Applied Behavior Analysis (ABA)

Parent Training Handouts

ACHIEVE BEYOND
Pediatric Therapy & Autism Services

Parent Training - Introduction to ABA

Objective: Parents will demonstrate knowledge of skills by completing quizzes and exercises associated with **topics (A-E)** with 90% accuracy and independence.

Topic A: *Introduction to Applied Behavior Analysis (ABA)* – parents will learn basic components of ABA, its utility and effectiveness in treating autism.

Applied Behavior Analysis (ABA) is the science to understanding behavior and has become a widely accepted and effective treatment for children with Autism Spectrum Disorder (ASD). ABA focuses on improving socially significant behaviors (i.e., anything important) to a meaningful degree and relies on assessment, individualized instruction, and structured teaching programs in order to measure behavior change.

Key Features of ABA: As Applied to Children with Autism

Adapted From Cambridge Center for Behavioral Studies [2001]

- The child's behavior is assessed through direct observations that focus on exactly what the child does, when he/she does it, at what rate and what happens before (antecedents) as well as what happens after behavior (consequences). Strengths and weaknesses are specified in this way.
- Skills that the child **does not** demonstrate but are expected based on age, are chosen for instruction.
- Initially, pairing is used to condition the behaviorist as a reinforcer and gradually instructional control is attained. This creates a lasting foundation to facilitate behavior change.
- Teaching methods are individualized based on what technic would be appropriate for the child (e.g., DTT/NET).
- Many opportunities to practice and learn a skill are given repeatedly in structured teaching situations and in the course of everyday activities. The number of opportunities depends on the individual needs of each child.
- Instruction initially emphasizes teaching a child how to learn -- to listen, to watch, to imitate and then continues to builds on these skills.
- As the child progresses, guidance is systematically reduced so that the child is responding independently; prompts are faded out.
- As steps are acquired, the child is taught to combine them in more complex ways and to practice them in more situations.
- Problem behavior is **not reinforced**. The child is **not** allowed to escape from learning through non-socially desirable means and is redirected to engage in appropriate

behavior.

- The child's responses during every lesson are recorded. These data are used to determine if he or she is progressing at an acceptable rate. If not, changes are made.
- Recording child behavior is essential because we need to SEE that the program is working.
- Observing therapist behavior tells us that the procedures are being followed correctly and consistently.
- The information adds to our knowledge about the effectiveness of procedures and how to avoid and overcome problems that may arise in practice.

Types of Interventions

ABA is an evolving science. Achieve Beyond is committed to critically examining all new techniques and integrating them into our staff-training program when applicable. At present, we believe the following techniques to be essential in a program for most children diagnosed with PDD:

- Discrete Trial Teaching (promotes quick skill acquisition)
- Incidental Teaching (promotes student initiations)
- Natural Environment Teaching (promotes generalization of learned skills)

Other techniques such as independent activity schedules, script fading, token economy, video modeling, peer modeling, and behavior contracts may be used if needed. Our practices are only limited by those practices not based on research.

Parent/Guardian Exercise

Describe some behaviors that are socially significant to you, as it pertains to your child.

Parent/Guardian Quiz

1.What is ABA? _____

2.What does it focus on? _____

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Parent Training - Behavior

Objective: Parents will demonstrate knowledge of skills by completing quizzes and exercises associated with **topics (A-E)** with 90% accuracy and independence.

Topic B: *Identifying and Measuring Problem Behaviors* – parents will learn to describe behaviors in objective and measurable terms and will learn the components of behavior measurement.

