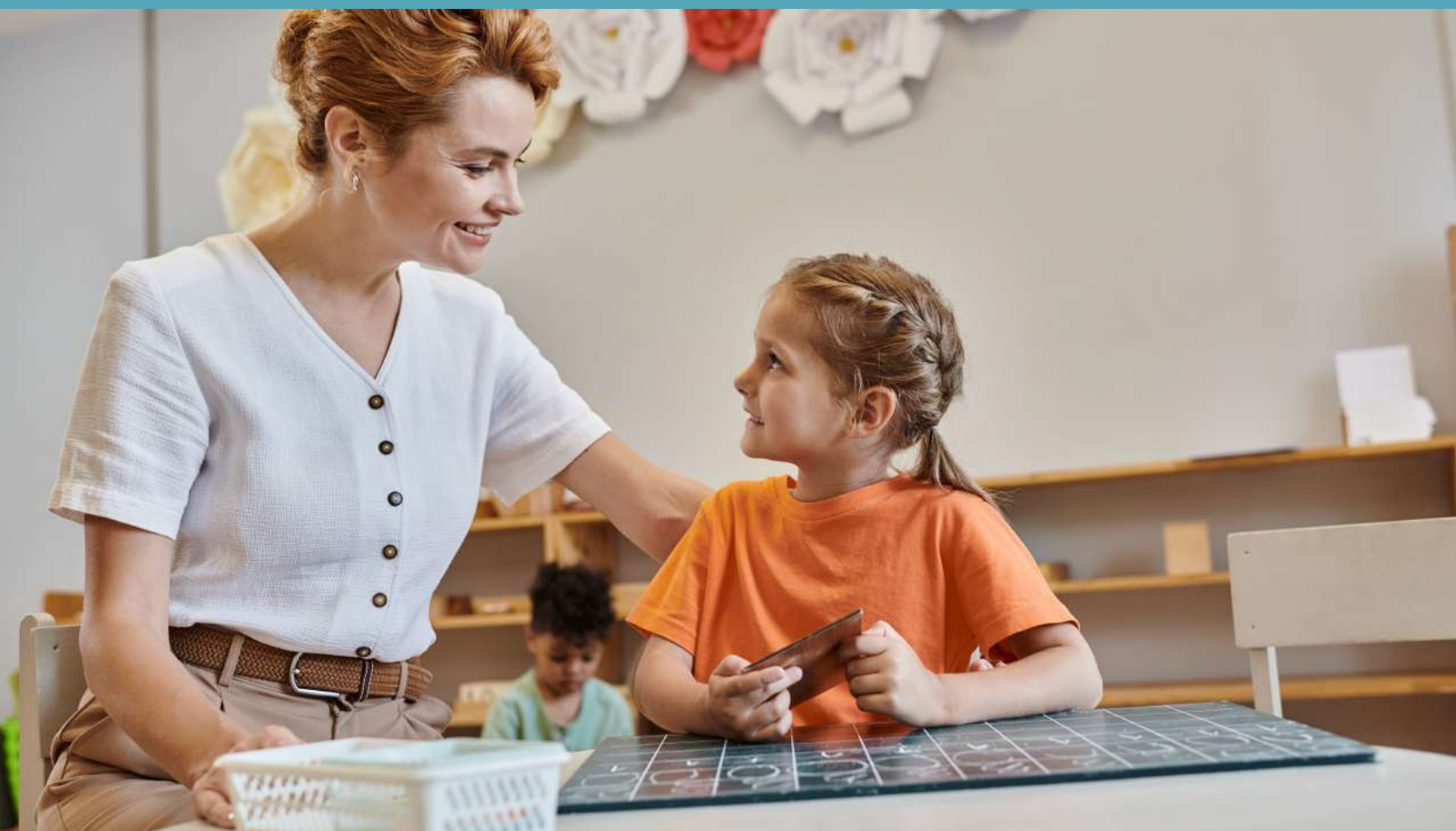
Affordable ABA

Preference Assessment and Reinforcer Evaluation



Introduction

Applied behavior analysis (ABA) contains various principles and procedures that are used to enhance skills as well as decrease behaviors in service recipients. One of the most basic principles and procedures used is positive reinforcement. Positive reinforcement is used to increase the future frequency of a behavior by presenting a stimulus after the occurrence of a behavior. It is important for a behavior analyst to understand positive reinforcement and how to evaluate a service recipient's preferences so that this principle and procedure can be used to maximize the lives of the individuals receiving services.

Most often, positive reinforcement is used by behavior analysts within programs that are used to increase behaviors that are appropriate. However, a typical misconception of the term positive reinforcement is that certain items or stimuli function as positive reinforcement just because of how the item is or what it looks like. For example, some people might say that a piece of candy was used as positive reinforcement for a child during mealtime. However, a behavior analyst should realize that this statement has the potential to be incorrect as positive reinforcement is defined by the effect that it has on behavior and not the way the item or stimulus looks. Positive reinforcement is known as the delivery of a stimulus that is contingent on a response that in turn will increase the likelihood that the response will occur again in the future. If the likelihood of the response does not increase in the future, then the stimulus that was presented following the response is not known as a positive reinforcer.

Through the understanding of positive reinforcement and how to select reinforcers that have the potential to maximize a service recipient's performance, a behavior analyst can enhance programming to teach socially significant goals and to enhance the lives of the individuals they provide services for. Therefore, it is important to understand how to identify these potential reinforcers and to

determine one's preference for stimuli that are available for integration into programming.

In this course, participants will learn to (1) identify preference assessments that can be used to identify reinforcers, (2) describe benefits that are associated with positive reinforcement, and (3) delineate various applications of preference assessments.

Section 1: Overview of Reinforcement

Reinforcement is considered to be the main principle and procedure that is used in the field of ABA. ABA is developed and based on B. F. Skinner's theory of operant conditioning. The theory of operant conditioning delineates that a behavior can be taught or learned through the different consequences that are provided. These behaviors are taught or learned through the use of reinforcement as this principle can be used to either increase or decrease the probability that a specific behavior will occur again provided that a certain set of circumstances occur.

Skinner outlined positive reinforcement through means of a stimulus repeatedly following a specific behavior that results in an increase in the frequency of the behavior in the future. For example, a teacher may be working with a student in a classroom setting to teach them to raise their hand when they want to speak or ask a question. If the teacher presents a positive reinforcer, such as telling the student "Good job", immediately after each time the student raises their hand before speaking, then the frequency of this behavior should increase in the future.

