Using functional assessment procedures and behavior intervention strategies for students with severe disabilities

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USING FUNCTIONAL ASSESSMENT PROCEDURES AND BEHAVIOR
INTERVENTION STRATEGIES FOR STUDENTS WITH SEVERE DISABILITIES

by

Abigail Williams

A thesis submitted in partial fulfillment of the requirements for the

Master of Arts in Education

Special Education

School of Education

California State University, Monterey Bay

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FUNCTIONAL ASSESSMENT & INTERVENTION STRATEGIES

USING FUNCTIONAL ASSESSMENT PROCEDURES AND BEHAVIOR INTERVENTION STRATEGIES FOR STUDENTS WITH SEVERE DISABILITIES

By

Abigail Williams

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Abstract

USING FUNCTIONAL ASSESSMENT PROCEDURES AND BEHAVIOR INTERVENTION STRATEGIES FOR STUDENTS WITH SEVERE DISABILITIES

by

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Research has long demonstrated the effectiveness of behavioral interventions based on the principles of Applied Behavior Analysis when working with children with a primary diagnosis of Autism. Utilizing a multiple baseline design, this study investigated the effectiveness of linking a differential reinforcement procedure to the results of a Functional Behavior Assessment on reducing challenging behaviors of one female and three male students with severe disabilities. The results show that implementing differential reinforcement procedures for students with severe disabilities can reduce the frequency of challenging behaviors and increase the use of appropriate behaviors. Implications of these results imply that special education teachers teaching in a self-contained public classroom setting can achieve meaningful reductions in the problem behaviors of students with severe disabilities.
Acknowledgements

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# Table of Contents

Abstract .................................................................. . 
Acknowledgements .........................................................................................................4 
CHAPTER I ....................................................................................................................9 
Chapter 1
Problem Statement .................................................................................................7 
Purpose .......................................................................................................................8 
Research Questions ..................................................................................................9 
Theoretical Model .......................................................................................................9 
Researcher Background ............................................................................................10 
Definition of Terms .................................................................................................11 
CHAPTER 2 ..................................................................................................................14 
CHAPTER 3 ..................................................................................................................24 
Methodology .............................................................................................................24 
Research Methodology .............................................................................................24 
Specific Research Plan ..............................................................................................25 
Setting ........................................................................................................................26 
Participants ...............................................................................................................26 
  Participant 1 .............................................................................................................26 
  Participant 2 .............................................................................................................27 
  Participant 3 .............................................................................................................27 
  Participant 4 .............................................................................................................28 
Procedures ................................................................................................................29 
Baseline and Functional Assessment ........................................................................29 
Intervention Phase ....................................................................................................34 
Dependent Variables ...............................................................................................36 
Data Sources/Instruments .......................................................................................38 
Data Analysis ............................................................................................................38 
Interobserver Agreement .........................................................................................39 
CHAPTER 4 ..................................................................................................................40 
Results ......................................................................................................................40 
Participant 1 .............................................................................................................40 
Participant 2 .............................................................................................................41 
Participant 3 .............................................................................................................41
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant 4</td>
<td>42</td>
</tr>
<tr>
<td>Summary</td>
<td>42</td>
</tr>
<tr>
<td>Figure 1</td>
<td>43</td>
</tr>
<tr>
<td>Figure 2</td>
<td>44</td>
</tr>
<tr>
<td>CHAPTER 5</td>
<td>45</td>
</tr>
<tr>
<td>Discussion</td>
<td>45</td>
</tr>
<tr>
<td>Summary</td>
<td>45</td>
</tr>
<tr>
<td>Limitations</td>
<td>49</td>
</tr>
<tr>
<td>Implications for Future Research</td>
<td>50</td>
</tr>
<tr>
<td>Implications for Practice</td>
<td>50</td>
</tr>
<tr>
<td>Conclusion</td>
<td>52</td>
</tr>
<tr>
<td>References</td>
<td>53</td>
</tr>
</tbody>
</table>
Chapter 1

Introduction

Students with severe intellectual disabilities often struggle to display appropriate social behaviors that can lead to maximum opportunities for learning in the educational setting and serve as a barrier to acquisition of basic and complex life skills. My goal is to reduce socially negative behaviors in students with severe disabilities as a means of improving life skills functioning through a multiple baseline design that employs validated methods of Applied Behavioral Research (ABA) practice.

In order to change a negative, or challenging, behavior, one must be able to identify the reasons a behavior occurs (function) and continues to occur (maintaining factors). This is done through a process known as a functional behavior assessment. Once the functional behavior assessment has been completed and analyzed, it can often be used to inform potentially effective intervention strategies for behavior change.

Once a behavior change strategy has been identified, it may be implemented across multiple students in the classroom setting. In order to test the efficacy and reliability of the intervention strategy, it is introduced to one student at a time until all identified students are working inside the new requirements.

Problem Statement

While much research has been conducted about the use of methods of Applied Behavior Analysis techniques to reduce challenging behaviors displayed by individuals with disabilities, much of that research focuses on those individuals with a primary diagnosis of Autism. Building upon prior research, along with utilizing methods of
Applied Behavior Analysis to conduct further research into reducing challenging behaviors of individuals with severe disabilities may help to expand the relatively small field and provide a reference point for others interested in a similar topic.

Additionally, as a special education teacher, one of the main goals in my classroom is to provide students with a strong foundation for independent living skills. These skills include learning to manage or eliminate behaviors that society regards as socially inappropriate. Often times, individuals who display such behaviors are labeled negatively thus reducing opportunities for independent functioning. In order to continue to help educators become more tolerant of behavior challenges students with severe disabilities face, it is imperative to provide salient methods that reduce behavior problems and increase positive interactions. Additionally, to help students with severe disabilities achieve maximum independent functioning skills, it is important to teach specific methods for reducing disruptive behaviors.

**Purpose**

This study is designed to investigate the use of Applied Behavior Analysis techniques through the use of functional assessments of behavior followed by the implementation of behavior change strategies. These strategies will be implemented using a multiple baseline across students: single subject design. Ultimately, elementary students with severe disabilities will reduce their occurrences of challenging behaviors in the school setting and will allow access to greater opportunities and access to acquisition of life skills. The purpose of this study is to identify and develop effective intervention methods of behavior change based on information derived from functional assessment data that will
serve to ultimately decrease the frequency of challenging behaviors in students with severe disabilities using a multiple baseline design.

**Research Questions**

- Will a functional assessment procedure result in the identification of the function of student problem behaviors and inform selection of behavioral strategies to use as a means of reducing problem behaviors of students with severe disabilities?
- What effect will strategies derived from the functional behavior assessment have on the problem behavior of students with severe disabilities?

**Theoretical Model**

Applied Behavior Analysis (ABA) is the theoretical model that will form the basis of this research. Applied Behavior Analysis is the science in which tactics derived from the principles of behavior are applied systematically to improve socially significant behavior and experimentation is used to identify the variables responsible for behavior change (Cooper, Heron & Heward, 2007). ABA methods serve to identify the cause of a behavior and seek ways to improve behavior based on the identified function.

