UNIT 6 GUIDE – 12/01/2019
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MODULE 26 – How We Learn and Classical Conditioning

How Do We Learn?	- **Learning** is the process of acquiring new and relatively enduring information or behaviors
	- Learning to expect significant events = classical conditioning
	- Learning to repeat acts that bring rewards and avoid ones that don't = operant conditioning
	- Learning new things by watching others = cognitive learning
	- Learned associations often operate subtly and feed habitual behaviors
	- Things become habits after around 66 days
	- We **habituate** to something when we decrease our response to a stimulus after repeated exposure to it
	  - complex animals associate their own behavior with its outcomes
	- By linking two close events, animals exhibit **associative learning** in two forms
	  - *classical conditioning*: associating two stimuli to anticipate events
	  - *operant conditioning*: associating a response and its consequence
	- A **stimulus** is an event or situation that evokes a response
	- Through **cognitive learning**, we acquire information that guides our behavior

Classical Conditioning	- Ivan Pavlov laid the foundation for John B. Watson's ideas (Watson: psychology should be an objective science based on observable behavior) - Watson created **behaviorism**, the view that psychology should be objective and study behavior - They both didn't like "mentalistic" concepts - Pavlov's dog experiment demonstrated how a **neutral stimulus** (no response before conditioning) can be associated with an **unconditioned response** (an unlearned, naturally occurring response) by being paired with the **unconditioned stimulus** which initially elicited the UR. - The unconditioned response now becomes a **conditioned response** and the neutral stimulus now becomes the **conditioned stimulus** - **Acquisition** is the initial learning of the stimulus-response relationship - Conditioning helps an animal survive and reproduce - Through **higher-order conditioning**, a new NS can become a CS by being associated with a previous CS - tens to be weaker than first-order conditioning - **Extinction** is the diminishing of a CS when the CS is no longer followed by a US (tone is no longer followed by food, etc) or when a response is no longer reinforced in operant conditioning - **Spontaneous recovery** is the recovery of an extinguished CR after a pause - **Generalization** is the tendency to respond to stimuli similar to the CS - **Discrimination** is a learned ability to distinguish between a CS and other irrelevant stimuli

MODULE 27 – Operant Conditioning

Operant Conditioning	- In **operant conditioning**, organisms associate their own actions with consequences

	- behavior that operates on the environment is called *operant behavior*
Skinner's Experiments	- B.F. Skinner elaborated on Edward L. Thorndike's **law of effect**: rewarded behavior is likely to recur - he designed an **operant chamber** which showed how animals respond to **reinforcement**: an event that strengthens a preceding response - **Shaping** is guiding actions towards a desired behavior - Using *successive approximations*, you reward responses that are ever-closer to the final desired behavior - In operant conditioning, the **discriminative stimulus** elicits a response after association with response - **Positive reinforcement** strengthens a response by presenting a pleasurable stimulus ater it - **Negative reinforcement** strengthens a response by reducing something negative - **Primary reinforcers** are innately reinforcing stimuli that satisfy biological needs - **Conditioned reinforces** gain their reinforcement by association with a primary reinforcer (light associated with a food) - With **continuous reinforcement** learning occurs rapidly but so does extinction - With **partial reinforcement** (responses are sometimes reinforced) learning is slower, but resistance to extinction is greater - With **fixed-ratio schedules** behavior is reinforced after a set number of responses - animals pause briefly after a reinforcer, then return to a high rate of responding - With **variable-ratio schedules** behavior is reinforced after an unpredictable number of responses - produces a high rate of response - With **fixed-interval schedules**, the response is reinforced after a fixed time period - produces a choppy stop-start pattern - With **variable-interval schedules**, the response is reinforced after a varying time period - produces slow, steady responding - In general, ratio is better than interval, but variable is better than fixed - **Punishment** opposes reinforcement by decreasing the frequency of a preceding behavior - In positive punishment, an aversive stimulus is given - In negative punishment, a pleasurable stimulus is taken away - Punished behavior is suppressed, not forgotten - Teaches discrimination among situations - Teaches fear - May increase aggression by modeling aggression as a way to cope with problems

MODULE 28 - Operant Conditioning's Applications, and Comparison to Classical Conditioning

