FUNCTIONAL BEHAVIOR ASSESSMENT IN SCHOOL SETTINGS:
FROM VALID ASSESSMENT TO SUCCESSFUL INTERVENTION

A Project

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by
Bryan Lance Johnson

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by

Bryan Lance Johnson

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Department of Special Education, Rehabilitation, School Psychology, and Deaf Studies
Abstract

FUNCTIONAL BEHAVIOR ASSESSMENT IN SCHOOL SETTINGS:
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Recent studies suggest that current perceptions regarding the validity of typical procedures utilized in functional behavior assessment may be inaccurate. In particular, descriptive assessment procedures appear to be heavily biased toward indicating a maintaining contingency of attention, and have been shown to have less validity than indirect measures such as the Functional Analysis Screening Tool. Given these findings, school personnel responsible for conducting functional behavior assessments should have access to alternative assessment procedures with improved validity. Experimental functional analyses offer one method that may be acceptable; this project seeks to develop a presentation that will provide participants with training in several alternative assessment procedures based on the experimental model for accurate identification of behavioral function through systematic manipulation of environmental variables.

_______________________, Committee Chair
Catherine Christo, Ph.D.

_______________________
Date
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Chapter 1

INTRODUCTION

Background of Problem

A report released in 2009 by the U.S. Government Accountability Office documented more than 100 allegations of death or abuse of children as a result of mismanaged responses to challenging behavior in educational settings. The investigation found that many of these students did not have specific treatment plans detailing how to respond to their challenging behaviors. This review reveals the significance of effective behavior supports based on functional behavior assessments for students with challenging behaviors. Federal legislation (Individuals with Disabilities Education Improvement Act (IDEA), 2004) has adopted recommendations from decades of research on addressing behavior challenges, stating that students who demonstrate behaviors that interfere with learning must receive behavior supports that are based on a functional understanding of that behavior. In other words, educators must first understand the purpose of a student's challenging behavior, and then develop strategies that allow the student an alternative means to meet that purpose. In order to accomplish this, professionals are to engage in assessment practices that develop conclusions regarding the function of the student's behavior. Failure to accurately identify the function of a student's behavior due to the absence of valid assessment practices may result in the implementation of strategies that do not meet the student's behavioral needs, and are thus unlikely to be effective in reducing the specific behavior challenge. It is this understanding that has prompted legislators to include requirements for functional behavioral assessments for students receiving special education supports.

Statement of Research Problem

Current behavioral assessment practices in education continue to rely on an approach that recent research suggests possesses weak validity. Many training programs and instructional
manuals on functional behavior assessment focus primarily on descriptive assessment, a
procedure that has been demonstrated to have a heavy bias toward implicating behaviors as
maintained by attention from others (Hall, 2005; Thompson & Iwata, 2007). Further, the
professional experience of this author has revealed that an overwhelming majority of behavior
support plans developed by school personnel identify a minimum of two functional hypotheses
for a single behavior, and that strategies defined within the support plan are contraindicated for at
least one of those identified functions. In a 2005 review of research on functional behavior
assessments, Handley and McCord indicated that multiple functions were identified in only 15%
of the cases reported. While it may be possible for a student to engage in challenging behavior
with more than one function, at the very least, behavior support plan strategies need to be
developed that directly link to each function in a way that does not contradict other identified
functions.

**Purpose of the Study**

The purpose of this project is to provide training in evidence-based behavior assessment
practices to school personnel responsible for conducting behavior assessment. Several assessment
models will be presented that allow for application in a variety of settings, and can be
implemented in accordance with the idiosyncratic needs of different educational teams (e.g., staff
availability, time, location of assessment). Through this training, participants will learn current
research on different behavior assessment procedures, how to conduct a variety of functional
behavior assessments that demonstrate strong validity, the essential components of an effective
behavior support plan, and how to link assessment results to each component of a behavior
support plan. This training will be provided via an interactive and hands-on workshop model.
Definition of Terms

Function of Behavior

A hypothesis stating why, or for what purpose, an individual engages in a specific behavior. Research in Applied Behavior Analysis typically recognized four primary functions of behavior: (a) access to attention from another person, (b) access to a tangible activity or item, (c) escape or avoid a task or setting, and (d) automatic reinforcement, or that the behavior directly produces a preferred outcome in without being mediated by another person.

Functional Behavioral Assessment

A set of assessment procedures used to develop a hypothesis for the function of a specific behavior targeted for intervention. While a Functional Behavioral Assessment (FBA) does not necessarily specify which strategies constitute a FBA, the procedures generally considered include indirect assessments, descriptive assessments, and experimental functional analyses.

Indirect Assessment

Procedures for gathering information regarding a behavior that rely on third-party knowledge of the behavior; indirect assessments do not require the behavior to be observed by the assessor. Such procedures commonly include various rating scales, questionnaires, and interviews. Assessors solicit information from other individuals with first-hand knowledge of the behavior targeted for assessment. Depending on the information sought and collected via indirect assessment approaches, a hypothesis regarding the function of the behavior may or may not be developed.

Descriptive Assessment

Procedures for gathering information regarding a behavior via direct observation of the behavior as it occurs within the natural setting. Descriptive assessment procedures may be
narrative or structured in nature, and require the person completing the assessment to observe the behavior and to document information regarding its occurrence (e.g., frequency, duration, antecedent and/or consequence variables observed). Depending on the information sought and collected via descriptive assessment approaches, a hypothesis regarding the function of the behavior may or may not be developed.

**Experimental Functional Analysis**

A systematic manipulation of environmental variables designed to identify those variables that are specifically responsible for eliciting and maintaining a targeted behavior. Experimental functional analysis was designed for the sole purpose of identifying the function of the behavior targeted in the assessment. First developed for use in clinical settings (Iwata, Dorsey, Slifer, Bauman, & Richman, 1982/1994), Experimental Functional Analysis has been the subject of a large number of studies over the past several decades, and is now considered to be the “gold standard” by which all other FBA approaches are measured (Cooper, Heron, & Heward, 2007). Also referred to as Functional Analysis.

**Limitations**

Although research on experimental functional analysis dates back more than 30 years, comparative analysis of indirect and descriptive assessment procedures is relatively new and small in scope. These studies typically include a small number of participants; the acceptability of findings increases as a preponderance of studies yield consistent results. While all of the research that has investigated the relationship between different behavior assessment procedures has drawn similar conclusions, this is an area of study that will benefit from continued exploration.

A second criticism directed at research in this area focuses on the clinical population from where participants are often selected. Early research in experimental functional analysis was conducted in controlled clinical settings that contrast the presence of myriad variables in typical
classroom settings, and with participants with severe functional and behavioral limitations whose behavioral needs may not generalize to students in public educational settings. However, recent research is beginning to respond to this criticism, with a focus of developing behavior assessment procedures specifically for school settings (Bloom, Iwata, Fritz, Roscoe & Carreau, 2011).

**Justification**

The significance of developing capacity among educational professional to conduct valid functional behavior assessments reaches beyond closing the gap between research and practice, although federal and state regulations continuously place greater emphasis on meeting this demand. From a practical standpoint, every student deserves to have his or her educational needs addressed by somebody who is trained in valid educational strategies. The 2009 GAO report details the worst-case scenario for when educators are not trained in effective behavior support strategies (United States Government Accountability Office). When evidence exists that one approach works and another does not, it is difficult to justify continued use of the latter. There is no increased cost or demand in time associated with implementing a more valid behavioral assessment approach; more likely is that there are fewer costs and less time required when assessment results are accurate the first time. More importantly, students are given a better opportunity to overcome behavioral challenges and become meaningful participants in their educational and social settings when educators have a functional understanding of why a specific behavior occurs accompanied by a set of strategies designed to address that identified need.
Chapter 2

REVIEW OF THE LITERATURE

The Need for Behavior Assessment

Changes to special education laws at both the state and federal level have placed an increased emphasis on addressing student behavior challenges through the use of positive behavior supports based on functional behavior assessment (Hughes Bill, 1990; Individuals with Disabilities Education Act, 2004). In addition to legal mandates for assessment and intervention for challenging behavior, one of the top reasons teachers consistently give for leaving the field has been student behavior (Hastings & Bham, 2003; Zabel & Zabel, 2002). According to a study by the National Center for Education Statistics (Kaiser, 2011), nearly 65% of teachers who left the field during the 2009-2010 school year reported leaving for reasons other than not having their contract renewed. Other surveys have identified that the top three reasons teachers leave the profession are dissatisfaction with school administration/policies, lack of career opportunities, and student behavior, with over 53% of teachers surveyed reporting that their students are not well behaved (Office of Program Policy Analysis and Government Accountability, 2007). While it would be speculative to suggest how many of these teachers would opt to continue in the field of education if additional support for addressing behavior in the classroom was available, it is at least fair to point out that it is an area of concern for teachers and needs to be addressed.

Classroom and school-wide positive behavior management approaches have become more common, as programs such as School-Wide Positive Behavior Interventions and Supports (Positive Behavioral Interventions and Supports, 2009) take advantage of a move toward Response to Intervention approaches for both academic and behavior interventions. And while these represent a positive step toward a consistent and evidence-based approach to managing behavior needs at the school site level, such programs are designed to work at the 1st Tier, or
preventative level, of intervention. As the intensity of behavior increases, or as student behaviors demonstrate resistance to change with Tier 1 interventions, more specific and individualized approaches become necessary. In the absence of more intensive intervention, behavior challenges may escalate to extremely disruptive or even dangerous levels. At this point, schools must deal with these severe behaviors that require more specialized support than what is available from preventative models.

The risks associated with not doing anything to improve how behavior challenges are addressed are far too great to ignore. Several recent reviews of schools’ responses to severe behaviors have identified that staff resort to dangerous, and at times deadly, reactive strategies. In a report completed by the U.S. Government Accountability Office (2009), members of the committee reviewed complaints and court rulings across the United States which alleged multiple cases of physical and emotional abuse suffered by students at the hands of educators who simply did not have a better strategy for dealing with behavior challenges. In the report, the GAO identified hundreds of cases alleging abuse and even death as a result of improper physical responses to challenging behaviors spanning the previous two decades. One of the most concerning findings of this report is that educators resorted to physical restraints and improper seclusion in response to minor behavior challenges, such as noncompliance to teacher instructions. Although most states in the U.S. have some legislation that outlines specific circumstances for when emergency intervention strategies can be employed (31 states had some law at the time of the report), the cases identified in the GAO report stretched across states without regard to the existence of such legislation.

A similar review was published by The Counsel of Parent Attorneys and Advocates, Inc. (2009), examining the details surrounding complaints of abuse and death of individuals in school settings due to improper use of emergency behavior response procedures. Of 155 cases that were
reviewed, 71% were reported to have no positive behavior supports in place. Again, many of these cases did not occur in response to dangerous student behaviors, but were reactions to minor disruptive or defiant behavior. Proper training in when and how to use emergency reactive procedures such as restraint and seclusion may have eliminated these reactions and saved the lives of the victims; training in behavior assessment and positive behavior supports could have given these educators appropriate tools for improving student behavior and prevented consideration of physical restraint altogether.

States such as California (Hughes Bill, 1990) have passed legislation on the use of emergency reactive procedures, and have also specified certain conditions when functional behavior assessments must be conducted. Although indicated in the Individuals with Disabilities Education Act (2004), no federal legislation specifies procedures that constitute functional behavior assessment. California's Hughes Bill delineates some core features of the assessment process, but refrains from outlining the exact manner in which functional assessment must be conducted. Nonetheless, both federal and state education laws specify the need for positive behavior supports derived from functional behavior assessment for students whose behavior interferes with their learning or the learning of others.