There are a couple of different ways that someone can determine if something will function as a positive reinforcer. One way is that an individual could deliver the potential reinforcer immediately after the specific behavior is performed and

then record whether or not the frequency of that specific behavior increases. This method has been noted as being the most direct manner of determining whether or not a particular stimulus is acting as a reinforcer for an individual. However, it is often also labeled as being the most time consuming process for determining a reinforcer. Next, an individual could simply ask the service recipient or their caregivers or parents what serves as a reinforcer for them. They could also observe the service recipient and determine what they interact with. However, these methods may be unreliable. Lastly, an individual can offer a variety of items to a service recipient and watch what the service recipient selects and engages with or consumes to assist with determining a reinforcing item. This option is often referred to as a preference assessment.

The second option, asking others to identify items that the service recipient likes or seeing what the service recipient interacts with, is typically used to delineate a potential list of reinforcers that are then used and tested within a preference assessment. By recording how often a service recipient interacts with various items as it relates to other items will help to determine reinforcers that are considered to be low, moderate, or high preference items. These types of preference hierarchies are then able to be used as a method of selecting a highly preferred item for intensive teaching purposes or for use with independent responses. Moderately preferred items can be used for instances of solitary play or for responses that require prompting.

Section 1 Key Words

Positive reinforcement - means of a stimulus repeatedly following a specific behavior that results in an increase in the frequency of the behavior in the future

Preference assessment - offering a variety of items to a service recipient and watching what the service recipient selects and engages with or consumes to assist with determining a reinforcing item

Section 2: Preference Assessments Used for Reinforcer Identification

There are six main types of preference assessments that are used to identify potential reinforcers. These preference assessments include single stimulus, paired stimulus, multiple stimuli with replacement, multiple stimuli without replacement, free operant, and restricted response. Prior to any of these assessments being administered, five to eight stimuli should be selected based on interviews that were conducted with parents and caregivers of the service recipient and observations that were conducted with the service recipient. These items could include edible items, toys, drinks, or any other item that could be a potential reinforcer for a service recipient. Various questionnaires and reinforcer assessments are available that could be provided for parents or caregivers to respond to regarding potential reinforcers across the different senses. One potential form that could be completed is the Reinforcer Assessment for Individuals with Severe Disabilities (Fisher et al., 1996). Although these are not required, they could provide assistance for considering the type of preference assessment that should be conducted.

Single Stimulus Preference Assessment

Within this type of preference assessment, one item is presented at a time in a trial-based format. The service recipient's response is then observed. This can include the service recipient reaching for or even looking at the item that is

presented in front of them. The individual will then switch between the different stimuli by presenting each stimulus several times and letting the service recipient interact with the item for about 30s. Items that are chosen in a high proportion of opportunities or for the longest time are considered to be highly preferred items. This type of preference assessment is different from other preference assessments because it does not require the service recipient to scan an entire array of objects and then select an item from a variety of different options. However, this type of preference assessment may not provide a preference hierarchy if several of the items are chosen in a high proportion of opportunities as this may reveal that several of the options are highly preferred.

Paired Stimulus Preference Assessment

The paired stimulus preference assessment is commonly known as the forced choice or paired choice preference assessment. Two items are selected and presented at the same time in a trial-based format. The service recipient is asked to pick one of the two items that are available. All of the items are presented to the service recipient in pairs in each combination that is possible. Each pairing of items may be assessed several times which can result in multiple trials. For example, if a total of eight items are included in the paired stimulus preference assessment, then all possible pairings would result in a total of 56 trials if each item is paired with each available item in both the right and left position. Preference of the service recipient is scored by calculating the proportion of opportunities an item was chosen when it was made available. Since there is the option to choose between two items, this type of assessment will result in a preference hierarchy being established for the service recipient.

On the other hand, since this type of preference assessment requires the pairing of each item and repeated testing, this preference assessment often takes longer

to implement than the other options that are available. This may, in turn, limit the updating of preferences on a frequent basis especially in environments where service recipients have competing schedules or limited visitation time. As a way of addressing this limitation, though, the number of stimuli that are presented within the assessment could be reduced. Additionally, the efficiency of this type of preference assessment could be enhanced by evaluating a few categories of stimuli (i.e., sweet foods, dairy items) rather than stimuli on an individual basis. An additional limitation of this type of preference assessment is with the removal of the stimuli during the assessment. This may elicit problematic behaviors from the service recipient when a stimulus is removed. This is more likely to occur with service recipients where challenging behaviors are reinforced by access to a tangible item.

Multiple Stimulus with Replacement Preference Assessment

This type of preference assessment requires that multiple items are presented in an array during each trial. The items are arranged in a line in front of the service recipient. If a large array of items is being used, it will be important for the assessor to point out each item, so the service recipient is able to look at each item that is available. Once the service recipient chooses an item that is available and is allowed to interact with it for approximately 30s, the assessor will place the item back into an array of other items, rearrange the order that all of the items are in, and start a new trial with the service recipient. On each trial afterwards, the service recipient will be allowed to select an item from all of the original items that are present. This type of preference assessment does indicate relative preference for the service recipient and requires less trials than the paired stimulus preference assessment. However, since every item is made available to the service recipient on each trial, the service recipient may only select the most preferred item. This can lead to an incorrect assumption being made that the

other available items do not function as reinforcers when they may actually do so. For example, in a multiple stimulus with replacement preference assessment with lollipops, licorice, and chocolate, if the service recipient selects chocolate for every trial, an incorrect assumption could be made that lollipops and licorice are not reinforcers. An additional limitation of this type of preference assessment is that it produces less consistent results across different administrations. Therefore, a paired stimulus preference assessment will typically generate a more differentiated preference hierarchy of the items that are used within the assessment.

