Early Learning Theories

Psychology 390
Psychology of Learning
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Begins with Associative Learning

• Reflexes
  • Described as a stimulus always eliciting the same response
    \[ S \rightarrow R \]
  • The strength of the response can change two ways with experience

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Habituation

• A decrease in some response due to repeated exposures to a stimulus.
  • e.g., Walk into a room with a bad odor (Sulfur). At first you grimace and attempt to avoid the smell.
  • Once you habituate, it doesn't smell as strongly as it did at first.

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Sensitization

• An increase in some response due to repeated exposures to a stimulus
  • e.g., Walk through the woods. At first you are alert to the noise (sensitized), then you habituate.
  • Then a twig snaps – You immediately become alert and responsive again.

Signals may be potential dangers

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Habituation and Sensitization

• Often occurs very rapidly
  • Usually is not caused by fatigue
  • Usually is associated with some type of stimulus that can be harmful to the organism.

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So What is Associative Learning?

• Defined as the the relationship between two stimuli.
  • \( S_1 \) becomes associated with \( S_2 \)
  • \( S_1, S_2 \)

• Key: The stimuli to which associations can develop can be anything.
• Several types of associative learning
Classical Conditioning

- Has a Stimulus - Stimulus focus
- S - S - R
- Analyze characteristics of the stimuli and how they influence the response

Instrumental Conditioning

- Has a Stimulus - Response focus
- S - R
- Focus is on the stimulus and how it influences the response

Operant Conditioning

- Has a Response - Stimulus focus
  S - R - S
- Examines how the consequent stimuli influences the response

Cognitive Learning

- Has a Stimulus - Organism - Response focus. Two Forms
- S - O - R
- Examines how some internal variable influences a response.
- S - O - R - S
- Examines how the consequent stimulus influences some internal variable which then influences the response.

Early Classical Conditioning Ideas

- Ideas begin with the concept of the reflex by Descartes.
- Senses are muscles are connected by a complex set of nerves.
- The flow of animal spirits through these nerves makes it possible for instinctive reactions to take place.

Example

- Step on a sharp stick.
- Nerves in foot send a signal to the Brain.
- Brain releases an animal spirit into the nerve which goes to a muscle causing it to swell and ultimately causes the foot to be pulled up off the stick.
Voluntary Reflexes

- Were more problematic because the mind and body are separate.
- Again, body is controlled by physical mechanisms.
- Mind is controlled by the soul.
- So how does the mind influence the body?

Answer

- The soul was located in the Pineal gland.
- The pineal also was the container for the animal spirits.
- Animal Spirits was the fluid that produced the muscle contractions.
- Tip the Pineal in the right direction, the soul then pushes the fluids in the right direction.
- Fluids would flow to the correct muscle and movement would occur.

Answer

- Thus, Pineal was the connecting system for both the mind and the body.

Later Concepts for Classical Conditioning

- Concepts come from physiology and reflexology.

Reflexes

- The experimental study of reflexes began with casual observations.
- If you stimulate the muscle, you get a contraction.
- Hall used decapitated newts and snakes.
- Found a widespread response to a stimulus some distance away from the stimulus site.

Sherrington

- Was an English physiologist.
- For Psychology, developed a major concept.
- Neural impulses and pathways extending from the sense organs and glands results in an automatic reaction from the stimulus (Spinal Reflexes).
Sechenov (1829-1905)

- Called the father of "Reflexology.
- Wrote a book called "The Reflexes of the Brain"
- Argued that psychology should be studied by objective methods of physiology.
- Independently worked with reflexes

Contended

- All acts of consciousness or unconscious life are reflexes.
  - Thus, mental processes of learning, memory, thoughts, etc. were basically complex chains of reflexes.
  - For thoughts, the motor aspects were inhibited.

Contended

- Was in contrast to other researchers of his time.
  - Was called immoral and materialistic.
  - Attempted to picture the subjective world in a purely physiological context.
  - Concluded that although actions were attributed to mental terms, the observed events were objective behaviors.
  - Argued that since natural science relied on objective observations, psychology must use objective procedures as well.