



Affordable ABA

## Treatment of Violence and Aggression in Individuals with Neurodevelopmental Disabilities



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## Introduction

The field of behavior analysis can be used to make significant contributions to various socially important issues. Applied behavior analysis (ABA) can be used in the treatment of violence and aggression in individuals with neurodevelopmental disabilities across a multitude of settings. Various theories and concepts have led to the development of empirical treatment procedures that are able to be used in various settings. Additionally, different approaches can be used to determine the environmental conditions that contribute to the exhibition of violence and aggression in individuals.

A functional analysis is a method used in ABA to determine the function of a behavior. It is a high level of functional behavioral assessment that involves creating situations and testing different conditions to learn what triggers challenging behaviors. As a result, functional analyses are conducted as a method for identifying various conditions that evoke violent and aggressive behaviors as well as different environmental events that serve as functional consequences that maintain these behaviors. The behavior clinician is then able to provide the same consequences for a more adaptive behavior for the individual that is exhibiting these behaviors. The information that is gathered from a functional analysis can be used to determine different interventions that would be effective for treating a multitude of behaviors, including violent and aggressive behaviors.

In individuals with neurodevelopmental disabilities, early and effective intervention is key to eliminating violent and aggressive behaviors. The most widely used treatment for the exhibition of violent and aggressive behaviors by individuals with neurodevelopmental disabilities based on differential reinforcement of alternative behavior is functional communication training (Falcomata & Wacker, 2013). Functional communication training includes teaching an appropriate communication response as a way of accessing a reinforcer that is

responsible for maintaining the problematic behavior. Functional communication training looks to establish communicative skills and develop environmental conditions where a socially appropriate communication response can be utilized in order to obtain reinforcement.

Additionally, mindfulness has been described as a type of social practice that allows an individual to engage in ethically minded awareness that is intentionally situated in the present time (Nilsson & Kazemi, 2016). Mindfulness is viewed as experiencing from moment to moment without judgment or criticism. Therefore, this intervention has been identified as an approach that can be used with the management of anger and aggression in individuals with neurodevelopmental disabilities.

In this course, participants will learn to (1) discuss how the information gathered from a functional analysis can be used to determine effective treatments for violent and aggressive behaviors, (2) identify communication-focused treatments that are used in treating aggression and violence in individuals with neurodevelopmental disabilities, and (3) discuss mindfulness and how it can be used with the management of anger and aggression.

## **Section 1: Functional Analysis of Violent and Aggressive Behaviors**

Behavioral health disorders are predominantly characterized by most disciplines based on their structural characteristics and how one's symptoms either cluster or covary (American Psychiatric Association, 2013). However, on the other hand, behavior analysts try to categorize behavior disorders by means of the environmental variables in which the behavior is a function. A functional analysis is the process through which a behavior analyst identifies various environmental

variables that control a behavior. Skinner (1953) determined that a functional relation existed between an environmental variable and a target response when a change in the environmental variable produces a consistent and expected change in the target response.

## **Components of a Functional Analysis**

Behavior analysts are responsible for determining the environmental variables that are responsible for the exhibition of socially significant behaviors as a step in the treatment of a problematic response. The behavior analyst may systematically arrange various situations that do or do not evoke the problematic response. This systematic approach to determining why a response occurs is a key element of a functional analysis. Coincidentally, also identifying why a response does not occur is just as important. Therefore, a major goal of a functional analysis is to demonstrate experimental control over responding or only producing the response when certain variables are accessible.

The reliable production of a target response is necessary when a functional analysis is conducted; however, it is not necessarily sufficient as other parameters need to be understood. A behavior analyst should understand the differences that exist in situations where reliable responding occurs and when reliable responding does not occur or reliably occurs at a lower level. When the two conditions that do and do not produce the targeted response are as similar as possible, the more confident a behavior analyst can be that they have been able to isolate at least one variable that has contributed to the response. Therefore, a major purpose of a functional analysis is to identify those variables of which the behavior is a function. Manipulation of both the antecedent (i.e., motivating operations, discriminative stimuli) and consequent (i.e., reinforcing) events that create the test and control conditions of a functional analysis will be key in being able to

identify the variables that are responsible for the exhibition and maintenance of the targeted response.

Even though a major goal of a functional analysis is to determine the variables of which behavior is a function, behavior analysts typically do not uncover every variable that is responsible for producing a socially significant response. Behavior analysts are usually only concerned with determining those variables that are responsible for the problematic response. Although it is important to maintain a balance between conducting a very thorough functional analysis of each individual contingency that maintains the problematic response and the need to treat the problematic response, this balance is determined through a tradeoff of sufficiency and thoroughness. The time spent conducting a functional analysis can depend on several factors including how complex the case is, the importance of the information that can be revealed through additional analyses, and time constraints that may speed up the timeline of service delivery.

It is important to understand that the purpose of conducting a functional analysis is to determine the variables that control responding. Behavior analysts that provide services to individuals that exhibit challenging behaviors typically want to determine these functional relations at the individual level. This is important to bring attention to as the variables that evoke and maintain challenging behavior can be different within and across individuals. When a variable is incorrectly identified or thought to have controlled the problematic response, this can lead to an ineffective treatment intervention (Iwata et al., 1994). Therefore, functional analyses are typically reliant on within-subject experimental designs that allow for the identification of controlling variables at the individual level. Additionally, within-subject experimental designs allow for repeated measures of the challenging behavior. It is highly desirable when conducting a functional analysis for the problematic response to be reliably produced each time only when the necessary variables are present. Every time a response is replicated, the

believability increases in that the variables present are responsible for the problematic response.

## **Functional Analysis Design Variations**

There are several different variations of functional analyses that exist. Some more traditional approaches include latency and trial based analyses, precursor functional analysis, and functional analyses of idiosyncratic functions. Functional analysis methodology is flexible, with different aspects of the analysis being adaptable dependent on the different constraints that are present.