In ABA theory, the function of a behavior is often determined through conducting a functional assessment procedure and completing a functional analysis. A functional analysis serves to identify the function of a behavior, as well as the consequences of that behavior that occur as a result of the behavior. Additionally, a functional analysis allows the researcher the opportunity to confirm a relationship regarding functional relations between exhibited problem behaviors and external events (Cooper, Heron & Heward,
Once a functional analysis is completed, methods for shaping behavior can begin to be formulated based on information derived from the assessment and analysis.

When seeking to change a challenging behavior or to shape a new behavior, utilizing the ABA method of differential reinforcement is a widely used form of behavior change. There are several branches of differential reinforcement, all of which operate under a similar method. Differential reinforcement involves enforcing one set of responses while withholding reinforcement for an alternate set of responses (Cooper, Heron & Heward, 2007).

**Researcher Background**

I am a special educator on the Monterey Peninsula, and have been teaching for 4 years. Currently, I work with students who are identified as having intellectual disabilities that fall within the moderate to severe range. Instruction within the classroom focuses primarily upon functional academics, functional life skills, and communication, providing appropriate educational experiences, and working towards achievement of IEP goals. The students within my program have diagnoses ranging from Down syndrome, Autism, seizure disorder, and other lesser known genetic diagnoses, often times combined with medical fragility. They are all primarily non-verbal and function at a cognitive level below 36 months. Many behaviors are exhibited throughout the day as a means of self-stimulation, escape, attention, communication, and desire for more of a person, item or activity.

When working with these students, I often see them struggle to communicate and even understand their own needs, wants, and desires. Quite often, this is when the challenging behaviors occur. While often times it seems as if the behaviors occur due to a
lack of being able to communicate, I believe that these behaviors can also impede the ability to learn how to communicate and respond/react appropriately in a given situation. I know that my students have the ability to expand their skills, and am confident that skill expansion can occur with the reduction of challenging behaviors.

**Definition of Terms**

- **Antecedent**: A preceding event, condition, or clause. (http://www.merriam-webster.com/dictionary/antecedent)

- **Applied Behavior Analysis**: A systematic method of supporting and/or altering behavior. It involves studying behavior (via observation), analyzing the steps involved in producing a behavior, and then teaching or modifying these steps one at a time. (http://www.anniescentre.com/applied_behaviour_analysis.html)

- **Behavior**: The way in which one acts or conducts oneself. (http://www.merriam-webster.com/dictionary/behavior)

- **Cognitive disability**: Intellectual disability is a disability characterized by significant limitations both in intellectual functioning and in adaptive behavior, which covers many everyday social and practical skills. This disability originates before the age of 18. (http://www.aaidd.org/content_100.cfm?navID=21)

- **Consequence**: The effect, result, or outcome of something occurring earlier. (http://dictionary.reference.com/browse/consequence)

- **Differential reinforcement**: Reinforcing only those responses within a response class that meet a specific criterion along some dimension (s) and placing all other responses in the class on extinction. Cooper, Heron, & Heward, 2007)
• **Function**: Consequence of a behavior. The 4 functions of behavior include:
  Sensory, Escape, Attention, or Tangible.

• **Functions of a problem behavior**: A) To get something (positive reinforcement) or B) To stop something (negative reinforcement)

• **Functional analysis**: The observation of current behaviors for their frequency as well as the antecedents and consequences of displayed behavior. This is considered a key component of Applied Behavior Analysis.
  (http://www.anniescentre.com/applied_behaviour_analysis.html)

• **Intellectual disability**: A disability characterized by significant limitations both in intellectual functioning and in adaptive behavior, which covers many everyday social and practical skills. This disability originates before the age of 18.
  (http://www.aaidd.org/content_100.cfm?navID=21)

• **Multiple baseline across subjects designs**: An experimental design that begins with concurrent measurement of two or more subjects in a baseline condition, followed by the application of the treatment variable to one of the subjects while the baseline condition remains in effect for the other subjects. After maximum change has been noted in the first subject, the treatment variable is applied in sequential fashion to each of the other subjects in the design. Experimental control is demonstrated if each subject shows similar changes when, and only when, the treatment variable is introduced (Kennedy, 2005).

• **Reinforcer**: A stimulus (as a reward or the removal of an electric shock) that increases the probability of a desired response in operant conditioning by being
applied or effect following the desired response. (http://www.merriam-webster.com/dictionary/reinforcer)

- **Sensory input**: Describes the act of accessing multiple sensory points on a person (such as: sight, smell, touch, taste, hearing, etc.) for an intended purpose, usually to help an individual regulate their behavior or calm their body down.

- **Single subject design**: Research done with individual subjects in order to study the changes in behavior that are associated with the intervention or removal of a treatment. (McMilland & Schumacher, 2006)

**Overview of the thesis:**

This thesis will use a single subject design to apply proven Applied Behavioral Analysis methods of behavior reduction to help students with severe disabilities reduce the rate and incidence of challenging behaviors. This thesis will use a quantitative research design, using past research as compared with current data collection (to be completed after human subjects approval) to help create a broader focus on this topic.
Chapter 2: Literature Review

Introduction

This is a literature review of widely used methods of applied behavior analysis to reduce challenging behaviors, in students with identified severe disabilities. The purpose of this paper is to examine the evidence based practices of functional assessment, applied behavior analysis implementation, and differential reinforcement procedures. I began by researching and reviewing evidence based models of applied behavior analysis, functional behavior assessments, and behavior change in students with severe disabilities.

Search Procedures and Criteria for Selection

A systematic search through three computerized databases was conducted. The databases accessed were ERIC, PsycInfo, and Google Scholar. The following descriptors were used: (d) mental retardation, (e) intellectual disability, (f) developmental delay, (h) cognitive impairment, (j) functional analysis, (k) behavior modification, (l) multiple disabilities, (m) reinforcement. These descriptors were used individually and in groups of two. Information was gained primarily by PsycInfo, followed by ERIC, and lastly by Google Scholar. In addition, archives from the Council for Exceptional Children’s website were explored. Finally, references from articles were reviewed.

Criteria

Studies were included in this review if they met the following criteria: (a) the study content was relevant to information that was being sought (b) the article was published between 1992 and 2012, (c) the subject(s) or participant(s) of the study had previously
been identified as having a severe disability, multiple disabilities, profound disabilities, or
a specific disability (such as autism) that profoundly impacted their behavior, and (d) that
the case study or article has been peer reviewed. Studies were excluded from the review
if (a) they were not peer reviewed, (b) the subject(s) had not been diagnosed with severe,
profound, or multiple disabilities, or (c) the study was published prior to 1992. Studies
were excluded from the review if: (a) the study came from a journal that was not peer­
reviewed, (b) the setting only involved a residential facility or other clinical environments,
(c) the study was more than 20 years old, or (e) no participants with developmental
disabilities were researched in the study.

**Effective Models of Applied Behavior Analysis in Individuals with Severe
Disabilities**

This section provides a short review of the principles of applied behavior analysis,
the efficacy of conducting functional assessments to determine proper interventions, and
commonly used methods of applied behavior analysis designed to reduce challenging
behaviors in children with severe disabilities.

