Chapter 13: Learning and Memory

The Nature of Learning

Four Principal Types of Learning

Two Principal Types of Memory

Memory Consolidation

Synaptic Plasticity

- electrophysiological mechanisms
- biochemical mechanisms

Neurobiological Mechanisms

Disorders

The Four Principal Types of Learning

1) Perceptual Learning.

- learning to recognize stimulus
- identify and characterize stimuli
- every sensory system is capable

The Four Principal Types of Learning

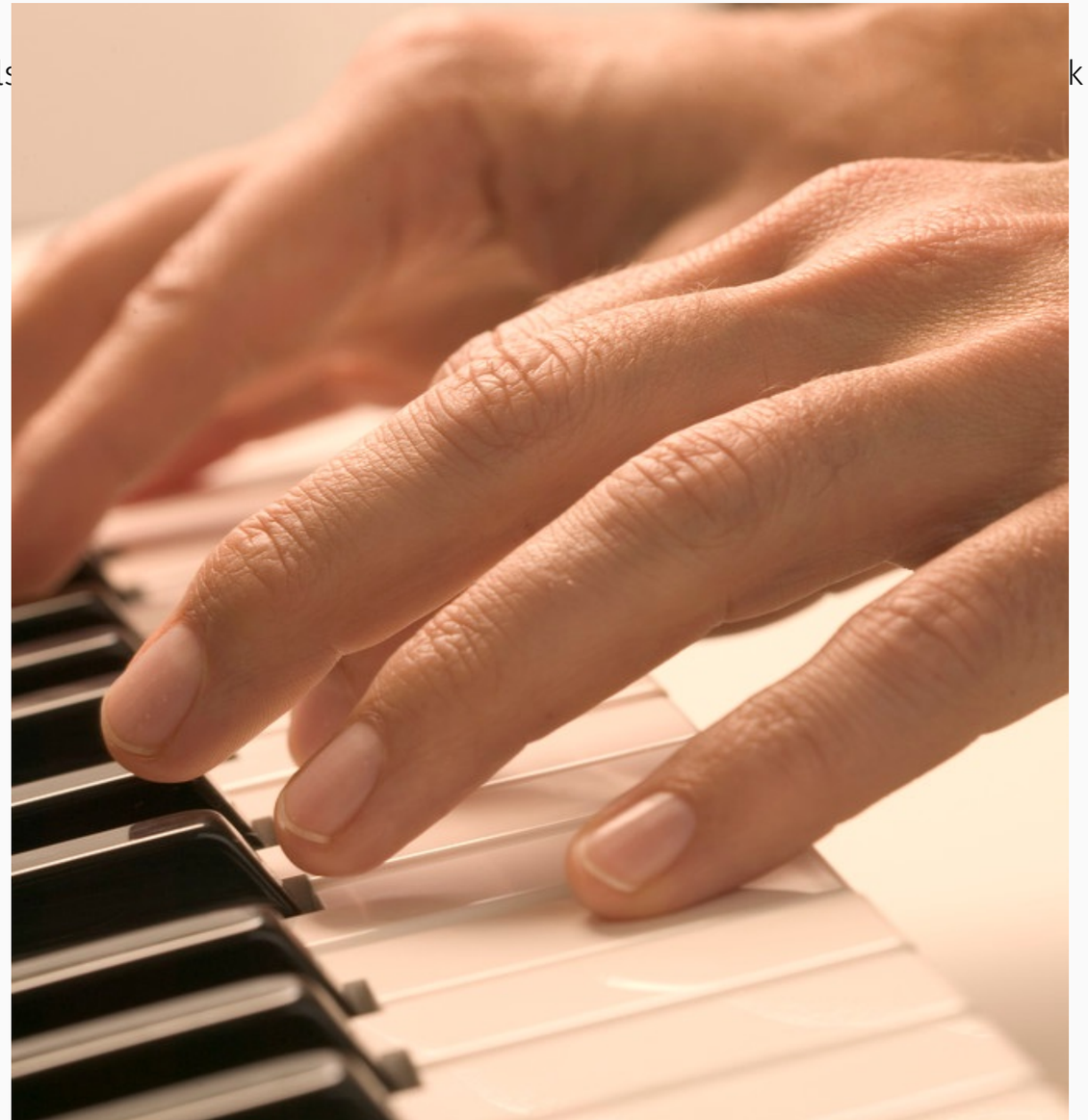
1) Perceptual Learning.

