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Training Caregivers to Conduct a Descriptive Behavioral Assessment

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by

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Abstract

We evaluated the efficacy of a training package in teaching caregivers to conduct an A-B-C checklist recording functional behavioral assessment. The training package consisted of a Microsoft PowerPoint presentation containing pertinent background information, a task analysis of assessment procedures, and examples of common environmental patterns that occasion and maintain challenging behavior and practice with supportive and corrective feedback. Participants conducted assessments while observing their own child engage in challenging behavior in the natural environment and while watching video recordings of other individuals engage in a variety of challenging behaviors. Data were collected on participants' accurate marking of antecedent, behavior, and consequence events that occurred during observations. Results showed that, following training, both participants correctly identified greater than 90% of events that occurred in training videos and 100% of events that occurred in the natural environment. Implications for future research are discussed.

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Chapter I: Introduction and Literature Review

Applied behavior analysis is the application of behavior principles to socially important behaviors (Baer, Wolf, & Risley, 1968). This study is predicated upon understanding the variables that affect an individual's behavior in an effort to better society. While some of these variables exist internal to the individual, these may be difficult to observe and manipulate, and therefore are not readily available for a scientific analysis (Skinner, 1953). Instead, a behavioral analysis focuses on the observable variables in the individual's immediate and historical environment that affect his or her behavior. By understanding the functional relationships that exist between environmental variables and behavior, it is possible to predict how an individual will behave in certain situations. With this understanding, it becomes possible to manipulate the environment so that behavior may be modified. In the field of applied behavior analysis, a functional assessment is performed to identify the environmental variables controlling socially important behaviors, and the information gathered is used to prescribe function-based interventions so that behavior may be improved (Betz & Fisher, 2011).

Functional Behavioral Assessment

Functional behavioral assessment is the process of collecting information about environmental variables that control a target behavior (Kelley, LaRue, Roane, & Gadaire, 2011). Environmental events which affect the occurrence of a target behavior may occur prior to the behavior, occasioning its occurrence, or follow the behavior, affecting the future likelihood of its production. This information may be collected indirectly from individuals who are familiar with the client, through direct observation of the client in the natural environment, or through the systematic manipulation of environmental variables. During assessment the assessor generates

an operational definition for a target behavior and identifies situations in which the behavior is likely and unlikely to occur. Cooper, Heron, and Heward (2007) broke down a functional behavioral assessment into a four-step process: (a) information is gathered through indirect and direct descriptive assessments, (b) this information is analyzed so that hypotheses about the function of target behaviors may be developed, (c) hypotheses are tested using an experimental functional analysis, and (d) function-based interventions are developed and prescribed based on the assessment results.

Indirect Behavioral Assessment

Indirect behavioral assessment refers to methods in which the assessor does not directly observe the client, but rather gathers information from people who know the client well (e.g., parents, caregivers, and/or teachers; Kelley et al., 2011). Indirect methods allow the assessor to collect information about the prevalence and topography of a target behavior, contexts in which the behavior is likely and unlikely to occur, and specific environmental antecedent and consequence events which are likely to immediately precede and follow the behavior. Common examples of indirect methods include structured interviews, questionnaires, rating scales, and checklists (Cooper et al., 2007). Surveys distributed to behavioral service providers have reported that indirect methods are the most frequently used type of functional behavioral assessment by practitioners serving individuals with developmental disabilities (Desrochers, Hile, & Williams-Moseley, 1997; Ellingson, Miltenberger, & Long, 1999) and are used by most schools serving individuals with emotional and behavioral disorders (Kern, Hilt, & Gresham, 2004).

Indirect assessment methods are advantageous as they may provide relevant information, require little training to conduct, and be more efficient than direct assessments methods (Kelley et al., 2011). A significant disadvantage of indirect assessment methods is that they may provide unreliable information which lacks validity (Kelley et al., 2011). For example, several investigations have scrutinized the reliability of the information gathered from the Motivation Assessment Scale (MAS) developed by Durand and Crimmins (1988). The MAS is a 16-item questionnaire used by many practitioners (Ellingson et al., 1999), which requires the assessor to rate the likelihood that a client demonstrates aberrant behavior in a variety of situations. Durand and Crimmins (1988) originally administered the MAS to the teachers of 50 individuals with autism or other developmental disabilities who displayed self-injurious behavior and reported high reliability ratings both between teachers and over time. The authors also reported high levels of validity for the MAS, as the ratings provided by the teachers accurately predicted the behavior of the participants in controlled analogue assessments.