**Applied Behavioral Analysis Methods/Principles**

Applied behavior analysis is a theory that stands to determine causes and
functions of behaviors based on observable and measurable standards and then use that
information to implement behavior change procedures. According to Cooper, Heron &
Heward, the definition of applied behavior analysis consists of six main components.
These components include that the practice of ABA is based on scientific inquiry,
behavior change must be implemented in a systematic and technological form, not all
behavior change is ABA, the focus of ABA methods is on changing socially significant behaviors, and that ABA seeks to understand the function of a behavior and consequently improve the behavior (2007).

ABA is comprised of two main components: the assessment of behavior and maintaining reason of the behaviors and the intervention designed from analysis of the assessment to help the student/person improve the targeted behaviors through specific interventions (Steege, Mace, Perry & Longenecker, 2007). The reasons, or functions, of the behavior typically occur for one of four reasons: to escape/avoid, to obtain, to seek positive reinforcement (i.e. gaining access to preferred toy), or to seek negative reinforcement (i.e. preferred activity is stopped), or as a means of self-stimulation (also known as automatic reinforcement) (Feely & Jones, 2006).

There are many forms of behaviors management present under the umbrella of Applied Behavioral Analysis (ABA). Effective methods of utilizing ABA as a means of reducing challenging behaviors include the use of extinction, differential reinforcement procedures, and/or punishment (positive or negative) procedures and functional communication training as demonstrated in studies completed by Kee, Hill & Weist (1999) and Graff, Libby & Green (1998). For the purpose of this study, only differential reinforcement procedures combined with extinction and functional communication strategies will be studied.

**Functional Behavior Analysis**

A functional behavior analysis describes a set of processes designed to identify the functions and maintaining values of a behavior or set of behaviors (Feely & Jones,
There are three common methodologies that fall under the umbrella of functional behavior analysis (FBA). These include a descriptive assessment such as ABC recording and direct observation, indirect assessments such as interviews and rating scales, and formal functional analyses (also described by Tarbox et al. as experimental functional assessments) which encompasses analogue conditions in which antecedent or consequent variables are systematically manipulated within an experimental design (Delfs & Campbell, 2010).

Descriptive assessments include completing direct observations in natural environments and recording data as behaviors occur in order to determine the maintaining function(s) of a behavior. One of the most common forms of collecting data in the descriptive assessment method is completing antecedent-behavior-consequence data sheets (ABC recording). This is done by observing the student in their natural environment and recording what occurs immediately before a behavior, the behavior itself, and the consequence received by the student demonstrating the behavior (Tarbox et al., 2009). The data recorded is then summarized and analyzed to determine the potential functions of the behavior. According to Tarbox et al., advantages of completing a descriptive assessment can include the ability to observe students displaying behaviors in natural settings as well as allowing for the opportunity to record a multitude of variables that may be contributing to the behavior(s). There are also drawbacks to completing descriptive assessments over other forms of assessments. Two potential drawbacks include the possibility of the behavior not occurring during the observation period, and the potential for data collectors to lack adequate amounts of training and expertise in identifying appropriate antecedents and consequences. Finally, Tarbox et al.
indicates that a potentially large disadvantage to conducting a descriptive assessment is that the relations between behavior and environment can be correlational and therefore may not reveal the true function of a behavior. Many studies and research reviews indicate a poor correlation in proper identification of the function of behaviors as compared to completing experimental functional analysis or indirect assessments (Defs & Campbell, 2010, Dracobly & Smith, 2012, Feely & Jones, 2006, Pence, Roscoe, Bourett & Ahearn, 2009, Thompson & Iwata, 2007), but they can serve to provide information on the environment and training of staff within the environment (Pence, Roscoe, Bourett & Ahearn, 2009). Additionally, small studies have indicated fair correlations between ABC recording and functional analysis outcomes (Delfs & Campbell, 2010, Pence, Roscoe, Bourett & Ahearn, 2009, Feely & Jones, 2009).

Another popular method of functional behavior assessment is through an indirect assessment of behavior. An indirect assessment of behavior is completed through interviews with people familiar to both the student and the behavior. There are several popularized questionnaires including the Questions About Behavioral Function (QABF) checklist, the Motivation Assessment Scale (MAS), Functional Assessment for Multiple Causality (FASC), and the Functional Analysis Screening Tool (FAST) (Zaja, Moore, van Ingam, Rojahn, 2010). All forms are designed to collects specific data around the behavior and assist in identifying functions around the behavior. As a category, Delfs & Campbell & Tarbox et. al. cite a major disadvantage to employing this method of assessment as correlations when compared to experimental functional analysis are inconsistent. However, of the rating scales available, the QABF is fairly consistent in its results, and has been found to be successful in identifying function of behaviors in 84%
of 384 in a trial completed by Matson, Bamburg, Cherry and Paclawskyj in 1999 (Paclawskyj, Matson, Rush, Smalls and Vollmer, 2000).

Finally, a functional analysis (FA) (also known as an experimental functional analysis or EFA) is a form of behavior analysis that seeks to link specific environmental events that affect challenging behavior to help design the selection of intervention strategies (Stichter, 2001). FA’s rely on the manipulation of single antecedent variables within test conditions and consequences to the target behavior (Dolezal & Kurtz, 2010, Tarbox et al., 2009). During a functional analysis, sessions in each condition are around 10 minutes long, with a reported range of 1-30 minutes (Dracobly & Smith, 2012). It is during this time that antecedents are manipulated and data on the behavior and consequence (along with antecedent) is recorded (Tarbox, et al, 2009.). In the field of behavior analysis, functional analysis procedure is considered the gold standard against which other forms of behavior assessment should be compared and tested for validity and reliability (Delfs & Campbell, 2010, Tarbox et al., 2009). Though functional analyses are regarded as the premier and desired format for determining and identifying maintaining functions of a behavior, there are drawbacks to this method as well. Conducting a FA is often time consuming, it relies on the identification of a single antecedent when at times there may be multiple antecedents that function as a motivating operation, infrequent behaviors may not be displayed during sessions, and the FA could produce maladaptive behaviors that could pose a safety risk (LaRue et al., 2010, Volkert, Lerman & Vorndan, 2005, Pence, Roscoe, Bourret & Ahearn, 2009, McLaren & Nelson, 2009, Dracobly & Smith, 2012, Dolezal & Kurtz, 2010). Despite possible limitations of completing a functional analysis, it remains a valid and reliable form of assessment to determine
maintaining functions of a behavior and subsequently develop effective methods of intervention.

**Differential Reinforcement Procedures**

Once an FBA has been conducted and hypotheses for functions of behaviors have been identified, interventions are then created to determine the best way to address the behavior(s). One form of intervention that is often chosen is known as a differential reinforcement procedure.

Differential reinforcement procedure can best be described as reinforcing one response class while withholding reinforcement for another response class (Cooper, Heron & Heward, 2007). Cooper, Heron and Heward further explain that differential reinforcement procedures include the most effective, widely known and commonly used techniques to reduce identified behaviors. Though there are several variations of differential reinforcement, the four most commonly used forms include the differential reinforcement of alternate behaviors (DRA), differential reinforcement of other behaviors (DRO), differential reinforcement of low rates (DRL), and differential reinforcement of incompatible behavior (DRI)(Cooper, Heron, & Heward). Many times the terms of differential reinforcement of alternate behaviors and differential reinforcement of other behaviors are used interchangeably and represented as DRO/A. Conducting a behavior assessment can be useful in identifying the proper variation based on maintaining function of the behavior (Athens & Vollmer, 2010).