In order to improve socially significant behaviors, behavior itself must be defined. **Behavior is anything an organism 'does' or 'says'.**

Key Features of Behavior

- Behavior impacts the environment.
- Each behavior selected for change must be individually described and defined using verbs, or action words.
- When describing behavior, the focus must be on features that are observable and measurable and we must refrain from subjective input (opinions and feelings). Again, the focus must be on observable 'overt' features (things that are seen) rather than 'covert' features (things that are unseen, hidden, or internal).
- An **operational definition** is a way of describing behavior in specific, concise, observable, and measurable terms.
- We use operational definitions of behavior in order to pin point what behavior we intend to address. Without a clear definition, we are unable to specify what our target will be, cannot decide on, or implement strategies, cannot determine how to collect behavior data, and cannot measure change for the good or bad.
- Examples:
  - Bad: John is nervous.
  - Good: John paces the room back and forth, rubbing his hands, and breathing rapidly.
  - Bad: Jane is disruptive.
  - Good: Jane vocally blurts out comments loud enough for the students in her class to hear, while the teacher is speaking.

Parent/Guardian Exercise

Choose a behavior. Practice writing an operational definition in the space below.

Behavior: _____

_____

_____

Types of Behavior Data Measurement

- **Antecedent – Behavior – Consequence (ABC) Data:** data are collected on the sequence of events surrounding a behavioral episode. This type of data helps identify what 'triggers' the behavior and what 'purpose' the behavior serves.
    - To collect this type of data you must describe the following:
        - Antecedent (A): what happened immediately right before the behavior?
        - Behavior (B): what was observed and said.
        - Consequence: what happened immediately right after the behavior?
- **Frequency/Event:** data are collected on the amount of times the behaviors are exhibited. These type of data may be collected in order to identify if behavior has changed from pre-intervention levels (i.e., baseline). It is best to collect frequency/event data when the behavior has a clear beginning and end.
    - To collect these type of data, tally each time you observe the behavior. You can easily get a behavior rate per hour by dividing the observation time by the behavior frequency.
- **Duration:** data are collected on the amount of time the behaviors are exhibited. These type of data may be collected in order to identify if behavior length has changed from pre-intervention levels (i.e., baseline). It is best to collect duration data when the behavior has a clear start and end time.
    - To collect these type of data, time the length of the behavior episode from when it starts to when it stops. You can easily get the average behavior duration per episode by dividing the amount of episodes by the entire total duration of all behavioral episodes. You can also collect data on the length of time from when a signal/cue is given until the behavior starts (i.e., latency).

Parent/Guardian Quiz

1.Behavior is _____.

2.Read the story below and identify the A – B –C.

Mikey and his mom went to the market. Mikey saw his favorite candy at the checkout line, pointed to it and started screaming. Mikey's mom asked him to be quiet. Mikey began hitting his mom. His mom grabbed the candy and gave it to Mikey. Mikey stopped screaming.

Antecedent: _____

Behavior: _____

Consequence: _____

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Parent Training - Data

Objective: Parents will demonstrate knowledge of skills by completing quizzes and exercises associated with **topics (A-E)** with 90% accuracy and independence.

Topic C: *Taking and Interpreting Data* – parents will learn to collect data on behaviors and will learn to interpret behavioral data (e.g., trend, level, etc.).

Once a behavior is operationally defined, data will be collected prior to, during, and after ABA strategies are implemented. Data are then analyzed to determine if ABA strategies are effective or if modifications to strategies, training, or skill sets are needed.

Key Features of Data Collection

- Baseline data are taken **prior** to the onset of implementing intervention strategies or teaching methods.
- Baseline data are absolutely essential to compare and measure behavior change.
- Without baseline data (i.e., the pre-intervention/pre-teaching level of behavior), it would be difficult to identify how/if a behavior is changing.
- Data can be collected **continuously or discontinuously**, meaning we can collect data on **all or some** instances of the behavior depending on the nature of the behavior itself, its baseline levels, environmental factors, and the overall behavior objective (i.e., the behavior change goal).
- Once a good sample of data are collected (this would depend on the behavior but should be about 3-5 episodes/days) they are analyzed via visual analysis.
- Data are graphed to interpret levels, trends, and variability.
- It is only through objective and accurate data collection and analysis that the team can determine the success of ABA strategies or if changes to strategies, additional training to significant others, or pre-requisite client skills are warranted.