### ***Traditional Functional Analysis***

Within the study conducted by Iwata et al. (1982/1994), the results were revolutionary not only for the study itself but also for the field of behavior analysis and our understanding of problematic behaviors and the environmental variables that maintain them. The functional analysis procedures that were involved within this study demonstrated different patterns of responding. These different patterns of responding within and across functional analysis conditions suggested that there were different variables that were responsible for maintaining the problematic behavior.

### ***Changes to Experimental Design***

A multielement design can be beneficial for a multitude of reasons. This type of design is concise and provides a robust demonstration of experimental control when responding is able to be differentiated across different conditions. On the other hand, this design can also be problematic as there is a rapid alternation of conditions. This can be troublesome when responding in one condition continues as another condition begins and when differentiation across conditions also



declines as the number of conditions increases. As a result, researchers have been able to evaluate other experimental designs that are able to be used in a functional analysis (Iwata et al., 1994b; Vollmer et al., 1995). In turn, modifications to the experimental design of a functional analysis is typically the first step when responding within a multielement functional analysis that is undifferentiated (Hagopian et al., 2013).

### ***Changes to Different Conditions***

Researchers have also scrutinized both the test and control conditions that are within a functional analysis. Some researchers have been able to demonstrate that by incorporating distinct discriminative stimuli across each of the functional analysis conditions, this would then help to produce differentiated patterns of responding (Conners et al., 2000). Other researchers have examined the outcomes that are produced by the use of both a full and abbreviated functional analysis (Wallace & Iwata, 1999).

Additionally, other researchers have made modifications to the test and control conditions of a functional analysis in other ways. Some have tested the use of setting a fixed duration of reinforcer delivery across conditions (Day et al., 1988), and others have modified the test condition so that the problem behavior produced therapist compliance with child mands (Bowman et al., 1997). These different modifications were able to produce differentiated responding across both the test and control conditions when evaluation of a more traditional functional analysis produced inconclusive results.

### ***Format Changes***

Other modifications that can be made are to the format of the functional analysis. These changes can be made to overcome different constraints while also preserving the features that are associated with a more traditional functional

analysis. One constraint could be associated with the time allocation that some clinicians have. Therefore, a brief functional analysis was an answer to these constraints that adapted a multielement functional analysis but still preserved the repeated measures component and ability to determine the behavioral function.

A latency-based functional analysis is able to be utilized when severe topographies of a challenging behavior or any topography of a challenging behavior that needs to be limited in occurrence needs to be assessed. Within a latency-based functional analysis, the first occurrence of the challenging behavior that produces the programmed reinforcer within the test condition also ends the session. If a challenging behavior does not occur, for example in the control condition, the session ends at a specified time. Therefore, the amount of time until the session ends is the key comparison across the control and test conditions within this type of functional analysis.

A trial-based functional analysis (Sigafoos & Sagers, 1995) enables one to take advantage of naturally occurring stimulus events by drawing in the test and control methodology of the functional analysis into the environment where the challenging behavior is already occurring. Each trial has a 1-min test segment and is followed by a 1-min control segment. The test segment is where an establishing operation and reinforcement contingency are present. On the other hand, these are both absent during the control segment. When responding occurs that is reliably higher in the test segment than in the control segment, this is indicative of a reinforcing contingency. This type of functional analysis can be helpful to conduct when the challenging behavior is not likely to occur in an environment that is well controlled.

### ***Approach Changes***

There are at least two other variations to the functional analysis methodology that are viewed as being changes to the more traditional functional analysis approach.

The first variation is a precursor functional analysis (Smith & Churchill, 2002). This type of functional analysis is different from other functional analyses as it has the goal to minimize the occurrence of challenging behavior throughout the entire assessment process but does so by defining the response class that also includes the challenging behavior. It then places the functional analysis test and control contingencies onto responses that occurred earlier within that response-class hierarchy. The idea behind this approach is that if some responses reliably occur prior to instances of the challenging behavior, and they rarely are exhibited unless the challenging behavior is soon to follow, then delivery of the functional reinforcer for a precursor to a challenging behavior should reduce the occurrence of the challenging behavior and also help to determine its function. This approach can be helpful to use when severe topographies of a challenging behavior have clear precursors associated with their occurrence.

Another example of changing the approach that is used in a functional analysis is in an approach called synthesized contingency analysis. A synthesized contingency analysis is different from a traditional approach to a functional analysis as it screens for different combinations of contingencies that when together will reinforce challenging behaviors. More traditional functional analyses work to isolate the individual reinforcement contingencies within and across both the test and control conditions. A synthesized contingency analysis, on the other hand, incorporates all suggested or reported contingencies that surround the occurrence of challenging behavior.

## **Recommendations for Safe and Effective Implementation of a Functional Analysis**

There are several recommendations that should be considered when effectively and safely implementing a functional analysis. Some of these recommendations are in the section that follows.

### ***Safety Precautions***

When conducting a functional analysis, it is important to remember that individuals are allowed to engage in destructive behavior that may present safety risks that require discussion. If an individual engages in self-injurious behaviors, there are several possible risks that can be posed to themselves (i.e., head banging), the therapists that are interacting with them (i.e., hitting and kicking), or the environment in which they are in (i.e., throwing objects). The injuries that can be sustained can be minor where the individual has red marks or swelling to more severe with breaks in the skin, scars, or even broken bones. Property damage can range from scratches or marks on pieces of furniture to structural damage to walls and vehicles.

Therefore, prior to implementing a functional analysis, behavior analysts should consider the precautions that should be taken in order to minimize any risks that can be associated with implementation and also to ensure the safety of the individual and those involved in the analysis. Additionally, behavior analysts should also consider any company policies and procedures that are in place when determining the safety precautions that should be in place.

### ***Medical Screening***

It is important that the behavior analyst speak to the individual's caregivers and medical providers as a method for gathering information regarding the

topography and intensity of the problematic behavior as well as any medical considerations that the behavior analyst should be aware of. This should be done prior to the implementation of a functional analysis to ensure that arrangements can be modified if necessary (i.e., purchasing of protective equipment). While in discussion with the caregivers and medical providers, the behavior analyst should request any information that is necessary in order to provide safe care for the individual's problematic behavior (i.e., history of seizures, vision or hearing deficits). Once the interview has been completed, the behavior analyst will be able to better determine the necessary precautions that should be in place in order to minimize any risk to the individual and those involved in the functional analysis.

