# Applied Behavioral Analysis

(ABA)

# What is ABA?

Cooper, Heron, and Howard (2007) provide the following definition of Applied Behavior Analysis:

> Applied Behavior Analysis is the science in which the principles of the analysis of behavior are applied systematically to improve socially significant behavior and experimentation is used to identify the variables responsible for behavior change.

# What does this mean?

- ABA focus on principles that explain how learning occurs. We are all surrounded by these principles and they help us learn from our environment and others.
- One such instance is positive reinforcement. If we engage in a behavior and receive reinforcement (some sort of reward), we are more likely to engage in that behavior in the future.
- ABA uses scientifically valid treatments to make significant changes in behavior.

# Reinforcement

- It has been referred to as ***"reward"***, although this is not always the case.
- Reinforcement always **increases** the likelihood that a behavior will occur again in the future.
- It is important to note that if a behavior does not increase, then the added stimulus is not considered a reinforcer.
- Example: Dina's mother offers her a piece of candy in order for her to finish her homework. Dina refuses and therefore her mom believes that reinforcement does not work.
- In this example, candy is not a reinforcer because it is not motivating enough for Dina to complete her homework. Say, for example, her mother offers her 30 minutes on her computer if she finishes her homework. Dina finishes her homework promptly. The computer is considered a reinforcer.

# Positive Reinforcement

- A stimulus is ***added*** and it will ***increase*** the likelihood that the behavior will occur again.
- Examples:
  - Claire raises her hand in class and is called on. She is more likely to raise her hand in the future.
  - Every 2 weeks Matthew gets paid for working. He is more likely to work in the future.
  - Marco is successful in hitting his sister in order to get her toys. He is more likely to continue hitting her when he wants her toys.

# Negative Reinforcement

- A stimulus is ***removed*** and it will ***increase*** the likelihood that the behavior will occur again.
- Examples:
  - Keira's brother hits her every time he wants to play with her toys. In order to stop his hitting, she gives him her toys. She will more likely continue giving him her toys when he starts hitting her.
  - Martin starts crying because he wants attention. Because the noise frustrates his mom, she readily picks him up and it stops the crying. She will more likely continue picking him up to stop the crying.

# Punishment

- Punishment always ***decreases*** the likelihood that the behavior will occur again in the future.
- It is important to note that punishment may sometimes lead to some aggression and/or frustration.
- In addition, the punisher may become an aversive stimulus to the individual being punished.
- Finally, it is possible that although the behavior being punished decreases, it may present itself as a different behavior.

# Positive Punishment

- A stimulus is ***added*** and it will ***decrease*** the likelihood that the behavior will occur again.
- Examples:
  - One day Tim starts biting his brother and his brother bites him back. He is less likely to bite his brother again.
  - Mark is changing the wall outlet without turning off the electricity. When he's handling the wires he is mildly electrocuted. He will not likely change any wall outlets without turning off the electricity in the future.
  - Betty is late for a presentation and receives a written warning. She is less likely to arrive late for a presentation again.

# Negative Punishment

- A stimulus is ***removed*** and will ***decrease*** the likelihood that the behavior will occur again.
- Examples:
  - Mikey is fighting with his sister over a toy and their mother removes the toy from both of them. They are less likely to fight over a toy again.
  - Chantel is playing with her friends when she refuses to share and starts being disruptive. Her mother places her on timeout. She is less likely to hit her friends again.
  - A student talks back to his teacher. The student then loses recess. He is less likely to talk back to his teacher in the future.

# Functions of behavior

- Even though the topography of a behavior (e.g., crying) may look the same, they might have different functions.
- In order to appropriately respond to a behavior, once must know the function of the behavior.
- There are 4 functions of behavior
  - Attention
  - Escape/Avoidance
  - Tangibles
  - Sensory

# Functions of behavior

- Attention
  - Individual engages in a behavior in order to gain attention.
- Escape/Avoidance
  - Individual engages in a behavior in order to escape/avoid a stimulus.
- Tangibles
  - Individual engages in a behavior in order to gain access to a stimulus or activity.
- Sensory
  - Individual engages in self-stimulatory behavior (which is self-reinforcing). Example: Matt bites his nails when he's nervous.

# Behavior Analysis in every day life

- Beth tells her daughter that she needs to clean up her toys. Beth starts crying and throwing a tantrum. Beth…

  Places her on time-out. Beth believes she is punishing her daughter by placing her on time-out. However, the reason her daughter is throwing a tantrum is to **escape** a demand (cleaning her toys). Therefore, taking her away from such demand is positively reinforcing her tantrum behavior. In the future, she will most likely throw a tantrum in order to escape a demand.

- What could have Beth done instead?

  When the function of the behavior is escape/avoidance, it is important to follow through. In this scenario, Beth should have followed through with her demand (having her daughter clean up her toys).

# Behavior Analysis in every day life

- Aydin is on the phone with his wife when little Mark starts screaming, “dad, dad, dad, dad!” Aydin turns to his son and tells him to be quiet. Little Mark continues to scream until Aydin is off the phone. Aydin…

  Believes that he was disciplining his son by scolding him to be quiet. In fact, he was positively reinforcing his attention-seeking behavior

- What should have Aydin done instead?

  Because the function of the behavior is attention-seeking, more appropriate responses need to be taught and inappropriate attention-seeking behaviors need to be ignored. Beware of **extinction burst!** (behaviors get worse before they get better).

  Optional video example: https://www.youtube.com/watch?v=0T2R8pTpcoo

# Behavior Analysis in every day life

- Shaun is playing with his favorite toy when his mom tells him he needs to go to bed. He continues playing with his toy until his mom comes up to him and takes it away from him. Shaun starts crying and throwing himself on the floor. His mom, seeing how frustrated he is, gives him the toy back and tells him he can have 10 more minutes with it. His mom…

  Believes she was being lenient and giving him an opportunity to calm down. As it turns out, by giving back his toy after his tantrum, she positively reinforced the tantrum.

- What should have Shaun's mom done?

  In this scenario, proactive approaches could have been attempted (such as giving him a warning, e.g., "you have 10 minutes before bed time"). As a consequence to removing a tangible object, it is always best to not give back the object after a tantrum.

# A-B-C

In order to determine the function of the behavior, we need to look at the ABCs of the situation.

- A – Antecedent
- B – Behavior
- C – Consequence

For example: Beth told her daughter to put her toys away and she threw a tantrum, resulting in a time-out.

Antecedent – Beth asking her daughter to put her toys away

Behavior – Beth's daughter throwing a tantrum

Consequence – Time-out for Beth's daughter.

# Summary

- By finding out the ABCs of the behavior, we can best determine how to react to different situations given the function of such behavior.
- Our behavior and those of others are shaped through consequences (positively or negatively reinforced/punished). Behavior modification is complex but the basic principles applies to all of us.
- Applied Behavior Analysis has been most popular used with children diagnosed with Autism and other developmental disabilities, but it can be used in other fields such as: animal training, gerontology, organizational behavioral management, counseling, exercise, language acquisition, substance abuse, education, etc.

# References


- Cooper J. O., Heron T. E., Heward W. L. (2007) *Applied behavior analysis* (2nd ed.). Upper Saddle River, NJ: Pearson.