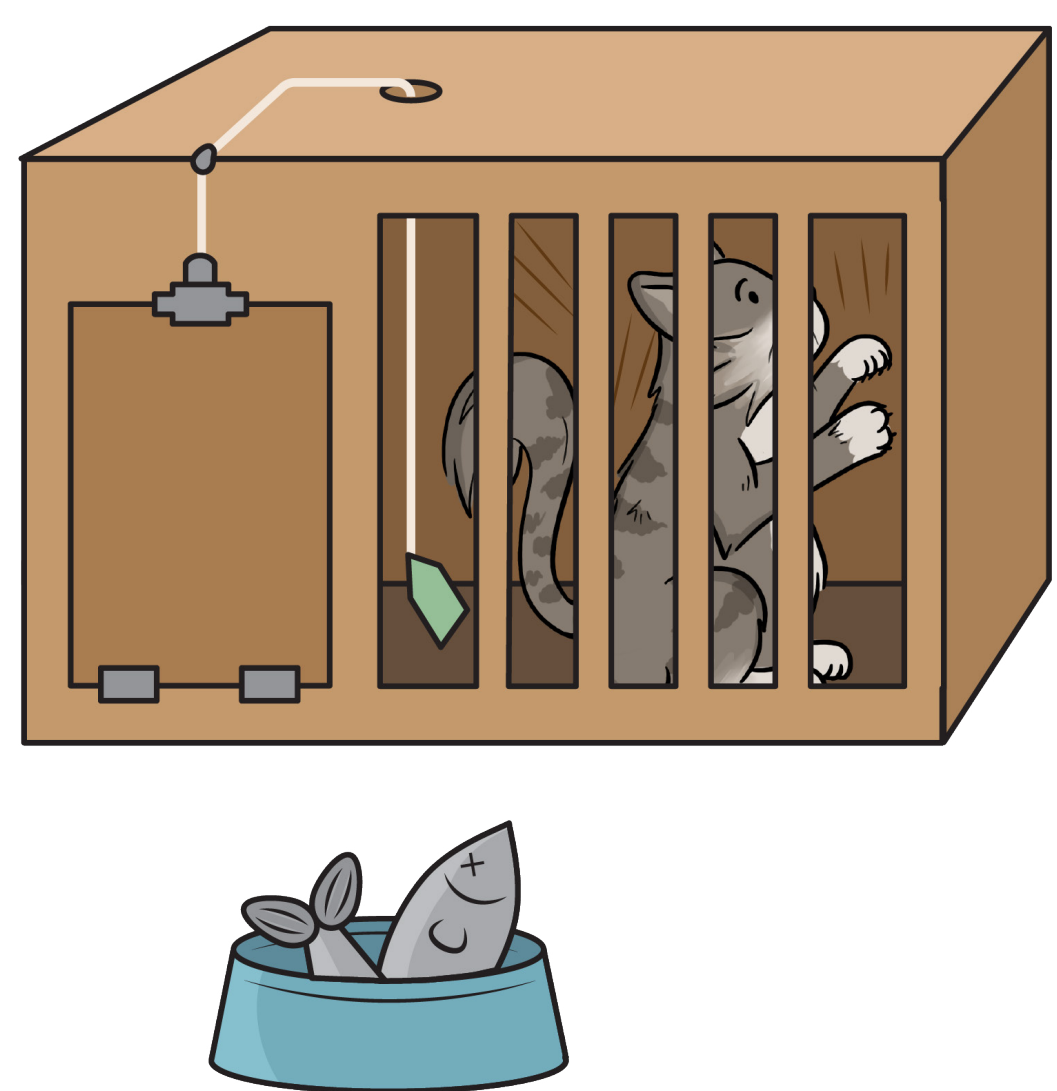


TOPIC: OPERANT CONDITIONING

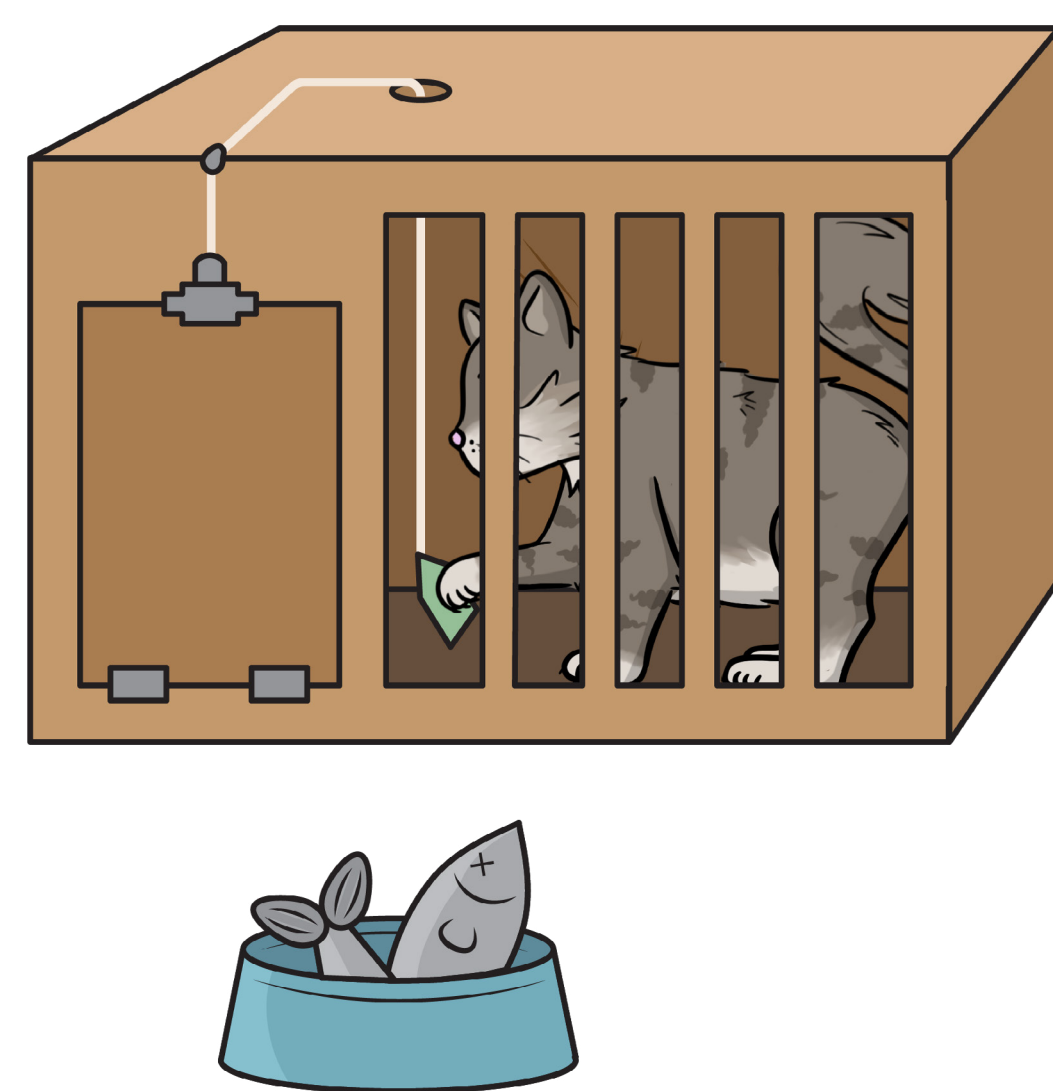
Contributions of Thorndike and Skinner