### ***Setting Modifications***

There are different manipulations that can be completed that would allow for safety to be improved during a functional analysis for both the individual and those involved in the process. One antecedent manipulation is making a modification to the setting in which the functional analysis is conducted so that the risk for self-injurious behaviors, aggression, and other destructive behaviors can be minimized. The setting can be made as barren as possible by removing any materials that are not necessary or that can be used as a tool for self-injurious behavior, aggression, or destructive behaviors.

When a particular setting is used frequently for implementation of a functional analysis, a behavior analyst should consider the installation of a one-way observation window and protective padding that can be installed on the walls and floors of the room. This can help to improve safety for the individual in the functional analysis and the other people assisting with the functional analysis. Padding that is used within a functional analysis can accommodate basic room essentials such as a fire alarm, electrical outlets, and door handles. It can help

provide protection to individuals that exhibit head banging behaviors and protect others from falling as a result of aggression. Additionally, the one-way observation window can be used for individuals that are collecting data so that they can be separated from the individual in the functional analysis. This means that fewer people would be involved in the room and would allow for more space for the individual and those involved.

If there are settings that need to be used that are not able to be emptied or made barren or install padding on the walls or floors, then a behavior analyst could use temporary padding and use personal protective equipment. This would still decrease any risks that are associated with conducting a functional analysis for both the individual and those involved.

### ***Personal Protective Equipment***

In addition to the modifications that can be made to the setting, those involved in the functional analysis can use personal protective equipment to further decrease one's risk of injury. Individuals that are assisting with the functional analysis may use padded sports equipment such as shoulder or chest pads and various sparring gear (i.e., hand and arm guards, blocking pads) as a way of protecting them from the individual's hits, kicks, and bites. If an individual is able to bite through a hand or arm guard, a soccer shin guard can often be used underneath the hand or arm guard so that there is an extra layer of protection for the individual involved yet the exterior still remains soft so that it does not pose a risk to the individual.

As an individual exhibits self-injurious behavior that can produce severe or permanent harm, a behavior analyst may consider using personal protective equipment on the individual so that their risk of injury is minimized during the functional analysis. Prior to using personal protective equipment on the individual, the behavior analyst should review any company policies or procedures as well as implement the steps within the medical screening and setting

modification sections. The individual should be allowed to take breaks from the personal protective equipment and be monitored for any adverse effects (i.e. rash) that they may encounter as a result from wearing the equipment. Consent should be gained as well as social-validity measures conducted from the caregivers of the individual prior to implementation of personal protective equipment. Additionally, a fade plan should also be integrated into treatment so that the personal protective equipment can be faded throughout the treatment that follows the functional analysis (Fisher et al., 1997).

It is important to know that many states may require a prescription from a physician for any individual where personal protective equipment may limit their mobility. Other types of personal protective equipment can be used as needed depending on the topography of the problematic behavior. Gloves, mittens, or even hats can be considered personal protective equipment.

There are several things that will need to be considered when personal protective equipment is being used on the individual receiving services. First, the personal protective equipment may mask an automatic function of the problematic behavior. If the automatic reinforcer that is produced by the problematic behavior is eliminated or decreases, then the personal protective equipment can function as extinction (Iwata et al., 1994a). Behavior analysts should also be prepared for the exhibition of novel topographies of problematic behavior as a result of extinction-induced variability (Goh & Iwata, 1994). Additional personal protective equipment should be readily available so that dangerous topographies of problematic behavior can be blocked. In some situations, the personal protective equipment will assist behavior analysts to identify behaviors that are multiply controlled by automatic reinforcement and social contingencies. The addition or removal of personal protective equipment can result in the individual exhibiting problematic behaviors differently in different conditions within the functional analysis.

Some environments will allow for the use of emergency or programmatic mechanical or physical restraint and seclusion for individuals that exhibit high-intensity and frequency destructive behaviors. Behavior analysts should only implement restraint and seclusion procedures if the problematic behavior places the individual or others at imminent risk of harm, when the organization's policies allow, and when the individuals involved have received adequate training. Policies that delineate the utilization of restraint and seclusion should include requirements for constant supervision while the procedures are being implemented as well as documentation during and following the procedure.

## **Section 1 Personal Reflection**

What are some additional precautions or considerations that should be thought of when utilizing physical or mechanical restraints or seclusion? Have you worked with an organization that has been able to delineate a process for the implementation of restraint or seclusion? If so, what are some things that you believe should be altered or kept the same in processes that you may use in the future?

## **Section 1 Key Words**

Functional analysis - process through which a behavior analyst identifies various environmental variables that control a behavior

Functional relation - occurs between an environmental variable and a target response when a change in the environmental variable produces a consistent and expected change in the target response

Mechanical restraint - a behavioral restraint that uses a device, material, or equipment to restrict a person's movement



Personal protective equipment - Any devices or clothing worn by the worker or client to protect against harm or injury

Physical restraint - a physical hold or securing of an individual to intervene with severe problem behavior

Precursor functional analysis - has the goal to minimize the occurrence of challenging behavior throughout the entire assessment process but does so by defining the response class that also includes the challenging behavior

Synthesized contingency analysis - a functional analysis approach that screens for different combinations of contingencies that when together will reinforce challenging behaviors

## **Section 2: Communication-focused Treatment for Aggression and Violent Behaviors**

In individuals with neurodevelopmental disabilities, early and effective intervention is key to eliminating aggressive behaviors. Research has shown that early integration of behavioral intervention can result in a reduction of problematic behaviors by up to 90% (Horner et al., 2002). Unfortunately, the lack of behavioral intervention can result in more persistent aggression across time which can lead to an increased risk for denial of services, social isolation, institutionalization, use of medication, restraint, and abuse (Antonacci et al., 2008; Lunsy et al., 2017).