**Principles of Behavior**

While human behavior has been a topic of study going at least as far back as ancient philosophers, the introduction of conceptualizing behavior as a function of an organism's interactions with the environment, rather than personality traits and states of consciousness, generally is attributed to the work of John Watson, as he argued that objective study of behavior should consist of direct observation of the relationship between environmental stimuli and the responses they evoke (1914). The idea was further refined when B.F. Skinner published *Behavior* in 1938, a summary of his laboratory research. In it, Skinner promoted the idea that behaviors are
shaped by the environmental consequences that follow, and asserted that behavior can be influenced by the altering of antecedent and consequent events. In the decades that have followed, an entire field of study has been dedicated to defining the nuances of these basic principles and applying them to everyday behavioral challenges in clinical and applied settings. Today, these once radical ideas are now the basis of everyday practice in dealing with behavior challenges in schools; federal guidelines for special education (Individuals with Disabilities Education Act, 2004) state that positive behavior supports must be considered to address student behavior that interferes with learning. Positive behavior supports are further described as interventions to address challenging behavior that relies on principles of reinforcement and a functional understanding of the behavior (Heumann & Warlick, 2001).

The foundational elements of interventions based on principles of behavioral learning theory include reinforcement and punishment. At its core, learning occurs when an individual intentionally engages in a behavior in order to access a desirable environmental outcome, or to avoid an undesirable outcome. These outcomes, based on their effect on the individual's behavior, have either a reinforcing or punishing effect. Further, the strength of the effect that a consequence has on a particular behavior is a function of the schedule (probability and/or quantity) by which the consequence is produced. Proper behavior assessment and behavior intervention must account for each of these concepts in order to achieve the intended change in behavior.

Reinforcement and punishment are terms that refer to contingencies to a behavioral response that change the probability of that behavioral response occurring in the future under similar circumstances. While reinforcement affects behavior by increasing the probability of that behavior occurring again, or strengthening the behavior, punishment decreases the probability of, or weakens, the behavior. These contingencies can be further categorized by the manner in which the consequence occurs, as either the addition or removal of a stimulus. If the consequence
constitutes the addition of some stimulus, then the consequence is referred to as a positive contingency. Conversely, a consequence that is the removal of some stimulus is a negative contingency. Note that the terms positive and negative do not refer to the effect of the consequence on behavior, but is solely a description of the internal properties of the consequence. As such, both reinforcement and punishment can occur as positive or negative contingencies. Thus, negative reinforcement is an outcome that strengthens the behavior that produced it and constitutes the removal of some stimulus, and positive reinforcement is an outcome that constitutes the addition of some stimulus that strengthens the behavior that produced it. Positive and negative punishment occur in the same way, except that the effect on behavior is a decrease in the probability of that behavior occurring in the future (Cooper et al., 2007).

Figure 1

Positive/Negative Contingency Matrix

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<th>Reinforcement</th>
<th>Positive</th>
<th>Negative</th>
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<td></td>
<td>Addition of a stimulus that increases the future probability of a behavior</td>
<td>Removal of a stimulus that decreases the future probability of a behavior</td>
</tr>
<tr>
<td>Punishment</td>
<td>Addition of a stimulus that decreases the future probability of a behavior</td>
<td>Removal of a stimulus that decreases the future probability of a behavior</td>
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Equally significant, but perhaps less commonly understood, are the effects that different schedules of reinforcement have on behavior. While learning is believed to occur when an individual intentionally acts to achieve a contingent consequence, most contingent consequences do not follow every single instance of a particular behavior. Students do not get called on every time they raise their hand in class, studying for a test does not always result in getting an “A” (for most people), and putting a nickel in the slot machine does not always result in hitting the jackpot. These are examples of intermittent schedules of reinforcement (two or more responses required before reinforcement is delivered), which typically produce higher rates of behavior than
continuous schedules (reinforcement delivered after each response) even though the “pay-out” appears to be less. While continuous reinforcement is important during the initial stages of learning in order to make the contingent relationship between a behavior and the consequence salient and facilitate learning, prolonged implementation of a 1:1 payout schedule will produce a low level of the behavior. Essentially, once the individual learns that the reinforcing consequence will occur after every instance of the target behavior, the behavior only occurs when the individual wants or needs that outcome. Higher rates of behavior will occur if the schedule is thinned (becomes increasingly intermittent) so that more instances of the behavior are required to produce the consequence. Intermittent schedules that are variable in the response requirement to result in reinforcement can achieve the highest and most stable levels of behavior, as the individual cannot predict when reinforcement will occur. Consider, again, the slot machines. The behavior of inserting a nickel and pulling the lever can be observed at very high levels (until the cost of nickels begins to outweigh the benefit of an unpredictable payout), as the gambler knows not how many more times before the next jackpot – it could always occur on the next pull (Cooper et al., 2007).

**What is Behavior Assessment?**

Prior to the era of functional behavior assessment, general behavioral principles were used to treat challenging behaviors in children and adults without a true understanding of the purpose, or function, aberrant behavior served for individuals. Instead, basic principles of reinforcement and punishment were employed in an effort to change the way a person behaved to adapt to the expectations of the environment. This generic approach to effecting behavioral change was (and is still) fundamentally limited in several ways: (a) providing arbitrary rewards and punitive consequences ignores the desires and/or needs communicated by the individual engaging in the target behavior; (b) nonfunctional contingencies may present challenges with
withdrawing intervention strategies, as the individual has not been taught compensatory behaviors to demonstrate in place of the target behaviors in order to achieve the same outcome; (c) nonfunctional contingencies may increase target behaviors if the intended punishment actually serves the same purpose as the target behaviors, thereby inadvertently reinforcing the target behavior (e.g., if “time-out” is intended as punishment when the function of the behavior is actually escape from the situation); and (d) implementers attempt to identify which strategies will be effective through a process of “trial and error,” which at best delays progress, and at worst makes the problem worse. By identifying the functional purpose of an individual’s behavior, intervention strategies can be developed to address the antecedent and consequent events, as well as acceptable alternative behaviors that can allow the individual to meet his or her needs that are currently being expressed by the target behaviors.

Current Behavior Assessment Practices in Schools

Fundamental to improving the response to challenging behaviors is increasing the knowledge base among educators regarding the development of sound interventions that are rooted in evidence-based practices. The first steps in developing intervention strategies are identification and assessment of the problem to be addressed. Understanding the process for behavioral intervention through the same lens that educators use regularly for academic interventions moves the conversation in the direction of constructive problem-solving. Functional behavior assessment is typically broken down into three different types or levels of assessment: indirect assessment, descriptive assessment, and experimental analysis (or functional analysis) (Cooper et al., 2007; O'Neill et al., 1997).

Indirect assessment procedures involve measures that report perceptions or beliefs about the target behavior by individuals who have observed the behavior, but do not require direct observation of the student or the behavior. Examples of indirect assessment include rating scales
and interviews, administered by the assessor and completed by individuals familiar with the behavior such as teachers, parents, and in some cases, the student. Advantages of indirect assessment include the efficiency with which they can be completed, and direct observation of the target behaviors is not necessary, as the interviewer relies on the experiences of an interviewee with direct knowledge of the target behaviors and the student. However, indirect assessment procedures are generally considered to be highly subjective and less reliable than direct observation and assessment (Cooper et al., 2007).

Descriptive assessment is the process of recording information regarding environmental antecedents and consequences through observation of the individual in the natural setting. Originally described in 1968 as a means to “describe interactions between behavioral and environmental events” (Bijou, Peterson, & Ault, p. 175), the procedure has since become a cornerstone of behavioral assessment, perhaps misguidedly so. Assessors document what is observed to occur prior to and after the behavior. This continues until a pattern of environmental contingencies is revealed, which is then the basis for interpretation. This method is commonly recommended due to the objective nature of observation and data collection – this is a process that does not rely on an individual's perceptions, but that strictly documents events as they occur. Another characteristic of descriptive assessment that assessors find favorable is that it provides for an understanding of all the environmental features that may be influencing behavior. Limitations of this approach include the amount of time required to gather a sufficient sample of behaviors that allows the assessor to develop a functional hypothesis, and a lack of control over environmental variables. This procedure relies on correlations between behaviors and events, but does not test for causal control (Bijou, Peterson, & Ault, 1968).

Extensions of traditional descriptive assessment procedures have been developed by some researchers in an effort to make the process more objective. One example comes from the
work of Vollmer, Borrero, Wright, Van Camp, & Lalli (2001), where documentation of behavioral events and corresponding antecedents and consequences is later analyzed via computation of probabilities and background probabilities that identifies antecedents and consequences that are statistically predictive of the target behavior. Results from the study indicated that the procedure was effective in identifying correlations that were consistent with experimental findings. By calculating conditional and background probabilities, the researchers were able to accurately identify maintaining variables consistent with results from experimental manipulations. However, two obvious limitations are evident in reviewing the methods indicated. First, documentation was required not only of antecedents and consequences observed to occur with temporal proximity to the target behavior, but also in the absence of target behaviors. That is to say it was necessary to observe and record all antecedents and consequences that occurred, either in the presence or absence of the target behavior. This presents a significant challenge for educators who are simultaneously responsible for instruction and classroom management, as this process is hugely time consuming. At least one individual dedicated to the observation and data collection process is required, and for extended lengths of time in order to gather sufficient data to analyze. Second, the analysis requires complex mathematical calculations, which represent additional technical expertise and training in order to perform them correctly. Although results from this study revealed a positive correlation, the utility of such a process in terms of training and resources is questionable.

The third method, and least utilized in schools, is experimental analysis. Experimental analysis (or functional analysis) is the systematic manipulation of environmental variables in order to identify which contingencies reliably elicit the target behavior. In order to achieve a functional understanding of an individual's behavior, one must first identify the environmental antecedents and consequences that shaped and maintain the target behavior. The process by
which a behavior is understood in terms of what purpose it serves to effect environmental changes was first described in 1982 (Iwata et al., 1982/1994). In this study, Iwata and colleagues demonstrated an experimental analysis of a target behavior by presenting a sequence of environmental contingencies to an individual in order to determine what set of circumstances was most likely to elicit and maintain the target behavior. Conditions were designed to test whether the target behavior served the function of: (a) obtaining attention from another individual (Attention condition); (b) obtaining access to activities or items (Tangible condition); (c) escaping certain activities/situations (Escape condition); or (d) if the behavior produced some form of internal or automatic outcome (Automatic condition). The authors were able to identify specific variables that reliably predicted the target behaviors of participants, and thereby developed interventions that aligned with these findings. This procedure has repeatedly yielded valid results, leading many to describe functional analysis methodology as the “gold standard” to which all other procedures are compared. However, limitations exist in the intensive nature of functional analysis, as it is time consuming, requires elicitation of the problem behavior, and has been criticized for the level of training required in order to implement (Cooper et al., 2007).

Although federal law is silent on the components of a functional behavior assessment, some states have described necessary components of functional behavior assessment in certain circumstances. California, for example, published legislation in 1990 (Hughes Bill) describing several elements of a Functional Analysis Assessment, which is conducted when challenging behavior meets a specific threshold identified in the law. According to the Hughes Bill, the behavior assessment must include direct observation of the target behavior(s), data collection, and a review of ecological factors, as well as other specific elements. Ecological factors include typical observable antecedents and consequences; in other words, some form of descriptive assessment. Although this provides a detailed list of procedures relative to other sources of
special education law, it leaves open to interpretation how data are to be collected or analyzed.

Professional organizations and training programs have also addressed functional behavior assessment procedures, providing some guidance for educators and practitioners. In general, most recognize the three separate procedures and accompanying strengths and limitations. In Cooper, et al (2007), the three are described as existing along a continuum, where both precision of outcome and difficulty of implementation increase from indirect, to descriptive, to experimental phases. As such, the recommendation is that assessors should begin with the least precise and least challenging tools, and move along the continuum if results are unclear or inconclusive. A similar model is proposed by several other organizations and training/Best Practices manuals (Horner, Sugai, & Lewis, 2007; Miltenberger, 2004; O'Neill et al., 1997; Steege & Watson, 2008). Still, some models omit the experimental analysis component altogether, choosing to rely solely on indirect and descriptive measures (Chandler & Dahlquist, 2006; Positive Environments, Network of Trainers, 2009).