One key to changing behavior utilizing methods of positive punishment and DRO/A is to find effective reinforcers for the individual that will serve to provide an
alternate for not displaying unwanted behaviors (Bambara & And, 1994). It is crucial that these reinforcers be appropriately selected to maintain the interest of the individual and continue to be effective over a period of time (Graff, Libby & Green, 1998). Additionally, staff working with individuals to reduce challenging behaviors must be appropriately trained to work with the individual using the same reinforcement schedule, prompt procedures, and extinction procedures consistently (Kee, Hill, & Weist, 1999).

**Functional Communication Training**

Functional communication training offers individuals the opportunity to learn how to make choices, request needs, and indicate feelings (Gerra, Dorfman, Plaue, & Schlackman, 1995). Research has indicated a correlation between the inability to speak and a higher rate of self-injurious behaviors (Durand, 1993), as well as a reduction in self-injurious behaviors when functional communication skills are taught as an efficient form of behavior replacement (Beare, Severson, & Brandt, 2004; Reichle, Drager, & Davis, 2002).

A review of research completed by Pragnell (2010) found varying results in the effectiveness of functional communication training when implemented alone. However, when the approach of functional communication training was combined with differential reinforcement of alternative behaviors, there was a much higher success rate. This also held true for combining functional communication training with an extinction method.

**Summary**

When looking at changing behaviors in a person displaying maladaptive behaviors, it is important to determine the function of the behavior as well as design
appropriate, evidence based interventions that are designed to meet the needs of the student. To do this, one must first learn about the theoretical model of Applied Behavior Analysis (ABA). ABA seeks to address behavior in a two step function of first assessing the functions of the behavior and then using that information to create an appropriate intervention.

The most commonly used methods of assessment is referred to as a functional behavior assessment (FBA). Within the umbrella of FBA, there are three main types of assessment: descriptive analysis, indirect analysis, and functional analysis. While descriptive and indirect analysis are most often used to identify the function of a behavior, they do not always correlate with the functional analysis (FA). FA's have been shown to have strong validity and reliability, but are also viewed as more complex and therefore not relied upon as heavily. Once the FBA has been conducted and analyzed, and a hypothesis about maintaining functions of a behavior has been created, then an intervention must be determined.

One of the most commonly used forms of behavior intervention is the differential reinforcement behavior combined with extinction. Though there are several variations, the most commonly used forms of differential reinforcement include differential reinforcement of alternate or other behaviors (DRO/A), differential reinforcement of incompatible behaviors (DRI), and differential reinforcement of low behaviors (DRL). All methods are considered non-invasive and can be done as is appropriate to the child. Methods of behavior extinction for maladaptive behaviors are implemented along with the DRO/A intervention. Additionally, functional communication training is often
effective when paired with DRO/A procedures and can help teach students alternate options for the maladaptive behaviors.
This section provides an overview of the methods, procedures, and limitations of the proposed research questions that follow:

1. Will a functional behavior assessment procedure result in the identification of the function of student problem behaviors and inform selection of behavioral strategies to use as a means of reducing problem behaviors of students with severe disabilities?

2. What effect will strategies derived from the functional behavior assessment have on the problem behavior of students with severe disabilities?

Research Methodology

The research that took place for this project included two phases of research. The first part of the research consisted of conducting functional behavior assessments for each participant and analyzing the data to help inform appropriate selection of ABA strategies for reduction of identified and targeted behaviors. The second part of this research consisted of implementation of the identified strategies using a multiple baseline across participants design.

Specific Research Plan

A single subject design model was chosen for many reasons. The primary reason for selecting a single subject design model is that the research was focused on changing specific challenging behaviors identified through a functional assessment procedure in
individuals with severe disabilities. This research calls for intensive intervention and is designed to measure a small sample of 4 students. Additionally, a single subject design was chosen based on the model of data collection being used and the style of analysis. Methods for data collection were collected using a multiple baseline across subjects design. A multiple baseline across subjects approach was chosen because, as opposed to an ABAB reversal design, no removal of intervention was needed to demonstrate an experimental effect (as is needed in ABAB designs) (Kennedy, 2005). Doing so could have been dangerous to the population chosen to participate in this study. Analysis was completed based on collected data points, and not on anecdotal or observational notes, which excluded this research from being a qualitative research project.

**Setting**

The research took place at a local elementary school located in northern California. The classroom in which the study participants are placed in is a class for students with severe disabilities within a regional moderate to severe special education program. The school is located in a low income area and is a Title 1 school that has undergone reconfiguration in the previous 3 years. Students participating in the moderate to severe special education program are not all from the local community; rather some are bussed in from various locations in the surrounding area within a 15 mile radius. The county has a resident population of approximately 415,000 residents, with a median household income of $57,647.00. 17.2% of residents residing in the county are identified as persons living below the federal poverty level. The county has a highly agricultural industry, as well as a strong tourist base.
The site itself hosts approximately 450 students, with 29 being enrolled in the moderate to severe special education program, and approximately 92% of students at the site qualifying for the federal free and reduced lunch program.

Participants

The individuals involved in this research included four students under the age of 18 diagnosed as having severe intellectual delays, and 4 adults working within the special education classroom setting.

The four students who were involved in this study are students placed within the moderate to severe program as identified and determined by an IEP team. They were between the ages of 5 to 10 years old, residing in grades kindergarten through fourth, and consisted of 3 males and one female. Criteria for choosing participants in the study were chosen based upon the following 3 factors: i) students had demonstrated challenging behaviors during school hours ii) no formal behavior change strategies for the challenging behavior had previously been introduced, and iii) all students had been previously diagnosed as having an intellectual disability.

Participant 1: This participant was a 10 year, 10 month old male of Mexican descent. He was in the 4th grade during the entirety of the research. His primary disability was Intellectual Disability, and his primary modes of communication include gesturing or walking towards the preferred item/activity, using the words “yes/no” in response to “Do you want ______?”, an emerging ability to imitate sign language, and an emerging ability to utilize a PECS communication board. Behaviors observed in the past have included screaming, hitting, scratching, charging, pushing, throwing, spitting, and refusal to follow
direction through remaining seated in the preferred activity/area. According to the results of a DP-3, he displayed an age equivalent (AE) cognitive functioning level of 1-10, a Physical AE of 1-10, an Adaptive Behavior AE of 1-6, Social-Emotional AE of 1-11, and a Communication AE of 1-6. These results suggest that Participant 1 had an overall average functioning age equivalent of 1.9 years old.

**Participant 2:** This participant was a 5 year, 11 month old male of Mexican descent. He was enrolled in kindergarten for the duration of this research and has a primary disability of Intellectual Disability with a secondary disability of Orthopedic Impairment. He displayed no spontaneous verbal behavior, and relied primarily on pointing, guiding, or using simplistic PECS communication boards to communicate his wants and needs.

