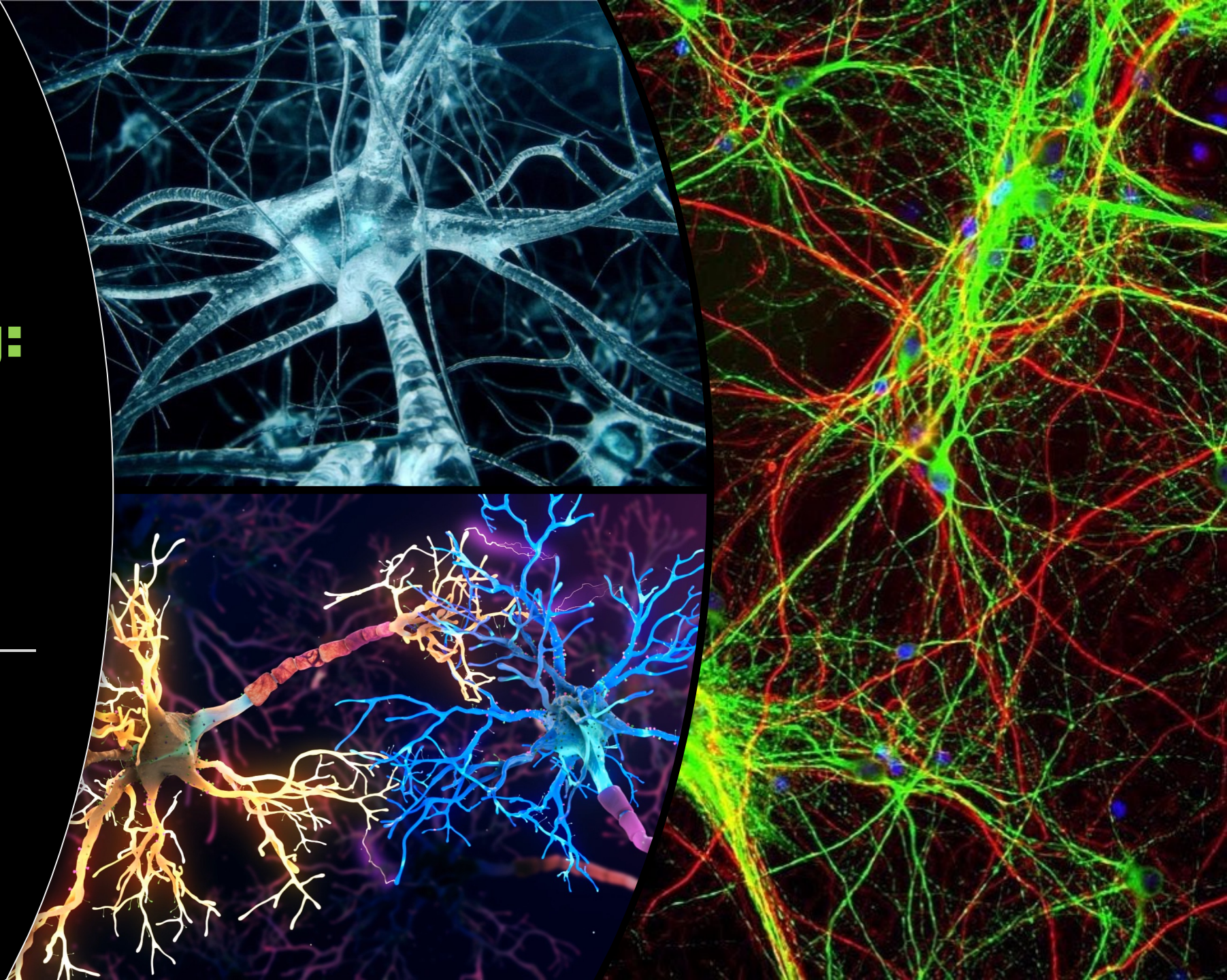


Enhancing Learning Through Brain Research

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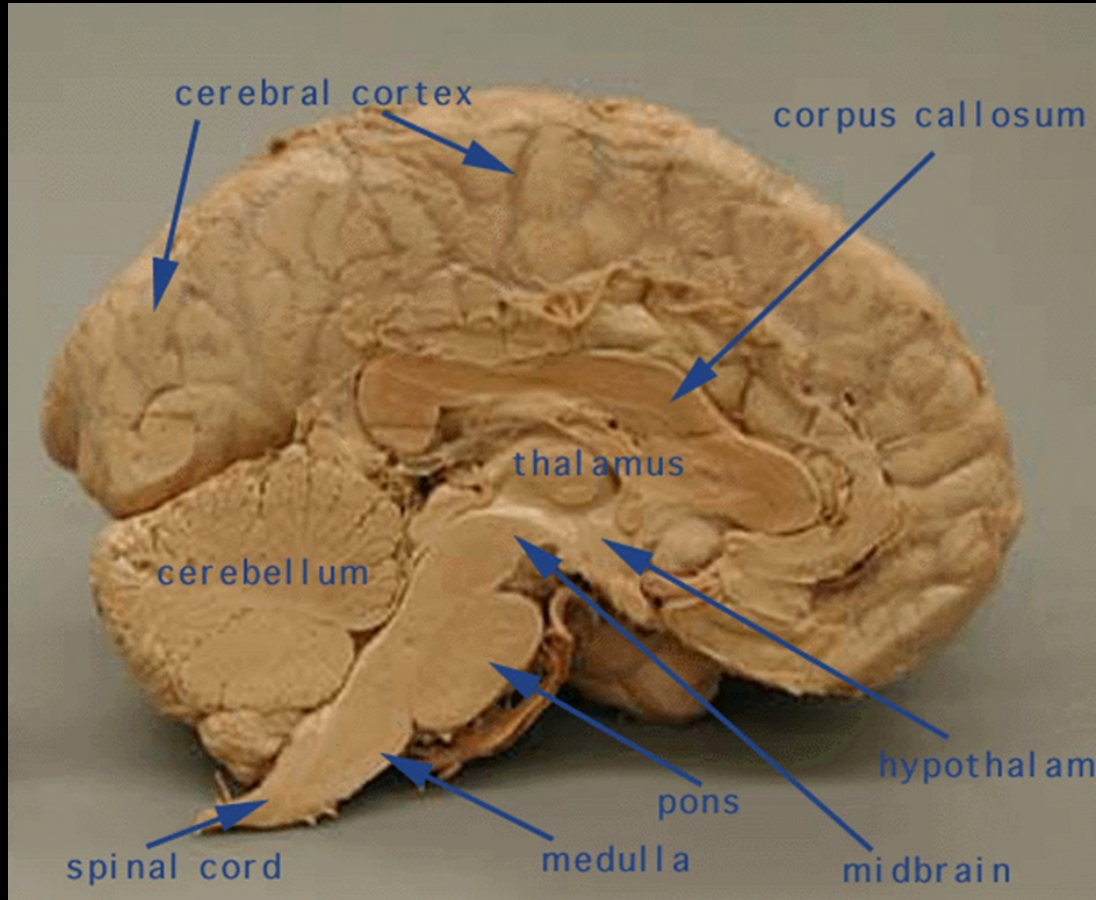
Neuroimaging: Offers new insights into how the brain learns



Reticular Activating System



Limbic System



- **Thalamus:** all sensory data is synapsed here and sent to cerebrum, motor activity
- **Hypothalamus:** homeostasis, emotion, thirst, hunger, circadian rhythms, and control of the autonomic nervous system.
- **Amygdala:** fear center, emotional center
- **Hippocampus:** converts short term to long term memory