Limitations with Current Behavior Assessment Practices

Current behavioral assessment models appear to rely primarily on indirect and descriptive assessment methods. Although this is in line with the recommendations of numerous professional and training organizations, there is substantial research that questions the validity of such models; recent data suggest the assumptions supporting these models may be wholly inaccurate. At the very least, a closer examination and better understanding of the limitations of these procedures is warranted.

A 2005 study by Hall was one of the first to compare identified functions from indirect and descriptive methods to results from experimental analyses. For each of the four participants included in Hall's study, the descriptive assessments indicated attention as the function of the target behavior. This matched the experimental analysis in only one of the four cases. Conversely,
the indirect assessment matched the experimental analysis in three of the four cases. Thompson and Iwata (2007) published similar findings in a comparison of assessment procedures for 12 participants. Descriptive assessment procedures implicated attention as the maintaining consequence for eight of the 12 participants, while experimental analysis corroborated this result in only two of the eight cases. Several other studies published subsequently produced similar results (Pence, Roscoe, Bourret, & Ahearn, 2009; Samaha et al., 2009; Tarbox et al., 2009).

Overall, comparison of indirect and descriptive assessment procedures to experimental analysis suggests descriptive assessment procedures are the least precise, and typically demonstrate a heavy bias toward attention as a maintaining consequence. Indirect assessment procedures have traditionally been considered to be the least precise; however, studies that included indirect assessment procedures reported that these ratings corroborated the results of the experimental analysis in more than half of the total cases, indicating stronger validity than descriptive assessment procedures.

Descriptive assessment procedures are often recommended as the primary feature of school-based functional behavior assessment (Chandler & Dahlquist, 2006; Horner et al., 2007; Miltenberger, 2004; O'Neil et al., 1997; Positive Environments, Network of Trainers, 2009; Steege & Watson, 2008). For years, the assumption has been that descriptive assessment provides an objective analysis of environmental events that can lead observers to accurately identify functional relationships with target behaviors. However, descriptive assessments offer poor control over features within the environment that may not be contingent to the target behavior. For example, attention was the most frequently identified function produced by descriptive assessment procedures in each of the preceding studies. Given the nature of most academic and clinical settings, one can begin to understand how some form of attention would be presented in response to a disruptive or challenging behavior in most cases. When a student in a classroom


misbehaves, teachers typically respond by providing some form of redirection or verbal reprimand. Even when individuals understand that some behaviors are best ignored, given a behavior that persists or escalates and becomes increasingly disruptive, at some point the teacher must respond, if only to remove the student and preserve the instructional opportunities for the other students in the classroom. Similarly, attention in the form of redirection or interruption would be expected if the target behavior represents the risk of injury to the person performing the behavior or other individuals in his/her proximity. Given that some form of attention is likely to occur in most group settings on a frequent basis in response to target behaviors, the “pattern” that becomes most evident to the observer is strongly suggestive of attention as a maintaining consequence.

Descriptive assessments do not provide sufficient sensitivity to recognize behaviors that are reinforced on intermittent schedules of reinforcement: this provides another explanation as to why accurate identification of function may be an elusive outcome. Even the technical approaches to descriptive assessment that incorporate statistical calculation of probabilities will result in misleading identification if the target behavior is reinforced on a thin schedule of reinforcement. Consider a student whose behavior is maintained by escape from academic tasks. If the teacher's typical response is some form of verbal reprimand, but eventually culminates in the dismissal of the student from the classroom, the statistical correlation between attention and the target behavior will be much greater than that between escape and the target behavior, as the teacher may verbally reprimand the student ten times more frequently than removing him from the classroom. However, a 1:10 payout ratio may be a small price for the student, if escape from the activity is motivating enough. If descriptive assessment procedures were employed to determine the function of playing slot machines, what environmental consequence would reveal itself as the most prominent and, therefore, be identified as the function of gambling behavior?
In addition to validity issues, practical concern with the length of time required to complete descriptive assessments is also a significant factor. Considering that indirect measures can be completed and scored in a matter of minutes, direct observation assessment procedures appear to require a much greater time commitment. Lerman and Iwata (1993) reported a minimum of six hours to document sufficient examples of behavior to facilitate conclusions (one participant required 12 hours of observation) regarding behavioral function. This was compared to experimental analyses that were subsequently completed for each participant, which were reported to require between two and nine hours. Although still a significant amount of time, the more technical and accurate assessment procedure required less than half the time to complete in most cases.

**Alternatives to Descriptive Assessments**

Descriptive assessment procedures may not be accurate measures of behavioral function, but they should not be completely dismissed from having any role in functional behavior assessment. Naturalistic observation may still be an essential component in order to better understand the environment and variables that should be considered when preparing to conduct an experimental analysis, or to develop a more comprehensive understanding of the environment that supports the target behavior. Such procedures could represent a much less time-consuming endeavor, however, if the purpose shifts from prolonged, repeated observations that must capture a sufficient sample of target behaviors to identify a reliable pattern of contingencies. Rather, the purpose of the assessment is limited to recognizing the general environmental variables, and the context within which the target behavior tends to occur. The resulting procedure may only require a brief observation of the behavior targeted for assessment.

If descriptive assessment procedures prove to be invalid measures of behavioral function, then those interested in functional behavior assessments will require sufficient tools to complete a
valid assessment. Recommendations from Thomson and Iwata (2007) and Tarbox et al. (2009) include beginning a functional behavior assessment with an indirect assessment tool, then moving to some form of experimental analysis if indirect tools produce inconclusive results. Both studies imply that the indirect measures may be useful due to their validity (greater than 50%) relative to descriptive assessment, and the ease and brevity with which they can be completed. However, if indirect measures produce clear and valid results in only approximately 50% of applications, there remains considerable need for additional assessment procedures that have improved validity, and are practical for use in school settings. While a prototypical experimental functional analysis (Iwata et al., 1982/1994) may be feasible at some schools, there may be logistical limitations that preclude this specific procedure. In order to conduct an experimental functional analysis, the assessor typically must have access to a separate room on the school site in which to work. As many school campuses often do not have sufficient classroom and office space to house all staff and students, spare locations available for such purposes may be unavailable. In addition, analogue functional analyses can be time consuming, as each session typically lasts ten minutes, and each condition must be repeated until a clear differentiated pattern of responding is evident. For school personnel operating under procedural time lines, and within schedules of academic instruction (as well as recess and lunch, of course), unlimited time is a luxury with which few are familiar. For most professionals in education, alternative procedures must be available in order to have any practical utility in the field.

Since the original 1982 study by Iwata and colleagues detailing the experimental analysis procedure, multiple attempts to produce more efficient and environmentally adaptable procedures that maintain experimental integrity have been published and proposed. Although not all result in the same level of accuracy (analogue functional analysis continues to be the “gold” standard to which all other procedures are compared), many demonstrated results that correlate strongly, and
appear more accurate than either descriptive or indirect assessment procedures. The variety of approaches ranges from modifications in time and repetitions, to procedures that can be employed within natural settings by teachers or other educators without significant disruption to the classroom activities.

In 2003, Wallace and Knights presented a brief functional analysis that detailed an abbreviated assessment approach. The brief functional analysis consisted of presenting two minute sessions, each addressing a specific function. During the first 60 seconds of each session, variables relevant to the condition being tested were presented; the second 60 seconds of each session served as the control. Thus, the test conditions for attention consisted of an activity during which the first 60 seconds the individual received no attention until demonstration of the target behavior. The test conditions for escape provided a task demand that was not removed unless the individual demonstrated the target behavior, and test conditions for automatic sources of reinforcement involved 60 seconds of no attention and no presentation of activities/materials, regardless of behavior. The control portion of each session was the same for each condition: the second 60 seconds of each 2-minute session involved providing moderate levels of attention, no task demands, and sufficient preferred activities/materials. Results were obtained from the brief functional analyses in an average of 36 minutes, while the extended functional analyses (traditional model) took an average of 310 minutes. Concordance was found in two out of the three cases. Although a small sample and only 67% correspondence to the full experimental analysis, Wallace and Knights provided a model that demonstrated accurate results superior to descriptive assessment and indirect assessment, and was completed in nearly 10% the amount of time required to complete an extended functional analysis.

A similar model was proposed in 2011 (Bloom et al), but was adapted for implementation within a classroom setting and for potential implementation by staff who are already present in
the environment. This classroom-based analysis utilized naturally occurring activities within the classroom as the basis for each condition being tested, with modifications to presented consequences in order to systematically address maintaining functions. Three two-minute segments were employed to target each condition; the control portion of each session was presented during the first and third two-minute segments, with the test condition presented during the second two-minute segment. When escape conditions were tested, naturally occurring academic tasks were utilized. During the control portion of tests for escape, the assessor was seated near the student, but was neither interacting with nor presenting demands to the student, and target behaviors were ignored. During the test portion, the assessor presented the academic demand and removed it only in response to target behavior. The attention condition was conducted during moderately preferred activities, and the assessor provided intermittent attention throughout the control segments. During the test portion, the assessor turned from the student and ignored him/her until demonstration of the target behavior. A tangible condition was also included in this model, which was conducted during play activities. The control portion of this test included allowing the individual access to preferred toys, then removing the toys during the test portion. The toys were returned only following the target behavior. For each of the conditions being tested, the test segment (second two-minute segment) was terminated immediately following the target behavior. Sessions were presented across four to six days, with eight to 16 trials presented each day. As the sessions all took place within the student's regular classroom environment and during naturally occurring activities, there was no need for an alternative classroom or location. Results corresponded to full functional analyses for six of the ten participants, and partial correspondence was achieved in a seventh case. Similar to Wallace and Knights, results suggested a possible alternative assessment procedure that is superior to both indirect and descriptive assessment procedures.
An assessment format that is similar to the original analogue functional analysis, but that can be completed in less time may be appropriate when an alternative assessment location is available and greater control over environmental variables is desired. The Brief Functional Analysis (Northrup et al., 1991) was presented as a procedure that mirrored analogue functional analyses, yet presented only one five-minute session for each function in question. After each condition had been presented once, the condition that resulted in the most elevated frequency of target behavior was subjected to a contingency reversal for a replacement behavior. For example, if the escape condition resulted in the highest level of target behavior responses, a subsequent escape condition was employed. However, rather than the target behavior resulting in escape, an alternative behavior (e.g., sign or form of communication) resulted in escape. Next a session reverting to the original assessment condition was presented, wherein the alternative behavior was ignored and the target behavior again produced escape. Finally, one more reversal session was applied. In essence, this format included one brief session of each test condition, then extended the assessment with a treatment probe, where a potential replacement behavior (based on data from the initial assessment conditions) was introduced. Northrup and colleagues demonstrated this to be an accurate tool for all three participants included in this study; less robust, yet still impressive, findings were reported in a subsequent study in 1992 (Derby et al.). Using this same procedure, Derby et al. were able to accurately identify the function in 50% of 79 cases. Considering the total time for each assessment was approximately 90 minutes, a very reasonable time-period for a school-based assessment, this approach represents a viable alternative to descriptive assessment procedures.

Several other variations to functional analysis have also been published, some with stronger validity evidence than those discussed here. However, these other alternatives do not directly address concerns most relevant to school-based assessments and were therefore not
included in this review. A comprehensive review of all experimental analysis procedural variations is beyond the scope of this project. Rather, those studies that included attempts to shorten the overall assessment length and/or modify procedures in a manner that allowed for implementation within a natural environment were described. Although none of these procedures matched the validity of a traditional analogue functional analysis, all were superior to descriptive assessment procedures in several key areas. Primarily, these assessment methods offer a significant improvement in their ability to accurately identify the function of target behaviors compared to descriptive assessment methods. Perhaps this is the most significant point to consider, given the practical implications of inaccurate assessment findings (e.g., inappropriate treatment recommendations, worsening behavior, additional time spent re-assessing and/or determining intervention strategies, implications for placement decisions). Second, these assessment procedures provide an evidence-based practice that can be completed in a reasonable amount of time. When total assessment time was addressed in the study's results, times ranged from 36 to 90 minutes. Even the average amount of time reported for completing an analogue functional analysis (310 minutes) represents an improvement over descriptive assessment procedures (6-12 hours). Finally, assessment procedures that allow for implementation in natural environments eliminate limitations in space, which can be a factor in some school settings. Combined, educators with these tools at their disposal will be better equipped to perform functional behavior assessments in a variety of settings, and have potential to overcome some of the basic challenges to experimental analysis procedures.