According to the results of a DP-3, he displayed an age equivalent (AE) cognitive functioning level of 2-0, a Physical AE of 2-0, an Adaptive Behavior AE of 1-10, Social-Emotional AE of 1-4, and a Communication AE of 1-4. These results suggest that Participant 2 had an overall average functioning age equivalent of 1.8 years old.

**Participant 3:** This participant was a 7 year, 11 month old female of European descent. She was enrolled in 2nd grade for the duration of the research and her primary disability was Intellectual Disability with a secondary disability of Orthopedic Impairment followed by a tertiary disability of Deaf/Hard of Hearing. Her primary mode of communication was through the use of limited sign language, gesturing, and beginning concepts of using a PECS system to communicate. According to the results of a DP-3, she displayed an age equivalent (AE) cognitive functioning level of 2-0, a Physical AE of 1-7, an Adaptive Behavior AE of 1-10, Social-Emotional AE of 1-11, and a
Communication AE of 1-6. These results suggest that Participant 3 has an overall average functioning age equivalent of 1.10 years old.

**Participant 4:** This participant was an 8 year, 6 month old male of Mexican descent. He was enrolled in 2nd grade and his primary disability was Intellectual Disability. He communicated through various methods including eye gaze, vocalizations, and prompted single switch buttons to assist in communicating his wants and needs. His behaviors included engaging in self-injurious behaviors such as punching, head banging, and finger biting. Other behaviors observed by this participant included property destruction, kicking, yelling, intentional falling to the floor and crying, biting, grabbing, pinching, and pushing. According to a the results of a DP-3, he displayed an age equivalent (AE) cognitive functioning level of 1-2, a Physical AE of 1-3, an Adaptive Behavior AE of 0-7, Social-Emotional AE of 0-10, and a Communication AE of 0-8. These results suggest that Participant 4 had an overall functioning age equivalent of 0 years and 11 months old.

Staff who worked to assist in data collection, but not data analysis, all worked within the moderate to severe special education program and had been trained in methods of data collection, behavior modification methods, and functional skills training. These adults included a 24 year old male with direct training in behavior modification, a 23 year old female who had been trained in data collection, attended some behavior modification in-services, and was working towards her certificate in behavior analysis, a 43 year old female, and a 32 year old female who had worked within the moderate to severe special education setting and received on the job training in data collection, behavior modification, and best practices for working with students who experience severe intellectual delays.
All classroom staff who participated in this research were provided with specific training and modeling examples for data collection and with the behavior techniques that were identified and implemented. Each adult was assigned to a participant for intervention and data collection, and was also expected to provide backup assistance for data collection in the event of an absence of another adult during data collection periods. Additionally, I worked to collect and analyze data, provide training for the outlined procedures, and, finally, implement the identified behavior modification techniques. I had received training in data collection, behavior modification methods, and behavior modification theory. Additionally, I continued to receive support and supervision from a Board Certified Behavior Analyst (BCBA).

So that the identity of individuals in this research project was protected, participant numbers have been used in lieu of a name to describe the study participants.

**Procedures**

This experiment was conducted in two phases, including a functional assessment and baseline phase followed by an intervention phase. This allowed for proper identification of behaviors and selection of specific differential reinforcement procedures appropriate to each participant's need.

**Baseline and Functional Assessment**

During baseline, data was collected systematically across an initial period of 2 weeks. During this phase, a functional behavior assessment procedure was completed for each student during transition periods, meal times, and whole group instruction during
which behaviors had been observed informally prior to data collection. For this study, three data collection times were chosen as top priorities for all students enrolled in the study. Data was initially gathered during meal times including breakfast, lunch and snack, during transitions between class activities, and whole group instruction periods.

In each functional behavior assessment (FBA), information was first gathered through indirect and descriptive measures, including informal direct observation, completed ABC data charts, interviews with staff, and record review of prior behavior data. Additionally, the researcher completed a Motivation Assessment Scale (MAS; [Zaja, Moore, van Ingam, Rojahn, 2010]) for each participant. Data was taken on frequency of occurrence of each participant’s challenging behavior within the classroom setting during the identified time period. Settings outside the classroom (e.g., playground, restroom) were not tracked. Following this, the gathered information was synthesized and reviewed to develop a hypothesis about the function of the challenging behavior selected for intervention for each child.

The FBA results for Participant 1 (P1) indicated a pattern of screaming during transition periods, most notably during a transition from a preferred classroom activity to either a much higher preferred activity or non-preferred activity. Additionally, interviews with the staff correlated with ABC data indicated a higher frequency of screaming behaviors when P1 was presented with a schedule icon combined with the verbal prompt to “check schedule”. For the purposes of this study, screaming was operationally defined as any behavior in which the participant emitted a loud, high pitched noise lasting longer than 2 seconds and a transition was operationally defined as having a beginning point of saying “Check your schedule” or being presented with a cue card, and ending once the
new activity began. This included and accounted for latency between arriving at the
designated area and waiting for the activity to begin.

Upon data review, the clear antecedent for this behavior was presenting the
student with a schedule icon combined with a request to check his schedule. The
screaming occurred primarily in response to the verbal command as opposed to the
presentation of the schedule icon, which had not been presented consistently in
conjunction with the verbal command. Often times, the verbal command preceded
presentation of the icon by a few to several seconds. Other antecedents to the screaming
behaviors were noted during transitions after excited smiling and turning of P1’s body to
walk in the direction of the scheduled activity. Higher rates of screaming behavior
occurred consistently during transitions to activities that were highly preferred or non-
preferred. These transitions often included meal times, circle times, folder work times
and restroom periods.

To determine the maintaining functions of the screaming behaviors, a review of
reinforcement received was conducted. The function of P1’s behavior demonstrates two
separate functions. The primary function of P1’s behavior is to gain social positive
reinforcement (attention). Additionally, as noted during direct observation and ABC data,
other instances of screaming were maintained by automatic positive reinforcement when
transitioning to a highly preferred event or activity (such as lunch). That is, P1 screamed
as a result of sensory seeking behaviors.

The consequence analysis showed that 63% of screaming behaviors were
reinforced with positive social attention through a “shh” prompt, “quiet body” verbal
prompt, or the conversational equivalent of “I know, it’s time to go get lunch, P1!” The
data suggests that because P1’s screaming during transition behaviors were reinforced intermittently, the behavior was maintained.

FBA results for Participant 2 (P2) showed a high rate of leaving seat behaviors defined as P2 leaving his designated seat without adult consent and exiting towards the play area during a whole group circle period. P2 has a history of a limited ability to remain engaged in one task without the need to run or move. Most recently, his one to one aid has recorded periods of up 8 minutes of active engagement for highly preferred tasks, such as the iPad™ (trademark symbol needed?). Baseline data was recorded for a period of 2.5 weeks prior to intervention.

The antecedent for the seat leaving behavior included transition between the end of one song and the beginning of another song, discussion of calendar or theme skills, and a circle time lasting longer than 20 minutes.