Cerebral Cortex

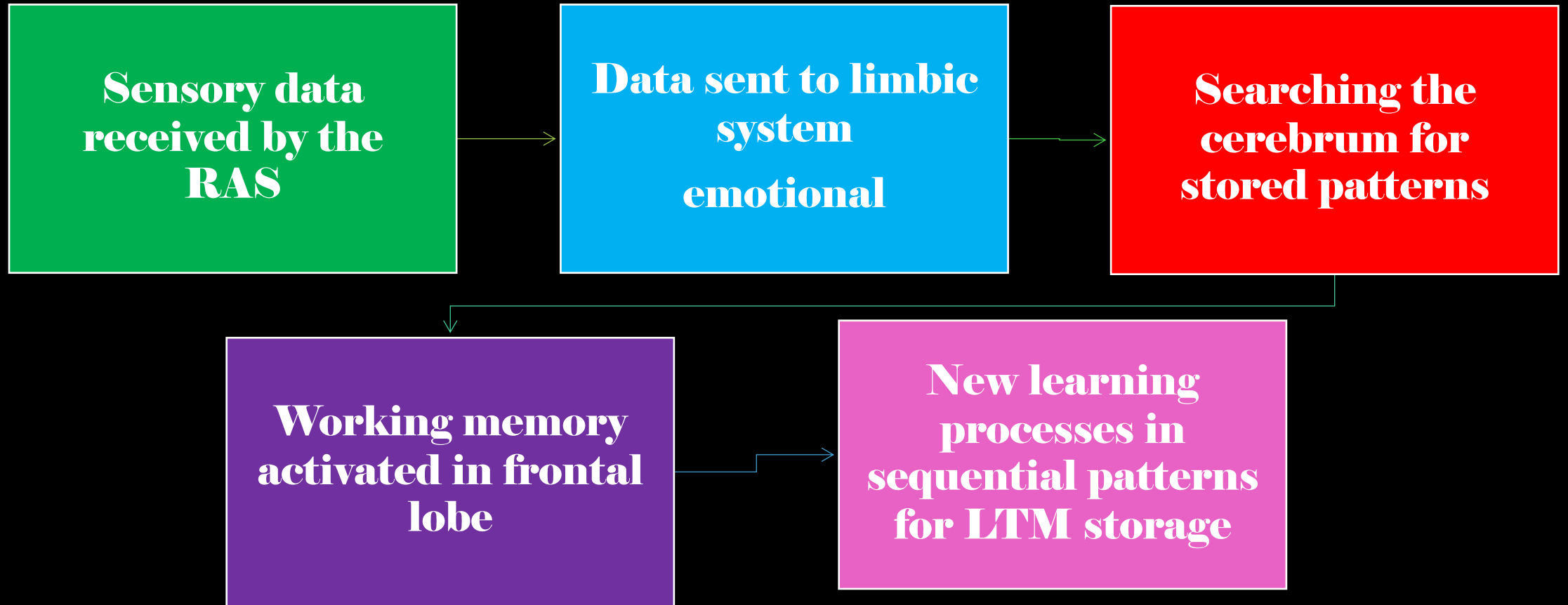
Frontal Lobe- associated with reasoning, planning, parts of **speech**, movement, emotions, and **problem solving**

Parietal Lobe- associated with **movement**, orientation, recognition, perception of stimuli

Occipital Lobe- associated with **visual** processing

Temporal Lobe- associated with perception and recognition of **auditory** stimuli, memory, and speech