**Challenges to the Use of Experimental Analysis: Training In Assessment**

Functional analysis methodology, as with any assessment approach, requires a certain level of expertise in order to implement and interpret results. While this may be a limitation for some considering incorporating these tools within their functional behavior assessment protocol,
several recent studies have demonstrated that a range of individuals can be trained in a relatively short period of time, and that in-depth, advanced training in applied behavior analysis is not a prerequisite to learning experimental functional analysis procedures.

In a study involving undergraduate students, eleven participants received a basic description of functional analysis procedures in written form, followed by several forms of more involved instruction: video modeling of the procedures, passing a written quiz, and hands-on practice with feedback (Iwata et al., 2000). The authors reported that participants demonstrated 95% accuracy following only two hours of training, and that many participants demonstrated basic levels of proficiency after only reviewing written material. Two studies using educators (teachers and school psychologists) as participants demonstrated successful acquisition of functional analysis skills following relatively brief trainings that included written handouts, 2-3 hours of lecture, and practice with feedback (Moore et al., 2002; Wallace, Doney, Mintz-Resudek, & Tarbox, 2004). A 2009 study used videoconferencing equipment to conduct functional analyses for two students (Machalicek et al, 2009.). Although not a training program specifically, the authors successfully instructed therapists who were present with the students in the implementation of a functional analysis, again demonstrating the ability to convey the necessary skills to other individuals responsible for the implementation of the actual assessment. Given these findings, it appears that graduate-level training or knowledge of applied behavior analysis is not necessary for successful acquisition and implementation of functional analysis procedures. Rather, most individuals appear capable of acquiring sufficient knowledge and skills with minimal training of 2-3 hours. Given the advantages experimental analysis has over other methods in validity and time efficiency, training programs that focus on school-based functional analysis methodology represent a significant benefit to students and educators. This project seeks
to develop such a training that can be used to facilitate increased use of evidence-based functional behavior assessment procedures in educational settings by school staff.
Chapter 3

METHODS

Information for this project was gathered through a systematic review of the literature, professional workshops, and coursework. Current research was obtained via the data bases of Academic Search Premiere and PubMed Central of the National Library of Medicine.

The decision to develop a full day Instructional Service Training was made as a result of professional experiences and information gathered through the literature review. This training tool could be used to train educational staff in a variety of functional behavioral assessment procedures that are consistent with current research findings regarding valid assessment methods. Participants will learn current research on different behavior assessment procedures, how to conduct a variety of functional behavior assessments that demonstrate strong validity, the essential components of an effective behavior support plan, and how to link assessment results to each component of a behavior support plan. The workshop model will consist of lecture, interactive discussions, and small and large group activities.

Please see appendix A for the project.
Chapter 4

FINDINGS

This project provides school districts a professional training resource to educate individuals responsible for conducting functional behavior assessments on valid assessment procedures, essential components of behavior support plans, and how to link assessment results to behavior support strategies. The goal of this training is to enable participants to: (a) select assessment procedures appropriate for the unique needs of students and settings in which they work, (b) conduct several different experimental functional analyses, and (c) use the information obtained from the assessment to develop a comprehensive and effective behavior support plan. This training can be conducted in approximately six hours, and may be delivered as a full-day in-service, or presented across two half-day presentations. Although there is a great deal of information conveyed through lecture and demonstration, the primary mode through which participants will gain the most knowledge and skill is via the workshops interactive activities and discussions. At the conclusion of the workshop, participants should have acquired sufficient information to begin implementing the presented assessment procedures at their work sites.

As a result of professional experiences and information obtained through the development of this project by this author, it became apparent that current functional behavior assessment procedures being utilized in school settings and being emphasized in many training programs lack the validity necessary to produce effective behavioral strategies for many students. These short-comings perpetuate a negative cycle of frustration and reluctance to accept students with behavior challenges. For the person responsible for assessment, invalid functional behavior assessment conclusions are obtained through a process that is time consuming and laborious. More time is devoted to the assessment components than is to the development of an effective plan or to supporting and training staff in the implementation of the resulting plan. For the
educators responsible for implementing the behavior support plan, the process may leave them with little practical information, as they may be given a complex set of written strategies within the behavior support plan, yet little to no explanation as to how to implement them. And when the strategies are developed on faulty conclusions from an invalid assessment procedure, there is a high probability that the strategies developed will be ineffective in changing student behavior. As a result, educators become less willing to accept a behavior support plan as a realistic means to support students under their care, and less accepting of students who demonstrate behavior challenges. This attitude reflects back to the assessor, who, in turn, comes to find functional behavior assessment and behavior support plan development a non-preferred activity relative to other job responsibilities. Each unsuccessful experience further perpetuates a negative and hopeless attitude. It becomes little wonder that one of the top reasons teachers provide for leaving the field is related to student behavior. In order to break this cycle, positive outcomes must be inserted into the professional experiences of each party. The first step to achieving this outcome must be developing effective functional behavior assessment procedures.

Through reviewing current literature and training resources, it is evident that more research needs to be conducted on school-based functional behavior assessment procedures. While several studies have addressed this issue in recent years, results are limited due to the relatively small sample sizes and lack of a consistent assessment model or models. Because this area of study has received so little attention to date, many training programs and manuals have not addressed the validity concerns that are raised in the few studies that exist. However, given the consistent findings concerning the utility of descriptive assessment procedures, educators and specialists in the field of behavior assessment should be concerned about the conclusions drawn from functional behavior assessment procedures that rely heavily on descriptive assessment procedures.
APPENDICES
APPENDIX A

Functional Behavior Assessment in School Settings: From Valid Assessment to Successful Intervention

PowerPoint Presentation
Functional Behavior Assessment in School Settings:

From Valid Assessment to Successful Intervention

Keys to Developing an Effective Behavior Support Plan

- Conducting a Valid Assessment
- Defining Procedures (aka the “Plan”)
- Setting Goals & Expectations
- Planning for Modifications
- Monitoring Progress

This training will cover 5 main components to developing effective behavior supports.

But First...

- Common Understanding of Principles of (Operant) Behavior

These next few slides will review some of the basics of behavioral principles. When we look at the development of behavioral supports based on a functional behavior assessment, we are addressing “Operant” behavior, or behavior that operates on the environment to produce outcomes. This is different from “Respondent” behavior, or reflexive behavior, which reacts to stimuli based on previous associations.
All behavior is learned in the same way
- We decide how to act based on what happens right before we act, and what happens right after we act
  Antecedent – Behavior – Consequence
- Behavior is a function of this interaction, not our DNA…

This first point is fundamental to how we approach behavior. If we understand that behaviors are learned, then we can understand that behavior can be “unlearned” or more acceptable behaviors can be learned, as well. If the assumption is that behavior is engrained in our personality, then it is unchangeable, which is a hopeless point of view.

In the environment, some antecedent occurs, we respond (behavior) for the purpose of affecting some outcome (consequence). Operant behavior is never random - it does not occur in a vacuum.

ABC Pattern of Learning
- We view behavior as occurring within the context of a 3-term contingency, or A-B-C pattern:
  - A: Antecedent events
  - B: Specific behavior
  - C: Consequence
ABC’s of Behavior and Learning

- A couple of simple rules:
  - Behaviors that result in desirable outcomes are more likely to happen again
  - Behaviors that do not result in desirable outcomes, or that result in undesirable outcomes, are less likely to happen again

Changing Behavior

- We can not control an individual’s behavior
- We CAN control the environment that supports the individual’s behavior
- Change the A and the C, which will result in changes to B

Since people are not puppets on a string, we cannot directly change behavior. Instead, we focus on the things that we do have control over – other events in the environment. We may not be able to control 100% of the variables 100% of the time, but if we are determined enough, we can control enough of them to affect behavior.

Antecedents

- Can be separated into two categories:
  - Distant events/conditions  
    (Establishing Operations)
  - Immediate events/conditions  
    (Discriminative Stimuli)

Typically we think of the antecedents in terms of what occurs right before a behavior occurs – what we perceive to “trigger” a behavior/response. However, other variables that may not necessarily trigger a response do have influence over how a person behaves/reacts.
Antecedents: Establishing Operations

- Distant events function like motivation.
  - Deprivation, Satiation
  - Events that make an anticipated consequence wanted
  - Examples?

Establishing Operations are variables that alter the value of a potential reinforcing consequence. For example, a lack of sleep may increase the value of escape from undesirable tasks. Escape from undesirable tasks is always reinforcing, but it’s worth more to us if we are sleep deprived. If you eat a small amount of sweets every day, the value of sweet foods as a reinforcer is likely less than if you haven’t had anything sweet for several weeks.

Antecedents: Discriminative Stimuli

- Immediate antecedents are events that indicate the desired consequence is available
  - Presence of materials/people (light switch, ice-cream truck, famous athlete)
  - Spoken directive or request (“Line up for recess”)
  - Other examples?

Immediate antecedents are what we typically think of as the “triggers” for a behavior. When we are presented with a “discriminative stimulus” (or SD), it elicits behavior that will produce a known reinforcer. In a dark room, light may be a reinforcer (depending on what’s going on in the room – establishing operations). But, it’s the presence of a lamp switch that elicits a response of pushing a button/turning a knob. Thus, the presence of the light switch is the trigger or SD for a “pushing” behavior that we have learned will result in the light coming on.
Behaviors

- The specific response to the antecedent event
  - Actions
  - Words
  - Thoughts
  - Etc.

Any response, internal or external, that occurs in response to the antecedents. While we acknowledge that thoughts and feelings are valid responses to environmental antecedents, we must also acknowledge that we cannot directly observe these responses, and so cannot say with any confidence if or when they occur in other people. For the purposes of behavior supports, we must focus on only what we can directly measure without inferring states of emotions or thoughts.

Consequences

- Consequences are the environmental outcomes produced by the student’s behavior.
- Consequences indicate whether the preceding behavior is more or less likely to occur again under the same or similar antecedent conditions

For operant behavior, the consequence is either desirable or undesirable. If the outcome is desirable, then that behavior is likely to occur again under similar antecedent conditions. If the outcome was undesirable, that behavior is less likely to occur again under similar antecedent conditions.

Consequences

- Consequences can have the effect of either increasing or decreasing the likelihood of a preceding behavior occurring again in the future.
- Consequences that increase future behavior are termed “Reinforcers”
- Consequences that decrease future behavior are termed “Punishers”
Reinforcing Consequences

- Reinforcement is defined by its effect on behavior, not the intentions of the deliverer.
- If you provide a reward that does not increase behavior, it is NOT a reinforcer.

This is a major point in developing effective behavior strategies, particularly in school settings. Teachers or parents will often report that they have tried using reinforcement, but that it “doesn’t work” if the behavior does not change (usually right away). Despite their best intentions, often what they were offering as a “reinforcer” was something they decided to offer and is not necessarily something the child wants. Or at least they don’t want it badly enough that they are willing to change their behavior. In this case, the reward was not a reinforcer. By definition, a reward that increases a behavior is a reinforcer.

---

Reinforcing Consequences

- Reinforcement can further be classified as either Positive or Negative

<table>
<thead>
<tr>
<th>Positive Reinforcement</th>
<th>Negative Reinforcement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the addition of an event/item - the addition of this stimulus increases the behavior</td>
<td>Is the removal of an event/item – the removal of this stimulus increases the behavior</td>
</tr>
</tbody>
</table>

Examples?

Positive reinforcement examples are usually easy to come up with – stickers, praise, prizes, extra recess time, etc.

Negative reinforcement examples: break from a non-preferred task, allowed to skip some classwork, escape from non-preferred peers or activity.