The function of leaving the seat behavior was in order to escape the task demands for both academics and behavior. This was maintained by a temporary escape from those demands each time he successfully left the circle time area prior to an adult providing physical redirection. During the baseline data collection phase, P2 was given adult attention and redirection to his seat.

For Participant 3 (P3), the FBA presented 2 different behaviors of significance. The first behavior identified was also escape through seated behavior. This was defined as positioning her body to slide out of the chair when she felt she was done with an activity or event. Additionally, challenging behaviors during lunch time and snack time were noted. Challenging behaviors during meal times were defined as table pounding
with an open or closed fist, and spilling food on table via means of turning over her plate, bowl, or napkin containing food. Baseline data was collected across a 3 week period.

Upon discussion with the parent, P3’s primary Instructional Assistant and evaluation of long term risks and benefits, challenging behaviors at meal time were chosen for analysis and intervention in this study. FBA results indicated that the maintaining function of the food tipping and table pounding behaviors during mealtime were to gain positive social attention from caregivers in order to obtain more of a desired food or request access to a drink. Though P3 is able to indicate her desire for more food or water through adapted sign language, she was unable to first gain visual adult attention without presenting her challenging behaviors. A frequent antecedent to her meal time behavior was the withdrawal of adult attention in the classroom, such as when the adult sitting next to her turned to assist another student or struck up a conversation with another adult. Engaging in the challenging behaviors resulted in adult attention in 100% of occurrences. It was noted, however, during a meal time if there was not a staff sitting next to her, and she had unlimited access to her preferred food items, she refrained from engaging in her challenging behaviors.

The FBA completed for Participant 4 (P4) indicated most difficult and intense rates of behavior during the transition to be changed in the changing area. P4 was required to walk with a 1 to 2 handed support approximately 15 feet to the diaper changing area. During this period, P4 would engage in tantrum behavior every 1 to 2 steps. Tantrum behavior was defined as loud vocalizations, dropping to the ground, engaging in SIB including head banging and face punching, and aggressive grabbing of caregiver’s legs.
A review of direct observation notes, ABC data, and interviews with his one to one aide demonstrated the function of P4’s tantrum behaviors was to escape task demands of walking and changing through avoidance techniques. Once in the changing area, P4 was compliant and presented no further challenging behaviors in 90% of opportunities. FBA background did indicate a history of severe urinary tract and kidney infection requiring extended hospitalization in December 2012 and January 2013. An increase in tantrum behaviors were noted informally amongst classroom staff once P4 returned to the school setting. This suggested that a potential maintaining factor of tantrum behavior was maintained by a traumatic event in P4’s recent history. During baseline data collection, the staff member working with P4 blocked SIB, provided positive verbal prompting and positive physical reinforcement to reach the changing area.

Analysis of each FBA indicated that all participants in this study could benefit from the implementation of a Differential Reinforcement of Alternative (DRA) behaviors intervention.

**Intervention Phase**

Once the hypothesis for each participant was developed, differential reinforcement procedures combined with extinction were designed in order to reduce the challenging behaviors identified across all 4 participants. Additionally, it was determined that two participants (P2 and P3) may benefit from limited functional communication training. The individual FBA’s assisted in identifying antecedents to the challenging behaviors, alternative skills intended to replace the behaviors, and potential reinforcers that could assist in implementing behavior change. When designing the intervention, care
was taken to ensure that each new skill being introduced was functionally equivalent to the challenging behavior that was targeted for extinction with each participant.

The intervention selected for Participant 1 was DRA with Extinction (DRA/E) procedures. In order to reduce screaming behaviors during a transition to a new activity when prompted by a cue to check his schedule, Participant 1 was taught the alternative behavior of using a quiet body and happy hands. A quiet body was described as PI using varied facial expressions, vocal grunts or noises, and/or heavy breathing while happy hands were described as 2 clasped or clasping hands. To implement the DRA/E procedure, PI was given the non-verbal cue to check his schedule by being presented with a schedule icon. Due to the verbal cue “check schedule” functioning as an antecedent to the screaming behavior, it was decided to eliminate the verbal cue. Upon checking his icon, the individual guiding him would prompt him with an initial verbal reminder to keep a quiet body and calm hands. For every 15 second interval in which he was able to keep a quiet body/calm hands and did not display screaming behaviors, he was rewarded with an M&M or cracker. As P1 indicated readiness to scream as observed by deeper, louder breathing and stunted walking, he received a verbal prompt of “quiet body, happy hands P1”. Presentation of the reinforcer continued to occur if no scream followed by the end of the 15 second interval. Screaming behavior was ignored during this transition.

For Participant 2, a DRA procedure combined with both Extinction and Functional Communication Training (FCT) procedures were introduced. In order to reduce leaving seat behavior, P2 was taught to sign “finished” when he needed a break, and was given a 2 minute break. Additionally, for each 45 second period that he remained
seated with no leaving seat behaviors he was presented with a varied food reinforcer. If P2 left the circle time, he was redirected with a physical redirection to his seat, as well as a visual and verbal cue to sit. The interval timer was reset. When P2 remained in his seat, he continued to be rewarded at a 45 second interval rate.

For Participant 3, intervention strategies focused on using a DRA method with Extinction and FCT. The identified alternative behavior to be taught was using FCT as a method of teaching P3 to request attention to receive more food. One the single switch button was placed and its use taught directly, table hitting and food tipping were initially redirected to the button. Once P3 demonstrated the ability to press the button unprompted, all challenging behaviors were ignored, and button hitting behaviors were reinforced with P3 receiving a piece or bite of the desired food.

For Participant 4, and DRA with Extinction procedure was chosen as a proper intervention strategy. Using a two on one procedure, P4 was prompted to walk to the changing area by first being presented with a visual combined with a verbal prompt by adult 1, he was then assisted in standing an walking by adult 2 (his one on one). For every 2 steps with no challenging behavior, he was reinforced with whip cream. Additionally, he was provided with positive reinforcement by adult 2 for each step taken. When a tantrum or SIB occurred, it was ignored until P4 maintained a quiet body for 3 seconds. Adult 2 left with the whip cream upon P4 entering the changing area.

**Dependent Variables**

Two dependent variables were investigated in this study: challenging behavior and appropriate behavior. For the purposes of this study, the dependent variable of
challenging behavior was generally defined as any behavior that disrupted normal classroom activities. For Participant 1 challenging behavior was defined as screaming behaviors during transition to an outside activity. For Participant 2 challenging behavior was defined as leaving the seat. This was defined as any instance of leaving a seat without adult consent during whole group circle time activities and heading towards the play area. The identified challenging behavior for Participant 3 was defined as any instance of table banging or dumping of food during a meal time, and for Participant 4 challenging behavior was defined as any tantrum behavior occurring after standing up and hearing the prompt “time for bathroom”. Tantrum behaviors included screaming, yelling, crying, pinching, head banging, dropping to the floor, and self-injurious punching.