Multiple Stimulus without Replacement Preference Assessment

In the multiple stimulus without replacement preference assessment, each item that is selected by a service recipient is not returned to the array of available items in subsequent trials. As a way of implementing this type of preference assessment, the assessor will present all available items to the service recipient. The service recipient will be allowed to choose one item out of the array. After the service recipient has had a moment to engage with the selected item, the assessor will leave that item out of any subsequent trial and then rearrange any items that are left. This method will continue until there are no remaining items left to select or the service recipient does not choose any of the items that are available. Points are typically assigned to the item that is chosen by the service recipient for each trial. For example, if five trials are conducted, the first item that is selected may be assigned a score of five points; the second item that is chosen could receive a score of four points; and so forth. After this type of preference assessment has been implemented five times for five items, points are totaled for each to determine the preference hierarchy. This type of preference assessment is more likely to note several preferred items for a service recipient.

A limitation associated with this type of preference assessment is that this assessment requires a service recipient to discriminate and choose an item from a particularly large array of stimuli. This can limit the number of items that are used in these assessments and that are able to be evaluated since the complexity of this task increases as the number of items within the assessment increases.

Free Operant Preference Assessment

A free operant preference assessment does not utilize trials to determine preference. In order to implement a free operant preference assessment, the assessor will arrange all of the items on a table or in an area that is designed for play or leisure. A brief session (i.e., 5 min) is started and during this session, the assessor should record the time that the service recipient spends engaging with each item that is available to them. The items that are engaged with for longer periods of time are determined to be the most preferred items by the service recipient. The free operant preference assessment is ideal if sessions are shorter in duration. These types of preference assessments may not delineate a preference hierarchy since the items that are available are concurrently available and the service recipient is able to select between the items that are available. Additionally, as this type of preference assessment does not include trials, it is less likely to evoke any problematic behaviors as there are no demands being placed on the service recipient to select an item and no items are being removed. However, a behavior analyst should be mindful as problem behavior can be exhibited from the service recipient if they display attention-reinforced problem behavior. On the other hand, this type of preference assessment can result in false negative results as the service recipient has the option to interact with one item exclusively.

Response Restriction Preference Assessment

This type of preference assessment combines different components of the multiple stimulus without replacement preference assessment and the free operant preference assessment. Each trial lasts between three and five minutes, and the assessor places several items in front of the service recipient and instructs them to play with any of the items that they would like. Similarly, to the free operant preference assessment, items are not removed and the time that is spent engaging with each item is recorded. Then, similarly to the multiple stimulus without replacement preference assessment, the assessor will remove the item that the service recipient engaged with the most and represent the remaining items for use within the next trial. When compared to other preference assessments, this type of preference assessment results in more differentiated preference and more complete information concerning the engagement of the service recipient across the different stimuli. There are limitations with this type of preference assessment, though. This type of assessment contains multiple complex rules for deciding on when to restrict stimuli. It also has a lengthy administration time and takes much longer to complete than other preference assessments.

Additional Measures of Preference

Although there are six main types of preference assessments that are used to determine the preference of a service recipient, there are also other methods that can be used to measure preference. It is important to take all of these options into consideration when determining the best method to use to determine preference for the service recipient the behavior analyst is providing services for.

Duration Assessment

Duration assessment can be used as an alternative approach to measure preference. Stimuli can be presented one at a time for two minutes in duration. Engagement with the selected item should be measured. This can be repeated over and over for the different stimuli that are to be evaluated. After all stimuli have been evaluated through means of engagement time, then the results can be compared as a way to rank order the items by time spent in engagement with each item. This can produce a differentiated preference hierarchy. This type of assessment can take less time to administer than other preference assessments; however, the results may be less stable regarding preference rankings across different administration periods.

Vocal Report

For service recipients that are able to identify preferred items vocally, then a vocal report or self-nomination may be a preferred way to identify preferences. A menu of reinforcing items or events can be presented to a service recipient for them to be able to identify their preferred items. This approach, though, can be limited in a multitude of ways. Self-nomination of preference may not always align with one's observed preferences. Additionally, self-nomination may only be an appropriate way of identifying preferences for individuals who demonstrate sufficient expressive and receptive language skills to be able to delineate their preferences vocally.

Caregiver Report

At times, it may be worthwhile to ask a caregiver or parent to delineate preferred stimuli for service recipients that are unable to express their own preferences to others. However, it is important to note that research has indicated that a

caregiver report of service recipient preferences is not consistently reliable (Windsor et al., 1994). Although this research has indicated that caregiver report may not be an effective manner at ascertaining service recipient preference, it does seem like a logical method to utilize for those individuals that are not able to self-report their own preferences. Behavior analysts should understand this limitation and use this method of identifying preferences when other methods are not successful or are unable to be integrated for use within programming.

Pictorial Representations

Another option that is available for identifying preferred items is through the use of pictures. This can be a method of identifying preference for service recipients that are not able to provide a vocal response. Picture menus can be provided that have different pictures of items available for selection. One limitation of this type of method that is used to identify preference is that the service recipient must be able to discriminate between the pictures that are present of the items or activities. If this method is to be used, the service recipient may need to partake in discrimination training first prior to engaging in a pictorial preference assessment.

Concurrent Chains

Typically, most preference assessments are used to determine preference for specific stimuli, items, or activities that are available for service recipients for use within different programs. However, preference assessments can also be used to determine a service recipient's preference for positive reinforcement interventions (Hanley et al., 1997), different schedules of reinforcement that can be used (Luczynski & Hanley, 2014), various motivational systems (Heal & Hanley, 2007), punishment and extinction components of different procedures (Giles et al., 2012), and preferences for choice and no-choice arrangements (Tiger et al,

2006). Research has used a concurrent chains procedure to assess preference for different procedures (i.e., functional communication training, noncontingent reinforcement) for reducing challenging behaviors. This type of procedure included the pairing of each treatment with a card that was a different color to indicate a different treatment option for a participant when they entered a specific room. When they entered this room, they received the treatment that was associated with that specific color of card. These results indicated preference for different treatment interventions for problem behavior of the individuals that participated in the study.

Group Arrangement

Research that has been conducted on the implementation of preference assessments has typically focused on the reduction of administration time for participants on the individual level. However, there has been some other research that has looked at evaluating the accuracy of preference assessments for multiple children at the same time (Layer et al., 2008). Within this study, the researchers determined a preference hierarchy for each child on an individual basis. Then, while the group assessment was taking place, each child was asked to select a colored card that the researchers had previously paired with specific food reinforcement. Once each child was able to select a card, the researcher placed all of the selected cards from each child into a box. The researcher then selected a card from the box, and each child in the study received the food item that was associated with the card that was selected. When both the individual and group preference assessments were compared, the results revealed that the two assessments produced similar results in regard to preference rankings, but the group assessment was able to delineate the preferred stimuli in a more efficient manner. Other students (Radley et al., 2019) have conducted similar studies.

