

Chapter 12: Observational Learning



Lecture Outline

- Observational learning
 - Observational learning in Classical conditioning
 - Observational learning in operant conditioning
 - Observational learning in animals
- Language
 - Attributes of language
 - Theories of language acquisition
 - Language & animals
- Rule governed behavior
 - Definition & characteristics
 - Disadvantages of rule governed behavior
 - Personal rules in self-regulation

Observational Learning

- Observational learning in classical conditioning
- Observational learning in operant conditioning
- Observational learning in animals

Observational Learning

- Classical & Operant learning refer to the direct experience of the animal
- Bandura – learning processes take place vicariously through observation
- Observational learning :

Example

You observe an older sibling studying hard. You observe your sibling's study behavior being reinforced by good grades and parental praise. In this case, your own tendency to study hard might be strengthened.

NOTE: Reinforcement is experienced by your sibling not you

- Observational learning - extension of Classical & Operant learning

Observational Learning in Classical Conditioning

- Fear acquired through
- Can be acquired in one of two ways
- Standard conditioning procedure
 - Emotional reactions of others serve as the US

Example 1

Mouse (CS) : Observe fear (US) → Fear (UR)

Example 2

Teddy Bear (CS) : Observe happiness (US) → Happy (UR)

Observational Learning in Classical Conditioning

- Higher order conditioning
 - Emotional reaction in others serves as the CS
 - Two-step process

Example 2

Step 1

Fear in Others (CS) : Fearful Event (US) → Fear in Oneself (UR)

Fear in Others (CS) → Fear in Oneself (UR)

Step 2

Mouse (NS) : Fear in Others (CS) → Fear in Oneself (UR)

Observational Learning in Operant Conditioning

- Observational learning in operant conditioning
 - Operant conditioning affects how
 - Operant conditioning affects *acquisition & performance* of the behavior

Example

You observe an older sibling studying hard. You observe that she spends many hours per week reading texts, writing assignments, and attending lectures and tutorials. In this case you have *acquired* the basic information for effective study behaviors. However, until you are old enough to attend university, you will not be able to translate that acquired knowledge into your own academic *performance*.

2 Characteristics of Obs Learning in Operant Conditioning

1. Acquisition - Does the person or animal observe the behavior of the model?
2. Performance - Does the person or animal begin to perform the behavior themselves?

Factors affecting acquisition

1. Attention - watching the situation

- The behavior of the model –
- Consequences of model's behavior – (e.g., if model's behavior is reinforced the observer is more likely to attend to the behavior)

2. Reinforcement for paying attention

- More likely to acquire behavior if
- e.g., more likely to pay attention to what lecturer is saying (eye-contact) if reinforced (smile, eye-contact)

Factors Affecting *Acquisition*

3. Reproduction

- Need belief in ability to be able to
- e.g., lecturer demonstrates how to perform structural equation modelling – students less likely to pay attention if they do not believe they can reproduce lecturer's performance

4. Personal characteristics of model

- Attend to models who are
- Attend to model's who
- Experts (e.g., lecturers who know SEM rather than students who think they know SEM)

Factors Affecting *Performance*

1. Reinforcement & punishment
 - More (or less) likely to perform behavior if model
 - E.g., more likely to perform study behavior if you sibling receives praise from parents and good grades from university
2. Consequences of performance for observer
 - E.g., more likely to perform modelled behavior when we
3. History of consequences for behavioral performance
 - Experience tells

Observational learning in animals

- Most research conducted on rats
- Very reliant on observational learning
 - Where to obtain food
 - Which foods are safe to eat
 - How much food to eat
 - Preference in mating partners
- Distinction between humans & animals
 -
 - Humans seem capable (e.g., “Simon says”)
 - Ape studies have returned mixed results

Ape Studies

- Task - perform novel behavior (get banana from box)
- Apes observe model perform complex sequence of actions (e.g., obtain key, open lock, pull lever, obtain food with stick)
- If observer can imitate should be able to perform behavioral sequence to obtain food
- Typically they cannot

- Perhaps true imitation is uniquely human!!!

Animal Studies Cont.

- Russon & Galdikas (1995)
 - Observational evidence
 - Orangutans living with humans in camp designed to reintroduce them to the wild
 - Animals learned to imitate human behaviors
 - Hang hammocks
 - Build bridges
 - Use boats
 - Light fires!!!

- Anecdotal evidence... need experimentation

Animal Studies Cont.

- Behavior can be explained by less complex processes
- Stimulus enhancement –
- Example
 - Monkeys spend time searching for food
 - If discovered, others come to investigate
 - Soon, others have tapped same food source
 - Appears to be observational learning...BUT...
 - Monkey attracted to location by observing another eating
 -

Language

- Attributes of language
- Theories of language acquisition
- Language & animals

Language

- Types of language
 - Written
 - Spoken
 - Symbolic (e.g., body language, gestures)
- Defining characteristic of human beings
- Attributes of human language
 - *Reference* –
 - *Grammar* –
 - *Productivity* –
 - *Situational freedom* –
 - Can discuss things that are not present
 - Can discuss future events

Language

- Theories of language acquisition
 - Behaviorist account
 - Nativist account

Behaviorist Account

- Skinner (1957)
 - Language learned through
 - Vocalizations not reinforced gradually extinguish
 - Other vocalizations shaped through reinforcement
 - Reinforcement used to control correct meaning & word pronunciation
 - Imitation & reinforcement explains grammar, syntax learning
 - When imitated statements are understood, parents reward child response to request → reinforcement

Nativist Account

- Chomsky (1959, 1965); Pinker (1994)
 - Problems with imitation theory
 -
 -
 - Problems with reinforcement theory
 - Parents respond to
 - E.g., Parents are unlikely to correct the utterance “her done dishes” - factually it is correct
 - Language development cannot be explained by reinforcement (or shaping)
 - Humans have inborn *language acquisition device* (LAD) that facilitates language development
 - Innate human capacity