- learning may be automatic and uncons

The Four Principal Types of Learning

2) Motor Learning.

- learning to make a new response
- changes in a neural circuit that controls



The Four Principal Types of Learning

3) Stimulus/Response (S/R) Learning.

- learning to make a response in presence of a stimulus, changes in connections in sensory-motor circuits
- non-associative learning (habituation/sensitization/dishabituation)
- habituation = attenuated response after exposure to one or more presentations of stimulus

The Four Principal Types of Learning

3) Stimulus/Response (S/R) Learning.

- non-associative learning (habituation/s
- sensitization = exaggerated response af

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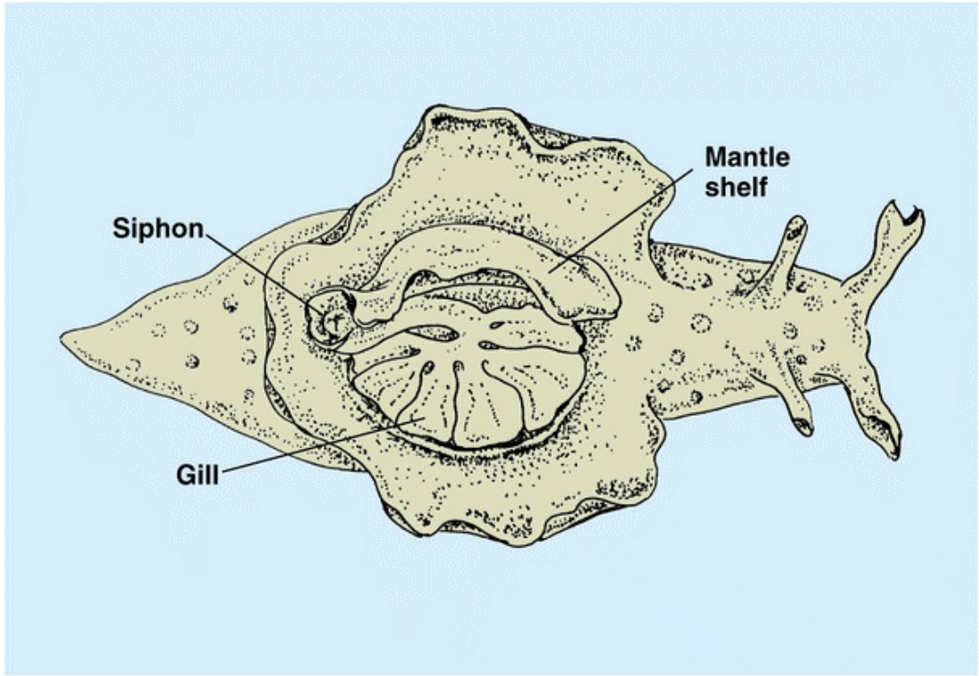
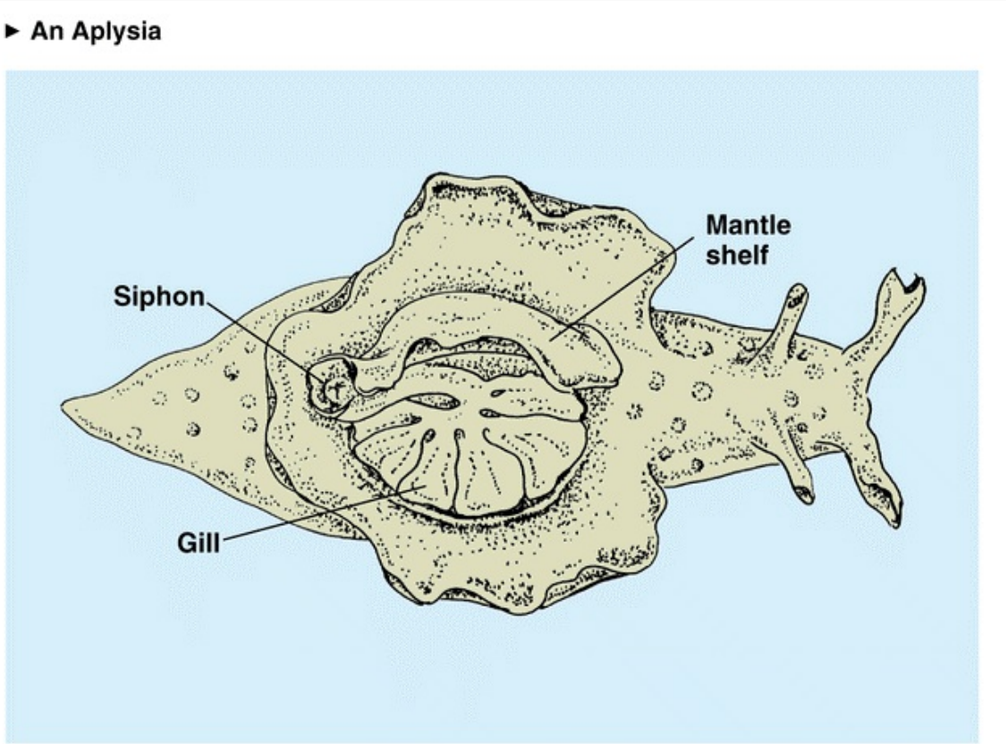