Results have indicated that the group procedure is a valid and rapid method that can be used to assess preference.

Section 2 Personal Reflection

Which preference assessment would you be most likely to use in your practice and why? Do you feel one type of preference assessment would be the most difficult to administer? How could you ease the level of difficulty for this type of preference assessment within your practice?

Section 2 Key Words

Free Operant Preference Assessment - records the amount of time a service recipient engages in a particular activity, then compares it to the amount of time engaged in other activities. The assumption of free operant observation method is that the more time a service recipient spends on a particular activity indicates more preference for that activity.

Multiple Stimulus with Replacement Preference Assessment - a method of identifying preferred items or activities for a child. The assessor presents an array of three or more items to the service recipient, and lets the service recipient choose one. The chosen item remains in the array for the next trial, while the unchosen items are replaced with new ones.

Multiple Stimulus without Replacement Preference Assessment - the assessor places an array of items in front of the service recipient and allows him or her to select one. After the service recipient plays with or consumes the item, the assessor removes it from the array. Each time the assessor presents the array, this is known as one trial. The assessor repeats trials until there are no items left in the array, or until the service recipient refuses to make any further selections.

Paired Stimulus Preference Assessment - the assessor places two items in front of the service recipient and allows him or her to select one. After the service recipient plays with or consumes the item, the assessor presents another trial of two items. Each time the assessor presents two items, this is known as one trial. The assessor repeats trials until every item has been paired with every other item.

Response Restriction Preference Assessment - the assessor places several items in front of the service recipient and instructs them to play with any of the items that they would like. The assessor will then remove the item that the service recipient engaged with the most and represent the remaining items for use within the next trial.

Single Stimulus Preference Assessment - method of identifying preferred items or activities by presenting one item at a time. It is suitable for learners who have difficulty choosing between two or more stimuli. The reaction and engagement of the learner to each item is recorded. It is also known as the successive choice method.

Section 3: Selecting a Type of Preference Assessment

The aforementioned types of preference assessments have all been noted as being effective at identifying positive reinforcers for use with a service recipient. However, each type of preference assessment does come with their own pros and cons. Often, an assessor may find it difficult to determine which type of preference assessment to use as there are no set rules or published guidelines for matching a type of assessment with a type of service recipient.

One general guideline that has been noted when discussing the type of preference assessments to use is that the multiple stimulus without replacement and the paired stimulus preference assessment are the most reliable methods that are

implemented. However, the paired stimulus preference assessment does take more time to implement. Additionally, if a service recipient exhibits problematic behaviors during an assessment, the assessor may want to switch to a free operant preference assessment. On the other hand, if a service recipient exhibits a position bias, then the assessor may want to use a single stimulus preference assessment or align the items so they are closer together within a container.

Research has focused on developing a decision-making model to guide assessors into selecting a preference assessment through a series of questions. These questions focus on prerequisite skills, time constraints, problematic behaviors, and preference hierarchy. Some models also include pre-assessment considerations and variables that may be motivating to an individual. While these decision-making models are not foolproof for selecting a preference assessment, they can be used as a resource for a systematic method of selecting a relevant preference assessment.

How Often do you Conduct Preference Assessments?

Once a type of preference assessment has been selected for implementation, a consideration that should be reviewed frequently is that one's preference for items is typically not stable. This means that what functions as a reinforcer in one moment of time may not function as a reinforcer later on or even in the next hour. This is due to reinforcers changing in their effectiveness based on the service recipient's motivating operations. Motivating operations are antecedent events or conditions that may cause either an increase (establishing operation) or decrease (abolishing operation) in the value of an item as a reinforcer and either increase or decrease the probability of exhibiting a behavior that has produced that stimulus previously. For example, if the service recipient has not eaten food in quite some time, there may be an establishing operation for something edible. Another

example can include providing a child with a blanket but no pillow when they want to take a nap. With this example, there may be an establishing operation for a pillow.

Therefore, it is important to take motivating operations into consideration when preference assessments are implemented. Mini-preference assessments could be conducted prior to implementing sessions as a method for frequently assessing establishing operations for items that could be used as potential reinforcers. These mini assessments may be structured or unstructured. Additionally, it should be noted that if the same items are offered as reinforcers over and over, the service recipient may no longer be interested in these items. It is advised that assessors continue to increase the items and range of reinforcers that are available and to work to identify new reinforcers as time lapses.

Efficient Preference Assessments

Most service recipients with intense service needs that are undergoing therapeutic treatment require treatment to be implemented in the most efficient manner possible. Combine these needs with the need to implement preference assessments on a regular basis as motivating operations are continually changing and this further supports the need that preference assessments are conducted in an efficient manner. Research has recommended two different strategies for conducting preference assessments with adaptations for quick implementation while still retaining the predictive validity of items chosen from a service recipient as functioning as reinforcers. The first adaptation involves altering the number of stimulus presentations that are used or the time that is needed during the preference assessment. For example, when conducting a free operant preference assessment, the session can be reduced from 5 min to 1 min. Additionally, the most common way of implementing a multiple stimulus without replacement is to

present the entire array of items five different times. However, a more efficient method would be to allow for the entire array to be presented only one time. When an assessor presents the array either one or two times when compared to three different times, this process may still result in the same hierarchy of items being revealed but possibly not the highest preferred item. This may not be much of a reason to pause if the highest preferred item still functions as a reinforcer.

The other adaptation involves altering the different types of items that are made available to the service recipient. This adaptation is particularly helpful in environments where specific items may not be available for consumption or difficult to deliver multiple times such as a preferred person or going swimming. This challenging situation can be alleviated by leveraging representational forms of the items (Graff & Gibson, 2003) in formats such as pictures or video clips. These items can be made available to the service recipient on a computer or a tablet (Brodhead et al., 2016). If representational items are to be used, it is important to determine if the service recipient is able to match items to video clips or pictures or has the capability to be able to be taught this skill. This method of using representational items can prove to be beneficial especially if the service recipient selects a picture but does not engage with that item (Brodhead et al., 2019). However, this can also become problematic and evoke challenging behavior from the service recipient (Davis et al., 2010).