Medication is frequently prescribed as a method of managing aggressive behaviors, even when a comorbid diagnosis is not associated with the individual. However, the efficacy of these medications in producing long-term decreases in problematic behaviors has resulted in mixed findings. Medications infrequently address the factors that are associated with the rise and maintenance of

aggression in individuals, whereas behavioral interventions that take into account these factors have consistently been shown to result in either elimination or significant decrease of violence and aggression across time (Brosnan & Healy, 2011).

A key outcome of functional analysis methods has been the capability of systematically identifying the putative reinforcer for problematic behavior that has been exhibited by individuals with neurodevelopmental disabilities. This enables a clinician to manipulate these reinforcers to aid in the decrease of aggression and replace them with an alternative, more favorable, behavior (Beavers et al., 2013). As a result, functional analyses are conducted as a method for identifying various conditions that evoke aggression as well as different environmental events that serve as functional consequences that maintain aggressive behaviors. The clinician can then provide the same consequences for a more adaptive behavior for the individual.

Differential reinforcement of alternative behavior is the withholding of reinforcers while simultaneously providing these reinforcers contingent on a specified alternative behavior (Petscher et al., 2009). This approach may be an ideal method as it rarely produces negative side effects and allows for a more appropriate option for individuals to be able to earn reinforcers when they are no longer exhibiting a specified behavior such as aggression. The withholding of reinforcers for aggression while providing an opportunity to obtain reinforcers through appropriate behavior has been shown to produce more efficacious decreases in aggression than when only withholding putative reinforcers (Shukla & Albin, 1996).

## Literature Review

The most widely used treatment for the exhibition of aggressive behaviors by individuals with neurodevelopmental disabilities based on differential reinforcement of alternative behavior is functional communication training (Falcomata & Wacker, 2013). Functional communication training includes teaching an appropriate communication response as a way of accessing a reinforcer that is responsible for maintaining the problematic behavior. While traditional differential reinforcement of alternative behavior treatments centralizes its focus on any alternative behavior that is appropriate for accessing the reinforcer that is maintaining the problematic behavior, functional communication training looks to establish communicative skills and develop environmental conditions where a socially appropriate communication response can be utilized in order to obtain reinforcement. Functional communication training is different from other differential reinforcement of alternative behavior approaches because it is a form of discriminable communication that is more than likely able to be recognized by other individuals within the social environment.

There may be therapeutic advantages to providing reinforcers that are maintaining aggressive behaviors contingent on communication that is appropriate instead of a noncommunicative, alternative behavior as some aggressive behaviors have long been used as a method for interacting socially within the environment in which one lives in (Durand & Moskowitz, 2019). Problematic behavior can tend to serve as a form of communication for individuals that have limited verbal skills or that do not have an adequate repertoire from which to communicate. Research has shown that by improving an individual's verbal abilities, problematic behavior may be decreased substantially or even eliminated (Beavers et al., 2013). Therefore, functional communication training may be one of the most effective treatment options for problematic

behavior such as aggression that is based on functional analysis results (Hagopian et al., 1998; Rooker et al., 2013).

The two main goals of functional communication training are to decrease or eliminate aggressive behaviors and to introduce an acceptable and functionally equivalent communicative response. A wide array of aggressive behaviors have been treated using this intervention method including hitting, biting, kicking, pinching, hair pulling, and other forms of forceful contact (Brosnan & Healy, 2011). This intervention method is most effectively used to treat aggressive behaviors that are exhibited to gain access to attention or items from other individuals, or to escape from a situation that is aversive.

Violence and aggressive behaviors are commonly maintained by social positive reinforcement and/or social negative reinforcement. For these situations, functional communication training would include teaching a functional communicative response that ends in contingent access to social reinforcers that would result in aggressive behaviors.

## **Combination of Communication-Focused Interventions and Other Behavioral Interventions**

Often, functional communication training will be combined with other behavioral interventions in a package deal for decreasing or eliminating violence and aggressive behaviors. Some research has shown that this combination approach is most effective when functional communication training is combined with different antecedent and consequence-based strategies (Brosnan & Healy, 2011).

Therefore, it may be beneficial to determine which strategy would be most appropriate depending on the severity of the aggressive behaviors, resources available, and goals for ensuring durability of functional communication training

over a period of time, to be used in conjunction with functional communication training.

### ***Functional Communication Training Combined with Antecedent-Based Strategies***

Antecedent-based strategies are centered around elimination of the motivation to exhibit aggressive behaviors, manipulation of the environment so that it no longer signals the availability of reinforcement for the exhibition of aggressive behaviors, or both. Even though aggressive behaviors are learned based on a contingent relation between the exhibition of the aggressive behavior and the consequence that occurs, there may also be antecedent factors that increase the motivation or likelihood that aggressive behaviors will be exhibited. Antecedent-based strategies are based on supplementing functional communication training by increasing the motivation of an individual to participate in communication instead of an aggressive behavior as well as manipulating the environment, both socially and physically, so that it is discriminative for the functional communicative response.

There are several antecedent-based strategies that have been used in conjunction with functional communication training. Some of these strategies include increasing the predictability of a schedule by providing a visual depiction of the sequence of events (Massey & Wheeler, 2000), interspersing high-probability tasks with tasks that have a low-probability of compliance or are more likely to evoke aggressive behaviors (Horner et al., 1991), delivering putative reinforcers for aggressive behaviors on a schedule that is time-based in addition to the occurrences of functional communicative responses (Hagopian et al., 2001), and increasing the autonomy of the individual by allowing them choice and control over events that have meaning to them (Dyer et al., 1990).

The last antecedent-based strategy that was mentioned may be especially useful when combined with functional communication training in that individuals with

neurodevelopmental disabilities often have a limited ability to communicate with others within their environment which then further limits their opportunities to make choices. When choice making is combined with functional communication training, the individual's communicative repertoire is likely to be affected in a positive manner as it has been shown that when an individual has limited opportunities to make choices it can result in an increased exhibition of aggressive behaviors (Kern et al., 1988).