The Four Principal Types of Learning

3) Stimulus/Response (S/R) Learning.

- non-associative learning (habituation/s
- dishabituation = robust response that w ually noxious) stimulus



The Four Principal Types of Learning

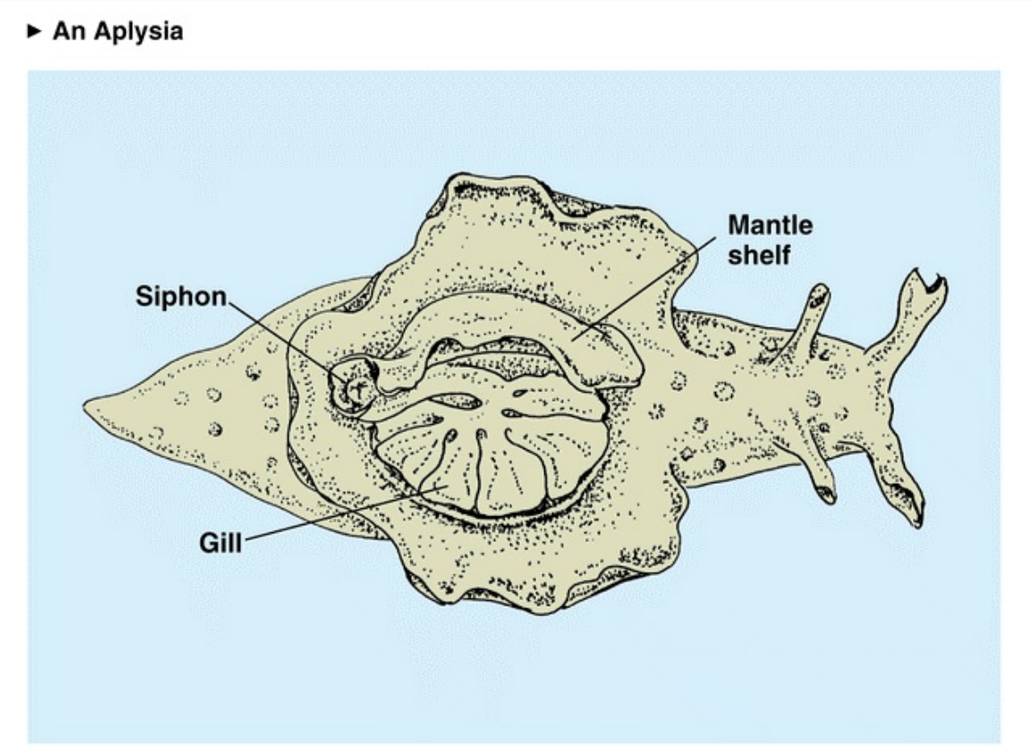
3) Stimulus/Response (S/R) Learning.