For the dependent variable of appropriate behavior, the general definition was behavior that was compliant with socially appropriate norms. For Participant 1 appropriate behavior was defined as maintaining a quiet body with quiet, or happy, hands while refraining from screaming behaviors. Appropriate behaviors for Participant 2 was defined as appropriate remaining in seat during circle time, combined with requesting, through sign language, a break prior to leaving his seat. For Participant 3, appropriate behavior was defined as requesting attention through the use of a single button switch along with refraining from food tipping and hitting the table. Finally, appropriate behavior for participant 4 was defined as walking to the changing area without displaying tantrum behaviors. This included walking with assistance, and taking multiple steps without exhibiting SIB or dropping to the ground.
Data Sources/Instruments

Data was collected for each participant in each phase of the study in the form of interval recording and ABC charting methods. For example, in a 25 minute circle time, data was recorded for P2 in one minute intervals. Each interval received a checkmark if the behavior was demonstrated at any time during the interval. Additionally, data was tracked using a teacher made form noting the quantity of independent alternative behaviors produced during baseline and intervention phases.

During the functional assessment phase of the baseline condition, Antecedent-Behavior-Consequence (ABC) data was collected using a narrative ABC chart. The raw data from all phases was collected on teacher made forms, and Microsoft Excel™ was used to track and monitor data points. In Excel, participant data was aggregated and then placed into graphs highlighting baseline and intervention data points.

Data Analysis

In order to conduct proper data analysis, all data points were charted individually on a line graph through Microsoft Excel™. The line graph contains differentiation of points between baseline period and intervention period.

Based on the data that was presented within the graph, a thorough analysis and composition of data points was conducted in order to determine the effectiveness of the intervention on each individual, synthesize the data of all participants, and guided answers to the research question.
Inter-observer Agreement

A second observer independently scored 25% of all sessions. Inter-observer agreement for acceptance was calculated by dividing the number of agreements in data collection by the number of agreements plus disagreements and then multiplying by 100%. The overall mean inter-observer agreement for DRA interventions was 95% (range, 80%-100%) for Participant 1; 95% (range 70%-100%) for Participant 2; 97% (range, 87%-100%) for Participant 3, and 90% (range, 70% to 100%) for Participant 4. The mean inter-observer agreement for the percentage of intervals with challenging behavior was 90% (range, 70%-100%) for Participant 1; 95% (range 85%-100%) for Participant 2; 80% (range, 60%-100%) for Participant 3, and 95% (range 90%-100%) for participant 4.
CHAPTER 4

Results

This study sought to identify challenging behaviors in 4 students identified as having severe intellectual disabilities and subsequently apply commonly used methods of behavior change interventions to effectively replace the challenging behavior with a socially acceptable behavior. The purpose of this study was to determine whether the use of a Differential Reinforcement of Alternative behaviors procedure using information derived from a functional assessment procedure would result in a decrease of challenging behaviors and an increase of compliant behaviors. This study also evaluated the effectiveness of conducting a functional assessment procedure to determine maintaining functions of challenging behaviors. Results are reported from all 4 participants (See Figures 1 & 2).

Participant 1

During baseline data collection, data was collected across 7 naturally occurring session across 4 days at a rate of approximately 2 transition periods per day. Data was recorded during one opportunity in the morning and one opportunity in the afternoon. There was one episode of non-recorded data due to a minimum day at school. During this phase, Participant 1 displayed an average of 6.4 screaming behaviors per transition. The minimum number of screams during a transition was 3, and the highest number was 9 instances of screaming. During intervention, Participant 1 screamed at an average rate of 1.6 times per tracked transition period. During intervention phase, the most instances of behavior occurring was 4 screams per transition, and lowest rate recorded was 0 screams.
Participant 1 displayed a reduction in screaming behaviors during transition by an average of 75% during the intervention phase.

**Participant 2**

During the initial baseline procedure, data was collected for Participant 2 on the number of times he attempted to leave his seat during a whole group instructional circle time. During baseline phase, Participant 2 exhibited an average of 9.2 attempts to escape per 25 minute circle time. The range of behaviors exhibited per session was between 2 to 19 attempts to leave his seat. Data was collected during both morning circle periods as well as afternoon circle periods. Once the intervention procedure was introduced, Participant 2’s average rate of leaving seat behaviors were reduced to 1.7 attempts to escape his seat during circle time. The range of behaviors exhibited during the intervention phase was between 0 and 5 attempts. Participant 2 successfully reduced the amount of escape from seat behavior by an average of 82% during the intervention phase.

**Participant 3**

Data collected for Participant 3 during baseline phase revealed an average rate of food tipping and table slamming behaviors 5.7 times per meal period. Meal periods included snack and lunch. Participant 3 exhibited a range of 0-12 challenging behaviors during the baseline phase. Once the intervention procedures began, Participant 3 displayed a range of 0 to 8 challenging behaviors per meal time, with an average rate of 3.3 challenging behaviors per meal time. Participant 3 displayed an average overall reduction of 43% in challenging behaviors during meal times at school.
Participant 4

During baseline phase, Participant 4 exhibited an average of 8.7 behaviors per transition opportunity to the in class restroom. He displayed an overall range of between 6 and 13 behaviors per session opportunity. Once the intervention was introduced to Participant 4, he displayed an overall average rate of challenging behaviors of 4.5 per session. He displayed an overall range of between 2 and 9 behaviors per transition opportunity or session. Participant 4 displayed a 48% reduction of behaviors during transitions to the restroom periods.

Summary

The data collected during both baseline and intervention show a consistent response from all participants. Each participant demonstrated a reduction in challenging behaviors during intervention phase, and an increase in replacement behaviors across the intervention period. While rates of behavior during intervention retained some variability, each participant reduced their average rate of behaviors per data recording session by a minimum of 43%. This indicates a high probability of the effectiveness of using a DRA procedure combined with extinction to reduce challenging behaviors in students with severe intellectual disabilities.
Figure 1: Number of Challenging Behaviors
Figure 2: Number of Appropriate Responses
Chapter 5

Discussion

This study sought to evaluate the effectiveness of 1) conducting a functional behavior assessment on individuals identified as having severe disabilities to determine the maintaining functions of challenging behaviors and 2) subsequently using that data to design intervention approaches to reduce the identified challenging behaviors and increase the rates of appropriate behavior. Research has shown that completing an FBA to identify maintaining functions of challenging behaviors can help inform selection of appropriate behavioral intervention strategies to assist in reduction of challenging behaviors (Tarbox et al., 2009). Often times, a differential reinforcement procedure is employed as an effective technique to reducing challenging behaviors (Cooper, Heron & Heward, 2007). This multiple baseline across participants design examined the effects of implementing a differential reinforcement procedure of alternative behaviors combined with extinction. Participants were four students with severe disabilities who displayed consistent challenging behaviors. During the functional assessment and baseline phases, all students demonstrated challenging behaviors with a maintaining function of attention or escape. During baseline phase, all students were given generalized verbal praise for appropriate responses, with varying responses to challenging behaviors, ranging from physical redirection to planned ignoring. Each student displayed a consistent pattern of challenging behaviors throughout the FBA and baseline data collection phases. During the intervention phase, each student was targeted with a specific DRA method, including extinction and for two students an added component of functional communication training (FCT). Challenging behaviors were ignored, while appropriate responses and
alternative behaviors were rewarded with both verbal and tangible reinforcements. During intervention, each student displayed a reduction in challenging behaviors and an increase in the appropriate replacement behaviors. While there was variability in the data, each participant exhibited an overall downward trend in challenging behaviors and an upward trend in appropriate requesting/response behaviors.