### ***Functional Communication Training Combined with Consequence-Based Strategies***

Interventions that utilize consequence-based strategies tend to focus on different generic classes of consequences that are able to be arranged for aggressive behavior. These strategies can include extinction of aggressive behaviors, punishment for aggressive behaviors, and ongoing reinforcement for aggressive behaviors. These types of strategies may be particularly helpful when combined with functional communication training as they directly operate on aggressive behaviors.

The most common strategy that is combined with functional communication training is extinction (Lerman & Iwata, 1996). When extinction is used, the functional reinforcer for the aggressive behavior is withheld as a method for teaching the individual that the problematic behavior is no longer an effective method for communicating. Extinction as a supplemental intervention when combined with functional communication training has been shown as being effective within research as functional communication training without extinction often fails to produce clinically significant reductions in aggressive behaviors (Fisher et al., 1993).

However, there are some circumstances where extinction is not able to be implemented and a more intrusive procedure such as punishment would need to

be integrated into the treatment intervention for the individual. The use of punishment during functional communication training requires the contingent application or removal of a consequence after the exhibition of aggressive behavior as a method for eliminating the problematic behavior. Research has been able to show that when punishment has been added to functional communication training, the efficacy of the communication-focused treatment increases (Hanley et al., 2005). Punishment can be integrated through use of time-out from reinforcement, reprimands, and contingent restraint. Although these are all possible interventions that can be used, efforts should be made to remove punishment entirely or move to a less intrusive form of punishment over time. The negative side effects that can be associated with the use of punishment in conjunction with communication-based interventions can be avoided by continuing to deliver functional reinforcers when the individual engages in communication (Hagopian et al., 2007).

There are times when neither punishment nor extinction are able to be implemented in a practical manner or are not able to be appropriate consequences for the aggressive behavior that is being exhibited. When this occurs, the concern becomes that the problematic behavior is still able to contact reinforcement and the effectiveness of the functional communication training may be dependent on the competition that exists between the reinforcement that is able to be obtained for communication versus the reinforcement that is able to be obtained for exhibiting aggressive behaviors. Research has evaluated different strategies that were designed to increase the value of reinforcement for communication over aggression when extinction was not able to be implemented within the environment (Athens & Vollmer, 2010). This research found that individuals with neurodevelopmental disabilities engaged in appropriate alternative behavior (i.e., communication) when the alternative behavior was able to lead to longer durations with a reinforcer, a greater quality reinforcer, or if the

delay to accessing reinforcement was shorter relative to the aggressive behavior. This indicates that the parameters of functional reinforcement including duration, quality, and delay should be manipulated so that it favors communication instead of aggressive behaviors when extinction is not able to be integrated into one's treatment.

## **The Practicality of Communication-Focused Interventions**

Although the effectiveness of functional communication training is widespread, just teaching a functional communication response may not be enough for some individuals or a practical end to a treatment intervention. The communication response may occur at a rate that is too high for caregivers to be able to reinforce. Therefore, it may be beneficial to only reinforce the functional communication response on occasion; however, it is also important to keep in mind that if a functional communication response occurs at a high rate but is frequently not reinforced, then it could become extinguished and lead to aggressive behavior reemerging. Additionally, the functional communication response could occur at times during the day that are inappropriate or difficult for someone to deliver reinforcement. As a result, establishing alternative and appropriate communication as a method for accessing putative reinforcers for aggressive behavior is only a starting place in communication-focused treatment interventions. Research has shown methods for increasing the practicality of communication-focused treatment interventions by thinning the schedule of reinforcement so that it is more representative of naturalistic occurrences while low levels of aggressive behaviors can be maintained (Greer et al., 2016). Reinforcement-schedule thinning is based on incorporation of treatment components that are designed to facilitate a delay to reinforcement and teach tolerance for when the reinforcer is not able to be delivered. Reinforcement-



schedule thinning procedures are used to program for generalization and maintenance of a communication-focused treatment intervention.

Research has indicated that there are several different schedule-thinning procedures that can be implemented following functional communication training, including delay schedules (Hagopian et al., 1998) and response restriction (Roane et al., 2004). However, it was found that multiple schedules were the most beneficial procedure when the ultimate goal is to delay the delivery of positive reinforcement for a length that is greater than 1 minute (Roane et al., 2004). Multiple schedules include the use of at least two reinforcement schedules that alternate with each being signaled. A discriminative stimulus is used to signal the reinforcement components while extinction components are signaled through the use of an S-Delta. The most used strategy for using multiple schedules as a schedule-thinning procedure following functional communication training is for short time periods of extinction to be alternated with longer time periods of reinforcement. Then, these time periods are gradually faded so that the reinforcement is accessible for a short period of time and extinction is then increased for longer periods of time (Saini et al., 2016).

When aggressive behaviors are maintained by negative reinforcement, research has shown that chain schedules of reinforcement are ideal to implement (Hagopian et al., 2011). Chain schedules are implemented based on increasing the number of tasks that the individual is to complete prior to the opportunity to emit a functional communication response is made available and prior to the functional communication response is able to produce reinforcement for the individual. As a chain schedule is introduced in conjunction with functional communication training, the response requirement is relatively small for the individual and then is systematically increased as time progresses. Additionally, research has suggested that a variation of a chain schedule could be implemented for aggressive behaviors that are maintained by positive reinforcement by teaching individuals to

engage in other, appropriate behavior during times when the functional communication response is not able to be reinforced (Ghaemmaghami et al., 2016).

## **Considerations for Communication Response Selection**

There are several items that should be considered when integrating a communication-focused intervention into treatment for aggressive behaviors. One consideration should be in determining the appropriate response topography for the functional communication response. There are many functional communication responses that have been used and can be found throughout the literature on this topic. Some functional communication responses include vocal responses (Carr & Durand, 1985), manual signs (Falcomata & Wacker, 2013), or even picture exchange (Saini et al., 2018). Even though any functional communication response that an individual is able to exhibit proficiently can be used to decrease the occurrence of aggressive behaviors when integrated with functional communication training, there are still several variables that need to be considered when the functional communication response is selected. The effort that is associated with exhibiting the functional communication response, the speed that the individual is able to learn the functional communication response, and the social validity of the functional communication response are all variables that are important to consider.