- associative learning (classical/operant conditioning)
- classical conditioning = adaptation in which an unimportant stimulus acquires importance
- calls upon automatic species-typical responses
- requires association between two stimuli

The Four Principal Types of Learning

3) Stimulus/Response (S/R) Learning.

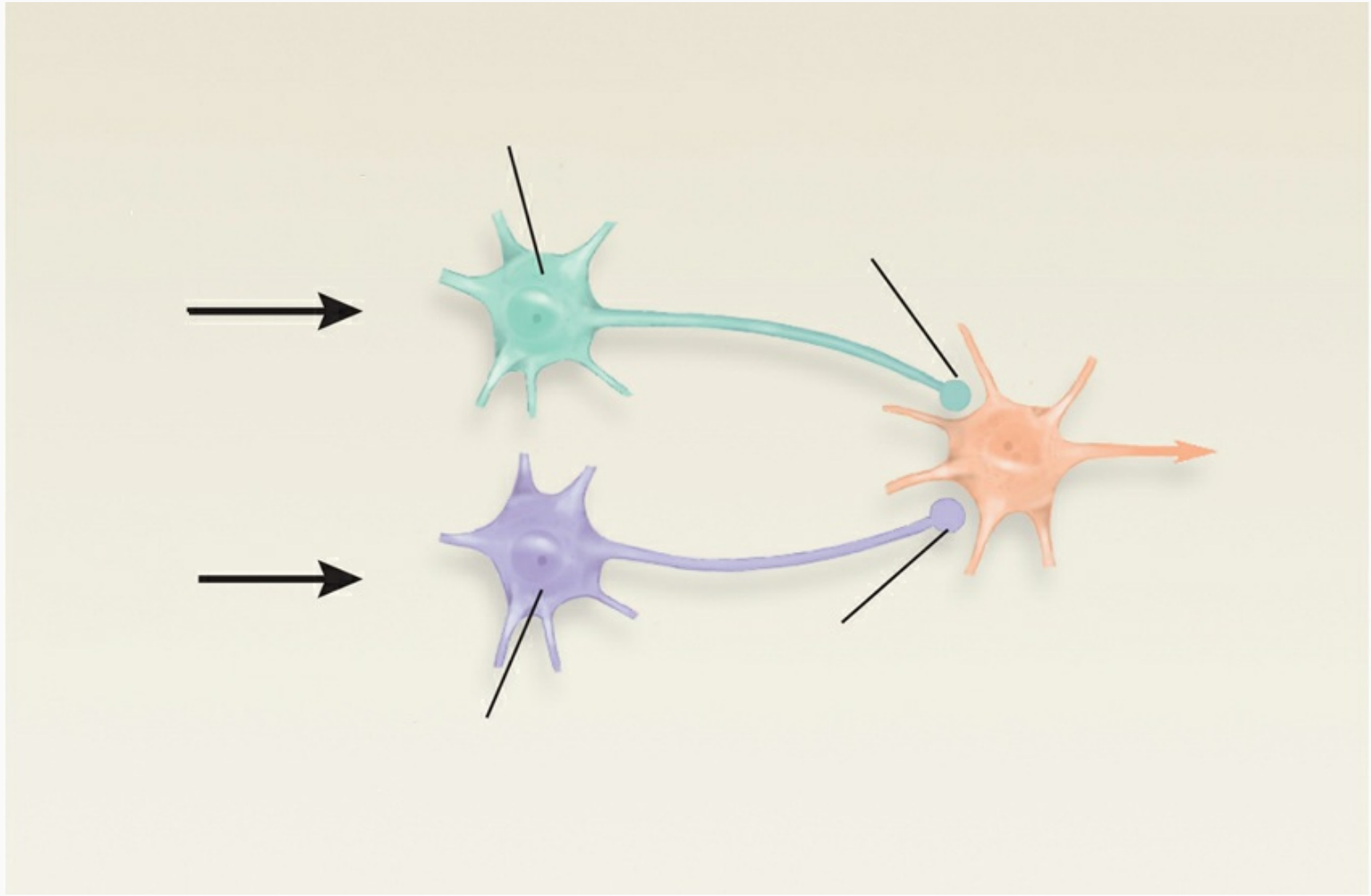
- associative learning (classical/operant
- CS+ is initially unimportant stimulus pa
- CS- is unpaired stimulus