Edward Thorndike (1874 – 1949)

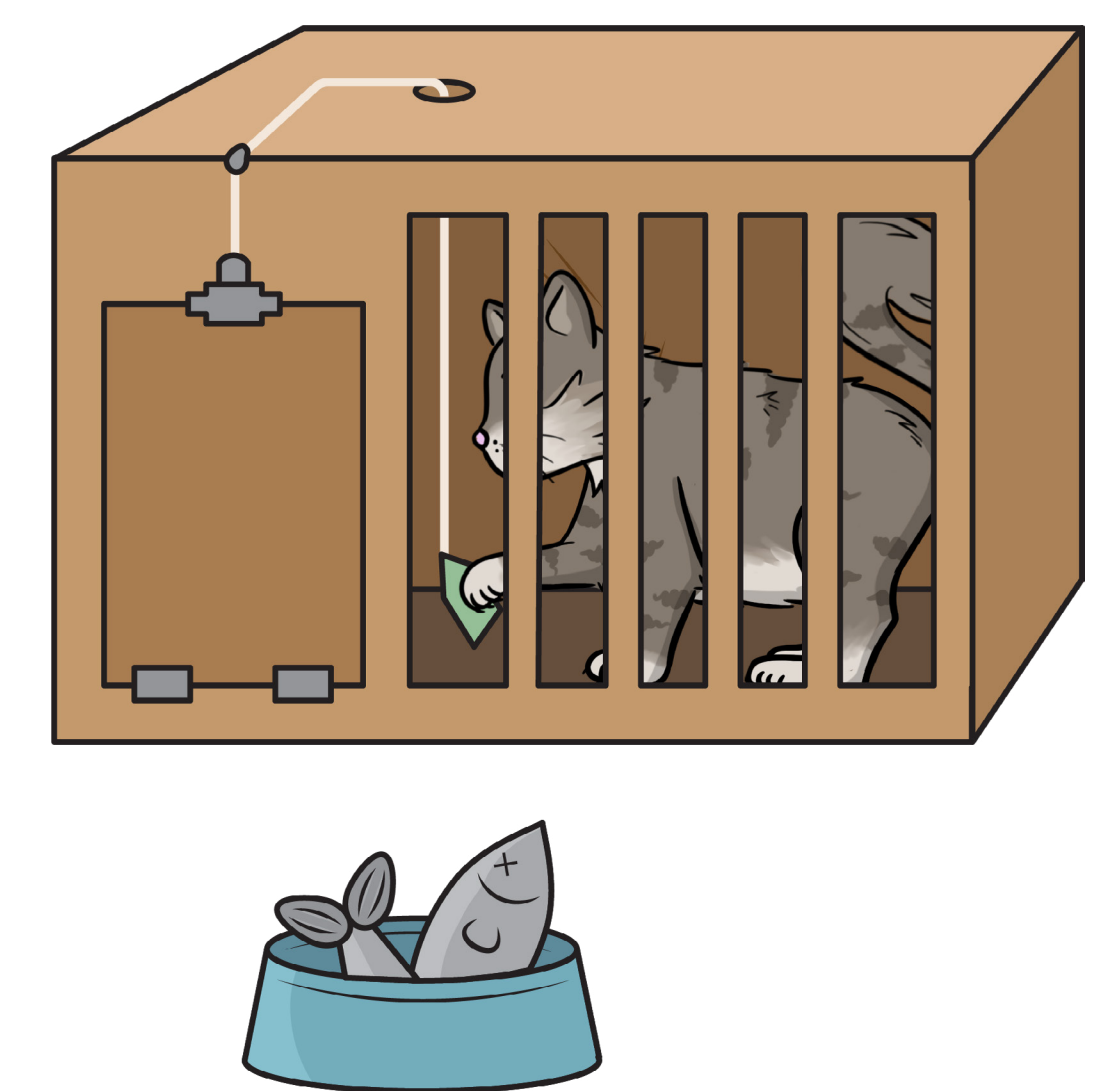
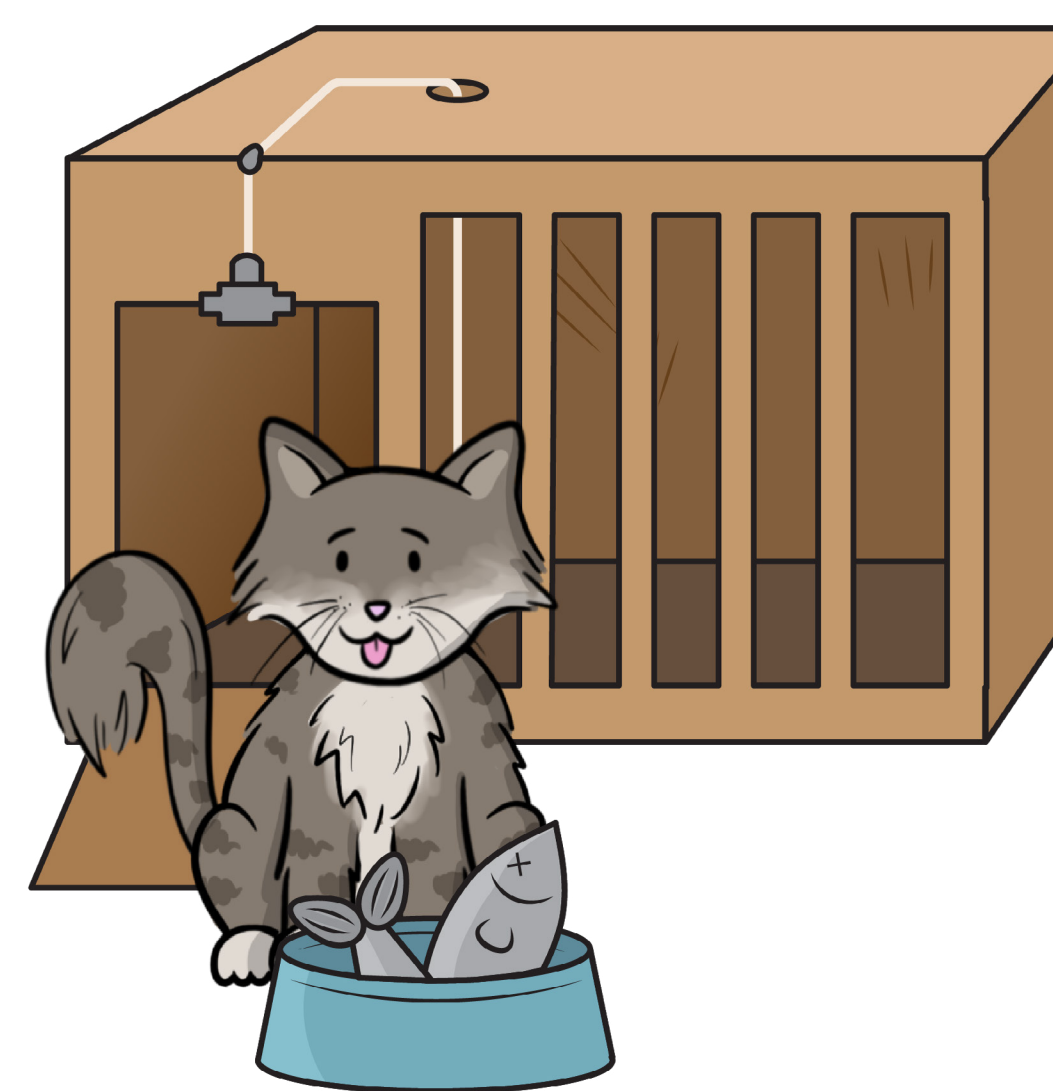
- **Law of Effect:** Behaviors followed by “reward” are _____; behaviors followed by “punishment” _____.
- Studied cats in _____ boxes:



Random behavior = no reward



Specific behavior = reward



Behavior was repeated

B.F. Skinner (1904 – 1990)

- Skinner studied how behavior _____ on the environment, which responds with reinforcement or punishment.
- Created the *Operant Conditioning Chamber*, also called a _____ Box



- ◆ **Operant conditioning:** Learning model in which the consequences of an organism’s actions determine how likely they are to repeat that behavior again.

TOPIC: OPERANT CONDITIONING

EXAMPLE

Match the psychologist with the experiment they performed or innovation they pioneered.

I. B.F. Skinner	
II. Ivan Pavlov	
III. Edward Thorndike	

- a) Placed cats in a puzzle box and rewarded them with treats if they performed specific actions.
- b) Created an operant conditioning chamber.
- c) Studied the salivation of dogs in response to the expectation of getting food.

PRACTICE

The Law of Effect states:

- a) The anticipation of a stimulus is sufficient to illicit a response.
- b) Responses can be generalized to gain rewards.
- c) Behaviors that are rewarded are repeated, behaviors that are punished are not.
- d) A behavior that has been extinguished can spontaneously reappear after a few weeks.

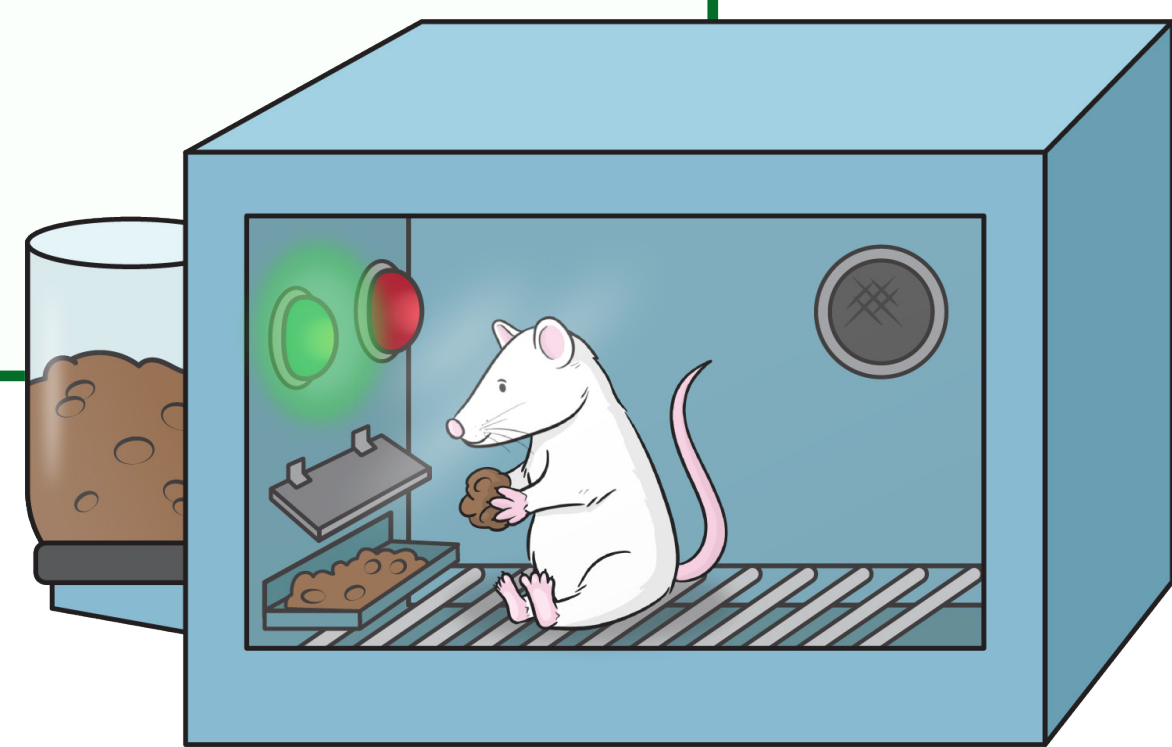
TOPIC: OPERANT CONDITIONING

Operant Conditioning

◆ In operant conditioning we are focusing on two environmental consequences: reinforcement and punishment.

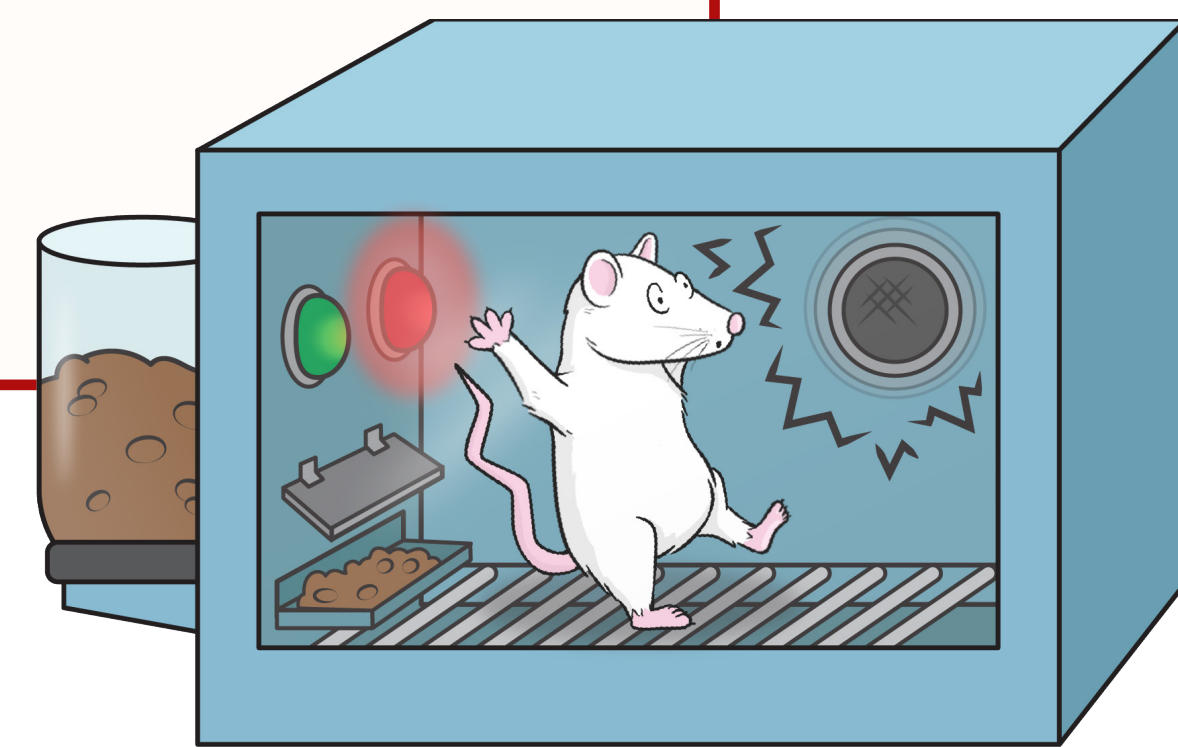
Reinforcement:

- Any event or stimulus that _____ the likelihood of a behavior.
- Strengthens response.



Punishment:

- Any event or stimulus that _____ the likelihood of a behavior.
- Weakens response.



◆ Note: Skinner observed that punishment can have unintended consequences (_____ or aggression).

- Reinforcement *generally* leads to more desirable outcomes.

◆ Modifying reinforcement/punishment can influence efficacy and learning:

Should be appropriate for the organism.

Time

Consequences should follow behavior as _____ as possible.

Consistency

Different _____ of reinforcement/punishment impact learning.

TOPIC: OPERANT CONDITIONING

EXAMPLE

For the statements below, write an “R” if it applies to reinforcement, a “P” if it applies to punishment and a “B” if it applies to both.

a. Weakens the response	
b. Can be a pleasant or unpleasant stimulus	
c. Increases the likelihood of a behavior occuring again	
d. Happens in response to an action	
e. Decreases the likelihood of a behavior occuring again	

PRACTICE

In operant conditioning, modifications to reinforcement and punishment can influence behavior. Which of the following modifications to reinforcement would increase the likelihood of a behavior occurring again?

- I. Reinforcing the behavior as quickly as possible after it occurs.
- II. Providing a reward that is appropriate and desirable for the organism.
- III. Punishing a desired behavior consistently.

- a) I & II.
 b) II & III.
 c) I & III.
 d) I, II, & III.

TOPIC: OPERANT CONDITIONING

Reinforcement Schedules

- ◆ Unlike classical conditioning (based on reps), operant conditioning is based on _____ of reinforcement.
- ◆ **Interval Reinforcement:** Dependent on the length of _____ between reinforcement.