### ***Functional Communication Response Effort***

Selecting a functional communication response that takes lower effort to exhibit than the aggressive behavior is recommended for individuals with neurodevelopmental disabilities (Tiger et al., 2008). When the goal is for a functional communication response to effectively replace an aggressive behavior, then it needs to be more efficient than the aggressive behavior at producing the

functional reinforcer. When a higher effort functional communication response is required of an individual to exhibit, they will often choose to continue to exhibit aggressive behavior.

### ***The Speed of Learning the Functional Communication Response***

Another variable that is important to consider when choosing a functional communication response is the speed at which the individual will learn the functional communication response. The training trials and topography of the functional communication response will affect the individual's speed of acquiring the response. It is important to choose a response topography that the individual is able to learn readily since the continued exhibition of aggressive behaviors may pose a serious risk to the individual and others. One factor to consider is whether the functional communication response is a topography-based response or a selection-based response. Individuals with neurodevelopmental disabilities may be able to learn topography-based responses quicker than selection-based responses (Sundberg & Sundberg, 1990). Topography-based responses require an individual to learn different responses for each word when compared to selection-based responses that require the learner to emit a topographically similar response. It may be easier to learn a topography-based response because the individual will not need to learn to discriminate among a variety of responses as they need to do in a selection-based response system. Selection of a functional communication response should be based on individualized characteristics that can impact the individual's speed of learning the response.

### ***Level of Proficiency***

Another variable that should be considered when determining the functional communication response is the level of proficiency that the individual has for emitting the functional communication response. A mand-topography assessment

can be conducted which is an assessment procedure for identifying the proficiency of functional communication responses (Ringdahl et al., 2009). In this assessment, the level of prompting that is required for the individual to emit the different functional communication responses is measured as a means for determining the proficiency level. Those responses that require less prompting for the individual to emit are considered to be more proficient.

### ***Individual's Preference***

The efficacy of functional communication training can be affected by the individual's preference across communication modalities. Although a multitude of functional communication response modalities can be effective at decreasing aggressive behaviors, the preference of the individual toward the functional communication response will influence their response allocation across communication modalities. The longevity of the treatment intervention may be enhanced by selecting a preferred functional communication response.

### ***Social Validity of Response***

Another variable that should be considered when selecting a functional communication response is the extent to which the functional communication response is able to be recognized and reinforced by other individuals within the natural environment. When the functional communication response is able to be reinforced within the individual's own natural environment, the long-term effectiveness of the functional communication training intervention may be improved (Durand, 1999).

## Methods for Teaching Functional Communication Responses

A functional communication response is a specific response that is used to convey a want or a need yet is also controlled by both the individual's motivation to acquire that want or need and the source of reinforcement. This type of communication training is determined by the function of the response and relies on manipulation of different variables that control problematic behavior, typically those that are associated with motivational factors and functional reinforcers.

It is extremely important to teach an individual to emit a functional communication response that is appropriate as it is the key component that determines the effectiveness of the functional communication training. If an appropriate functional communication response is not established to replace the problematic behavior, then the functional communication training will be ineffective. Therefore, when the individual is being taught the functional communication response, the training should occur under conditions that are similar to those that were determined to occasion the aggressive behavior when the functional analysis took place. This will help to ensure that the relevant motivation is in place and can be completed through two different ways. The first way is that the instructor can contrive the motivation by arranging a situation that has been determined to occasion the aggressive behavior. This method may involve setting up a condition that is similar to the functional analysis condition that has been associated with an increased occurrence of aggressive behavior. The other method involves the instructor waiting for the evocative situation to occur on its own within the environment of the individual that exhibits the aggressive behavior. Each of these methods have both benefits and limitations.

When the motivation is being contrived, the instructor is able to provide the individual with several opportunities where the functional communication response is prompted and reinforced under controlled conditions (Tiger et al.,

2008). This allows the individual to practice emitting the functional communication response over and over while obtaining the reinforcer. Since this situation is contrived, though, there may be additional steps needed to help promote the generalization of the functional communication across different contexts.

When the naturalistic training method is implemented, generalization is more likely to be promoted as the training of the response will take place within the individual's environment. However, since the training opportunities will require the instructor to wait for opportunities for the individual to respond, this may ultimately result in slower acquisition of the functional communication response (Tiger et al., 2008).

Once the training method has been chosen, the prompting strategies that will be implemented to help the individual to learn the functional communication response will need to be specified. Acquisition level training exists with an individual when the individual is taught to emit a novel functional communication response and the instructor is required to provide enough support for the individual to emit the correct response and also ensure delivery of the reinforcer. Once the individual is able to readily emit the specified response without any prompting and in the presence of the relevant stimulus conditions, the prompts that had been provided can be systematically removed so that the transfer of control can occur from the prompts to the stimuli that are associated with any motivating conditions. The instructor should continue to monitor and track the individual's progress so that the prompts are able to be systematically withdrawn once the individual is able to begin to emit the functional communication response on their own.

There are two different prompting strategies that can be used to teach a functional communication response to individuals with a neurodevelopmental

disability. These prompting strategies include using the least-to-most and the most-to-least sequence for prompts. The words “most” and “least” are used to describe the intrusiveness level of the prompt that is used.

## **Section 2 Personal Reflection**

Within your clinical experience, have you integrated functional communication training into the treatment of a client’s challenging behaviors? If so, what functional communicative response did you teach, what steps did you take to teach the response, and did the client successfully learn the response? Were there steps that you took that you felt could be done differently and if so, why?

