

3705 Operant Objectives #1

1. We have covered respondent conditioning that can be summarized as an “A-B” analysis. We will now examine “B-C” relationships. Know what these are as well as what an A-B-C analysis is (we will talk about those later). It is important that you master the terms “Antecedent” and “consequence” and to know the view that researchers in this area take to analyze how learning occurs.
2. Know in general what operant conditioning (also called instrumental) is and of what relevance it is to human (and nonhuman behavior). Be able to provide examples of operant behavior.
3. Be able to define reinforcer. Note that it cannot be defined without looking at the effect on behavior. Be able to provide and recognize examples of reinforcers. Be careful. Something that appears to be aversive to you may function as a reinforcer for another.
4. Be able to define punisher. Note that it cannot be defined without looking at the effect on behavior. Be able to provide and recognize examples of reinforcers. Be careful. Something that appears to be positive to you may function as a punisher for another.
5. Know what a conditioned reinforcer and what may serve as one. You should also know how to create a conditioned reinforcer. How is this related to respondent conditioning?
6. Know what a conditioned punisher is and what may serve as one. You should also know how to create a conditioned punisher. How is this related to respondent conditioning?
7. Know what a generalized reinforcer is. Note that this is a special kind of conditioned reinforcer. Be able to provide examples of GRs and to recognize them as well. Also, you should know what a token economy is (the tokens are the generalized reinforcers)
8. Know what negative reinforcement is. Know that “negative” refers to taking something away (an aversive stimulus) and reinforcement, as always, means that the response that it followed increases. Be careful with this one, many people confuse it with punishment, but it is not!
9. I will present a chart that distinguishes between Positive Punishment and Negative Punishment (as well as the other two consequences we have already discussed, reinforcer and punisher). Know each and be able to recognize examples and provide examples.
10. Know what operant extinction is. That means you should be able to produce it and recognize and provide examples of operant extinction. Be able to contrast it with respondent extinction.
11. 11. You should be familiar with some of the side-effects and problems associated with Punishment.
12. You should know the basics of “motivation” from a behavioral perspective. This relates to the effectiveness of a particular reinforcer. Be able to provide/recognize examples.
13. Know what a Discriminative stimulus is. It is often abbreviated as SD (a stimulus that is discriminative). Know how to create on, recognize examples of them, and be able to create original examples of SDs. Note that this is the “A” in the “A-B-C” analysis. Also, know what an “S delta” is.
14. Know that you can extinguish the ability of an SD to evoke a response in the same way that you extinguish a response (withhold the reinforcer). Know how to do this, and recognize examples.
15. Know what it means to have generalization of an SD’s effect. That is, that how a stimulus similar to an SD can evoke the same response.
16. Know how to conduct a stimulus generalization gradient for operant behavior (using an SD).

1. We have covered respondent conditioning that can be summarized as an “A-B” analysis. We will now examine “B-C” relationships. Know what these are as well as what an A-B-C analysis is (we will talk about those later). It is important that you master the terms “antecedent” and “consequence” and to know the view that researchers in this area take to analyze how learning occurs.

A= antecedent – **stimulus** before the behavior we are studying.

B = **behavior** of interest

C = consequence. **stimulus** that follows the behavior

Respondent: Stimulus → Behavior (reflexes)

A → B

Operant:

Simple

Behavior → Consequence

B → C

More Complex

Antecedent → Behavior → Consequence

Why this view (imagine you are a researcher on another world)

Examples?

2. Know in general what operant conditioning (also called instrumental) is and of what relevance it is to human (and nonhuman behavior). Be able to provide examples of operant behavior.

Operant/instrumental conditioning:

Behavior that acts on the world (environment) and the world acts on behavior

Of what relevance?

3. Be able to define reinforcer. Note that it cannot be defined without looking at the effect on behavior. Be able to provide and recognize examples of reinforcers. Be careful. Something that appears to be aversive to you may function as a reinforcer for another.

Reinforcer: a stimulus that follows a response (thus - consequence) within a second or so, and increases the future frequency of that response, or maintains that response

Define by future effect on behavior, not by how we perceive it (e.g. as positive or aversive)

Reinforcers

- A. Will change over time: e.g. eat chocolate, but eat too much and chocolate will not be a reinforcer
- B. Are often relative (e.g. take the best of the situation in effect)
 - i. Child will do behavior to get any attention (yelled at) vs. no attention

Examples:

4. Be able to define punisher. Note that it cannot be defined without looking at the effect on behavior. Be able to provide and recognize examples of reinforcers. Be careful. Something that appears to be positive to you may function as a punisher for another.

Punisher: a stimulus that follows a response (thus - consequence) within a second or so, and decreases the future frequency of that response.

Most effective if intense and immediate.

5. Know what a conditioned reinforcer and what may serve as one. You should also know how to create a conditioned reinforcer. How is this related to respondent conditioning?