Fixed-Interval (FI) Schedule

Behavior is reinforced at a _____ time.

Ex: Rat gets a treat every 5 minutes / getting a paycheck once a week.



Variable-Interval (VI) Schedule

Behavior is reinforced at a _____ amount of time since last reinforcement.

Ex: Rat gets a treat *about* every 5 minutes / fishing.



- ◆ **Ratio Reinforcement:** Dependent on the _____ of responses to reinforcement.

Fixed-Ratio (FR) Schedule

Behavior is reinforced after a _____ number of repetitions.

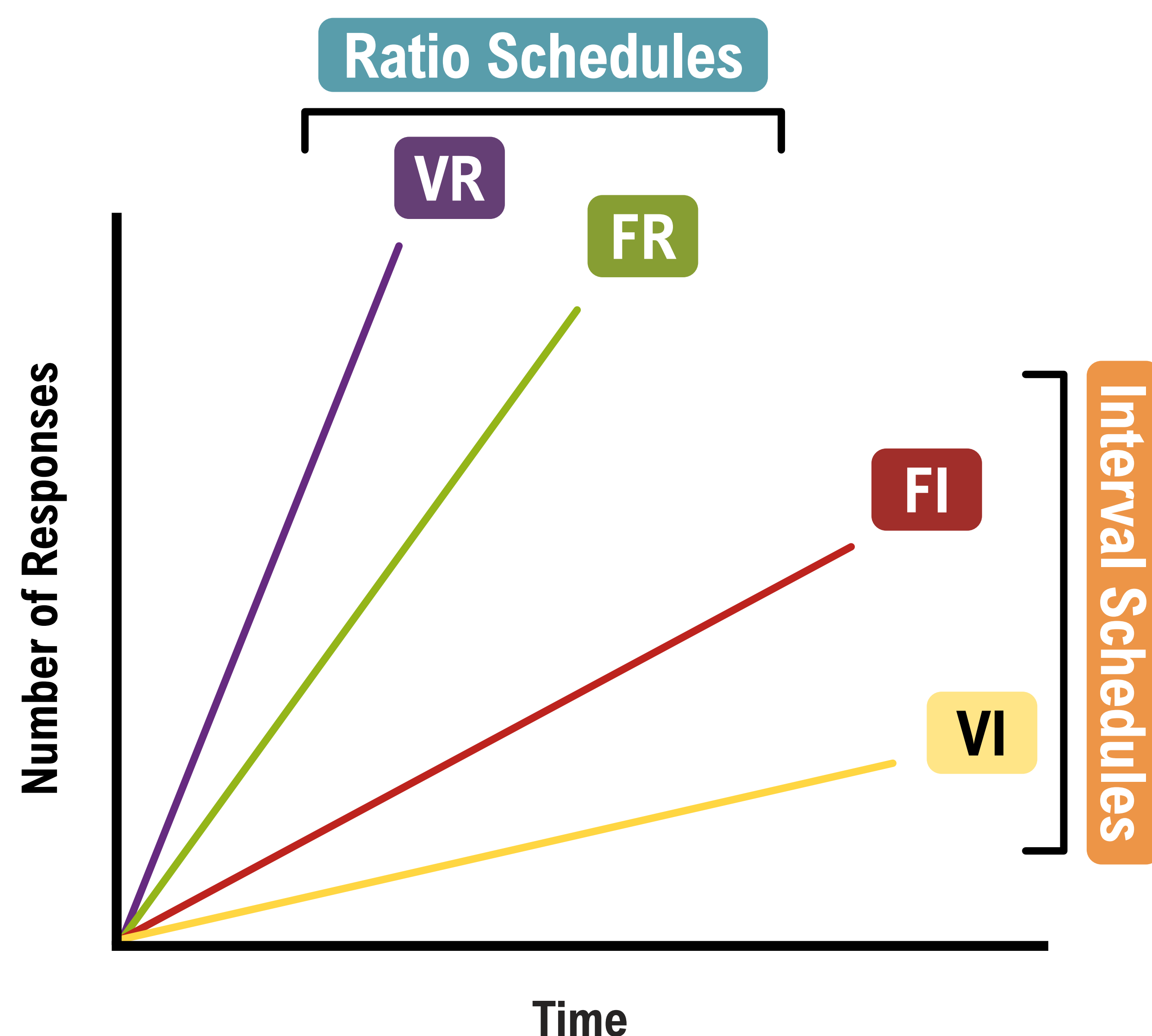
Ex: Rat gets a treat every 5 responses / customer loyalty programs.



Variable-Ratio (VR) Schedule

Behavior is reinforced based on a _____ number of repetitions.

Ex: Rat gets a treat *about* every 5 responses / slot machines.



- ▶ Generally, ratio schedules lead to faster learning and higher responding.
- ▶ **Variable-ratio schedules** are the most _____ to extinction.

TOPIC: OPERANT CONDITIONING

EXAMPLE

For each scenario below, determine what reinforcement schedule is being used. The reinforcement schedule types are listed in the box. Not all terms are used.

a. A social media algorithm rewards a viewer with a fun video every 45 – 90 seconds.	
b. A video game gives a player an extra life every 50 points they earn.	
c. A boss gives a promotion after the completion of 4-9 major projects.	

I) Fixed-Interval Schedule

II) Variable-Interval Schedule

III) Fixed-Ratio Schedule

IV) Variable-Ratio Schedule

PRACTICE

- True or False: if false, choose the answer that best corrects the statement.
- In ratio-based reinforcement schedules, rewards are given at regular time intervals.
- a) True.
 - b) False, in ratio-based reinforcement schedules rewards are given based on the ratio of responses to reinforcement.
 - c) False, in ratio-based reinforcement schedules rewards are given at irregular time intervals.
 - d) False, in ratio-based reinforcement schedules rewards are given at regular time intervals.

