Introduction to Human Learning

EDS 248

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Learning Theories

- Behaviorism
  - Learning = external/nurture
- Social Learning theory
  - Learning = external and internal factors
- Cognitive Psychology
  - Learning = internal/nature

Learning Theory Reflection Paper Outline and Content

- Assumptions or ideas regarding learning/schooling held before the class
  - Pre-class personal theory
- Ways in which ideas have been changed or validated
  - Post-class personal theory
  - Understanding of current theories of learning
- Practical (psycho-educational) applications of theories
  - Understanding of current theories of learning
  - Reflective practice
- Future study proposals
  - Understanding of current theories of learning
  - Reflective practice

What is a Learning Theory?

The relationship between a theory and its principles

- *What* causes learning (principles)

  vs.

- *Why* learning has taken place (theories or explanations)

What is a Learning Theory?

The relationship between a theory and its principles

- Principles (or laws) identify factors that consistently influence learning
  - When present these factors cause specific effects
  - They tell us what is important
  - Tend to be more durable
  - Are specific and testable

What is a Learning Theory?

The relationship between a theory and its principles

- Theories explain why factors are important
  - They explain the cause and effect relationship (why principles of learning have their effect)
  - Describe the underlying mechanisms involved
  - Help us to make sense of research
  - Help us to design learning environments
  - Disadvantage, may restrict our view/interpretation of data
  - Are much more general than specific principles (no one study will verify)

For Example (my principles)

- Repetition improves learning
- Intrinsic value improves learning
- Extrinsic reasons for learning are inferior to intrinsic motivations.
- Making new material concrete improves learning.
- Learners need to be developmentally and emotional available for new learning.

For Example (my principles)

- People learn best by practicing what they have done.
- Modeling improves learning.
- People learn best when they can make a meaningful personal connection to the material to be learned.

For Example (my theory)

- Both internal and external factors are important to learning. While both are important, all other things being equal, internal factors have a greater influence over learning.
  - Internal factors: development, emotions, motivation, and meaningful connections.
  - External factors: instruction, modeling, and motivation.

Activity

- Write an outline for the first section of your paper. Think about the principles that you feel are important to learning. Especially reflect on those instances where your own learning has been successful. In particular try to identify those factors that consistently affected your learning. List these *personal principles of learning.*

Concluding Thoughts

- Explanations provided by theories for specific cause/effect relationships are dynamic, they evolve, they are typically not static.
- Just as is true for the study of learning in general, it should also be true for your own personal theory. It should develop/ evolve as this course progresses.

Introduction to Behaviorism

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Introduction

- A collection of theories (explaining why certain factors have specific effects) that focus on external observable events (occurring outside of the organism).
- Emphasizes the role of the environment in learning.
- Principles of behaviorism are essential to the understanding and application of functional assessment (EDS 240, 3rd Semester).

Basic Assumptions of Behaviorism

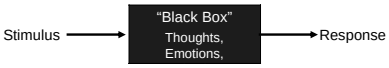
- Equipotentiality.
  - Principles of learning apply equally to different behaviors and different species. Thus, what is learned about the learning of one species can be generalized, and much behavioral research is done with animals.
- Emphasizes Stimulus (cause) – Response (effect) relationships.
  - The study of learning must employ the same methods as are used in the physical sciences. The introduction of an IV (cause or stimulus) should be studied to determine its effect on a DV (specific effect).

Basic Assumptions of Behaviorism

- Defines learning as an observable behavioral change.
  - Study of learning is a science. Focuses on the observable/measurable. Stimulus from the environment and response from the organism fits this requirement.
- Tabula Rasa
  - Besides specific instincts, organisms are not born to behavior in any particular way.

Basic Assumptions of Behaviorism

- Excludes from study internal processes.
  - Internal processes cannot be directly observed, thus they cannot be studied.



  - However, neo-behaviorists believe that factors operating within the individual are important, and are thus often referred to as S-O-R theorists.

Basic Assumptions of Behaviorism

- Learning is documented by observable behavior change.
  - Learning has occurred only when behavior change is observed.
- Conditioning is often used instead of "learning."
  - Behavior is conditioned by environmental events. The things we learn – the results of experience – are often beyond our control.
- Parsimony.
  - Explain learning in as few principles as possible.

Modern Behaviorism

- Has begun to focus on internal factors (e.g., motivations).
- Pays more attention to the role of aversive stimuli as being important to learning.
- Learning (ability) and performance (choice) are related, but not necessarily one in the same.

Educational Implications of Modern Behaviorism

- Learning is behavior change.
  - Students as active respondents
  - Assessment
  - Practice
- Drill and practice.
  - Repetition strengthens/makes more automatic habits
- Rewards.

Classical Conditioning

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Stimulus > Response SR Theory

Classical conditioning is based on the premise that certain stimuli automatically trigger certain responses.

UC**S**	UC**R**
(Possible triggers of the UCR)	*(Involuntary, automatic, reflexive reactions)*
	Salivation
	Pleasure
	Pain
	Startle
	Exhaustion
	Sleep
	Displeasure

Stimulus > Response SR Theory

Classical conditioning is based on the premise that certain stimuli automatically trigger certain responses.