This is where people usually start to get confused. Think of Positive and Negative as mathematical terms, rather than value statements. Positive does not mean “good” and negative does not mean “bad.” Positive means “add” and negative means “subtract.”

Try giving one or two examples of each and then ask the audience to come up with additional. If they are stuck, offer a few more.
Punishing Consequences

- Punishment is also a consequence that is defined by its effect on behavior – no decrease in behavior = no punishment
- Typically thought of as events such as verbal reprimands, extra responsibilities, loss of privileges

Punishing Consequences

- Just as with reinforcement, is classified as “Positive” or “Negative” Punishment
- Positive – always refers to the addition of some stimulus
- Negative – always refers to the removal of some stimulus
- The use of punishment should be a last resort, and should always be used in conjunction with reinforcement strategies

Punishment is any consequence to a behavior that decreases the probability of that behavior. Sometimes what we think may be a reinforcer actually serves as punishment (and vice versa). Giving a student praise in front of the class may seem like it should be reinforcing, but for students who do not want to have attention drawn to them, it may serve to decrease future participation.

Consequences Summary

<table>
<thead>
<tr>
<th></th>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcement</td>
<td>Give special attention</td>
<td>Remove from an unpleasant situation</td>
</tr>
<tr>
<td></td>
<td>Give access to toy</td>
<td>Remove/reduce pain</td>
</tr>
<tr>
<td>Punishment</td>
<td>Assign extra homework</td>
<td>Remove from a preferred activity</td>
</tr>
<tr>
<td></td>
<td>Assign clean-up duties</td>
<td>Take a toy away</td>
</tr>
</tbody>
</table>

With this visual, see if the audience can come up with a couple more examples of each.

Next slide begins a review activity. For each slide, read the question and options aloud. Allow audience several seconds to consider their answer, then signal for them to all hold up their answers at once – that way they won’t be looking at everybody else’s. Once all answers are displayed, show the correct answer. Explain why that answer is correct if necessary.
Review

• Positive Reinforcement has what effect on behavior?
  • A. Makes the behavior more likely to occur
  • B. Makes the behavior less likely to occur
  • C. Makes the behavior more likely to be good/positive behavior

*Correct answer revealed on click*

Review

• Positive Punishment has what effect on behavior?
  • A. Makes the behavior more likely to occur
  • B. Makes the punishment more enjoyable
  • C. Makes the behavior less likely to occur
Review

• Negative Punishment has what effect on behavior?
  • A. Makes the punishment less likely to be used again
  • B. Makes the behavior more likely to occur
  • C. Makes the behavior less likely to occur

Review

• Negative Reinforcement has what effect on behavior?
  • A. Makes the behavior more likely to occur
  • B. Makes the behavior less likely to occur
  • C. Makes the behavior more likely to be bad/negative behavior

Review

• In terms of behavioral consequences, the term “Positive” refers to:
  • A. The addition of a stimulus/stimulation as the consequence
  • B. The effect on behavior
  • C. That the consequence is good/preferred
Review

• In terms of behavioral consequences, the term “Negative” refers to:
  • A. The effect on behavior
  • B. The removal of a stimulus/stimulation as the consequence
  • C. That the consequence is bad/non-preferred

Application

• Marcus gets a dollar every time he earns 90% or better on spelling tests. This is an example of:
  • A. Positive Reinforcement
  • B. Negative Reinforcement
  • C. Reward

It’s a reward because there is no change in behavior

Application

• Marcus gets a dollar every time he earns a 90% or better on spelling tests. This has resulted in Marcus receiving more spelling tests with scores of 90% or better. This is an example of:
  • A. Positive Reinforcement
  • B. Negative Reinforcement
  • C. Reward
Application

• Valerie has increased her use of vocal requesting since her parents started reducing her chores each time she vocally requests. This is an example of:
  • A. Positive Reinforcement
  • B. Negative Reinforcement
  • C. Positive Punishment

Application

• Antonio has been tantruming more frequently since his teacher started using time-out each time he cries. This is an example of:
  • A. Positive Reinforcement
  • B. Negative Punishment
  • C. Positive Punishment
  • D. Negative Punishment

The intention was not for Time Out to be a reinforcer, but it is having that effect on the behavior…

Application

• Kelly feels the physiological sensation of hunger. She eats a cookie. She no longer feels hungry. Now she eats a cookie every time she feels hungry.
  • A. Positive Reinforcement
  • B. Negative Reinforcement
  • C. Negative Punishment
  • D. An Anti-diet

This one can be misleading. The removal of the physiological sensation is what is described as having the increasing effect on behavior. Removing something = Negative. Increase in behavior = Reinforcement.
Application

- Kelly likes sweets. She eats a cookie. Now Kelly eats a cookie whenever she sees them.
  - A. Positive Reinforcement
  - B. Negative Reinforcement
  - C. Negative Punishment
  - D. Time for an intervention

Sweetness is added = Positive Reinforcement

Application

- Juan was bitten by a vicious mosquito on his foot. Whenever he kicks something, it stops itching. He’s been kicking kids at school all week.
  - A. Positive Reinforcement
  - B. Negative Reinforcement
  - C. Negative Punishment

Kicking is removing the itching sensation = Negative. Kicking increases = Reinforcement.

Application

- Shellie likes the sensation she gets when she kicks things. She’s been kicking everything in sight...
  - A. Positive Reinforcement
  - B. Negative Reinforcement
  - C. Negative Punishment
  - D. A future soccer star
Now that we have a common foundation of basic behavior principles, let’s look at how they apply to conducting a valid assessment.

Old school behavior modification – the focus was on using arbitrary reinforcement and punishment to change behaviors. For example, a student was given a prize at the end of the day if he finished all his classwork. Although the rewards used were effective in increasing appropriate behavior, the rewards became difficult to fade out because they were not functionally related to the behavior. Appropriate behavior didn’t transfer to other settings and did not persist in the absence of the arbitrary reinforcers.

In Modern Behavior Analysis, greater emphasis is placed on functional equivalence in defining reinforcing and punishing consequences. If the student in the previous example was not completing work because incomplete work was reinforced by extra attention from his teacher, current views in Behavior Analysis would prefer the use of teacher attention as a reinforcer for work completion. In addition, an alternative behavior that results in teacher attention might be taught, such as hand raising or approaching your teacher for help.
FBA and Prevention of Problem Behavior

- When default technologies are used, other problem behaviors may emerge
  - The use of FBA for developing intervention may avoid the development of new problem behaviors
- FBA may identify conditions that pose risks for the development of future problem behaviors

Most environments (classrooms and home settings alike) tend to rely on the use of punitive consequences for challenging behaviors. Further these punitive consequences are typically scripted based on what the behavior looks like rather than individualized to the student’s unique needs. Decades of research has shown that punishment is typically: only effective for the short-term, is more likely to result in avoiding the source of punishment than to actually decrease the behavior, results in other problem behaviors – increases emotional responses, and may inadvertently reinforce the challenging behavior.

Understanding the function of behavior allows you to identify consequences that will not inadvertently reinforce challenging behaviors and design positive/reinforcement based approaches to support the student.

Functional Behavior Assessment

- What is the purpose of Assessment?
  1. ID Function of Behavior
  2. ID Function of Behavior
  3. Understand Common Antecedents
  4. Establish Baseline of Target Behavior
  5. Determine Proficiency of Alternative Behavior
  6. ID Function of Behavior

Understanding common antecedents helps with predicting and preventing target behavior. If you know what triggers the behavior, you can avoid triggers and/or be prepared to redirect target behavior.

Establishing a baseline of target behavior is essential to developing realistic goals & monitoring progress. You need to know if the alternative behavior is in the student’s repertoire. Does the new behavior need to be taught or just shaped up? Obviously the emphasis is on identifying the function of the behavior. This is the foundation of any intervention plan. Without this information, you may make the problem worse.
The “What” does not tell you anything about the behavior in terms of how to intervene. If you know “Why” the behavior occurs, or what purpose it serves, you can begin to develop strategies to prevent the behavior and teach alternatives.

A student may use multiple behaviors to meet the same need. For example, yelling, throwing materials, hitting peers may all be used by the student to escape a non-preferred activity. A student may use the same behavior for different purposes. Hitting may be used to escape some situations, while used to gain attention in other settings. Note that the same behavior will not serve multiple functions in the same situation – a different antecedent will correspond to each function.
Functions of Challenging Behaviors

- Positive Reinforcement
  - “Getting something”
- Negative Reinforcement
  - “Getting out of something”
- These functions can be
  - Socially mediated
  - Non-socially mediated (automatic)

Socially mediated refers to consequences that require another person to deliver them. Automatic may also be thought of as behaviors that directly produce the desired outcome in the absence of another person.

Positive Reinforcement

- Social
  - Attention from others
  - Access to tangible stimuli
- Automatic
  - Physical Stimulation

Negative Reinforcement

- Social
  - Escape from aversive or difficult tasks
- Automatic
  - Escape from aversive stimulation
4 Primary Functions of Behavior

- Get something
- Get attention
- Escape/Avoid something
- Automatic/Direct

For the purpose of functional behavior assessment, we can simplify all behavior into one of these four categories. While there may be some nuances associated with each function (e.g., attention from peers vs. adults; type of attention), focusing on just these four descriptions allows for a consistent approach.

Probable Functions of Behavior

According to review of published research that included qualifying Experimental Analyses of Behavior (Hanley, Iwata & McCord (2003))

<table>
<thead>
<tr>
<th>Function</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Escape</td>
<td>34%</td>
</tr>
<tr>
<td>Attention</td>
<td>25%</td>
</tr>
<tr>
<td>Automatic</td>
<td>16%</td>
</tr>
<tr>
<td>Tangible</td>
<td>10%</td>
</tr>
<tr>
<td>*Multiple</td>
<td>15%</td>
</tr>
</tbody>
</table>

This study reviewed every published functional behavior assessment that included qualifying functional analysis methodology. The percentage of participants for whom each behavioral function was identified is shown. Based on this information, where would you focus your attention first?

Probable Functions of Behavior

- Almost 60% of behaviors appear to serve either attention or escape functions
- Only 15% of behaviors appear to serve multiple functions*
- Parsimony!

If you have to guess, your best odds are with attention or escape
*These studies mostly included participants with severe behavior challenges in intensive treatments settings (mostly residential/clinical). Possible that this may be higher or lower in typical school settings. However, the best information available to date suggests multiple functions are rare.

Approximately what percentage of BSPs that you have written/read implicated more than one function?
The function of a student’s behavior would NOT be to get you to approach them and try to get them to do their work AND simultaneously to escape the work.

Escape may be socially mediated.

If a behavior functions for escape AND attention, it must be in response to different situations. In one setting the function of yelling may be to escape a task, but in another setting the function may be to get attention. It won’t be both functions in response to the same antecedent conditions.

**Improbable Functions of Behavior**

- Attention **and** Escape
- Contradicted
- Multiple functions appear to be rare
- Differential antecedents required for each function

**Improbable Functions of Behavior**

- Control
  - Operant behavior is by definition an attempt to “control” one’s environment
- Manipulation
- Revenge
- To get a reaction
  - This is really attention
Quick Review (Quiz)

Which behavioral function has been most commonly identified in research?
A. Automatic
B. Attention
C. Tangible
D. Escape
E. Multiple

FBA Procedures

- Indirect Assessments
- Descriptive Assessment
- Experimental/Functional Analysis

Have audience hold up corresponding Letter Card
*Correct answer on click*
Refer to slide #43 to review

These are the core procedures included in functional behavior assessment. Most training programs acknowledge all three, but tend to emphasize only the first two. Some training programs do not even mention the third.

The traditional perspective of the different procedures has been this. Even within the field of Applied Behavior Analysis, from where functional behavior assessment originates.
Indirect Assessment

- Interviews, ratings scales, questionnaires
- Considered to be the least precise
- Most are easily administered, quickly completed

In terms of functional behavior assessment, behavior rating scales that categorize behaviors in terms of diagnostic criteria do little more than describe the topography of the behavior in different terms. More useful in this case are surveys that seek to narrow down probable behavioral functions.