Part 1: Collecting Data

Continuous vs. Discontinuous Data

- **Continuous:** data are collected on all instances of the behavior. Examples include frequency, duration, latency, and trial-by-trial/opportunity percentage data. This type of data is useful when all instances of the behavior can be observed and accurately recorded. Averages are sometimes computed to summarize multiple observations/days of data collection.
- **Discontinuous:** data are collected on some instances of the behavior. Examples include first-trial/probe data, categorization of prompt levels, interval recording (whole vs. partial), permanent product, and trials to criterion.

New Data Collection Terms Not Yet Introduced

- Trial-by-Trial/Opportunity Percentage: data are collected on each opportunity the instructor presents to the learner, then all the correct learner responses are calculated by all the trials presented to measure **accuracy**. This type of data is useful in identifying changes within the behavior, over reliance on, or too much, prompting (i.e., instructor assistance provided).
- First-Trial/Probe Data: data are collected on the initial or first time the instructor presents the "trial" to the learner across sessions. Accuracy (+/-) of the learner response and/or the prompt level required may be collected. First-trial data is another way to measure the acquisition or maintenance of skills and can be used as an efficient alternative to trial-by-trial data depending on the skill and learner.
- Categorization of Prompt Levels: "Prompts" are levels of assistance (please refer to 'The Prompt Hierarchy: Using Levels of Assistance to Reach Independence' handout). Data are collected on the type of prompt used by the instructor to assist the learner in making the required response. Prompt data are useful in determining what assistance the learner requires and at what point the instructor can reduce, or fade, their level of prompt assistance so that the learner can achieve independence.
- Interval Recording: data are collected on whether or not the behavior is observed during or throughout a set interval of time. Whole interval recording data is collected when the learner engages in the behavior for the whole entire duration of the set interval and is used to increase desired behaviors (e.g., sitting, attending, walking near parent in community, etc.), Partial interval recording data is collected when the learner engages in the behavior at any part or time during the set interval and is used to decrease problem behaviors (e.g., hand flapping, tensing, scripting, etc.). For both types a percent is usually calculated to summarize the data.
- Permanent Product: data are collected on an outcome the behavior has on the environment. Examples include how many math problems were solved, how many pages of homework were completed, how many pages of a book were read, how many books were read, how many dishes were washed, how many envelopes were stuffed, etc. This type of data is useful when the number of some behavioral dimension is important.
- Momentary Time Sampling: data are collected on a behavior that is observed momentarily on a predetermined schedule. This type of data is useful when it would be difficult to observe the behavior continuously, rather a timer might be set to go off every 10 minutes, upon hearing the timer the instructor would look at the learner and collect data on what they see right then, and so on and so forth.
- Trials to Criterion: data are collected on how many trials or opportunities are needed to meet the mastery criteria. This type of data is useful in identifying how quickly the behavior changes overtime when very specific criteria is set.

Parent/Guardian Exercise

After selecting a behavior/goal (from the report), determine the pros and cons of collecting data continuously or discontinuously for the chosen behavior. Select which type of data collection would be best, find the corresponding data sheet (in the client binder) and collect data! Once accurate data are collected with the BCBA support, you will be required to collect data on this behavior outside of the ABA session on your own.

Behavior: _____

Data Collection: _____

Data Sheet: _____

Baseline: _____

Parent/Guardian Data Collection Assignment/Goal:

_____

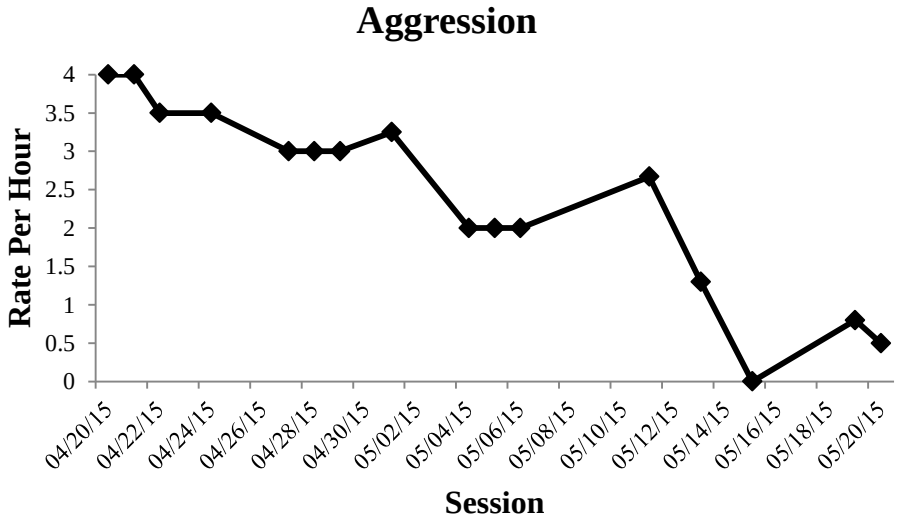
_____

_____

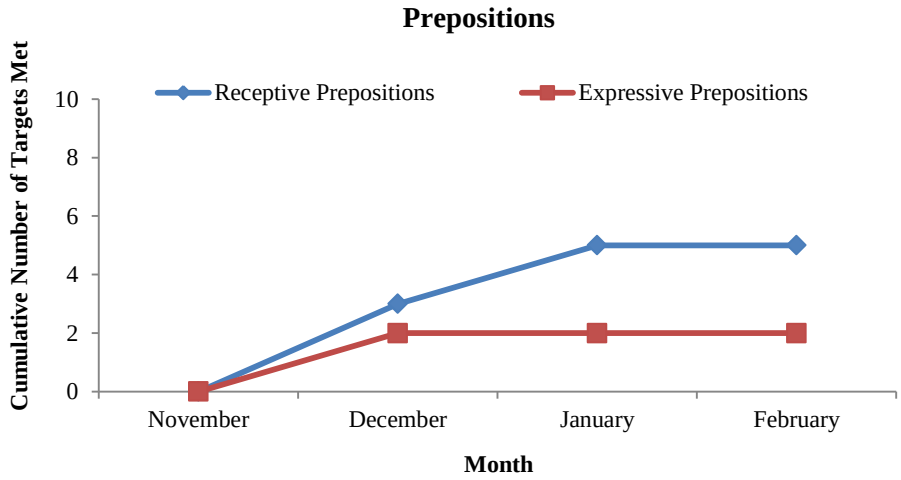
Part 2: Interpreting Data

After a predetermined amount of data are collected on the selected behavior you may precede to interpreting and analyzing behavior change. Data may be graphed via pencil/paper. There are three types of graphs that we use in our reports (i.e., Line, Cumulative, and Bar).

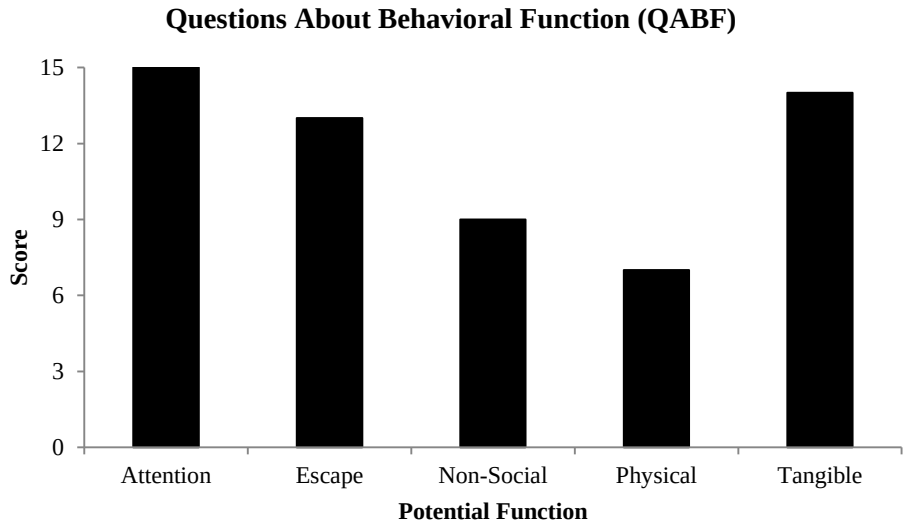
- Line Graph: shows a quantified dimension (frequency, duration, percent, etc.) of behavior across time.