Applications of Operant Conditioning	- At School
	  - Computer-assisted learning helped realize Skinner's goal of individually paced instruction with immediate feedback
	- In Sports
	  - The key to shaping athletic performance is rewarding small

	successes and gradually increasing the challenge - The accidental timing of rewards can produce superstitious behaviors - At Work - Reinforcers influence productivity by rewarding specific, achievable behaviors, not vaguely defined "merit" - Reinforcement should be immediate, but not necessarily material or lavish - At Home - Parents can learn from operant conditioning - When children obey because they are frightened, it reinforces a parents' angry behavior, but when parents cave to whining it reinforces a child's bratty behavior - It's good to affirm good behavior in children - explain misbehaviors and give a time-out - For Self-Improvement - To build self-control, you should reinforce your own desired behavior - State your goal in measurable terms - Announce your goal - Monitor how often you engage in your desired behavior - Reinforce the desired behavior - Reduce rewards gradually
Contrasting Classical and Operant Conditioning	- Through classical Pavlovian conditioning, we associate different stimuli we don't control, and respond automatically - Through operant conditioning, we associate our own behaviors that act on our environment to produce rewarding or punishing stimuli with their consequences

MODULE 29 - Biology, Cognition and Learning

Biological Constraints on Conditioning	- A species' predispositions prepare it to learn the associations that enhance its survivals - John Garcia and Robert Koelling challenged Greogry Kimble's idea that all associations can be learned equally well - Proved that the US didn't immediately have to follow the CS for conditioning to occur - Early findings on taste aversion - Conditioning is speedier, stronger and more durable when the CS is ecologically relevant - for example, similar to stimuli associated with sexual activity - We most easily learn and retain behaviors that reflect our biological predispositions - In the instinctive drift animals revert to their biologically predisposed patterns
Cognition's Influence on Conditioning	- Robert Rescola and Alan Wagner showed that animals can learn the *predictability* of an event - The more predictable the association, the stronger the conditioned response - Awareness of the CS-US association can weaken a response

	- Tolman and Honzik showed that rats develop a **cognitive map**, a mental representation of a maze
	  - Exploring rats experienced **latent learning**, which became apparent only when they had an incentive to demonstrate it
	- We can perceive a solution in a sudden flash of **insight**
	- Excessive rewards can destroy **intrinsic motivation**, the desire to perform a bavor effectively for its own sake
	  - the overuse of bribes, leading people to see their actions as externally controlled, is called *overjustification*
	- **Extrinsic motivation** is behaving in certain ways to gain external rewards or avoid punishment)

Learning and Personal Control	- We need to learn to **cope** with problems by alleviating stress
	- With **problem-focused coping** we address stressors directly
	  - used when we feel a sense of control over ourselves and over a situation
	- With **emotion-focused coping** we search for stress relief by seeking out support and comfort
	  - it can be maladaptive because we can ignore or put off a problem
	- Problem-focused coping can be more effective and promote long-term health and satisfaction
	- Feeling helpless and oppressed can lead to a state of passive resignation called **learned helplessness** where we feel we have no control and can become depressed
	- Perceived loss of control can predict health problems by provoking an outpouring of stress hormones
	- The **external locus of control** is the perception that chance or outside forces determine our fate
	- The **internal locus of control** is the perception that we control out own destiny
	- More Americans now embrace the external locus of control, which may be associated with increased rates of depression and other psychological disorders
	- **Self-control** is the ability to control impulses and delay short-term gratification for longer-term rewards
	  - predicts better adjustment, better grades, and social success
	  - requires attention and energy and our capability for self control can be improved by exercising it, almost like a muscle

MODULE 30 – Learning by Observation

Mirrors and Imitation in the Brain	- Cognition is a factor in **observational learning**, in which higher animals learn without direct experience - We learn behavior by observing and imitating others, a process called **modeling** - Albert Bandura's Bobo Doll experiment demonstrates that by watching a model, we experience *vicarious reinforcement* or *vicarious punishment* - We're especially likely to learn from those similar to us, or people we think are admirable or successful - **Mirror neurons** provide a neural basis for imitation and observational learning - they fire when performing actions *or* watching others do those actions

	- Imitation is widespread in other species, and it is pervasive in humans - Our brains support empathy and imitation, making emotions contagious - *Theory of Mind* is the ability of a child's brain to enable empathy and infer another's mental state - Brain activity underlies our intensely social nature
Applications of Observational Learning	- **Prosocial** modeling can have prosocial effects that are constructive - Models are most effective when their actions and words are consistent - Observational learning can have antisocial effects