Nontangible Items Used in Preference Assessments

Representational items such as pictures and videos can be used within preference assessments to assess preference for social and nontangible items (Wolfe et al., 2018). Unique types of social interactions such as back rubs, hugs, and tickles can be offered as a potential reinforcing item. Researchers have developed a social interaction preference assessment that combines components of a multiple

stimulus without replacement preference assessment and a response restriction preference assessment (Morris & Vollmer, 2019). This type of social interaction preference assessment conducts five trials each session where the assessor presents pictures that represent different types of social interactions and if an item is selected for at least 80% of the trials for two sessions, then that item is removed and no longer available for the following sessions.

Other nontangible items that could be potential positive reinforcers are sounds and smells. These can be assessed using a paired stimulus preference assessment. Research has been conducted to assess different songs played on a CD player (Horrocks & Higbee, 2008). Two CD players were used, and a different song was played on each CD player. The service recipient was able to select which CD player played the song that they preferred. Additionally, two air fresheners have been used for a service recipient to select the smell that they prefer (Saunders & Saunders, 2011). There are a variety of smells and sounds that can be used as potential positive reinforcers; therefore, a behavior analyst should keep these items in mind and not feel hindered by only using tangible or edible items.

Cultural Differences within Preference Assessments

When conducting a preference assessment, it is vital that the assessor takes into consideration the cultural and linguistic background of each service recipient and how that may influence their selection and preference of potential reinforcers. It has been projected that foreign-born populations will grow from 13% in 2016 to 19% in 2060 (United States Census Bureau, 2015). With this vital statistic playing a role in the treatment services provided to service recipients, behavior analysts should understand that they are serving more and more culturally, racially, and linguistically diverse individuals. Within the field of ABA, behavior analysts are responsible for integrating cultural responsiveness and cultural humility into their

everyday work as they provide services to service recipients as well as when they are providing training opportunities to other behavior analysts (BACB Ethics Code, 2020).

Most preference assessments include the use of food items as potential reinforcers, and food items are typically provided as positive reinforcers during behavioral programming. Consideration should be given when considering food items in these situations, particularly for use within preference assessments. As an example, a service recipient that is part of an Italian family may prefer foods with dairy included such as cheese while a service recipient that is part of an Asian family may prefer wheat-based items such as noodles. Furthermore, if a behavior analyst is working with a family that has an income level that is below the poverty line, the behavior analyst should take this concern into consideration and be mindful of suggesting a food item that could be relatively expensive for this family as well as if there are food insecurities such as not being able to provide consistent access to food for active and healthy living (Tucker et al., 2022).

There may be times when a survey can be best used to determine preferences. For example, research has shown that a survey was beneficial when used to assess preferences for verbal adolescents diagnosed with emotional disturbance within a school setting. Results within this study were correlational with a weak-to-moderate effect size as there may have been other factors that contributed to these results. However, it is still notable that a survey approach to assessing preferences may be beneficial to use for diverse individuals within a large group.

The cultural and linguistic background of a service recipient does not only affect the choices made in regard to food items, though. When comparing the selection of screen-based technology such as iPads in children diagnosed with autism in both Italy and the US, it was found that the screen-based technology was chosen in lower percentages in Italy than in the US (Slanzi et al, 2020). These results are

likely to have occurred as a result of programs in Italy not using screen-based technology as frequently as those in the US, and these devices are not used as alternative communication devices. These results are indicative that consideration should be given when determining potential reinforcers for integration within a preference assessment and for use within behavioral programming.

One main way to exhibit cultural humility within the use of preference assessments is to include the parents in the selection of items that could serve as potential reinforcers. In order to do this, a behavior analyst may choose to administer an open-ended interview or a culturally sensitive assessment tool that can be used to ascertain information from family members regarding how their own cultural backgrounds and preferences for certain items affect their choices regarding different items that could be used as potential reinforcers for their service recipient (Moreno et al., 2014). As a behavior analyst is able to be more sensitive to the needs of the service recipient they are working with, trust can be established and increased over time. It is not necessary that a behavior analyst be able to speak the service recipient's language; however, the behavior analyst should be familiar with any relevant cultural context, the virtues that the family holds, and religious preferences within the family as knowing these items will help to establish and build rapport (Castillo et al., 2022). There may be times, though, that a language barrier exists. If this occurs, the behavior analyst should collaborate with an interpreter who also shares in the same cultural and linguistic background as the service recipient. Additionally, if a behavior analyst is working with a service recipient that resides in a non-English-speaking house, a preference assessment can be used to determine the language that the service recipient prefers to be used for instructional purposes.

Section 3 Personal Reflection

What are some methods that you can use to include cultural differences within a preference assessment? Have you used any of the methods mentioned previously? What has worked the best for the service recipients that you work with?

Section 3 Key Words

Abolishing operations - motivating operations that momentarily decrease the effectiveness of some stimulus, object or event as a reinforcer

Establishing operations - motivating operation that increases the value of a reinforcer and increases the frequency in behavior that provides access to the reinforcer

Motivating operations - antecedent events or conditions that may cause either an increase (establishing operation) or decrease (abolishing operation) in the value of an item as a reinforcer and either increase or decrease the probability of exhibiting a behavior that has produced that stimulus previously

Section 4: Outcomes of Preference Assessments as Social Validity

When a behavior analyst evaluates the social validity of an intervention, the behavior analyst determines the acceptability of the goals, procedures, and outcomes that are associated with the intervention by direct and indirect service recipients. Preference of various interventions and procedures can be evaluated in a similar manner through use of a preference assessment. The procedures and interventions can be arranged in a preference assessment if possible. If this is not

possible, though, an alternative assessment can be completed to determine the extent to which the service recipient demonstrates happiness. These specific types of assessments of social validity are key when deciding on a service recipient's transition from the school environment into their adult world.

Determining Preference for Different Interventions

A preference assessment can be utilized to guide a service recipient in selecting an intervention that they will receive. If a service recipient is able to talk and engage in conversation about their own preferences, then a straightforward approach to determining preferences regarding an intervention would be through dialogue or with use of a questionnaire. A service recipient that is considered to be nonverbal can also express preference of an intervention and should be empowered to do so with self-determination (Wehmeyer, 2020). By integrating this method of determining preference and interpreting the results of preference assessments in this manner, this will assist stakeholders with improving the quality of life and self-advocacy skills of the service recipient with whom they work with.