The Four Principal Types of Learning

3) Stimulus/Response (S/R) Learning.

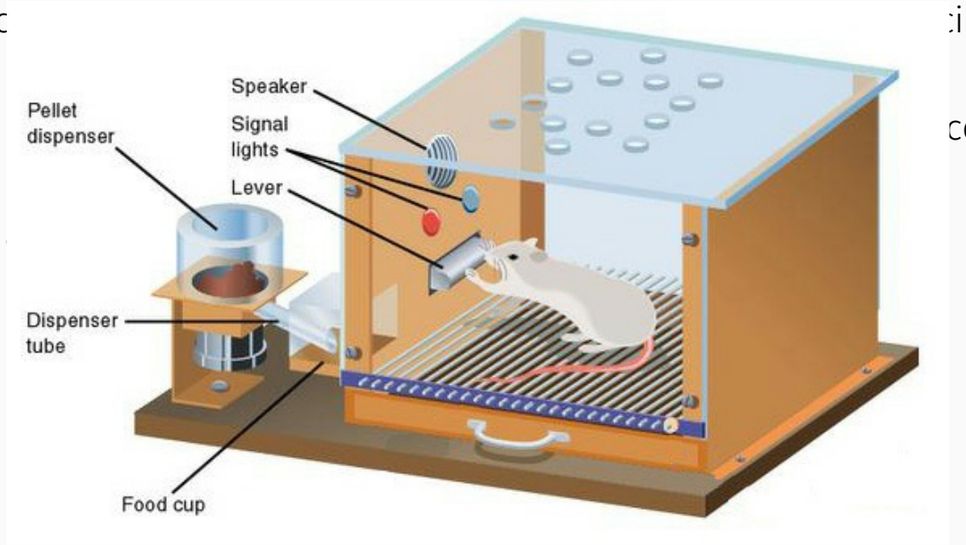
- Classical Conditioning



The Four Principal Types of Learning

3) Stimulus/Response (S/R) Learning.