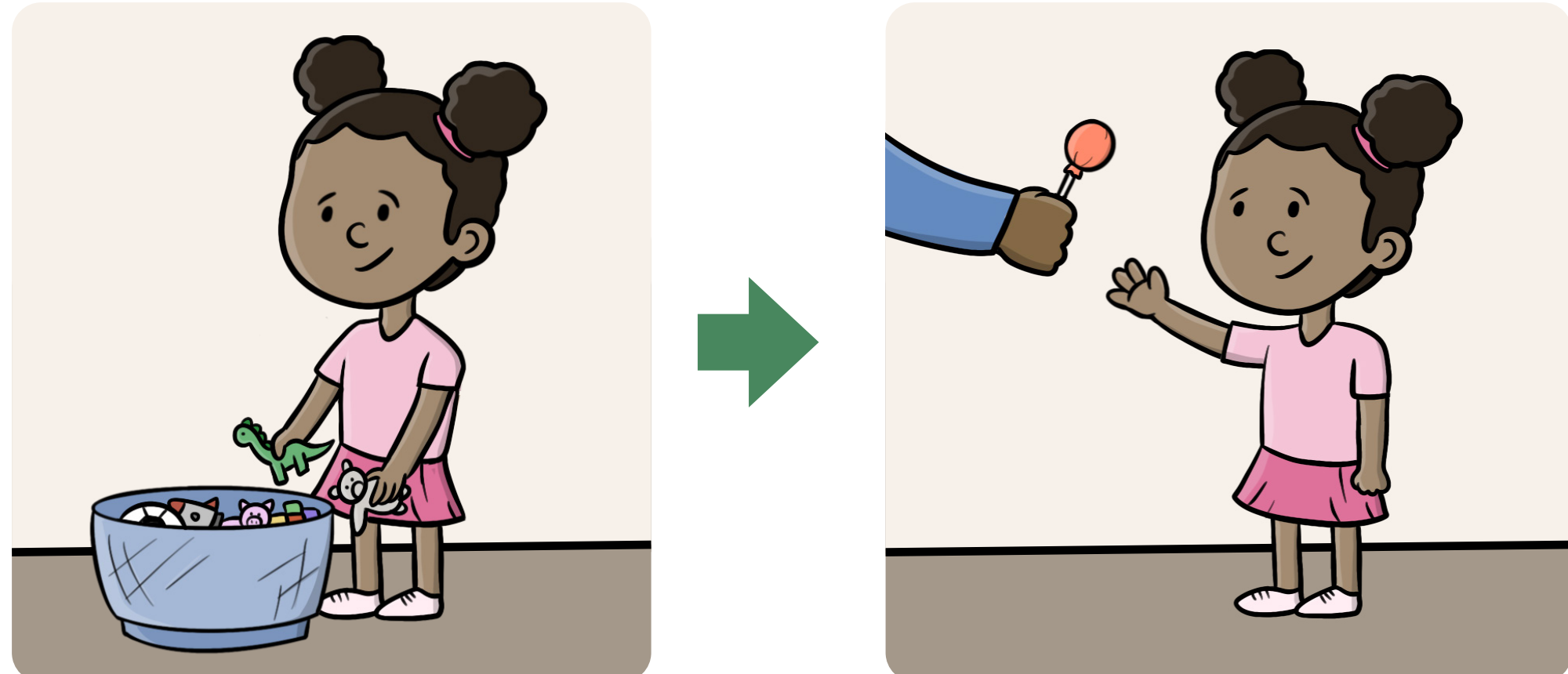
TOPIC: OPERANT CONDITIONING

Reinforcement & Punishment

◆ Reinforcement & punishment can be (adding something) or (removing something).

Positive Reinforcement

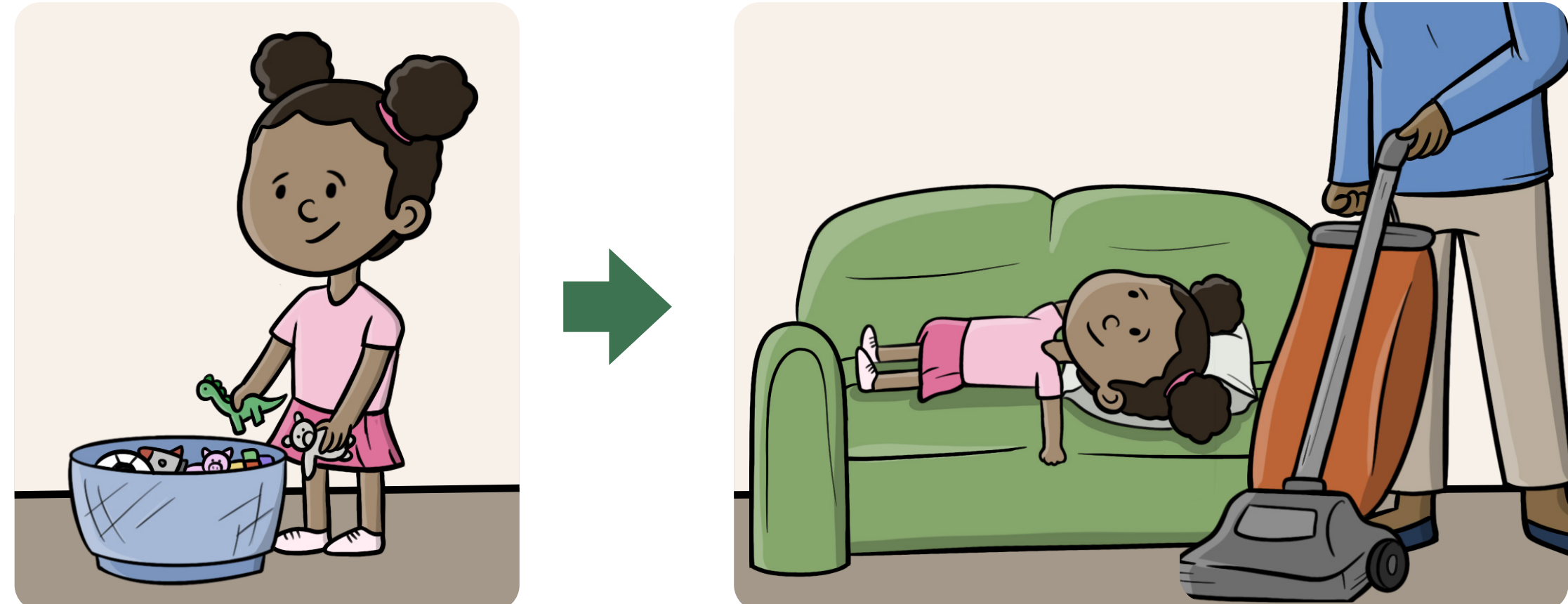
_____ a stimulus to increase the likelihood of a behavior.