Motivational Assessment Scale (MAS): Reliability = 20%
Questions About Behavioral (QABF): Reliability = 43%
Functional Analysis Screening Tool (FAST): Reliability = 67%

Few studies have examined the reliability and validity of indirect assessment measures. The few that have been published have initially focused on reliability. Generally speaking, indirect measures are believed to have lower reliability than direct measures. In general practice, indirect measures with a reliability coefficient above .6 are thought to be reliable (including questionnaires such as the BASC, etc.)

Descriptive Assessment

- Direct observation of behavior in natural setting
- Considered more precise than indirect assessment procedures
- More time consuming than indirect assessment procedures
- Less precise but easier and faster than experimental procedures

Most common approach to descriptive assessment is ABC charting, which requires an observer to document observed antecedent events, the specific behavior observed, and observed consequences. Interpretation is drawn from documented patterns of antecedents and consequences. What is documented as the most common sequence is thought to be indicative of behavioral function. ABC approach first introduced in 1968 as a means to describe interactions between behavioral and environmental events, not as a means to ID function.
Experimental Assessment

- “Functional Analysis”
- Gold standard for functional behavior assessment
- Most precise
- Most time consuming
- Most complicated

Traditional Functional Analysis (Analogue FA) was first described in 1982 by Iwata, Dorsey, Slifer, Bauman, & Richman. The procedure experimentally controls for all variables by systematically manipulating antecedent and consequence stimuli in order to identify a functional relationship between behavior and antecedent and consequences. Since 1982, repeatedly demonstrated as valid approach in research.

Functional (Experimental) Analysis

- Antecedents and consequences are arranged so that their separate effects on problem behavior can be observed and measured
Functional Analysis

- Yields a clear demonstration of the variable(s) that relate to the occurrence of problem behavior
- Serves as the standard to which all other forms of FBA are evaluated
- Enables the development of effective reinforcement-based treatment

Continuum of FBA Methods

- Recent research suggests reconsideration of the hierarchy is warranted

Indirect Assessments

Descriptive Assessments

Over the past several years, there has been a focus on defining the effectiveness of the different assessment procedures. Based on this recent data, the presumed hierarchy of precision and difficulty appears to be inaccurate.

Hall (2005)

- ¼ Descriptive assessments matched FA (Attention)
- ¾ Indirect matched FA

Most of the studies in Applied Behavior Analysis research are single subject designs. Although effective in demonstrating contingent relationships and effectiveness for the participants, repeated demonstrations are necessary to make generalizations about the findings to broader populations.

The first study in 2005 by Hall compared the outcomes of indirect and direct assessment procedures to the results of functional analyses. With only 4 participants, results demonstrated that only ¼ descriptive assessments matched the results of FA,
while ¾ indirect assessments (FAST) matched the FA results. The most commonly identified function in descriptive assessment was attention. In fact, the only descriptive assessment that matched FA results was for the participant for whom the FA concluded attention was the function.

What about the perception that descriptive assessment is less time consuming than functional analysis? 1993 study found that the amount of time necessary to observe and collect sufficient number behavioral sequences to allow drawing a conclusion regarding the function when using descriptive assessment ranged from 6-12 hours of observation. For the same participants, the time required to complete their functional analyses ranged from 2-9 hours.

Many training programs have long suggested that conducting functional analyses requires more training and expertise than is reasonable to expect of school personnel. Further, it was thought that graduate-level instruction and supervised experience was necessary to gain the skills required to conduct FA.

Multiple studies have since demonstrated successful training can be completed in as few as two hours with participants who range in experience and background – teachers, school psychologists, undergraduate

FA takes too much time...
- Lerman & Iwata (1993)
  - Time to complete DA ranged from 6-12 hours
  - Time to complete FA ranged from 2-9 hours

FA requires too much expertise...
- Iwata et al. (2000)
  - Undergraduate students
  - 2 hours of training
  - 95% accuracy in implementation
  - Teachers and School Psychologists
  - 2-3 hours of training
students. In fact, many participants demonstrated high levels of proficiency in FA after only reviewing written descriptions of FA procedures.

Typical Conditions

- Contingent attention
- Contingent escape
- Alone
- Control (e.g., “free play”)
- These are presented one at a time until a pattern of problem behavior emerges

In traditional (analogue) functional analysis, there are four experimental conditions – three test conditions and one control. Three conditions test for a specific behavioral function (escape, attention, automatic), while one serves as the baseline against which the other conditions are compared. The conditions are presented following a multi-element, counterbalanced design. In other words, the sessions are presented in random order, but ensuring that each condition is presented once before it is repeated. This cycle continues until a clear differentiated pattern of behavior exists – the amount of behavior in each condition is relatively stable.

Typical Functional Analysis: Attention Condition

- Student is given access to low-moderately preferred activity
- While in same room, ignore all non-target behavior
- When target behavior occurs, provide attention for ~5 seconds, then turn away

Description of the condition that tests for attention.
### Typical Functional Analysis: Escape Condition

- Student is presented a non-preferred task
- Provide instruction to complete task
- If student does not complete task, prompt to complete, then present next task
- When target behavior occurs, remove task for 30 seconds, then re-present task

Description of the condition that tests for escape.

### Typical Functional Analysis: Automatic Condition

- Student is left in room alone with no materials and asked to wait
- Observe student via 2-way mirror or video feed
- Track levels of target behavior – no response

Description of the condition that tests for automatic reinforcement.

### Typical Functional Analysis: Control Condition

- Student is given free access to variety of preferred activities
- No demands are placed on student, including social (don’t ask conversational questions)
- Provide attention every 30 seconds (comment, praise, etc.)

The purpose of the control condition is to provide the best possible environment that is least likely to produce the target behavior. Some behaviors will occur even in this environment, but the need to engage in challenging behavior should be suppressed here – there are no demands to escape, attention is freely and frequently provided, and the best/favorite activities are freely available.

Any condition that yields behavior at a level higher than the control condition is indicated as the function.
Typical Functional Analysis (Analog)

- Each session is 10 minutes
- Present one condition, track the behavior during session
- Take a 5 minute break between sessions
- Alternate conditions (Attention, Escape, Control, Automatic)

Typical Functional Analysis (Analog)

- Randomize order of conditions presented to control for sequencing effects
- Conditions that elicit target behavior rates higher than the control condition indicate the function of behavior
Here is a graph of results from a FA. In session 1, the control (play condition) resulted in no behavior. Session 2 was the escape condition and produced approximately 1 behavior. Session 3 = attention = 20 behaviors. Session 4 = escape = 0 behaviors. Random presentation of sessions continued for a total of 3 cycles (each session presented 3 times). Clear pattern indicates attention is function of behavior. If pattern was not clear, would have continued presenting conditions until pattern emerged.

Typical Functional Analysis

- Practice
  - Divide into teams
  - Each person responsible for one condition
  - One person will be student
  - Other groups will take data while you demonstrate FA

As facilitator, you define the target behavior. *Be sure behavior is safe for group setting. Even adults can get carried away, especially when asked to speak in front of a group. Choose a mild behavior, such as yelling, pushing materials away, and stomping feet. AVOID any aggressive behavior, or self-injurious (including head slapping).*

To accommodate time, each session should be 2-5 minutes max.

Each group only performs one session of each condition (3 sessions total: Control, Escape, Attention. Automatic is too boring. People will get it based on description).

Allow groups 5-7 minutes to prepare. Inform other groups that they will collect data when they are not performing.
Typical Functional Analysis

- Practice
- Divide into teams
- Each person responsible for one condition
- One person will be student
- Other groups will take data while you demonstrate FA

Practical Limitations of Typical Functional Analysis

- Your thoughts?
- Space – where would you conduct?
- Time – could take a long time to complete over multiple days
- Some argue that there are idiosyncrasies in the classroom setting that are lost in an analog setting

While groups are preparing, walk around and make sure they are on the right track. Give feedback, ask/answer questions. Demonstrate for them if necessary.

After each group presents, ask observers to provide constructive feedback – 1 thing that went well? 1 thing that could be improved on?

If time does not allow for all groups to have a turn, consider having one group go first in front of everybody, then breaking into two or three sets of groups – have multiple groups going, one in each set. It’s recommended that everybody have an opportunity to practice and receive feedback.

Talk through the concerns participants have regarding this procedure. Validate the concerns, while tempering with facts about FA.

- FA consistently yield valid results – interventions based on FA results work consistently
- FA does not create more problem behavior (does not teach or strengthen) – only one documented instance of behavior worsening after FA and it was with inclusion of a Tangible condition (test for access to a tangible activity/item). Tangible conditions are typically not included unless there is a reasonable suspicion that it may be the function b/c of the power of tangible reinforcement to influence behavior.
- The behavior is already occurring – the FA is an efficient approach that takes a relatively short amount of time to determine function and produce an intervention that will
be successful. How much will the behavior occur if the FA did not occur? What if invalid assessment results in invalid interventions?

- There are alternative procedures if behavior is potentially dangerous – often medical professionals are consulted when FA is going to assess potentially dangerous behaviors to monitor and modify assessment.

While the traditional FA may not be practical or preferable in your practice/setting, these alternatives may be viable. However, it should be noted that they are generally less accurate than the traditional FA, yet more accurate than descriptive or indirect measures.

With a single function FA, you are still conducting the same conditions in the same way, but only choosing one test condition and the play condition. This may take less time if you have a sound hypothesis for function going in and want to confirm. Based on your hypothesis, these are the sessions you would include for each.

### Alternatives to Analog Assessment
- Classroom Based FA
- In-Situ Assessment
- Brief FA
- Single Function Test FA

### Single Function Test

- **Social Sr+**
  - Attention or Tangible vs. Play
  - If PB high in Attention or Tangible, go to treatment

- **Social Sr-**
  - Demand vs. Play
  - Automatic Sr
  - Alone Condition
  - If PB high in alone, go to treatment
  - If PB low or decreasing trend, likely social function

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Iwata, 2009
Classroom application of a trial-based FA

- Conditions: attention, tangible, demand, ignore
- 4-min trials embedded during school day (20 trials each condition?)
  - 2 min: Control
  - 2 min: EO Present, Sr contingent on PB
- Typical FA: Same conditions
- How valid?: 6/10 correspondence with FA

Each trial consists of a 2 minute control and a 2 minute test probe. Each trial is presented during naturally occurring activities throughout the school day. During control probe of each session, 2 minutes of no demand, generally preferable activities available, and attention provided to student (no demands). If the behavior occurs during the test portion of the trial, the continent response is provided and the trial in terminated. As such, the test probe could last less than 2 minutes.

Test for attention: 2 min control, then 2 min of turn attention away from student and “ignore.” If target behavior occurs, provide contingent attention, then terminate trial.

Test for escape: 2 min control, then 2 min of provide demand (use naturally occurring classroom task). If target behavior occurs, provide contingent escape from demand, then terminate trial.

Test for automatic: 2 min control, then 2 min of remove access to activities and attention. If target behavior occurs, continue to ignore and terminate session.

Test for access to tangible: 2 min control, then 2 min remove preferred item and hold it. If target behavior occurs, return preferred item and terminate session.
Classroom Based FA Practice

- Using same groups and target behavior from before
- Each person responsible for one condition – rotate!
- Develop and practice for a classroom application

Have each group demonstrate the sessions the designed.

If time is limited, have them describe each test condition they developed and just demonstrate one session.

Discuss the pros and cons of this with the group.
It is less valid than traditional FA, and would require teacher/classroom staff to implement and record data.
Does not require another room or specialized conditions – taking advantage of naturally occurring activities.

In-Situ Assessment

- Develop intervention package based on initial hypothesis
- Alternate periods of baseline with periods of intervention
- If initial hypothesis was correct, intervention is already developed

Develop alternative behaviors, reinforcers, and preventative strategies based on functional hypothesis.
Implement for a period of time (hours of day, days of week, 1 week?), then remove intervention and return to how behavior was handled before. Alternate intervention and no-intervention periods. Compare levels of behavior.