Subsequent research on the reliability of the MAS has reported significantly lower levels of inter-rater reliability (Newton & Sturmey, 1991; Zarcone, Rodgers, Iwata, Rourke, & Dorsey, 1991). Newton and Sturmey (1991) assessed a variety of challenging behaviors demonstrated by 12 adolescents and adults with intellectual disabilities using the MAS and found low levels of inter-rater reliability. The authors suggested that varying rates, topographies, and maintaining consequences of the target behavior being assessed may all contribute to the reliability of the results of the MAS. Zarcone et al. (1991) also attempted to replicate the findings of Durand and Crimmins (1988) with regards to levels of inter-rater reliability. The MAS was administered to 55 individuals with developmental disabilities to identify the source of reinforcement for self-

injurious behavior in either an institutional or school setting. This investigation also reported low levels of inter-rater reliability using the same correlational analysis methods as Durand and Crimmins (1988) as well as more stringent analytical methods. Zarcone et al. (1991) suggested that low inter-rater reliability may be due to items on the questionnaire being ambiguous and subjective. Following their inability to replicate the results of Durand and Crimmins (1988), Zarcone et al. (1991) questioned the utility of the MAS and recommended exercising caution when administering the assessment and interpreting the results.

While indirect behavioral assessments are commonly used, efficient, relatively easy to implement, and may provide useful information about the function of a target behavior, their results must be interpreted carefully. The information collected may be subjective and the results of these assessments may be biased, unreliable, and inaccurate (Cooper et al., 2007; Kelley et al., 2011). Researchers have recommended that indirect assessments should not be used instead of direct assessments (Zarcone et al., 1991), but rather as a preliminary step in a comprehensive functional behavioral assessment (Cooper et al., 2007; Kelley et al., 2011; Repp & Karsh, 1994).

Descriptive Behavioral Assessment

Descriptive behavioral assessment refers to methods in which the assessor collects information about the prevalence and topography of a target behavior and environmental variables which are correlated with the occurrence or non-occurrence of that behavior through repeated, direct observations of the client in the natural environment (Thompson & Borrero, 2011). This information may be used to assess functional relations between a behavior and the environment in the natural context (Mace & Lalli, 1991). When the results of a descriptive

assessment demonstrate a high degree of correlation between a target behavior and specific environmental events, hypotheses regarding the function of the behavior may be developed, but this information is correlational only (Lerman & Iwata, 1993; Mace & Lalli, 1991). As environmental variables are only observed in a descriptive assessment and not manipulated, functional relations between the environment and behavior can only be suggested and not definitively demonstrated (Bijou, Peterson, & Ault, 1968; Mace & Lalli, 1991). While descriptive assessments are most commonly used to generate hypotheses regarding the function of a target behavior, these methods have also been used in research to identify contingencies which are common in natural settings, establish baseline rates of behavior to assess the efficacy of future treatments, and study conceptual behavioral concepts in the natural environment (Thompson & Borrero, 2011).

Surveys completed by practitioners serving individuals with developmental disabilities have reported that descriptive assessments are used with 40%-60% of clients (Ellingson et al., 1999) and that respondents believe these methods, compared to other assessment methods, provide the most useful information about the function of problem behavior (Desrochers et al., 1997). Surveys have also reported that descriptive assessments conducted in the natural setting are the most frequently used assessment method in schools serving individuals with emotional and behavioral disorders (Kern et al., 2004).

Descriptive methods are advantageous as the results are based upon information that is collected through the direct observation of an individual's aberrant behavior as it occurs in the natural environment (Lerman & Iwata, 1993). The information collected may be more objective than that obtained through indirect methods as the process is not dependent upon recollections of

those familiar with the client. These methods may also be relatively easy to implement (Arndorfer, Miltenberger, Woster, Rortvedt, & Gaffaney, 1994) and may provide qualitative (Thompson & Borrero, 2011) as well as quantitative (Axelrod, 1987; Bijou et al., 1968) information about a target behavior. A major limitation of descriptive methods is that the results may indicate the existence of a functional relation when there is none (Thompson & Borrero, 2011). That is, environmental events may be highly correlated with a target behavior even though the two are not functionally related. Additionally, descriptive methods may fail to identify maintaining environmental variables which only follow a target behavior occasionally or in contexts not captured during observations (Lerman & Iwata, 1993). Common descriptive assessment methods include scatterplot assessment (Touchette, MacDonald, & Langer, 1985), A-B-C recording (Cooper et al., 2007; Lerman & Iwata, 1993), and quantified A-B-C recording (Bijou et al., 1968).