Ex: Kid behaves and gets a candy

Negative Reinforcement

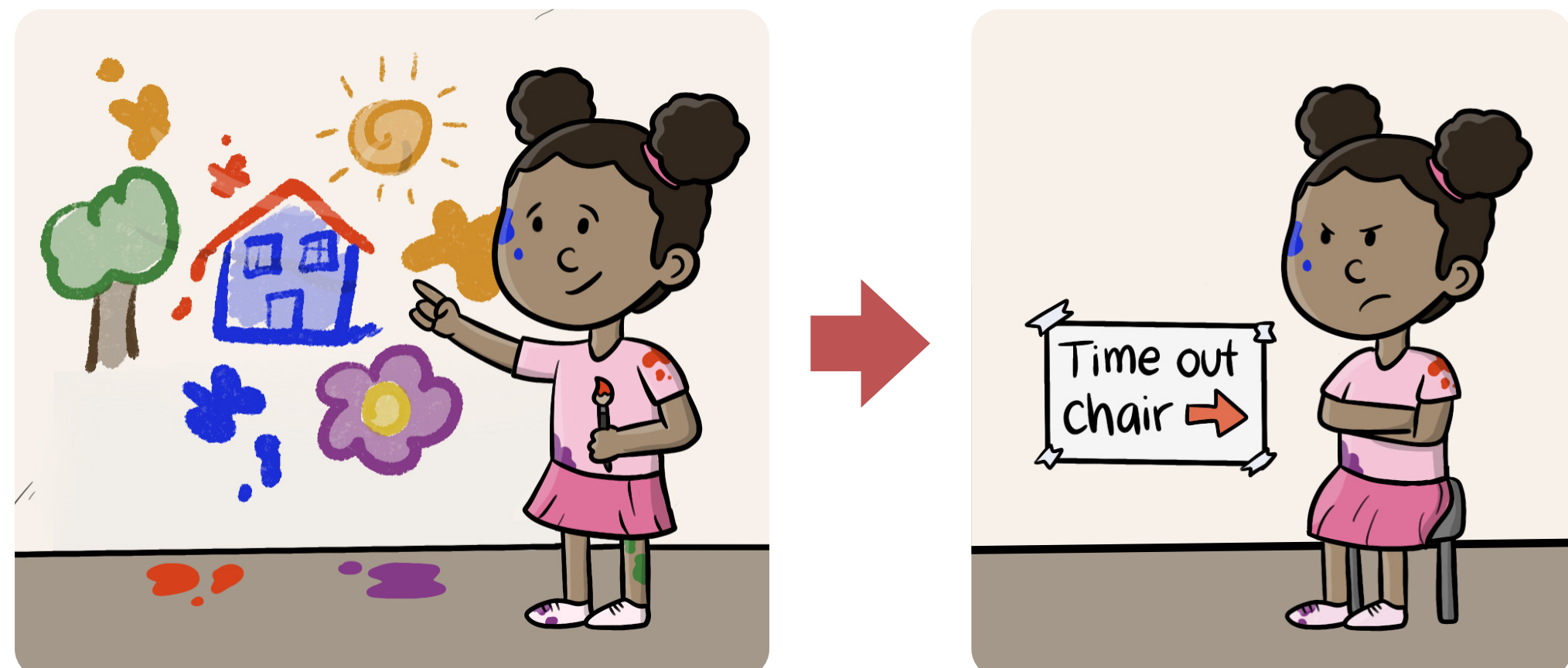
_____ a stimulus to increase the likelihood of a behavior.