## **Section 2 Key Words**

Antecedent-based strategies - centered around elimination of the motivation to exhibit aggressive behaviors, manipulation of the environment so that it no longer signals the availability of reinforcement

Chain schedules - implemented based on increasing the number of tasks that the individual is to complete prior to the opportunity to emit a functional communication response is made available and prior to the functional communication response is able to produce reinforcement for the individual

Consequence-based strategies - used to minimize reinforcement for problem behavior and increase reinforcement for desirable behavior

Differential reinforcement of alternative behavior - withholding of reinforcers while simultaneously providing these reinforcers contingent on a specified alternative behavior

Functional communication training - includes teaching an appropriate communication response as a way of accessing a reinforcer that is responsible for maintaining the problematic behavior

Mand-topography assessment - an assessment procedure for identifying the proficiency of functional communication responses where the level of prompting that is required for the individual to emit the different functional communication responses is measured as a means for determining the proficiency level

Multiple schedules - the use of at least two reinforcement schedules that alternate with each being signaled

Reinforcement-schedule thinning - based on incorporation of treatment components that are designed to facilitate a delay to reinforcement and teach tolerance for when the reinforcer is not able to be delivered

Selection-based responses - require the learner to emit a topographically similar response

Topography-based responses - require an individual to learn different responses for each word

## **Section 3: Mindfulness and The Management of Anger and Aggression**

Anger has been characterized as a negative emotional state where one has negative thoughts, an increase in physiological arousal, and a predisposition to both verbal and physical aggression (Berkowitz & Harmon-Jones, 2004). An individual can experience anger as their own inner feelings as well as express anger through exhibition of aggression, defiant behavior, and tantrums. When aggression is exhibited, it can cause both mental and physical harm to a person or



to others in the environment. Depending on a person's age of onset for the exhibition of aggression, different forms of aggression and anger can have various trajectories which may result in either violent or nonviolent behavior including mental health concerns (Kjelsberg, 2002).

Anger and aggression are diverse in their nature, motivation, and topography. Therefore, there are several treatment options that are available for implementation; however, not every treatment option will work or be effective with every person that needs an intervention. Some individuals will require the use of parent training programs to help family members integrate consistent parenting practices into their home. Some individuals may explore the use of pharmacotherapy or cognitive behavior therapy. Each of these methods may be effective for different individuals, contexts, or the behavior that is exhibited.

ABA can be used as an evidence-based approach for the treatment of aggressive behaviors (Luiselli & Ricciardi, 2017). The treatment interventions that are used are based on the identification of the function of each topography of the aggressive behavior that is being demonstrated as it occurs across settings. Then, the development of a case formulation occurs, and a behavior support plan is created. The intervention that is used in the behavior support plan is aligned with the function or the motivation for the exhibition of the aggressive behavior. Although this approach is typically effective, the implementation may be intensive and lead to stress or burnout of the caregiver or those implementing the procedure.

When looking at the General Aggression Model (Anderson & Bushman 2002), it is found that adaptive emotional regulation can lead to interpersonal interactions that are considered to be socially acceptable. When an individual's emotional regulation is maladaptive, then this can result in anger, aggression, and other violent behavior (Robertson et al., 2012). Various mindfulness-based programs

have been developed in the last couple of decades for handling anger, aggression, and violent behaviors as these programs can recalibrate an individual's response to events that increase emotional dysregulation (Singh et al., 2017). Mindfulness is able to provide a variety of practices that an individual can implement to self-regulate their emotional experience and expression. These programs may also be effective at decreasing aggressive behaviors and violence through these emotion regulation practices (Fix & Fix, 2013).

## **Mindfulness**

The term mindfulness has been characterized in a multitude of ways over the years. It is often described as a type of social practice that allows an individual to engage in ethically minded awareness that is intentionally situated in the present time (Nilsson & Kazemi, 2016). Mindfulness is viewed as experiencing from moment to moment without judgment or criticism. It can also be described through use of its qualities: mechanistic mindfulness, ethically attuned mindfulness, fully informed mindfulness, and holistic mindfulness.

### ***Mechanisms of Mindfulness***

When evaluating the root cause of anger and aggression, Buddhist psychology points toward the mind and that control of the mind can occur through retraining. Additionally, patience has been identified as the main antidote of anger. When teaching patience, the main instruction revolves around the need to pause prior to an automatic reaction to destructive emotions. If an automatic reaction is able to be preempted by means of a pause, then a mindful response may be produced. This pause can allow for different mechanisms to come forward that can produce the mindful response.

Another idea is that mindfulness helps to facilitate the development of decentering (Fresco et al., 2007), re-perceiving (Shapiro & Carlson, 2009), or metacognitive insight (Bishop et al., 2004). This allows an individual to see their thoughts of anger and aggression as not being representative of reality. Mindfulness practice allows an individual to see their anger-producing thoughts as being transient event and allows for cognitive flexibility for responding in a nonaggressive manner. A pause allows for an increased opportunity for a socially acceptable mindful response to occur. Mindfulness meditation is designed to focus one's attention on the experience of thoughts, emotions, and body sensations through observation as they come forward and pass by. The main part of this mechanism is that it allows the individual to change the nature of their relationship with their thoughts and emotions instead of responding by using anger and aggression.

Rumination is known as almost uncontrollable thoughts that are repetitive about negative emotions and experiences. These thoughts can lead to both anger and aggression (Peled & Moretti, 2009). While rumination occurs during the present time, it is often focused on events that have previously occurred as well as probably future outcomes. It has been suggested that mindfulness-based programs can be used to decrease rumination in an individual. A person can respond with non judgment, act with awareness, and exhibit non-reactivity to thoughts that are typically anger producing as a method for reducing anger and aggression. These methods may result in the reduction and extinction of both anger and aggression. When an individual engages in nonjudgmental awareness and non-reactivity, then the anger and aggression is not being reinforced and extinction should occur.

## ***Mindfulness-Based Programs and Practices***

The term mindfulness can be viewed as one's state of being as well as a practice that is able to further enhance an individual's quality of life.

### **Parents**

Research has shown that there is a bidirectional correlation that exists between the stress that occurs among parents and a child's psychopathology beyond that of mere genetic and environmental effects (Yorke et al., 2018). This correlation appears to be more robust particularly when the child has been diagnosed with autism spectrum disorder (ASD).