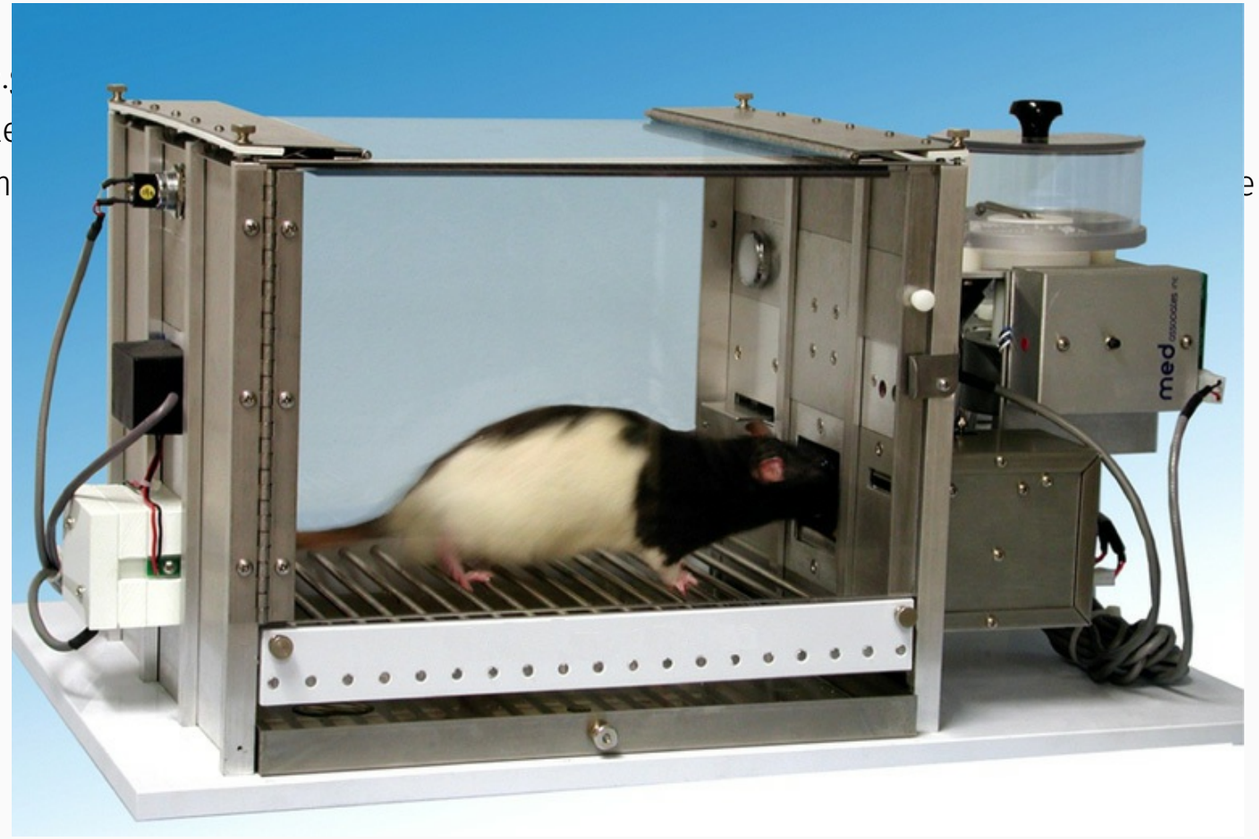
- learning to make a response in presenc circuits
- associative learning (classical/operant
- operant or instrumental conditioning = consequences of actions
- calls for learned behaviors
- requires association between stimulus



The Four Principal Types of Learning

3) Stimulus/Response (S/R) Learning.

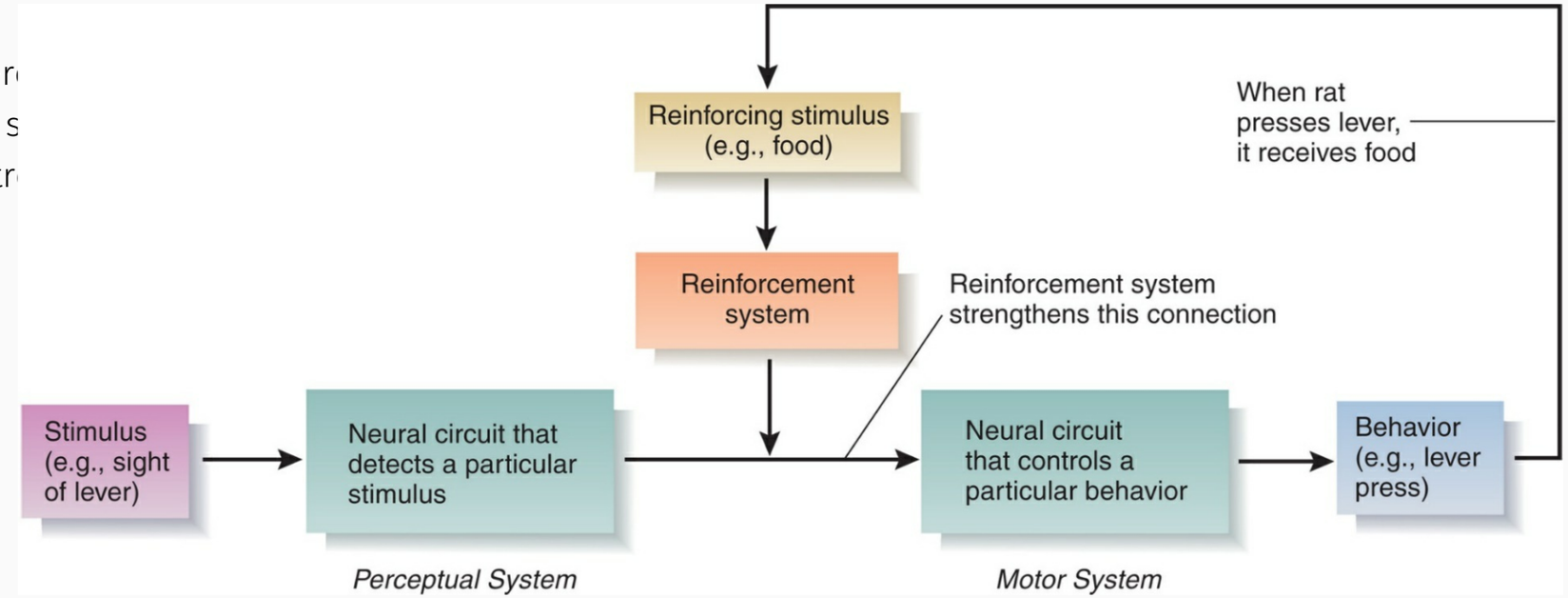
- operant conditioning:
- Reinforcement = appetitive stimulus (e.
- Punishment = aversive stimulus (e.g. ele
- Negative Reinforcement = aversive stim e of behavior