Scatterplot assessment. Scatterplot assessment is a descriptive method that may reveal temporal distributions of a target behavior in the natural environment (Touchette et al., 1985). An observation period is broken down into short, discrete time periods and the occurrence or frequency of the target behavior within these periods is recorded and graphed so that temporal behavioral patterns may be identified. If the target behavior reliably occurs during certain periods, modifications may be made to the environment during these times to help decrease the likelihood of that behavior. Touchette et al. (1985) used a scatterplot assessment to analyze aggressive, self-injurious, or self-abusive behavior demonstrated by three individuals diagnosed with developmental disabilities. For two out of the three participants, the assessment identified temporal patterns of the target behavior and the information was used to make alterations to the

environment that effectively decreased the likelihood of the target behavior. For the third individual, the scatterplot assessment produced data that were uninterpretable, which the authors suggested might be due to an unstable environment. This prompted the investigators to create a fixed activity schedule for the individual, which allowed a pattern of self-injury to be identified, and a subsequent intervention to be introduced. The authors concluded that while scatterplot assessments may identify temporal patterns of behavior and provide approximations of response frequency and rate over time, they are limited in their ability to identify specific environmental variables that control a target behavior.

Subsequent research has failed to demonstrate similar efficacy for scatterplot assessments (Kahng et al., 1998). Kahng et al. (1998) replicated the study by Touchette et al. (1985) with a larger sample of participants and over a longer period. When the authors analyzed the scatterplots from 15 participants they were unable to identify reliable temporal distributions of target behaviors for any of them. They recommended the use of alternative assessment methods due to the scatterplot assessment's inability to identify the specific antecedents and consequences affecting an individual's aberrant behavior and the extensive amount of time taken to collect data which they found to be inconclusive.

Scatterplot assessments may provide quantifiable data that increases the efficiency with which other assessments are completed (Arndorfer et al., 1994). Arndorfer et al. (1994) had parents of participants complete scatterplot assessments to identify periods of time when aberrant behaviors were likely to occur. They then scheduled trained assessors to directly observe participants and record A-B-C data during these periods. This application demonstrated the

relative ease with which scatterplot assessments may be conducted and how their use may facilitate the overall functional behavioral assessment process (Arndorfer et al., 1994).

A-B-C recording. A-B-C recording is a descriptive assessment method in which an individual is directly observed in the natural setting and a variety of environmental events that precede and follow a behavior of interest are recorded (Thompson & Borrero, 2011). Extensive training may not be required to teach an individual to conduct an A-B-C recording, but the descriptive account must be accurate and objective for the results to be valid (Lennox & Miltenberger, 1989). Recording should focus on observable environmental events which occur within close temporal proximity to the target behavior. Cooper et al. (2007) recommend that observers conducting A-B-C assessments use shorthand or codes to increase the efficiency of recording, record only observable events to maintain objectivity, and remain as unobtrusive to the environment as possible. There are several variations of the A-B-C recording method, each with its own advantages and disadvantages.

A narrative recording is the most unstructured type of A-B-C recording in which the assessor composes a running description of environmental events that surround behaviors of interest (Thompson & Borrero, 2011). Data are only recorded when a behavior of interest is observed (Cooper et al., 2007). This method is advantageous because it is simple to implement and may provide detailed qualitative information about a target behavior and the environmental events surrounding it (Thompson & Borrero, 2011). The information collected may be useful for developing operational definitions and identifying potential replacements for aberrant behaviors. Disadvantages of this method include the possibility that the information gathered may be subjective, that the process may be time consuming, and that the results may provide little

quantitative information, making analysis difficult. Furthermore, since data are only collected when a behavior of interest occurs, the assessor cannot determine if the correlated environmental events are also likely to occur in the absence of the behavior (Cooper et al., 2007). Therefore, this method may provide an incomplete account of environmental events, possibly indicating functional relations which do not exist. Cooper et al. (2007) recommend using narrative recordings as a preliminary component of a more comprehensive functional behavioral assessment.