- Cumulative Graph: shows the number of skills/responses acquired across the observation period (e.g., trial-by-trial, criterion, permanent produce, etc.).



- Bar Graph: shows a dimension of behavior that is categorized or grouped (e.g., prompt level, etc.).



Interpreting Graphs with Visual Analysis

- Level: refers to where the data is on the graph. Is it high on the graph, in the middle, or low? Interpreting the level would depend on the y-axis (i.e., horizontal axis) which is how behavior is measured.
- Trend: refers to the direction the data is moving over time along the x-axis (i.e., vertical axis). Is it increasing over time, decreasing, or staying the same? This is more relevant for line and cumulative graphs.
- Variability: refers to the extent to which the data fluctuates or varies. Less variability is a good thing and suggests "instructional control." More variability from day to day suggests a "lack of instructional control." Many things can attribute to variability in data and the BCBA will need to further investigate patterns of variability within and across behaviors.

Parent/Guardian Exercise

Select the type of graph you will create. Graph the data and interpret your results through visual analysis. Describe your findings below. Discuss as a team what your data suggests with respect to the success of current strategies or if changes are warranted.

1. Level:
2. Trend:
3. Variability:

Parent/Guardian Quiz

1. Baseline data are data collected _____ to the onset of implementing intervention strategies or teaching methods.

2. _____ analysis are used to interpret graphs.

For questions 3-5 please indicate what type of analysis is suggested (level, trend, or variability).

	Type of Analysis
3. The data are low on the graph, which suggests hitting behavior is low.	_____
4. The data are not stable and change a lot from day to day.	_____
5. Overtime the data are going up in percent, which suggest compliance is getting better.	_____

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Parent Training – Reinforcement

Objective: Parents will demonstrate knowledge of skills by completing quizzes and exercises associated with **topics (A-E)** with 90% accuracy and independence.

Topic D: *Identifying and Using Reinforcement* – parents will learn to identify reinforcers and will learn to use reinforcement effectively.

Reinforcement is a procedure in which an environmental event occurs after a behavior (i.e., consequence in the A-B-C contingency) that increases or maintains the behavior.

Key Features of Reinforcement

- Reinforcement is a natural procedure (negative reinforcement vs. positive reinforcement) that influences all of our behavior.
- A reinforcer is a 'thing' that increases/maintains behavior (i.e., reinforces behavior).
- Reinforcers are different for everyone and may change from day to day. Initially, 'unnatural' reinforcement may be the only thing to reinforce behavior change and overtime the goal is to fade to more natural forms of reinforcement.
- The delivery of reinforcement (i.e., the schedule of reinforcement) is selected and implemented for different reasons and overtime will be faded to a more natural schedule of reinforcement.
- Punishment is the opposite of reinforcement in that it is a procedure (negative punishment vs. positive punishment) in which an environmental event occurs after a behavior that decreases or stops the behavior. Although punishment is natural, it is very rarely used due to its bad side effects and in ABA it is considered best practice to use reinforcement strategies first.

Part 1: Reinforcement

Types of Reinforcement

- Positive Reinforcement: something is added (+) after the behavior, which results in a future increase in the behavior.
    - The boy receives $10.00 from his parents for getting all As on his report card.
    - The girl gets ice cream from her mother for cleaning her room.
    - The student is reprimanded in front of his peers by his teacher after making a silly noise during a test.
- Negative Reinforcement: something is removed (-) after the behavior, which results in a future increase in the behavior.
    - The husband does the dishes in order to avoid his wife's nagging.
    - The child can get up from the sitting at the dinner table after eating 2 bites of broccoli.

Parent/Guardian Exercise

Identify if the following scenarios are examples of positive or negative reinforcement.