Discuss pros and cons as group:
Requires an initial hypothesis, may spend a lot of time determining if intervention works (other downsides to this aspect?).
If hypothesis is correct already have intervention package developed, does not require alternative location or staff.
In-Situ Activity

• Using the same behavior from the Classroom Based FA activity develop simple intervention strategies
• Decide as a group how you would use this intervention to conduct an In-Situ Assessment
• How would you collect and interpret data?

Brief FA

• Similar to Typical Functional Analysis
• Each condition implemented only once
• 5 min sessions
• ID condition with highest rate of behavior and perform contingency reversal sessions

Brief FA

• Contingency Reversal
• Identify an alternative behavior for target behavior (e.g., raising hand, asking for break)
• Perform the elevated condition, but only respond to alternative behavior during reversal sessions
• Alternate reversal session and target behavior session
Brief FA

• If hypothesis is correct, you should see:
  • Target behavior occurs at higher rates during target behavior sessions, since it is reinforced
  • Alternative behavior occurs at higher rates during reversal sessions, since target behavior is no longer reinforced

This approach could dramatically reduce the amount of time it takes to complete the assessment
A possible alternative behavior would already be identified and introduced to student
Still requires a location where sessions can be conducted

Brief FA Activity

• Based on the “implicated” function from your previous FA
• Develop your reversal condition
  • What is the replacement behavior?
  • How does each session look?
  • Try it!

Assessment Review (Quiz)

• Which assessment methodology yields the most valid results?
  A. Indirect Assessment
  B. Descriptive Assessment
  C. Functional Analysis
  D. IQ Testing

Hold up response cards
*Correct answer on click*
Assessment Review (Quiz)

- Which assessment methodology produces results that are least valid?
  A. Indirect Assessment
  B. Descriptive Assessment
  C. Functional Analysis
  D. Divine Intervention

Keys to Developing an Effective Behavior Support Plan

- Conducting a Valid Assessment
- Defining Procedures (aka the “Plan”)
- Setting Goals & Expectations
- Planning for Modifications
- Monitoring Progress

Reinforcement Based Approaches to Bx Intervention

- Effective plans address each variable within the A-B-C behavior context

  A – Prevention – Irrelevant
  B – Teaching – Inefficient
  C – Reactive – Ineffective

Added bonus – what function is most commonly identified through Descriptive Assessment procedures? Attention

Now that you know what the function of the behavior is, what do you do with that information?

The more ways that you can intervene on a behavior, the more you can influence it.
Target each of the ABC variables for maximum effectiveness.

If you can decrease the need to engage in the behavior by affecting the antecedent variables, you make the target behavior irrelevant.
If you can identify an alternative behavior that will result in access to the desired outcome (function) more readily than the challenging behavior, you make the target behavior inefficient.
If you can eliminate reinforcing consequence in response to the challenging behavior, you make it ineffective.

Reinforcement Based Approaches to Bx Intervention

- A – Irrelevant – Non Contingent Reinforcement
- B – Inefficient – Differential Reinforcement
- C – Ineffective – Extinction

Non Contingent Reinforcement will decrease the need to engage in the target behavior. Differential Reinforcement will make another behavior more likely to produce the reinforcer than the target behavior. Extinction will eliminate the contingency between the target behavior and the identified reinforcer.

None of these requires the use of punishment. Although punishment contingencies can be added if necessary to enhance the distinction in contingencies between the target behavior and the preferred/alternative behavior.

Non Contingent Reinforcement

- NCR
- Delivering functional reinforcer for “free” regardless of behavior
- Decreases the need to engage in any behavior that is used to access the reinforcer because it’s already given for free

Reinforcer is given on fixed or variable time schedule
Does not matter if student engages in target behavior
Can avoid unintentional reinforcement of target behavior by withholding briefly (10-30 seconds) if behavior is occurring when time to deliver
Activity: From your previous assessment activities, what would NCR look like based on your obtained results? Provide attention for free? Provide escape for free? Provide the automatic reinforcer for free?

Reduce frequency of delivery over time as behavior decreases (day to day, week to week? Depends). If you thin the schedule too quickly, can always increase delivery again.

Does not guarantee behavior will not occur, just decreases the value of the reinforcer (satiates the student).

Based on results of FA, identify a behavior that is acceptable within the student’s environment that will result in the functional reinforcer being provided. While this typically involves a “replacement behavior” that is some form of communication that requests the reinforcer (e.g., asking for a “break” rather than throwing materials), it may also include providing the functional reinforcer for another preferred behavior (e.g., completing some work results in break/escape from rest of work).
• The ultimate goal is for the student to tolerate the trigger event/complete a task/“behave appropriately”
• Provide functional reinforcer for the “ultimate goal” behavior

Replacement behaviors should generally be considered an intermediary step toward the ultimate goal

Activity: From your previous assessment activities, what would DRA look like based on your obtained results? DRA of replacement behavior? DRA of alternative (ultimate goal) behavior?

You can decrease delivery of reinforcer by requiring more instances of the alternative behavior, and this will effectively increase the rate of that alternative behavior. For example, reinforce every other alternative behavior, reinforce every 3rd behavior, reinforce every 4th behavior…

Or can also require more time to pass between alternative behaviors that will be reinforced. This will maintain lower rates of the alternative behavior. For example, require 30 seconds to pass before next behavior will be reinforced, require 1 minute to pass before behavior will be reinforced again, 2 minutes, etc.

Or can require additional exposure to the triggering antecedent before alternative behavior will be reinforced (tolerance training). For example, require 10 seconds exposure or one more problem on a worksheet, then reinforce; require 30 seconds or 3 more problems, etc.
Extinction

• Withhold reinforcement when challenging behavior occurs.
• Challenging behavior may still occur, but will not result in reinforcement.
• May result in “extinction burst” – it’s only temporary!

The more consistent you can be, the more effective your intervention will be.
If not used in conjunction with DRA, then implementation of EXT must be perfect – otherwise student is being reinforced on an intermittent schedule, which will drive rates of challenging behavior up.
When used in conjunction with DRA, enhances effectiveness of DRA and makes imperfect implementation more tolerable (although still not desirable). Perfect implementation of EXT is rarely practical.
Extinction burst is an initial increase in the target behavior – the student is essentially trying to figure out why something that used to work isn’t working anymore…

Extinction

• For Attention
• For Escape
• For Automatic

• Extinction would always remain in effect – never thin or withdraw it
Now that you have procedures in place, how will you decide that the plan is no longer necessary or not working?

We should not expect this student to behave perfectly – how are his/her peers behaving? Goal should be within the norm.

If a student who is unable to read is placed in a reading intervention on Monday, would we expect them to be reading at grade level the next day? Remember, behavior is learned, just like academic skills are learned. It takes time to unlearn something that has a history of working and learn a new way of doing something.

NCR, DRA, and EXT do not prevent behavior from occurring. They all act to decrease the probability of the target behavior occurring again under similar circumstances. It will take time for the student to learn that the target behavior
does not work anymore, and that another behavior works better. Consider the student’s history – how long have they been using the target behavior? What kind of schedule was the target behavior reinforced on? Intermittent schedules are more resistant to change (probably because changes in reinforcement are not as salient).

Although this is what most people would like to see when an intervention starts, it never happens this way. Intervention starts on day 3, and the behavior is “fixed.”

It rarely looks even this good, with perfect moderate improvement every day until it’s fixed.
This is more typical, still represents an ideal change. The change is generally moderate, but there are ups and downs from day to day. On day 10, it may seem as though the intervention isn’t working, but a more objective perspective shows that it clearly is.

If you just write a plan for phase one of behavior change, how will you ever be able to fade it out? Will you just yank the intervention and supports all at once when the student meets the goal? What do you think will happen when all of a sudden all of the supports that were available yesterday are gone today?

“A failure to plan is a plan for failure.”

If you build in these modifications now, it will save you time later. One way or another, the plan has to change – either to fade out because it’s working, or to change because it’s not. You can’t anticipate every possible change (nor should you), but you can at least build in some. It builds confidence in the plan if people know you anticipated some possible road bumps.

Keys to Developing an Effective Behavior Support Plan

- Conducting a Valid Assessment
- Defining Procedures (aka the “Plan”)
- Setting Goals & Expectations
- Planning for Modifications
- Monitoring Progress
Planning for Success

• What is the plan if:
  – behavior is getting worse?
  – behavior is not improving (progress stalls)?
  – behavior is improved?

Behavior is Getting Worse

• When will the data say that this plan is not working?
  Define this in your plan. If after how much time the behavior is higher than baseline levels…
  What changes might you make? (see next slide for some ideas)

Progress Stalls

• When will data indicate that progress has stopped?
• What changes can be made?
  – Changes to reinforcement density?
  – Decrease in triggers?
  – Changes in teaching strategy / targets?

Will you increase the NCR schedules?
By how much?
Will you increase the DRA schedules?
By how much?
Solicit ideas from audience.
Behavior Improves

- When criteria are met, how will the plan be faded?
- Thin schedules of reinforcement?
- Generalize to natural reinforcers?
- Expand to other times of day/environments?

Keys to Developing an Effective Behavior Support Plan

- Conducting a Valid Assessment
- Defining Procedures (aka the “Plan”)
- Setting Goals & Expectations
- Planning for Modifications
- Monitoring Progress

Why?

- Intervention
  - Is this working?
  - Behavior improving?
  - Getting worse?
  - No Change?

Many behavior plans are written, possibly implemented, but usually not monitored consistently. When do we most often collect data? Right before a meeting to review progress?? If you don’t collect data, how will you know anything about the plan?
Cost-Benefit Analysis

• Data collection is time consuming!
  – Takes time away from interacting with students

• Data collection is complicated!
  – Methods can be tedious
  – Feedback may help refine procedure and make it more user friendly

What is the cost of not collecting data?

• May result in the termination of a successful intervention
• May result in the continuation of an ineffective intervention
• May delay necessary changes to intervention

Alternatives to Data Collection

• Anecdotal reports are unreliable
  – Subjective
  – Bias
  – Reliant on observer’s memory!
  – “He never turns in his homework”
  – “He always distracts the other students”
  – “He’s been hitting a lot more lately”

Reasonable objections.
Solicit other objections from audience.

Solicit input from audience

What if we don’t collect data? It leaves us with imperfect and unreliable anecdotal reports.

Always/Never reports from others are obviously exaggerated and detract from the goal of progress in trends.
Rate of Change

- Behavior does not follow a constant trend
- An “up and down” pattern of behavior is difficult to analyze anecdotally

Remember this graph from earlier? If you didn’t write this down every day, would you be able to remember how many times the behavior occurred each day, or perceive if it was improving or getting worse? Could you remember 15 days of data? 10? 5?

Day 1 – 10; Day 2 – 15; Day 3 – 12; Day 4 – 8; … Day 10 – 10…

Determining Data Collection Tools

- Data should be meaningful to you – it is a resource to assist you in planning
- Data should tell you something you would not otherwise know about the behavior
- Data should work for you – Don’t work for your data!

Data collection doesn’t have to mean writing down everything that happens all day long on an ABC chart. Determine what data you need based on your intervention and your established goal. If you were teaching a student reading comprehension strategies, why would you continuously monitor reading fluency?

Innovative Techniques

- There are numerous methods that you can employ to help you collect data without carrying around a clipboard, if that is impractical.

What data collection methods have you seen used in the past for behavior? What worked about those? What didn’t?
### Innovative Techniques
- Tape
- Beads
- Beans/coins/paperclips
- Golf counter
- Knitting counter
- MP3 Counter
- There’s an App for that

These are some specific alternative that may be helpful – they’re all relatively cheap! With the app market for smart phones continuously growing, there are more and more options available for free download. Do a little search and see what you find for free or cheap.