The Process of Learning



Functions of the Brain: Neurons that Fire Together Wire Together

Linguistic

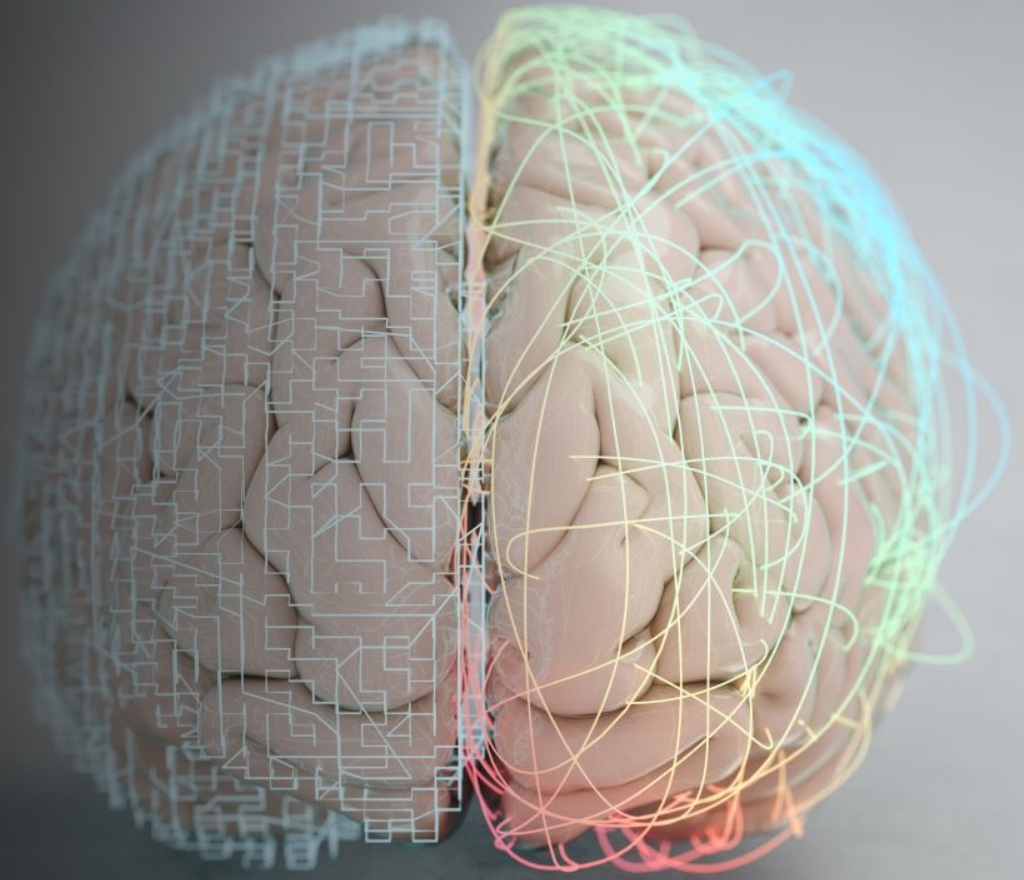
Visual / Spatial

Motor

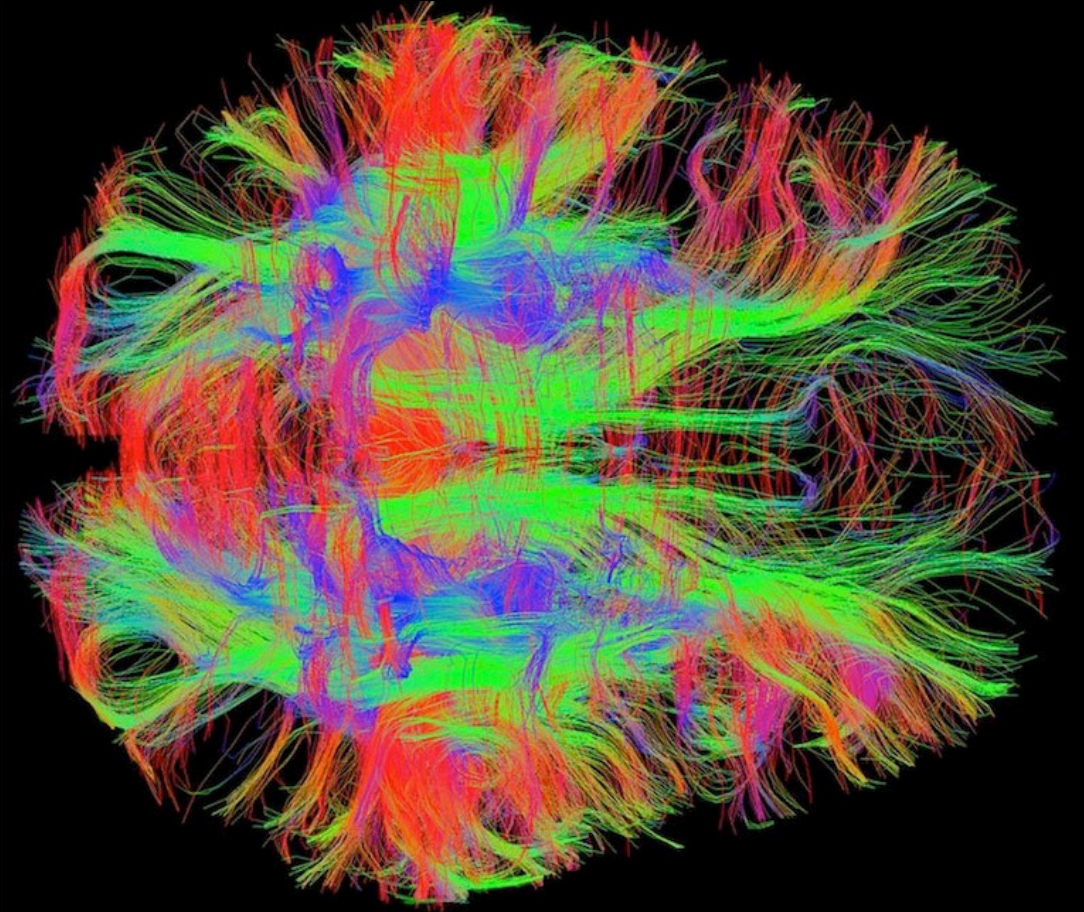
**Executive Functions /
Attentional**

Memory

Caine and Caine Brain/ Mind Learning Principles



Each brain is uniquely organized.



All Learning is Physiological



Learning is Developmental



The brain is social





The search for meaning is innate.

**Learning
involves both
conscious
and
unconscious
processes**





We learn through patterns.

**Emotions
are
critical to
patterning
and
storage**



The brain learns parts and wholes simultaneously



**Learning involves focused
attention and peripheral
perception**





Complex learning is enhanced by challenge and limited by threat