Language & animals

- Apes most widely researched (chimps, gorillas, orangutans)
- Similar to humans in anatomy, DNA, cognitive skills
- Once believed that apes had capacity for language, but not motivation to use or reinforcement for use
- Cross-fostering studies (teaching apes to *speak*)
 - Chimps in raised in human foster-homes
 - Most celebrated chimp (Viki) only learned to speak 4 words (mama, papa, up, cup)
 - Needed physical manipulation of mouth to form utterances
- Apes lack vocal apparatus for *speaking*

Language & animals

- Cross-fostering studies (teaching apes to *sign*)
 - American Sign Language (ASL) rich, complex language reliant on hand-gestures
 - Gardener & Gardener (1969)
 - Raised Wishoe (infant chimp) in home over years
 - Only used sign language (not English)
 - Taught through modelling
 - Taught through moulding (placed fingers in correct position, with reference to object)
 - Wishoe used 100+ different signs
 - Other controlled studies
 -
 -

Artificial language studies

- Designed to overcome interpretational difficulties associated with cross-fostering studies & ASL
 - Cross-fostering studies – no cause-and-effect
 - ASL – not appropriate for assessing grammar, productivity & situational freedom
- YERKISH (artificial language)
 - Language consists of visual symbols on computer keyboard (not vocal; gestures)
 - ? WHAT NAME OF THIS
 - Grammar different to English; ASL
 - Smaller vocabulary than English; ASL
 - Very rigid grammatical rules – can assess aspects of language that ASL cannot

- Results
 - Most chimps learned to
 - Unclear whether they mastered grammar
 - PLEASE MACHINE GIVE X (X = banana, apple)
 - Limited sentences – unclear whether they learned
 - Pigeons can be trained to peck a sequence of 4 keys to obtain food reward (can pigeons speak?)
- Summary
 - Results of cross-fostering and ASL studies unclear
 - Good evidence for apes mastering reference
 - Other aspects of language not known

- Studies using dolphins
 - Large brains (architecture to represent concepts)
 - Social systems (need for interaction with members of same species)
- Louis Herman (University of Hawaii)
 - Two dolphins, each trained with a different artificial language
 - Gestural language (similar to ASL)
 - Acoustic language (similar to YERKISH)
 - Results
 - Learned vocabulary of symbols (e.g., ball, Frisbee, basket – reference)
 - Learned basic grammatical rules (e.g., FRISBEE FETCH BASKET or reverse)
- Can animals speak??? That depends...

Rule-Governed Behavior

- Definitions and characteristics
- Disadvantages of rule governed behavior
- Personal rules in self-regulation

Rule-Governed Behavior

- Definitions and characteristics
 - Rule =
 - Expressed as IF : THEN statement
 - E.g., IF you are late : THEN you will be locked out
 - *rule-governed behavior*=
 - Rules can be used to establish behavior
 - E.g., you don't have to be late to know that you will be locked out
 - Human experiments – Tell P, IF you press this button when the light is on, THEN you will earn money. Within a few seconds of outlining the rule, you have a button-pressing, money earning human.
 - Consequences of following rules influence whether we follow rules again

- Disadvantages of rule governed behavior
 - Rule-governed behavior can be
 - E.g., no matter how many books you read on how to play golf, your game will only improve if you actually go out practice hitting the ball
 - Behavior is
 - E.g., Human Ps told they can earn money by button pressing. On FI schedule, human Ps do not display scalloped pattern of responding typical of FI reinforcement schedules seen in rats. They press button like continuous schedule. (focus on rule given)
- Rule-governed behavior is useful, BUT... need to recognise situational limitations and modify accordingly

- Personal rules in self-regulation
 - Self-determined rules can govern own behavior
 - Expressed as SAY : DO statements
 - (SAY) if I want do well on exam : (DO) then I must study hard
 - To be effective need *bright boundaries* between acceptable and unacceptable behavior
 - E.g., “I will study today” – vague statement – might delay study behavior until it is too late to study
 - E.g., “I will study between 6pm and 9pm today” – specific statement more likely to be carried out

- Gollwitzer & Brandstätter (1997)
 - Ps asked to name 2 tasks they intended to complete during Xmas break
 - Easy task (e.g., go skating)
 - Difficult task (e.g., write an essay)
 - Ps asked if they had decided *when* and *where* they intended to carry out task
 - Following break, Ps asked if they had carried out task
 - Results
 - Easy task –
 - Difficult task –
- Personal process rules (specific process for task completion) affects probability of accomplishing the goal

Lecture Summary

- In observational learning the observer acquires information by observing a model
- The Pavlovian aspect – the emotional cues exhibited by the model serve as CSs that elicit vicarious CRs
- The operant aspect – acquisition depends on the consequences of the model's behavior, characteristics of the model, reinforcement for attending to behavior etc.
- Turning knowledge into performance depends on whether the observer's performance is reinforced or punished
- Animal also learn through observational learning
- Characteristics of language include reference, grammar, situational freedom & productivity
- Studies have shown it is difficult to teach chimps to speak because they do not possess the necessary vocal apparatus

Summary Cont.

- Chimps have demonstrated a capacity for language using ASL & artificial languages
- The results suggest they can master reference but use of grammar is less clear
- Rule-governed behavior is a verbal description of a contingency
- Adaptive means of communicating desired behaviors
- Rule-governed behavior can be less efficient than behavior shaped by natural consequences, and is sometimes less sensitive to contingencies
- We set personal rules to regulate our own behavior
- These are most effective when there is a clear statement about when the rule has to be followed