### Observing and Collecting
- The goal of data collection is to obtain a representative and reliable sample of the target behavior
- You do NOT necessarily need to observe and record EVERY instance of the behavior
- You DO need to observe and record sufficient samples of behavior that truly reflect how often the behavior is occurring and during situations in which that sample is meaningful.

### Observing and Collecting
- Is the behavior a problem throughout the day?
- Is it a problem only at certain times of the day (e.g., recess, group instruction, independent work)?
Observing and Collecting

- How long do you need to observe?
- Long enough to get a representative sample.
- No less than 10-15 minutes per observation.
- Can you make a reliable prediction of how often the behavior occurs throughout the day after your observation?

Some Final Thoughts

- Once the paperwork is done, the real work is just beginning...
- Other considerations to increase the success of the fruits of your labor!

Common Objections

- Students should be self-motivated
- Students should be accountable or punished
- I don't have time to do this
- It's not my job
- It's not fair to treat students differently
- It won't work – I've already tried that

Chandler & Dalquist, 2006

As a person responsible for developing a behavior plan and convincing others to implement it, you should be prepared to respond to these typical perspectives. It’s important to be understanding and validate these opinions, while at the same time helping that person to see the alternative viewpoint. How would you handle each of these objections? What could you say?

If you can collect enough data in 15 minutes to reflect the daily level of behavior, then collect 15 minutes of data. Less than 10 minutes of data collection is generally not sufficient to be a representative sample of the day/period.
Directly Administer and Monitor

- After reviewing information and brainstorming with the team, provide written and vocal description of the intervention
- Model application with the student in the classroom setting

The more support you can provide upfront, the more buy-in you will have from those who are responsible after you leave the room. Working directly with the student and the staff shows them that it’s possible to do and helps reduce fears associated with uncertainty about how to implement the interventions. Plus, it gives you an opportunity to evaluate the strategies – if you can’t or aren’t willing to do them, why should anybody else?

Directly Administer and Monitor

- Observe staff implementing interventions – Teach and Reinforce
- Revise intervention plan as needed
- On-going monitoring and communication with staff

Be involved. Don’t just write a plan and walk away. More often than not it will end up costing you more time as you are called in to modify the plan after it “doesn’t work.”

Lack of Support Available to Implement

- Fidelity is perhaps #1 issue affecting success of behavior plans
- May not have resources to implement all day long
- Start with small period of day with 100% fidelity, then “break down intervention,” then expand to other times of day

Teachers don’t usually actively “teach” early reading skills ALL DAY LONG – it’s impractical. Reading is taught intensively for 30-60 minute periods: Practicing sounds that will be read, reminding, cueing, repeating, feedback, modeling, etc., etc. Once students start to develop these skills during the instructional period, we start to expect them to read during other class activities, albeit with fewer intensive teaching strategies.

Behavior can be targeted the same way. Intensive application of interventions for a period of the day.
Once the behavior is responsive to intervention during that period, fade back some of the strategies to a level that is more practical to implement at other times of the day. Once that is achieved, begin to target the behavior during other times of the day, with the less intensive supports.

You can encourage staff to develop a self-care plan: How will you think about the behavior differently to reduce negative thoughts/perceptions. What will your self-script be? How will you manage your personal needs? Who/How/When can you ask for support from somebody else?

“QTIP” is a way to communicate to another team member that you need a break, or offer a break to another team member. It won’t convey frustration or weakness to students or other staff members. “Can somebody please get me a QTIP?”

**Staff Support**

- Be encouraging and responsive to questions and requests
- Prep staff on importance of taking care of themselves
- QTIP (Quit Taking in Personally)
Facilitator’s Handbook

By: Bryan Johnson
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Facilitator’s Information

How to Use This Guide

This guide provides you with the information you will need in order to present Functional Behavior Assessment in the Schools: From Valid Assessment to Successful Interventions. This presentation is designed to be delivered as an interactive training workshop. The complete workshop should take approximately 7 hours; it may be delivered in one full-day in-service, or broken up across two days. Breaks may be given at the presenter’s discretion. The information in this guide is organized around facilitator information, interactive quizzes, activities, and handouts.

How to Use the CD-ROM

The CD-ROM includes the presentation, pre-reading materials, information on how to present activities, and the handouts for participants. The minimum computer requirements to run this CD are the installation of Microsoft PowerPoint 2007 (or compatible), Microsoft Word 2007 (or compatible), and Adobe Acrobat Reader. A free installation of Adobe Acrobat Reader is available at http://get.adobe.com/reader/.

Background Knowledge Needed

In order to successfully present and train participants on the procedures contained in this presentation, the facilitator must have a solid foundation in principles of behavior
analysis, including (a) behavioral learning theory, (b) principles of reinforcement, (c) functional analysis, and (d) positive behavioral interventions. The presenter should also have thorough understanding of behavior support plan/behavior intervention plan development. For further information, the facilitator should refer the suggested pre-readings, and the reference list.

Suggested Pre-Readings

Principles of Applied Behavior Analysis


Functional Analysis Methodology


Comparative Studies of Indirect, Descriptive, and Experimental Assessment Procedures


**Alternative Functional Analysis Procedures**


Materials

Prior to presenting the facilitator will need the following materials:

**Activity Handouts**

Please print handouts for each participant. Handouts can be obtained from the CD-ROM under the file Participant Handouts.

**Computer**

A computer with Microsoft PowerPoint 2007 compatible viewer is needed.

**Projector**

A projector that is compatible with the computer that will be used to run the presentation application.

**Writing Instruments**

Pens and/or pencils should be provided to participants to take notes and complete activities.

**Presentation Room**

A room should be obtained that is large enough for all participants to view and space to work in small groups.
The presentation is composed of five main sections: Conducting Valid Assessment, Defining Procedures, Setting Goals and Expectations, Planning for Modifications, and Monitoring Progress. This workshop provides participants with training to conduct a variety of functional analysis procedures that demonstrate improved validity over common functional behavior assessment procedures used in school settings. The entire workshop should take approximately 7 hours to complete. When planning the schedule for the presentation, the following provides a suggested time allowance for each section:

Conducting a Valid Assessment…………….3 hours
Defining Procedures……………………..2 hours
Setting Goals and Expectations……………. 30 minutes
Planning for Modifications…………………..30 minutes
Monitoring Progress………………………45 minutes
Final Questions……………………………..15 minutes

Breaks should be provided throughout the training and will add to the total time required to complete. It is up to the facilitator to manage time wisely and incorporate breaks at appropriate times.
Interactive Quizzes

Throughout the presentation a number of opportunities are included for participants to demonstrate what they have learned up to that point. These activities also allow the presenter to assess if certain topics need to be reviewed, or if the audience is ready to move on to the next topic. In order to participate in the interactive quizzes, audience members must take out the ABCD letter page of their handout and separate the letters. After reading the question and response options, allow approximately 15-30 seconds for participants to decide on their answer. Instruct everybody to hold up their response in unison to allow. The correct answer to each interactive quiz question will be displayed after clicking on the slide advance button. Provide a brief explanation for the correct response, and allow participants to ask questions for further clarification. If a large portion of participants (more than 10%) did not identify the correct answer, it is recommended that the presenter review that information before moving on to the next topic.
Activities

Activities should be completed in small groups of 4 participants. Activity length will vary, but sufficient time should be allowed to ensure every member of every group has the opportunity to participate.

Activity 1: Traditional Functional Analysis (Analogue Functional Analysis)

For additional background information on conducting Functional Analysis please refer to the article listed in the Suggested Pre-Readings section of this manual.

- **Objective:** Participants will understand the basic procedure for conducting a traditional functional analysis.

- **Procedure:** Each member of a group will be responsible for one of four roles in the FA activity – demand condition implementer, attention condition implementer, control condition implementer, and the student. After reviewing the FA procedures in the presentation, each group will identify a behavior to target and act out an abbreviated FA. Each implementer will have approximately 2 minutes to implement their condition with the student and respond to observed target behaviors accordingly. After 5-10 minutes of preparation time, have each group demonstrate their FA procedure while other groups record data. Allow participants to provide positive feedback and one suggestion.
o Note on Data Collection: Groups that are not demonstrating will record
data on the corresponding data sheet available in the Participant Handouts.

In the traditional FA, each instance of behavior is tallied in the
corresponding condition section.

o FA Results: After each group demonstrates all conditions, review the data
that was collected by other groups. Discuss possible identification of
behavioral function. As this is a mock activity, allow the group to
speculate about how future data sets would appear to facilitate in making
conclusions about behavioral function.

Activity 2: Classroom Based FA

o Objective: Participants will understand how to conduct a classroom based
FA.

o Procedures: Follow the same procedure used for Activity 1. Ensure that
group members rotate roles so they experience a different assessment
condition for each activity. Provide feedback and encourage participant
feedback as with Activity 1.

o Data Collection: Observing groups will collect data on the corresponding
data sheet in the Participation Handouts.

o FA Results: Discuss possible identification of behavioral function as with
Activity 1.
Activity 3: In-Situ Assessment

- Objective: Participants will understand how to conduct an In-Situ assessment.
- Procedures: Groups will discuss what an In-Situ assessment may include based on the same behavioral scenario from Activities 1 and 2. Given a hypothesized function from results of their Traditional or Classroom Based FA, have groups describe their proposed assessment. Discuss how long In-Situ conditions would be implemented (Intervention vs. Baseline), and how data would be collected/analyzed.

Activity 4: Brief FA

- Objective: Participants will understand how to conduct a Brief FA contingency reversal.
- Procedure: Discuss in groups how to implement the contingency reversal phase of a Brief FA. Given a hypothesized function from results of their Traditional or Classroom Based FA, groups will define a potential alternative behavior and how to conduct their sessions of baseline vs. reversal. If time allows, have each group demonstrate their proposed baseline and reversal sessions. At least one group should demonstrate for the group.
Activities from Defining Procedures Section

- Objective: Participants will identify strategies for each intervention component (NCR, DRA, and EXT) that correspond to each behavioral function (Attention, Escape, Automatic).

- Procedure: After presenting the description of each procedure, and how each addresses behavioral function, have groups discuss possible intervention strategies.

- Discussion Questions:
  - How does the strategy address the identified behavioral function?
  - Is the strategy practical for the proposed setting?
  - How could the strategy be faded out over time?
Participant Handouts

Each participant should receive a handout packet. Handouts can be found on the CD-ROM in the file labeled Participant Handouts. Each handout includes a copy of the following:

1. Presentation slides 3 per page
2. ABCD Page for Interactive Quizzes
3. Traditional Functional Analysis Data Sheet
4. Classroom-Based Functional Analysis Data Sheet
APPENDIX C

CD-ROM

This CD includes: *Functional Behavior Assessment in the Schools: From Valid Assessment to Successful Intervention* presentation, Facilitators Handbook, Participant Handouts, and Pre-Readings. The minimum computer requirements to run this CD-ROM is the installation of *Microsoft Powerpoint 2010 (or compatible)*, *Microsoft Word 2010 (or compatible)*, and *Adobe Acrobat Reader*. A free installation of Adobe Acrobat Reader is available at [http://get.adobe.com/reader/](http://get.adobe.com/reader/).
REFERENCES


descriptive methods: Implications for behavioral assessment. *Journal of Applied Behavior

interventions and supports?* Storrs, CT: George Sugai.

behavior support team's guide to developing and evaluating behavior support plans for
behaviors that interfere with the learning of student and/or peers.* Los Angeles, CA:
Browning-Wright.

Analyses of response-stimulus sequences in descriptive observations. *Journal of Applied


Thomas & J. Grimes (Eds.), *Best practices in school psychology* (pp. 337-348). Bethesda,
MD: The National Association of School Psychologists.

Tarbox, J., Wilke, A.E., Najdowski, A.C., Findel-Pyles, R.S., Balasanyan, S., Caveney, A.C., …

Thompson, R.H., & Iwata, B.A. (2007). A comparison of outcomes from descriptive and
functional analyses of problem behavior. *Journal of Applied Behavior Analysis, 40*(2),
333-338. doi:10.1901/jaba.2007.56-06