Watching favorite TV show after finishing homework _____

Scratching an insect bite that itches _____

Dog gets a treat for sitting, laying, rolling over _____

Taking a pain reliever to reduce pain _____

Receiving money after completing a job _____

Part 2: Reinforcers

Classification of Reinforcers

- Unconditioned: biological or primary things (food, water, etc.) that are unlearned.
- Conditioned: after being paired with other reinforcing things, learned or secondary things have acquired reinforcing value.

Types of Reinforcers

- Edible – food, drinks, etc.
- Tangible – toys, books, dolls, blocks, etc.
- Activities – playing game, swimming, watching videos, riding bike, etc.
- Social – tickles, high fives, thumbs up, etc.
- Generalized – things that can be exchanged for a reinforcer like tokens, stickers, points, money, etc.
- Verbal – phrases like, "nice", "awesome job", "wow", etc. (can be given in addition to the delivery of any other type of reinforcer).

Determining Reinforcers

- Ask, if the learner/others can tell you.
- Observe, what does the learner request or spend their time doing? What makes them smile, laugh, etc.
- Conduct a "Reinforcer Assessment" (single, multiple, paired) to identify a rank of reinforcers.

Parent/Guardian Exercise

Identify and list some things that may be potential reinforcers for your child. If you are unable to identify a good variety, the BCBA will assist you in conducting a more formal reinforcer assessment.

_____

_____

_____

_____

_____

Part 3: Using Reinforcement: How and When

Using Reinforcement Effectively

- Be sure to deliver the reinforcer immediately after the desired behavior.
- Match reinforcement with the behavior (think differential reinforcement).
    - Prompted behavior should be reinforced with lower ranked reinforcers and high ranked reinforcers should be given for independent responses.
- Make sure the selected reinforcer is valuable/motivating enough to the learner
- Satiation may occur, so switch reinforcers up!
    - Pair new, novel, and more natural reinforcers with existing reinforcers.
- Deprivation can be key in making the reinforcer valuable/motivating.
    - Limit the learner's access to a reinforcer you are using to increase a certain behavior. The learner will more likely to get something they don't already get for 'free'!

Schedules of Reinforcement

- Initially, behaviors you want to increase must be reinforced continuously every time they occur. For new desirable behaviors/skills, continuous reinforcement is used.
- Once the behavior becomes more consistent, you will need to fade reinforcement to an intermittent schedule in which you will reinforce some occurrences.
- Intermittent reinforcement is effective in maintaining behaviors over time and resembles a more natural reinforcement schedule.

Parent/Guardian Quiz

1. Reinforcement is a procedure that _____ behavior, while a reinforcer is a _____ that is delivered.

2. In positive reinforcement something is _____ .

3. In negative reinforcement something is _____.

4. Describe some ways you can use reinforcement effectively.

_____

_____

_____

_____

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Parent Training – Managing Behavior

Objective: Parents will demonstrate knowledge of skills by completing quizzes and exercises associated with **topics (A-E)** with 90% accuracy and independence.

Topic E: *Introduction to Behavior Management* – parents will learn basic function-based behavior management skills.

All behavior serves a function. In ABA, the function of the problem behavior must be identified in order to select the appropriate behavior intervention strategies. Once we can identify **why** a behavior is happening, we can then put a plan in place to manage the behavior.

Key Features of Behavior Management

- Behavior function is determined via analyzing the A-B-C contingency.
- Formal identification of behavior function is identified through a "functional analysis" (FA).
- A "functional behavior assessment" (FBA) is a comprehensive assessment of a problem behavior which may or may not include a "functional analysis".
- Once the function of the problem behavior is identified, a behavior reduction goal should be selected to decrease baseline levels.
- In addition to a behavior reduction goal, a replacement behavior goal will be selected that will serve the exact same function as the problem behavior (i.e., functionally equivalent replacement behavior, FERB). That is, if we take away a behavior, what will we teach the learner to do instead as a more socially appropriate and functional alternative? Baseline should also be attained for the replacement goal.
- A "behavior intervention plan" (BIP) will be designed to address strategies the team will use to decrease the problem behavior across settings and increase the replacement behavior.
- The strategies outlined in the BIP should match the identified behavior function and should be evidenced based!
- The gold standard of a BIP is to have antecedent/proactive strategies, reinforcement/teaching strategies, and consequence/extinction strategies.
- Implementing the 'wrong' strategies can actually make the behavior worse.
- Consistency is key when implementing a BIP!