For example, a service recipient may exhibit problematic behaviors that are maintained by attention. Functional communication training and noncontingent reinforcement are two interventions that could potentially be used to reduce these problematic behaviors. As these interventions are being implemented, the behavior analyst could prompt the service recipient to touch a red card when functional communication training is being implemented and a blue card when noncontingent reinforcement is being administered. After both interventions have been noted as being effective, the behavior analyst could then ask the service recipient to select their choice of intervention by selecting either the red or the blue card. Research has used preference assessments as a way of assessing social validity by providing service recipients with the opportunity to select an

intervention (Hanley, 2010). This research arranged concurrent operants to allow service recipients to select several interventions including choices between backward and forward chaining, interdependent and independent group contingency (Groves & Austin, 2017), and book and tablet picture schedules (Giles & Markham, 2017). Additionally, by allowing a service recipient and their family to select the intervention that will be implemented, this allows a behavior analyst to practice both cultural humility and compassionate care. A behavior analyst will need to continually evaluate their own preferences and biases when determining an intervention to be used for implementation and be careful to select an intervention that aligns with their service recipient's own culture. Engaging in communication and providing different options regarding an intervention that can be utilized demonstrates that the behavior analyst is adopting the service recipient's cultural perspective, avoiding assumptions that may be incorrect, and seeking input on a continual basis.

Measuring Indices of Happiness

At times, it may be challenging to allow a service recipient the opportunity to select an intervention, an environment that is large-scale, or a specific living arrangement. When these situations arise, it may be best to use more descriptive methods as a way of determining preference. These methods could include measuring indices of happiness (Tullis & Seaman-Tullis, 2019). As a service recipient's environment is arranged in such a way that it is highly preferred, the service recipient may respond in a way that would be deemed as "happy." On the other hand, as a less preferred condition is made available to a service recipient, they may respond in a way that is representative of a "neutral" or "unhappy" way.

Happiness and unhappiness can be defined in a systematic way for nonverbal or minimally verbal service recipients (Parsons et al., 2012). In these methods, the

caregivers of the service recipients can be asked to indicate the indices of happiness and unhappiness for each service recipient. Some definitions of happiness could include laughing, smiling, or even skipping. Additionally, some definitions of unhappiness could include frowning, crying, biting hands, or hitting legs. The caregivers could also be asked to provide different contexts in which the service recipient is happy. These could include drawing, leisure time, or swinging outside. On the other hand, the caregiver can also be asked to determine different situations in which the service recipient is unhappy. Examples of these include reading, sitting idle, or visiting the doctor. Next, the indices of happiness should be verified that they occur in the situations or contexts that were noted to be happy, and the same should be done for indices of unhappiness. Lastly, a paired stimulus preference assessment should be utilized with the service recipient for them to be able to select the happy or unhappy situations as their preference. These types of descriptive assessments do contain limitations (i.e., precision); however, they may be best used with certain contexts.

Preference assessments that are used to determine social validity have promise; however, a behavior analyst should move forward with caution if this route is chosen. A behavior analyst may decide that it is important to include additional variables that are needed in order to validate the preference of a service recipient, such as the efficacy of an intervention. For example, if a service recipient chooses to use noncontingent reinforcement when the intervention does not decrease a challenging behavior, the preference assessment will lack validity. Additionally, when the social validity is assessed in accordance with the guidelines that are provided by Wolf (1978), there may be disagreements between relevant stakeholders or a shift that could occur in an environment's acceptability if changed. Throughout this process, it is key that the service recipient is at the center of the process and their thoughts are taken into consideration.

Uses of Preference Assessment within Transition Services

When a service recipient transitions from the school environment into their adult life, it is important to assess their own acceptability with their new environment. The term self-determined has been referred to as an individual that is able to make their own choices about what they eat, where they reside and with whom, what they clothe their bodies with daily, what to do with the money that they earn, where they go for their education, and so on (Peterson et al., 2021). Transition services are a set of assessments, goal development, and skills within acquisition for students diagnosed with disabilities after high school to help with the transition to a different environment. These types of services help to guide students across different areas of employment, social activities and leisure activities, and living arrangements. By using preference assessments during the integration of transition services, this can help to ensure that nonverbal or minimally verbal service recipients are able to be fully engaged with the process and are able to make choices as they align with the three aforementioned domains. Preference assessments that are used within transition services can either be direct (i.e., multiple stimulus without replacement preference assessment) or descriptive (i.e., indices of happiness).

With regard to employment, a behavior analyst can assess for preference of different components that are the same and as relevant for individuals without a disability. These components can include location, time that work takes place, time for break, conditions during break time, and reinforcers that are distributed for task completion (Ninci et al., 2017). Also, a behavior analyst can utilize indices of happiness to determine if some of these components such as a work shift are either preferred or nonpreferred for the service recipient. These indices of happiness could be altered by determining preference using metrics that are associated with time that a service recipient spends engaging with job-related items or the frequency in which they take breaks during a work shift.

When evaluating social and leisure activities, the research that has been conducted on assessing preference for these items is minimal. Some research has used a concurrent operants preference assessment to evaluate the functional properties of social interactions. These functional properties included the environment in which the social interaction occurred, the theme of the social interaction, and how long the social interaction occurred for (Call et al., 2012). The data collected from this research study indicated that assessing social stimuli was vital as well as assessing the service recipient's preference for the nature of the social interaction that has occurred.

Throughout the transition planning process, a service recipient's living arrangement has been found to be the least researched area as well as the most difficult area to assess. A person's living arrangement should be considered a basic right for an individual. Quality of life is often best described through one's evaluation of preference for one's own living arrangement (Stancliffe & Keane, 2000). Preference is considered a main component to the concept of quality of life. When evaluating preference within a supported living or independent living environment, the typical assessments used to determine preference may be less appropriate to use and instead a more descriptive form (i.e., indices of happiness) may need to be utilized. As with the other two domains within the transition process, measures of preference should be adjusted by means of other observations in order to validate one's preference. For example, a behavior analyst may be able to align an objective of being happy living with another individual with measures of how frequently the service recipient or other individual interacts with one another or are in the same room within the living environment. By providing an opportunity for a service recipient to express their preference for their own living arrangement, this provides the service recipient with a worthwhile and meaningful living experience.