Pair a neutral stimulus with a stimulus that functions as a reinforcer and that NS will become a reinforcer also – probably not as powerful as the “unconditioned” reinforcer, but still effective

Many things function as conditioned reinforcers:

Words (thanks!)

Money (\$\$)

Actions (Open a door)

Tone (for Pavlov's dogs)

6. Know what a conditioned punisher is and what may serve as one. You should also know how to create a conditioned punisher. How is this related to respondent conditioning?

Pair an NS with an aversive stimulus and after multiple pairings the NS will become a conditioned punisher (will function as a punisher). The same stimulus will function as a negative reinforcer.

Examples:

Words: (No!)

Sight of a gun/Paddle

Shiny paper that wraps butter

7. Know what a generalized reinforcer is (also known as a generalized conditioned reinforcer). Note that this is a special kind of conditioned reinforcer. Be able to provide examples of GRs and to recognize them as well. Also, you should know what a token economy is (the tokens are the generalized reinforcers)

Generalized conditioned reinforcer – stimulus that has been paired with many reinforcers, thus does not rely on food deprivation or water deprivation, chocolate deprivation, etc.

Examples:

Money

Words “Good job!”

8. Know what negative reinforcement is. Know that “negative” refers to taking something away (an aversive stimulus) and reinforcement, as always, means that the response that it followed increases. Be careful with this one, many people confuse it with punishment, but it is not!

Negative Reinforcer:

An aversive stimulus precedes a response and the response terminates the aversive stimulus

Aversive stim = the negative reinforcer

The response **INCREASES** in the future (or is maintained, thus it is a reinforcer)

It is cold, you put on a coat

Alarm goes off in the AM and you hit the snooze button

Someone is poking you in the rib, you ask them to stop (or whack them – can shape up inappropriate behaviors!)

9. I will present a chart that distinguishes between Positive Punishment and Negative Punishment (as well as the other two consequences we have already discussed, reinforcer and punisher). Know each and be able to recognize examples and provide examples.

Response	Behavior Increases	Behavior Decreases
<u>Consequence</u>		
Presented	Positive Reinforcement	Positive Punishment
Removed	Negative Reinforcement	Negative Punishment

10. Know what operant extinction is, as well as spontaneous recovery. That means you should be able to produce it and recognize and provide examples of operant extinction. Be able to contrast it with respondent extinction.

Allow the response to occur, but do not allow for the reinforcer to occur

A. In Positive Reinforcement: response occurs, no reinforcer follows the response

B. In Negative Reinforcement: response occurs, aversive stimulus remains

In both cases, the response decreases under extinction

Let time pass if a similar situation occurs, the response is likely to occur

Example: Kid in store, whining for candy

Kid – in a positive reinforcement situation

Parent – in a negative reinforcement situation

11. You should be familiar with some of the side-effects and problems associated with Punishment.

- A. Punishment is usually applied but the reinforcer for the response is still present (thus the punisher and reinforcer occur together)
- B. Punishment often produces emotional and aggressive behaviors (respondently)
- c. Punishment pairs an aversive stimulus with the sight of the punisher

12. You should know the basics of “motivation” from a behavioral perspective. This relates to the effectiveness of a particular reinforcer.

Motivation: Called “Establishing Operation”

An antecedent condition that
Increases the value of a reinforcer
May function to evoke behavior

e.g. food deprivation increases food as a reinforcer
food satiation decreases food as a reinforcer

other “EO’s”
Sleep deprivation, heat/cold, painful stimulation, etc

13. Know what a Discriminative stimulus is. It is often abbreviated as SD (a stimulus that is discriminative). Know how to create on, recognize examples of them, and be able to create original examples of SDs. Note that this is the “A” in the “A-B-C” analysis. Also, know what an “S delta” is.

Discriminative Stimulus: the “A” in the A-B-C

In the presence of this stimulus a response is reinforced

When this stimulus is absent, and the response occurs it is not followed by a reinforcer

If a stimulus is present during this “nonreinforcement” it is called the “S-Delta”

Thus, the SD evokes the response (higher prob that response will occur)

The S-Delta does not (that response does not occur with the s-delta) (lower prob that response will occur)

Stimulus control refers to the general issue of stimuli causing a response to occur

14. Know that you can extinguish the ability of an SD to evoke a response in the same way that you extinguish a response (withhold the reinforcer). Know how to do this, and recognize examples.

SD “extinction” occurs when you present the SD, the response occurs and reinforcement does not follow

The SD will soon stop evoking the response

15. Know what it means to have generalization of an SD's effect. That is, that how a stimulus similar to an SD can evoke the same response.

Stimuli similar to a trained SD will evoke the same response
e.g. someone who looks like a friend of yours (call them your friends
name)

Kids call cat dog, other males "dad", etc.