The Four Principal Types of Learning

3) Stimulus/Response (S/R) Learning.

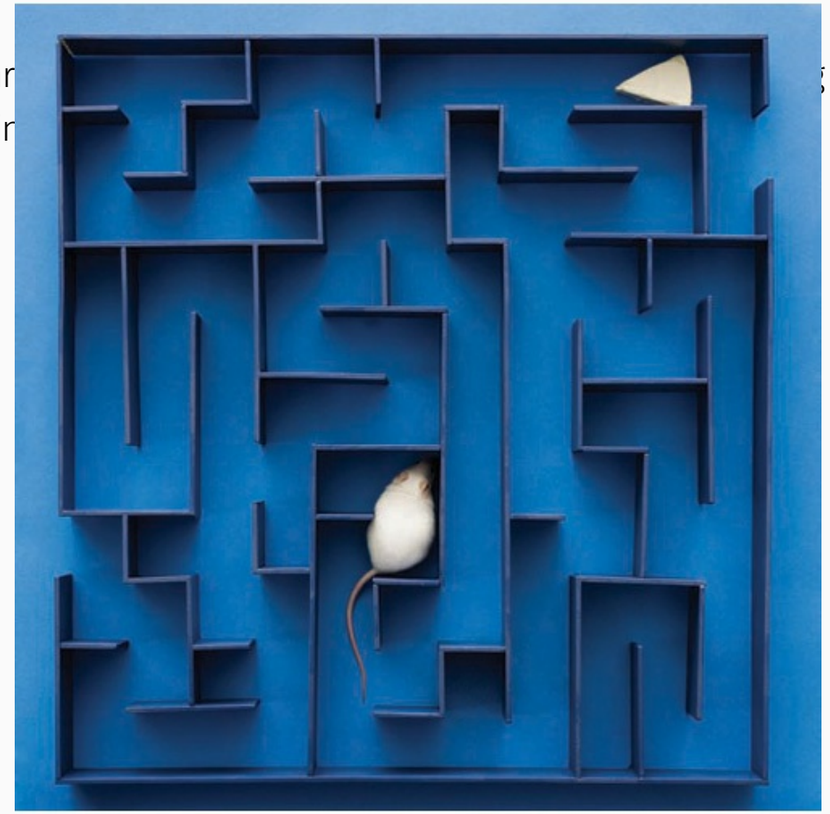
- Operant Conditioning
- sensory input yields perception of rf+-r
- activates motor neurons that produce s
- reinforcement activates system that str
- behavior reoccurs



The Four Principal Types of Learning

4) Relational Learning.

- the most complex form of learning
- includes ability to recognize objects thr ; relative locations of objects within the environment, remembering the sequence of events ir



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