These data support earlier findings that conducting a functional behavior assessment using data collection methods such as ABC observation charts, frequency counts, and interview assessments can lead to proper identification of maintaining functions of behavior and guide decisions for appropriate behavior intervention methods (Athens & Vollmer, 2010). Additionally, the use of a DRA procedure combined with extinction methods can result in an increase in desired, or alternative, behaviors while simultaneously evoking a decrease in challenging behaviors (Bambara & And, 1994).

During the baseline and FBA data collection period, four participants were during circle time, meal times (breakfast, snack and lunch), and whole group instruction periods to determine prevalence and rates of challenging behaviors. Both ABC data and frequency counts were taken on each student. Additionally, a DP-3 assessment was completed to assess current cognitive functioning levels, and guide selected target behaviors and interventions.

Participant 1 displayed a pattern of screaming behaviors during prompts to check schedule and completing a transition to the designated activity. FBA analysis identified two maintaining functions of his screaming behaviors. The primary function was to access attention, while other periods of screaming occurred as a result of automatic reinforcement or sensory input. Based on the FBA results, a differential reinforcement
procedure of alternative behaviors (DRA) combined with extinction was chosen as an appropriate intervention. During intervention, Participant 1 was presented with a nonverbal prompt to check his schedule. Screaming behaviors were ignored, while the alternative behavior of a quiet body and happy hands were reinforced with edible reinforcements at a rate of 1 per 15 seconds. During intervention, Participant 1 displayed a reduction of screaming behaviors by an average of 75%, indicating high effectiveness of a dense reinforcement schedule combined with verbal prompting as an appropriate intervention method.

Results of the FBA for Participant 2 indicated that leaving seat behavior during whole group instruction occurred as a result of desired escape from activity. This behavior was maintained by temporary escape of whole group demands and access to preferred play areas. An intervention procedure of DRA combined with Extinction along with functional communication training was chosen to assist in reduction of seat leaving behaviors. During the intervention period, Participant 2 was rewarded with edible reinforcers for each 45 second period of in seat behavior. When out of seat behavior occurred, Participant 2 was redirected to his seat, and the interval time was reset. Additionally, Participant 2 was taught to request a break from whole group activities through the use of sign language (to sign “break”). When he appropriately signed for a break, he was given a two minute break from the whole group activity. Data collection during the intervention phase indicated an overall reduction in inappropriate seat leaving behavior at a total reduction rate of 82%.

FBA data for Participant 3 revealed that common challenging behaviors occurred during meal times. Participant 3 would demonstrate hitting table and plate dumping
behaviors during a meal time. FBA data results identified a maintaining function of attention seeking behavior. The challenging behaviors occurred most frequently when adult staff were not attending to her. Based upon FBA and baseline results, a DRA with Extinction and Functional Communication Training procedure were identified as appropriate intervention strategies. Participant 3 was provided with a single switch button at meal time to request attention from an adult. Additionally, table hitting and plate dumping behaviors were ignored. When Participant 3 appropriately requested adult attention, she was rewarded with a preferred food item (nuts or crackers). This was designed to create functional communication skills and reduce challenging behaviors. During intervention, Participant 3 quickly learned how to access the given button device to request adult attention and receive a preferred food. Intervention data points indicated a continuing downward trend of table hitting and plate dumping behaviors at an average of 43%, with a concurrent increase in the alternative, FCT behavior.

Participant Four displayed many challenging behaviors during a transition to the bathroom. His challenging behaviors included self-injurious behaviors, tantruming, and aggressive behaviors. FBA results indicated a maintaining function of the challenging behaviors as an escape procedure from diaper changing. The identified appropriate intervention, based on FBA data, was a DRA procedure combined with Extinction. Prior to transition to the changing area, Participant 4 was presented with a large picture visual of the changing area combined with a verbal warning “P4, it's time to go to the bathroom”. Following presentation of the visual and verbal prompt, Participant 4 was given a dense rate of reinforcement. For each two steps towards the changing area, he was rewarded with an edible reinforcer (whip cream). Challenging behaviors were
blocked and ignored. During the intervention data collection phase, Participant 4 reduced his episodes of noncompliant behavior by an overall rate of 48%. Data did indicate that when an unfamiliar person attempted to work with the intervention, there was an increase in challenging behaviors. This was corrected when the familiar person implemented the procedures.

The findings indicate that conducting a functional assessment procedure is an effective measure of identifying maintaining functions of challenging behaviors in individuals with severe disabilities, and is able to inform selection of appropriate interventions for behavior change procedures. Additionally, the intervention results indicate that implementing a differential reinforcement of alternative behaviors procedure combined with extinction and/or functional communication strategies are an effective intervention for the identified population.

Limitations

While results support findings in other studies, claims about the effectiveness of this approach can’t be made for all students with severe disabilities. Due to the single subject design with a small number of participants, these results have limited ability to apply to a larger population. Additionally, this study only looked at the effectiveness of behavior support strategies and not at maintenance or generalization. Reinforcement thinning schedules were not introduced to any participants within the study period, likely resulting in higher rates of compliance. In order to test long term effectiveness and generalization of appropriate behaviors, administration of reinforcers would need to be faded with continued data collection and maintenance probes.
Implications for Future Research

The findings from this intervention procedure implicate a variety of avenues for future research. Future research should look at expanding the identified behaviors as well as a wider range of students with severe disabilities. Additionally, future research should look at the effectiveness of the intervention on the participant’s overall quality of life and the ability to generalize the taught replacement behaviors across multiple settings. Finally, future research should place emphasis on reinforcement thinning schedules combined with a plan for long term maintenance probing and long term effectiveness.

Implications for Practice

The implications of these findings for practitioners indicate the need for careful planning and scrutinization of available resources to conduct and complete an FBA and subsequently implement a DRA/E procedure with or without and FCT component. Future practitioners could benefit greatly from the use of a DRA technique to reduce challenging behaviors for students with severe disabilities. Within the classroom, the teacher would need to have their staff assist in completing ABC and frequency counting charts to identify challenging behaviors within a particular student or students. Once that data is collected, they could then use that data to identify greatest areas or times of challenging behaviors, and create a DRA procedure to address the behaviors. This could help in the overall structure and functioning of the classroom environment.

Conclusion

This study found that the use of Differential Reinforcement of Alternative Behaviors combined with Extinction, and where appropriate, Functional Communication
Training, resulted in a reduction of challenging behaviors in individuals with severe disabilities. Proper intervention techniques were identified through the use of baseline data and analysis of a functional behavioral assessment procedure. This study demonstrated a decrease in behaviors of all participants, and an upward trending increase in appropriate behaviors. This indicated a clear effectiveness of the use of ABA methods that are commonly implemented with individuals with Autism for individuals with severe disabilities. This study provides preliminary evidence that FBA analysis and subsequent intervention using DRA with Extinction and FCT methods can be effective forms of behavior change for individuals with severe disabilities.
References