Ex: Kid behaves and gets out of chores

Positive Punishment

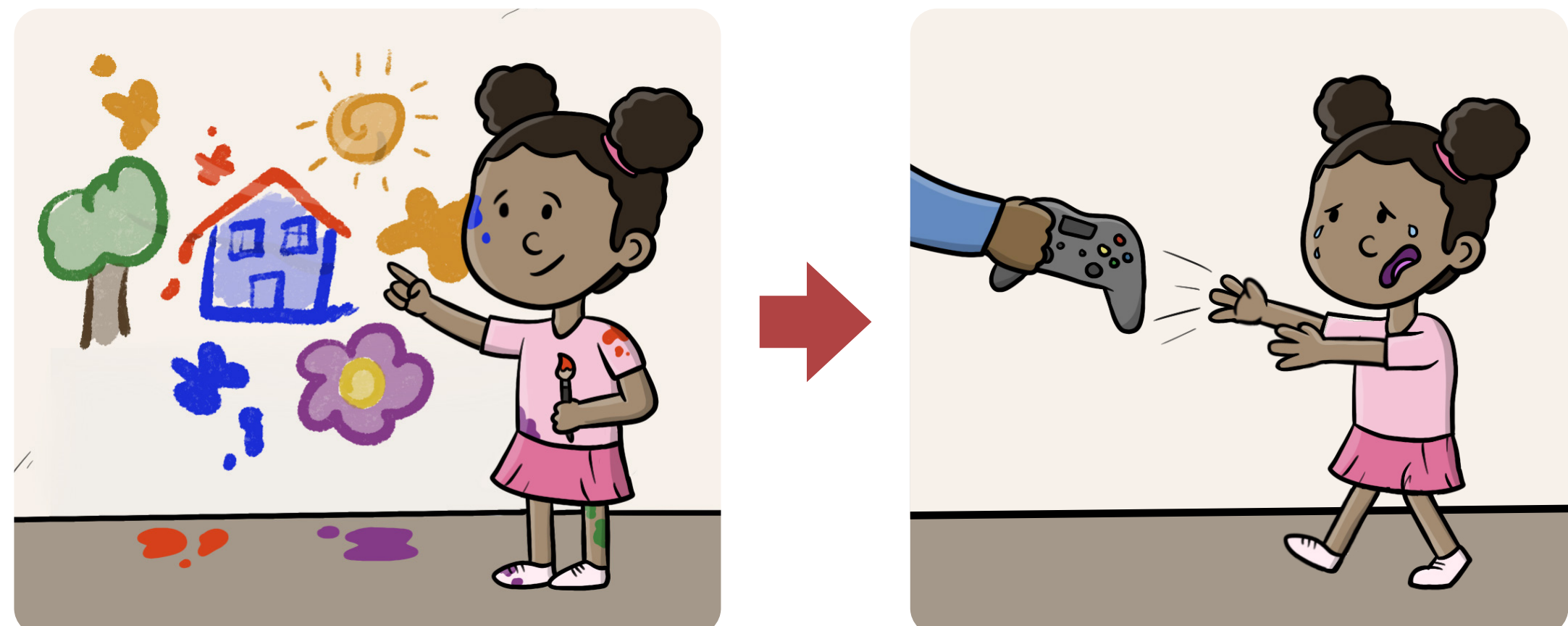
_____ a stimulus to increase the likelihood of a behavior.



Ex: Kid misbehaves and gets a timeout

Negative Punishment

_____ a stimulus to increase the likelihood of a behavior.



Ex: Kid misbehaves and gets toy taken away

TOPIC: OPERANT CONDITIONING

EXAMPLE

Lana is trying to help her son do better in school. She decides to try operant conditioning. In the boxes below, write examples of positive reinforcement, positive punishment, negative reinforcement, and negative punishment she could use with her son.

Positive Reinforcement	Negative Reinforcement
Positive Punishment	Negative Punishment

PRACTICE

Jerome completes a very demanding project at work, and his boss rewards him with a modest bonus on his next paycheck. This is an example of...

- a) Positive reinforcement.
- b) Negative reinforcement.
- c) Positive punishment.
- d) Negative punishment.

PRACTICE

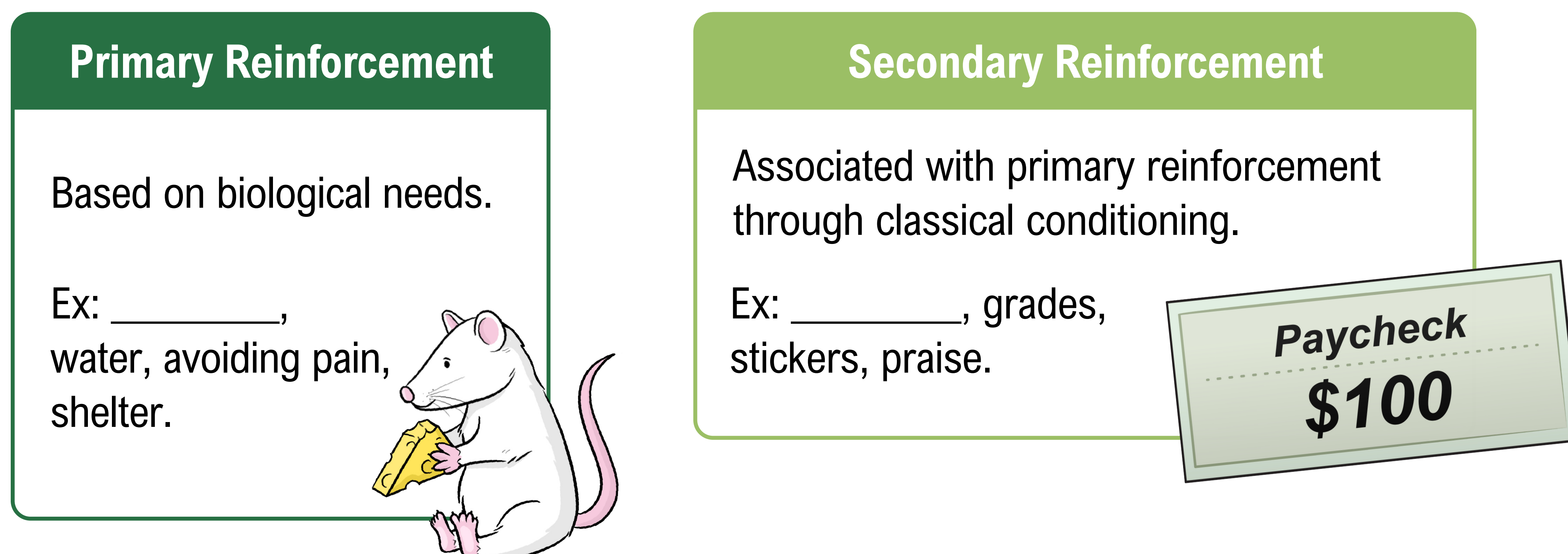
In a laboratory experiment, mice who fail to pull a lever when cued are given a mild electric shock. This is an example of...

- a) Positive reinforcement.
- b) Negative reinforcement.
- c) Positive punishment.
- d) Negative punishment.

TOPIC: OPERANT CONDITIONING

Primary and Secondary Reinforcement

◆ Reinforcers and punishers are built on biological needs, and there are 2 types:



◆ Primary reinforcement tends to be used in _____ research.

EXAMPLE

Primary reinforcers and punishers are powerful in modifying behavior because of their link to basic biological needs.

What would be an example of an ethical concern with using primary punishers in research settings?

PRACTICE

Which of the following is **NOT** a primary reinforcer?

- a) Money. b) Shelter. c) Water. d) Food.