song playing and choose to focus on it

Selective attention and vision

- Stroop effect/ name as quickly as possible the colour of ink in which each word is printed. Name from left to right across each line

Blue

Brown

White

Red

Orange

Purple

Pink

Green

Black

Gray

Green

Pink

Brown

Black

Gray

White

Red

Blue

Orange

Purple

Purple

Black

Red

Gray

Green

Orange

Pink

Brown

Blue

White

Read through the list of colour names as quickly as possible. Read from right to left across each line

Blue

Brown

White

Red

Orange

Purple

Pink

Green

Black

Gray

Green

Pink

Brown

Black

Gray

White

Red

Blue

Orange

Purple

Purple

Black

Red

Gray

Green

Orange

Pink

Brown

Blue

White

➤ Read the “black words” only

In performing an experiment like this one on man attention car it house is boy critically hat important shoe that candy the old material horse that tree is pen being phone read cow by the hot subject tape for pin the stand relevant view task sky be red cohesive man and car grammatically house complete boy but hat without shoe either candy being horse so tree easy that phone full cow attention is hot not tape required pin in stand order view to sky read red it nor too difficult

➤ When people do this type of task they do not effectively remember

Stroop effect: Demonstrates the psychological difficulty in selectively attending to the colour of the ink and trying to ignore the word that is printed with the ink of that colour

- Reading is an automatic process
- Colour naming is a controlled process
- Our automatic process of reading interferes with our ability to selectively attend to colour naming

Divided attention

- Divided attention occurs when we are required to perform two or more tasks at the same time and attention is required for the performance of both/ all the tasks/ multitasking
- It is easier to multitask when the activities do not require much focus: rewriting notes and listening music, watching a movie and cleaning the house,
- The task becomes difficult when both activities require that a good amount of attention is focused on the activities, cooking and doing the laundry, taking care of younger sibling and doing your homework

Search

- Actively seeking out the target/ scanning the environment for a particular feature

Example: rummaging through your room looking for a particular book/ shoes/ clothes when it is particularly messy

- Distractor: Nontarget stimuli that divert our attention away from the target stimuli

Example: objects that are similar to what we are searching for which then gives you false hope or causes false alarm

Feature search

- Searching for an object or target with a specific feature

Example: you are an assassin sent to kill someone in a suit on Wall street. Everyone on Wall street wears a suit

- Your target has specific features such as he is partially bald and wears a brown briefcase



Conjunction search

Finding an object that has a combination of two features



Filter Theories

➤ Feature integration theory Treisman 1986

Whenever we have previously identified a stimulus or a target by a specific feature, we encode that to memory and whenever we want to locate it, we receive the feature of the stimulus or target from memory

Filter Theories

➤ Similarity theory

the more the stimulus and the distracter have in common, the harder it is to accurately point out what it is that you are looking for

➤ Guided search theory

finding targets that have similar elements to what you are looking for/
eliminating those that do not fit the criteria of what you are looking for



Homework

Attention Deficit Hyperactivity Disorder

1. Definition
2. Characteristics of people with ADHD



THANK YOU