Section 4 Personal Reflection

Have you ever used a preference assessment to evaluate one's preference for social interactions, leisure activities, or work environment? What are some methods that you used to evaluate preference for these categories or what would you prefer to use in the future to assess these areas?

Section 4 Key Words

Self-determined - referred to as an individual that is able to make their own choices about what they eat, where they reside and with whom, what they clothe their bodies with daily, what to do with the money that they earn, where they go for their education, and so on

Social validity - the acceptability of the goals, procedures, and outcomes that are associated with the intervention by direct and indirect service recipients

Transition services - a set of assessments, goal development, and skills within acquisition for students diagnosed with disabilities after high school to help with the transition to a different environment

Section 5: Various Integrations of Preference Assessments

Research has noted that preference assessments have been utilized across a variety of populations and lifespans. Children as young as 13 months (Rush et al., 2005) to adults as old as 95 years have been included in these evaluations of preference (Feliciano et al., 2009). Additionally, different types of students have been included in the use of preference assessments. For example, general education students (Schanding Jr. et al., 2009) and other students that have had or

have been at risk for emotional disturbance (King & Kostewicz, 2014) have had preference assessments integrated into their lives. These preference assessments were used to determine items that would be acceptable to the service recipients for reinforcing their on-task behavior (Paramore & Higbee, 2005). Furthermore, preference assessments have been used with adults diagnosed with schizophrenia to indicate their preference (Wilder et al., 2003) as well as sex offenders with an intellectual disability to assess their likelihood of reoffending (Reyes et al., 2017).

An additional use for preference assessments has been within the realm of organizational behavior management. Potential reinforcers have been identified in a variety of studies through the implementation of preference assessments in different organizations (Simonian et al., 2020). Potential reinforcers that have been identified include money, gift cards, snacks, breaks, different work tasks, supplies for the office, and praise. Most of the studies that were reviewed within this area used either a paired stimulus preference assessment or multiple stimulus without replacement preference assessment as their choice of assessment. Other studies have integrated either surveys or other indirect methods as a way of evaluating one's preference.

Regardless of the method that one selects as a way of determining preference for an individual, it is important to understand the different ways that preference can be assessed and the limitations that are associated with each. Preference assessments can be integrated into a variety of environments and used in a way that increases performance, maximizes one's potential to exhibit a skill, and enhances the environment in which one resides.

Training Individuals on the Methods of Conducting Preference Assessments

There have been over a dozen studies published that reference the methods of how to teach other individuals how to conduct a preference assessment. Although there may be several methods available for teaching one how to conduct a preference assessment, the most common procedure is through the use of behavioral skills training (Lavie & Sturmey, 2002). This method includes the use of instructions, modeling, role play, and feedback. It involves both competency and performance with a specific skill used as a teaching strategy to train new skills. Another effective procedure that is used to train others how to conduct a preference assessment includes the implementation of the feedback sandwich (Bottini & Gillis, 2021a). This method involves the integration of positive-constructive-positive feedback after an individual performs a skill or task. Video modeling has also been incorporated and typically includes the use of written or voice-over instructions (Delli Bovi et al., 2017). This method involves the use of watching an individual on screen completing a desired skill accurately. Then, the individual is asked to complete the skill that they viewed. They have the option to stop and rewatch segments of the video or the entire video multiple times until competency can be demonstrated. Research has also shown that online training (Bottini & Gillis, 2021b), self-instruction (Shapiro et al., 2016), and telehealth (Higgins et al., 2017) are effective methods for teaching an individual how to conduct a preference assessment. Once a behavior analyst is able to choose an effective method for assessing preference, there are a multitude of procedures that are available for teaching others how to conduct a preference assessment.

Section 5 Personal Reflection

What are some methods that you have used to train others on how to conduct a preference assessment? How were you trained to conduct a preference assessment?

Section 5 Key Words

Behavioral skills training - a training package that utilizes instructions, modeling, rehearsal, and feedback in order to teach a new skill

Feedback sandwich - the integration of positive-constructive-positive feedback

Organizational behavior management - the study and application of applied behavior analysis in organizations that focuses on assessing and changing work environments to improve employee performance and business results

Section 6: Evaluation of Reinforcement Effects and Concerns Related to Certain Stimuli as Reinforcement

There are different methods that can be used to evaluate the effects that exist for a service recipient with the use of varying stimuli, particularly among preference and reinforcement effects. These methods are outlined in the following information.

Methods for Evaluating Effects of Reinforcement

Relationship Between Preference and Reinforcement Efficacy

Studies have evaluated whether or not the reinforcer effectiveness varies positively with the degree of preference of a service recipient. In other words, researchers have attempted to determine whether or not the preferences that are demonstrated within a preference assessment can also predict the relative effectiveness of the reinforcer. Conclusively, research has shown that through concurrent operants reinforcement assessments that results of preference assessments have predicted the effectiveness of reinforcers with high, medium, and low preferred items (Piazza et al., 1996). Other research has also noted similar effects. Near perfect correspondence was able to be found between the preference and reinforcer assessment (Lee et al., 2010).

Simple and Complex Responses Compared

Some researchers have utilized the simple, free-operant responses (i.e., raising hand, in-chair behavior) to indicate one's preference for specific stimuli or activities. Using a simpler method during a reinforcement assessment does contain several advantages. The main goal of a reinforcement assessment is to assess whether or not an item serves as reinforcement instead of attempting to teach a specific response. Simple responses are best for these forms of evaluation because service recipients with different functional levels may be able to discriminate the contingencies quickly, which would result in a more time efficient evaluation. If a service recipient is unable to emit a more complex response during an assessment, this could be indicative of a skill or motivational deficit that the individual exhibits. On the other hand, if a service recipient fails to emit a simple response, then this is more than likely due to a skill deficit.

Single and Concurrent Operants Compared

An advantage of a concurrent operants schedule for evaluating reinforcer effectiveness is that the magnitude of the response that is emitted for each operant is a function of the value that each reinforcer holds. The value that reinforcement holds for a service recipient is a function of its rate, magnitude, quality, and immediacy of delivery as well as the response effort that is required to gain access to the reinforcement. This is also all relative to these same characteristics of other reinforcers that are concurrently available. Therefore, concurrent operants schedules are ideal for determining the strength of a particular reinforcer as it relates to other reinforcers that are available to the service recipient.