Functions of Behavior

- **Attention:** the learner engages in the behavior to get a reaction from someone/others.
- **Access:** the learner engages in the behavior to get access or to attain something.
- **Escape:** the learner engages in the behavior to avoid or escape something they do not want to do.
- **Automatic:** the learner engages in the behavior to get a sensory sensation.

Parent/Guardian Exercise

Review the most recent FBA or BIP (ABA or IEP) with the BCBA.

- Locate the operational definition of the problem behavior/reduction goal. Is there baseline data? How was it measured?
- Locate the potential behavior function. What is it? How was it measured?
- Locate the functionally equivalent replacement behavior. Is there baseline data? How was it measured?

Intervention Strategies

- **Antecedent Strategies:** implemented prior to the occurrence of the problem behavior to decrease the likelihood that the problem behavior will occur. These are often referred to as 'proactive' strategies.
    - Identify what triggers/signals behavior and remove it or add a cue for when reinforcement will be given.
    - Provide non-contingent reinforcement on a determined schedule (give reinforcement for free) so that the learner does not 'act out' to get reinforcement.
    - Alter the motivation. Can you create satiation or deprivation in reinforcement?
- **Reinforcement Strategies:** implemented to positively reinforce replacement behaviors or diminishing/zero rates of problem behavior. These are often referred to as 'teaching' strategies and include "differential reinforcement".
    - When the learner engages in the replacement behavior or other good behaviors reinforcement is delivered (DRA).
    - When the learner engages in lower levels of the problem behavior reinforcement is delivered (DRL).
    - When the learner engages in a different and incompatible behavior instead of the problem behavior reinforcement is delivered (DRI).
    - When the learner exhibits the absence of the problem behavior reinforcement is delivered (DRO).
    - When the learner engages in higher rates of the replacement behavior reinforcement is delivered (DRH).

- <u>Consequence Strategies:</u> implemented after to the occurrence of the problem behavior to decrease the likelihood that the problem behavior will occur. These are often referred to as 'reactive' strategies and are what to do when the problem behavior happens.
    - Function-Based Extinction:
        - Attention = planned ignore
        - Access = withhold/deny access
        - Escape = follow through/prompt response
        - Automatic = block/redirect behavior

Parent/Guardian Exercise

- Locate the intervention strategies in the FBA/BIP (ABA or IEP).
    - What are the antecedent/proactive strategies? Are these being implemented across settings and people consistently? If not, why?

      _____
      _____
      _____
      _____

    - What are the reinforcement/teaching strategies? Are these being implemented across settings and people consistently? If not, why?

      _____
      _____
      _____
      _____

    - What are the consequence/extinction strategies? Are these being implemented across settings and people consistently? If not, why?

      _____
      _____
      _____
      _____

Parent/Guardian Fidelity Assignment/Goal

Parent/Guardians will be required to implement key strategies outlined in the BIP and data will be collected. The following strategies will be introduced, modeled, and role-played with you. Once independence is achieved, the BACB will design a way to measure your implementation of these strategies during and outside of sessions.

Antecedent Strategies:

Reinforcement Strategies:

Consequence Strategies:

Parent/Guardian Quiz

1. The four functions of behavior include:

_____
_____
_____
_____

2. If a problem behavior is 'removed', what is taught in its place?

_____
_____

3. A comprehensive Behavior Intervention Plan (BIP) should include:

_____
_____
_____

4. What is the significance of identifying the function of a problem behavior? Why would this be important and what could happen if a BIP is created/implemented without identifying the potential behavior function?

_____
_____
_____
_____

5. In the space below, list some strategies on your child's BIP.

_____
_____
_____
_____
_____
_____
_____