Mindfulness-Based Positive Behavior Support was developed with parents and caregivers in mind for use with their children and adults that exhibit problematic behaviors (Singh et al., 2020). There are two main components that exist within this program, mindfulness and positive behavior support. These are both considered to be evidence-based interventions. There are several mindfulness components that are used in conjunction with the principles and practices of positive behavior support.

### **Caregivers**

Typically, direct caregivers provide services to individuals with ASD that exhibit aggressive behaviors that can cause injury to others (Knotter et al., 2018).

Research has shown that by teaching mindfulness practices to these particular caregivers, their quality of life can be enhanced and the behaviors of the individuals that receive their services can be changed (Singh et al., 2014). For example, one study has shown that individuals that functioned at severe or profound levels of intellectual or developmental disability were able to demonstrate substantial reductions in aggressive behavior and increases in the

number of learning objectives that they were able to master corresponding with the participation of their caregiver in a mindfulness-based program.

### **Trained Clinical Caregivers**

Mindfulness meditation instructions are often delivered by meditation teachers that have an extensive history and personal practice of daily meditation. An evaluation of research on mindfulness-based programs has shown that these programs have used experienced meditation teachers. Within clinical practice, clinicians are delivering both inpatient and outpatient care that can involve the use of mindfulness-based practices. Therefore, these clinical caregivers would need to have personal experience in the practice of meditation prior to delivering these services.

Soles of the feet is a term used to describe a mindfulness practice that is portable, easy to use, requires no equipment, and does not require continual instruction from other individuals. It provides guidance with self-management on different socially undesirable behaviors that are exhibited. Soles of the feet guides an individual to shift from an automatic reaction to an internal event (i.e., negative thoughts, feelings, emotions) or an external event (i.e., when someone tells you something hurtful) to a response that is mindful or skillful. This shift helps an individual to learn an inhibitory response to emotionally negative arousal situations.

SOBER breathing space is another mindfulness practice that was developed for use within substance abuse clients but can also be integrated as a self-management practice for individuals that exhibit aggressive behaviors or other behaviors that are exhibited during emotionally arousing situations. SOBER stands for 1) stop and become aware of what is taking place at that moment, 2) observe the changes in the body that are occurring within both the physical sensations and emotional regulation, 3) breathe and consciously think about breathing, 4) expand

your awareness of the current situation as well as your options for responding, and 5) respond in a mindful manner.

Surfing the urge is another mindfulness practice that originated within the context of substance abuse. All situations arise, peak, and then fade. As an individual experiences the urge to exhibit a harmful or socially unacceptable behavior, one should continually observe this urge in a nonjudgmental way with equanimity so that it will decrease its frequency and eliminate the urge completely. This is similar to extinction of a private event as the instance of arising of an urge is not reinforced. The individual is able to use meditation to overcome their urge. This mindfulness practice can be used as a self-management strategy for most emotionally arousing thoughts, feelings, or events.

## **Teachers**

Although there are fewer research studies on teachers using mindfulness-based programs, when compared to other caregivers, teacher mindfulness has been shown to spill over to the students that are in their classrooms for those teachers that engage in mindfulness practices. Mindfulness programs that use a multitude of components (i.e., basic meditations, developing awareness, beginner's mind, being present in the moment) have shown statistically significant decreases in the aggressive and destructive behaviors of children in a classroom setting as well as an increase in compliance with requests from their teacher (Singh et al., 2013).

## ***Implementation of Mindful Caregiving***

Behavior analysts are able to adopt mindfulness as an approach and method to better serve individuals that exhibit problematic behaviors and also for use with their parents and caregivers. Behavior analysts have a foundation built on analytic methods and an empirical mindset that is based on behavioral assessment, assessment of fidelity and training, and social validity methodology. This can allow

behavior analysts to become more responsive to the complex needs of the individuals that they provide services to.

In order for this to happen, behavior analysts will need to avoid premature cognitive commitment that ABA is able to answer all of the worldly problems single handedly and instead may need to be used in conjunction with other approaches and methodology to best serve the needs of their clients. Behavior analysts will need to be open and curious to entertaining the idea that there may be other methods that have answers to issues which have continued to elude behavior analysis. The beginning point for incorporating mindfulness into behavior analytic practice is to be able to discuss basic meditation practices prior to one adopting the use of mindfulness-based programs and practices. Behavior analysts will then need to develop a disciplined meditation practice in order to be able to deliver mindfulness-based services. A practice that is rooted in mindfulness can be simple; however, the development of the practice will require effort on the part of the behavior analyst. Additionally, a behavior analyst should also receive training in meditation and mindfulness from teachers that embody mindfulness into their life.

### **Section 3 Personal Reflection**

Have you ever used mindfulness practices in your personal life? Do you feel that mindfulness practices could be implemented with the clients that you provide services for? If so, what mindfulness approaches would you consider integrating into their treatment and how do you see these approaches helping your client?

### **Section 3 Key Words**

Mindfulness - a type of social practice that allows an individual to engage in ethically minded awareness that is intentionally situated in the present time

Mindfulness meditation - designed to focus one's attention on the experience of thoughts, emotions, and body sensations through observation as they come forward and pass by

Mindfulness practice - allows an individual to see their anger-producing thoughts as being transient event and allows for cognitive flexibility for responding in a nonaggressive manner

Rumination - almost uncontrollable thoughts that are repetitive about negative emotions and experiences

SOBER - stands for 1) stop and become aware of what is taking place at that moment, 2) observe the changes in the body that are occurring within both the physical sensations and emotional regulation, 3) breathe and consciously think about breathing, 4) expand your awareness of the current situation as well as your options for responding, and 5) respond in a mindful manner

Soles of the feet - guides an individual to shift from an automatic reaction to an internal event (i.e., negative thoughts, feelings, emotions) or an external event (i.e., when someone tells you something hurtful) to a response that is mindful or skillful

Surfing the urge - as an individual experiences the urge to exhibit a harmful or socially unacceptable behavior, one should continually observe this urge in a nonjudgmental way with equanimity so that it will decrease its frequency and eliminate the urge completely



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