Progressive Ratio Schedules

When implementing a progressive ratio schedule, the requirement that needs to be met in order to gain access to reinforcement increases within a single observation. For example, an initial requirement for responding might be to read one sentence in order to receive access to a preferred item. After this reinforcer has been delivered, the reinforcer is removed from the service recipient and the requirement for responding increases to two sentences that need to be read to gain access to the preferred item. This progression may continue until responding no longer occurs for a certain period of time. This type of reinforcer assessment can be used to determine how much work a service recipient may complete for a specified reinforcer prior to the service recipient reaching their breaking point. This breakpoint is known as the schedule requirement at which the service participant does not meet the criteria established for access to reinforcement.

Concerns Related to Certain Stimuli as Reinforcement

There are different areas of concern that should be noted when determining the items or activities that will be used for reinforcement. These areas are noted in the information that follows.

Choice as a Reinforcer

Research regarding choice as reinforcement has been limited due to choice being confounded with a service recipient's preferences for the selected stimuli. Other research, though, has looked at addressing this concern by yoking the choice and no-choice conditions (Fisher et al., 1997). Participants in the study were able to select from two available items that were preferred as reinforcement in the choice condition. The reinforcer was then yoked in the no-choice condition to the reinforcer that the participant had selected in the choice condition. For example, the order that items were selected in the choice condition were presented in the same order in the no-choice condition. Results indicated that there were higher levels of responding for the participants in the choice condition. A limitation of yoking is that it does not provide control for in the moment fluctuations in preference that occur over time.

Stimuli that are Edible

At the forefront of research regarding preferred stimuli, researchers evaluated a service recipient's preference for selecting food relative to other options that were available (DeLeon et al., 1997). In a combined preference assessment, results indicated that participants typically preferred food over nonfood items. Additional research has indicated similar results, revealing that higher rates of responding were found when edible items were provided as reinforcement when compared to leisure items (Fahmie et al., 2015). However, in individuals with deficits in

sensory perception (i.e., smell, taste), a differential preference has not been indicated for edibles over leisure items (Ortega et al., 2012). Therefore, it is important to determine if deficits in these areas exist for the service recipient as it may reduce the value of the edible item that is available. A behavior analyst should move forward with caution when including both edibles and leisure items in the same evaluation for preferred items.

Social Interaction as Reinforcement

Social interaction for individuals diagnosed with autism spectrum disorder (ASD) is typically viewed as a less likely reinforcer than other options. This is in part due to deficits in social interaction that individuals with ASD typically present with even though this is primarily due to a lack of social or emotional reciprocity, a diagnostic feature of ASD. However, research has steered this viewpoint in a different direction and noted that children diagnosed with ASD do tend to enjoy some social interactions. These interactions may include tickling, swinging, or even playing chase with another individual. Results from research in this area indicate that social interactions can function as reinforcement for individuals diagnosed with ASD (Morris & Vollmer, 2019). Therefore, these items should be included in preference assessments for these individuals.

Technology as a Reinforcer

As our world continues to propel forward with new gadgets and advancements in technology, it is reasonable to assume that some individuals will prefer advanced technology, such as an iPad, as a reinforcer over other stimuli. These items will have greater reinforcer efficacy for these individuals. Research has indicated some interesting results surrounding the use of technology as reinforcement. For example, results have indicated that the item type and access duration of

interaction are different depending on the level of technology used (Hoffmann et al., 2017). Individuals have been found to prefer high-tech items at longer durations of access, and low-tech items at shorter durations. Additionally, individuals have engaged in less responding when high-tech items were provided to the individual for shorter durations of time and when the low-tech items were provided for longer durations of time.

Factors Influencing the Effectiveness of Reinforcement

There are several factors that are associated with altering the effectiveness of reinforcement. Therefore, it is important to understand these factors prior to conducting a preference assessment.

Rate, Quality, Delay, and Distribution

Multiple research studies have been conducted over the years to assess how rate, quality, and delay to reinforcement affect an individual's responding. Results have indicated that individuals prefer schedules of reinforcement that coincide with higher quality (Neef et al., 1992) and shorter delays associated with access to reinforcement (Neef et al., 1993). When there is a longer delay associated with access to reinforcement, it will most likely decrease the effectiveness of that reinforcer when compared to a shorter delay time. This is also typically true even when the individual is provided with a choice between a delayed larger reinforcer and a smaller but immediate reinforcer (Madden & Bickel, 2010). However, some individuals prefer accumulated but delayed reinforcement over small, immediate reinforcement. The duration of access that one has to a reinforcer may also influence preference hierarchies that are compiled during preference assessments.

Variation in Stimuli

Reinforcement effectiveness can be enhanced by varying the stimuli that are available to the service recipient. Individuals have been known to prefer varied presentations of preferred items when compared to a constant presentation of stimuli. Therefore, it is important for a behavior analyst to vary the different stimuli that are available for reinforcement as this will affect the responding of the service recipient.

Long-term Stability of Preferred Items

An individual's preferences for certain items are continually changing. This is dependent on establishing operations and the context of the environment in which the stimuli are delivered. For example, water may be considered a reinforcer for some individuals if they have just consumed a salty snack. On the other hand, water may not function as reinforcement if the individual is no longer thirsty or has just consumed a large amount of liquid. Additionally, an individual may prefer chocolate, and chocolate may serve as a reinforcer in most cases. However, if the individual has been consuming chocolate every day for a couple of weeks, the value of the chocolate may decrease. Preferences for items tend to be consistent and relatively stable over time (Kelley et al., 2016). Changes in preferences, though, do not appear to affect reinforcer effectiveness.

Satiation Compared to Deprivation

A commonly referred to strategy for maintaining the motivation of an individual is to limit the individual's access to reinforcement when they are not engaged in training or treatment sessions. Research has indicated similar results in that higher levels of responding are exhibited when access to the reinforcer is restricted once sessions are completed (Kodak et al., 2007). Additionally, satiation

and deprivation of food when used as reinforcement play a part in the responding of individuals. It is important to understand these effects when designing a program for implementation.

Section 6 Personal Reflection

What are some ways that you have used to alter the effectiveness of a reinforcer? Do you feel that any of the ways mentioned would be more difficult to do than others? Why?

Section 6 Key Words

Breakpoint - the schedule requirement at which the service participant does not meet the criteria established for access to reinforcement

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