UCS	UCR
(Possible triggers of the UCR)	*(Involuntary, automatic, reflexive reactions)*
Food, food smells	Salivation
Exercise, intoxication, sex	Pleasure
Injury	Pain
Load noise	Startle
Strenuous exercise	Exhaustion
Fatigue	Sleep
Nausea	Displeasure

Classical Conditioning

In classical conditioning, a neutral stimulus (NS) is paired with an unconditioned stimulus (UCS). Overtime this association changes the NS to a conditioned stimulus (CS). This occurs when the CS elicits the same response as the UCS [a conditioned response (CR)]

Bunny		Loud Noise		Startle
NS	+	UCS	=	UCR

Classical Conditioning

School office		Punished		Anxiety
NS	+	UCS	=	UCR

- A NS (office) is paired with an UCS (punishment).
- Overtime this association changes the NS to a CS.
- This occurs when the CS (office) elicits the UCR (anxiety). The UCR is now referred to as a CR.

Classical Conditioning

- Occurs when two stimuli are presented at about the same time.
- For a NS to become a CS it is most effective if it is presented just before the UCS.
- Contiguity may, however, be overly simplistic.
- Contingency is perhaps more important. The potential conditioned stimulus must occur only when the UCS is going to follow.
- Sometimes one pairing is enough for the learning/conditioning to take place.
- The more noticeable the NS, the more likely it is to become a CS.
- Some stimuli are more naturally associated (e.g., food and nausea, playground and school, etc.). This is referred to as associative bias.
- Characteristics of the NS affect the degree to which it becomes and CS. The more noticeable the NS (the principal's office is very unique) the more likely it is to become a CS
- Classical condition is now thought to involve cognitions.

Activity

- Develop real world (preferably school based) examples of Classical Conditioning

(_____)		(_____)		(_____)
NS	+	UCS	=	UCR
▼				▼
CS			=	CR
(_____)				(_____)

Extinction

Hospital		Surgery		Pain
NS	+	UCS	=	UCR
▼				▼
CS			=	CR
Hospital				Pain
▼				
CS	+	UCS	≠	CR
Hospital		Job		

CS will weaken and eventually disappear if the UCS is no longer associated with it.
The weaker the CS, the quicker it will be extinguished.
Extinction is not always predictable.

Spontaneous Recovery

Extinction >>> Rest period >>> Spontaneous Recovery

The recurrence of a CR when a period of extinction is followed by a rest period (essentially one remembers the prior association).

The spontaneously recovered CR, however, will be weaker and will extinguished more quickly.

Stimulus Generalization

Rabbit		Noise		Startle
NS_1/CS_1	+	UCS	=	CR_1
▼				▼
NS_2/CS_2		UCS	=	CR_2
Fuzzy things				Startle

NS that are similar to the CS may also generate a CR.

The more similar a NS is to a given CS, the greater the likelihood of generalization
May increase over time.

Stimulus Discrimination

Rabbit		Loud noise		Fear
$NS_1 = CS_1$	+	UCS	=	$NS_1 = CR_1$
▼				▼
$NS_2 \neq CS_2$	+	No UCS	=	$NS_2 \neq CR_2$
Fuzzy things		No loud noises		No fear

Present the similar stimuli (that has become a CS) without the UCS.
The organism learns or is conditioned to expect that the UCS will not occur.

Higher Order Conditioning

NS_1 Failure	+	UCS Abuse	=	UCR Pain
▼				▼
CS_1 Failure			=	CR_1 Pain
▼				▼
NS_2 School	+	CS_1 Failure	=	CR Pain
▼				▼
CS_2 School			=	CR_2 Pain

Sensory Preconditioning

NS_1 Playground	+	NS_2 School		
NS_1 Playground	+	UCS_1 School Shooting	=	UCR Fear/pain
▼				▼
CS_1 Playground			=	CR Fear/pain
▼				▼
NS_2 School	▸	CS_2 School	=	CR Fear/pain

Eliminating Conditioned Responses

- Extinction
- Counterconditioning
- Systematic Desensitization

Conclusion

In the school setting it is very easy for a variety of NS to be associated with UCS

Neutral Stimuli	*Unconditioned Stimuli*	*Unconditioned Response*
School	Punishment	Fear/Pain
Teacher	Failure	Anxiety
School Work	Frustration	Anxiety

Further, CRs can be very durable and difficult to eliminate. This emphasizes the importance of setting children up for early school success.

Next Week

- Read Ormrod chapters 4 & 5.
- Respond to the assigned writing prompt (on the next slide).
- HINT: Do not attempt to answer this question until after you have completed next weeks assigned reading (Ormrod, chapters 1, 2, 3, 4, & 5).

Next Week

Distinguishing btw Classical & Operant Conditioning

- A teacher reported that she had been giving her students points on the chalkboard whenever their group was the most quiet and attentive. Eventually, her students learned to become quiet and attentive whenever the teacher approached the chalkboard.
- What type of conditioning is at work here?
- What is the role of the teacher by the chalkboard?