16. Know how to conduct a stimulus generalization gradient for operant behavior (using an SD).

Present the well established SD and measure responding, present similar stimuli (under extinction) and measure responding. Often the response measure will be RATE of responding

Gradient on board

17. You should be familiar with what shaping is, what is meant by the phrase “differential reinforcement of successive approximations to the final response”

Shaping is used to get an organism to do a behavior that is not in their repertoire

Often a conditioned reinforcer is used in shaping to immediately “catch” and reinforce the behavior

Shape a dog to fetch the paper

1. An EO should be in effect for food (to be used as a reinforcer)

2. A conditioned reinforcer should be created – often a clicker is used

3. Patiently, as the dog turns/walks/toward the paper you reinforce each step closer

Reinforcer 1: dog turns toward paper, click, then give food

Reinforcer 2: dog turns toward paper and 1 step toward it, click, then food

Reinforcer 3: doge turns toward paper, 2 steps, click, food

“differential reinforcement” – reinforcer is delivered after different behaviors over time (the successive approximations)

“Successive approximations” the change in the behavior – turn, turn then 1 step, turn then 2 steps

18. Know what chaining is and how to create a chain of behavior. You should also know what backward and forward chaining are. Be able to create and recognize examples of each.

Chain: a series of behaviors – one after the other – that end with a reinforcer

Examples:

Making a sandwich – put two pieces of bread down, put on mayo, put on meat, pickle, put second piece of bread on the top, eat!

Rat – learns to climb ramp, cross drawbridge, climb ladder, walk the tightrope, climb ladder, crawl through tube, then lower self in elevator, press lever and get food!

Each new situation in the chain serves two functions:

1. reinforces the immediately preceding response and
 2. functions as an SD for the next response
- at the end the primary reinforcer is delivered (e.g. food)

(OH)

Forward chaining – you train up each response (shaping) when that one occurs, you move on to the next one..... thus the first two links will be required, then the first three, etc, until you have trained up the entire chain.

Teach someone to take clothes from basket, fold them, put them into appropriate dresser drawers

Teach rat to climb the stairs, etc.

Backward chaining

Teach the chain in reverse order – the last link of the chain first

Teach put clothes in draw first

Teach fold clothes, then put in draw

Teach get clothes from basket, fold clothes, put in draw

Often backward chaining is a bit easier

- Complete the new task - sight of folded clothes serves as an SD to put them in draw.

19. You should be familiar with the basic schedules of reinforcement: CRF, FR, FI, VR and VI. Know means to be familiar with the contingencies involved in each schedule, as well as the types of behavior they engender.

CRF = continuous reinforcement

These are all called intermittent schedules of reinforcement

FR = Fixed Ratio

Ratio refers to a number of responses

FI = Fixed Interval

Interval refers to the passage of time

VR = Variable Ratio

VI = Variable Interval

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CRF – every response is followed by a reinforcer. This is the simple A-B-C. It is also an FR1

A response on CRF is easily extinguished

FR (Fixed Ratio) – often followed by a number that indicates the number of responses that must occur prior to the reinforcer being delivered. Thus, FR5 = five response must occur prior to the reinforcer being delivered.

Many video games have FR value (5 hits and the enemy goes kaput!)

Faucet – turn 2 full turns to get full water pressure

More....

Piecework, nailing, getting from one channel to another, etc.

When a reinforcer is not delivered after each response, it is intermittent reinforcement. Intermittantly reinforced behavior is more resistant to extinction than behavior under CRF reinforcement.

Fixed Interval (FI)

The first response after a fixed amount of time is reinforced.

The number next to the FI value indicate the duration –
FI5” means the first response after 5 seconds is reinforced
FI5’ means the first response after 5 minutes is reinforced

Notice that only one response is actually needed!

Examples:

Cooking – something must bake for x amount of time

Waiting for a bus (come every 15 minutes)

Studying for an exam

Resistant to extinction

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Variable Ratio

X number of responses must occur before a reinforcer is delivered.
X varies from trial to trial

The number next to the VR is the average of all the X's!

VR5 means on average, 5 number of responses is required for the reinforcer to be delivered

Trial	# Response
1	5 responses
2	9 responses
3	2 responses
4	4 responses

total of 20 response/4 trials = an average of 5

Wild dogs hunting – don't get every animal they chase after

Sales person – tries to sell but doesn't get every sale (can figure average # of people must approach)

Very resistant to extinction

Variable Interval
(VI)

after X amount of time passes the first response is reinforced.

The number next to the VI is the average of all the X's! (the average amount of time that must expire prior to the first response being reinforced)

VI 6" means on average, 6 seconds must pass before the first response is reinforced

Trial	# Seconds
1	5
2	9
3	6
4	4

total of 24 seconds/4 trials = an average of 6 seconds = VI 6"