Lennox and Miltenberger (1989) recommended a more structured A-B-C recording process in which the results of a preliminary narrative recording inform the development of a more direct observational system. This system is then used to quantify the frequency with which particular environmental events are correlated with the demonstration of the target behavior. The Detailed Behavior Report (DBR) (Groden, 1989; Groden & Lantz, 2001) is an example of a structured narrative recording. The DBR organizes information about environmental events into more specific antecedent and consequence categories. It prompts the assessor to record thorough descriptions of the target behavior, settings in which is it likely and unlikely to occur, immediate and distant antecedents which precede it, and consequences which follow it. This information is then used to create a checklist which allows the assessor to quantify how frequently the target behavior is correlated with each environmental condition. Together, this information is then summarized to plan for behavioral intervention. One major limitation of the DBR is that it prompts assessors to report covert information about what the individual is thinking or imagining and his or her emotional state (Thompson & Borrero, 2011). This may produce subjective information leading to erroneous assessment results. In general, structured narrative recordings

may provide more quantifiable data than the unstructured variety, but may be more complex, time consuming, and difficult to implement (Thompson & Borrero, 2011).

An A-B-C checklist is another structured form of A-B-C recording in which environmental antecedents and consequences and target behaviors are operationally defined prior to observation (Thompson & Borrero, 2011). A customized data sheet is created so that as the assessor observes the demonstration of the target behavior, he or she checks off the pre-defined antecedents and consequences that correlate with the occurrence of the behavior. The events included on the individualized checklist may be determined based upon information gathered from previous narrative recordings (Groden, 1989; Groden & Lantz, 2001), indirect assessments (Arndorfer et al., 1994), or the common functions of problem behaviors. The purpose of defining events prior to observation and organizing them into a checklist is to increase objectivity and decrease complexity so that the assessment is easier to conduct (Thompson & Borrero, 2011). The resulting data also permit a limited quantifiable analysis of the probability with which certain environmental events are correlated with the demonstration of a target behavior.

Arndorfer et al. (1994) used an A-B-C checklist in combination with other functional assessment methods to determine the function of a variety of aberrant behaviors for five participants. The authors found the results of the A-B-C checklist to be valid as the findings were verified by a subsequent experimental analysis. They also successfully trained the mothers of the five participants to use the A-B-C checklist. Although the inter-rater reliability of the results of the assessments between the experimenters and the mothers was low because the

mothers failed to score repeated instances of target behaviors, the parents and the researchers did identify the same functions for aberrant behaviors using the A-B-C checklist.

Cooper et al. (2007) reported another method called A-B-C continuous recording. Similar to the A-B-C checklist, specific target behaviors, antecedents, and consequences are first identified via an indirect assessment or narrative recording. These events are given codes and data are collected on the occurrence of each regardless of whether or not the target behavior occurs. The main advantage of this method is that data are collected continuously, allowing the assessor to collect information on environmental events that occur in the presence and absence of the target behavior. Data collected in this manner may be analyzed in a quantifiable manner to determine the probability that environmental events are correlated with both the occurrence and non-occurrence of a target behavior. This more complete account of behavior and the environment may reduce the likelihood that functional relations that do not actually exist are identified. A limitation of this method is that correlations between environmental events and behaviors of interest may be difficult to identify, particularly if the environmental events do not reliably occur with the target behavior (Cooper et al., 2007).

Quantified A-B-C recording. Bijou et al. (1968) presented an assessment method that combines descriptive and experimental approaches and provides detailed information about the quantitative and qualitative characteristics of an individual's behavior and multiple environmental variables. The assessment procedures consist of specifying the situation for observation, operationally defining behavioral and environmental events to be recorded, measuring the reliability with which different observers record these events, and then collecting, analyzing, and interpreting the data. The situation selected for observation and operational

definitions of relevant events may be based upon the results of a narrative recording. The authors emphasize the importance of defining behavioral and environmental events in observable terms so that multiple observers may reliably record the occurrence or nonoccurrence of events. Once events are objectively defined they may be coded to increase recording efficiency. Observers may then be trained on the observation system and data collection may begin. Precise data on the occurrence of specified events are recorded either by their frequency and duration, or using an interval or time-sample recording system. Bijou et al. (1968) demonstrated the use of this system with a young boy in a nursery school setting. The system provided detailed information about the frequency with which the boy, his teachers, and his peers demonstrated selected behaviors in a variety of environmental contexts. Analysis of the resulting data identified correlations between the boy's behavior and environmental events, allowing the authors to generate hypotheses about functional relations controlling the boy's behavior.

The method described by Bijou et al. (1968) is advantageous as it provides qualitative and detailed quantitative information about both an individual's behavior and multiple environmental events. From this information, hypotheses about the functional relations controlling an individual's behavior in the natural environment may be proposed, but since environmental variables are not manipulated, these hypotheses still are not verified (Bijou et al., 1968). Systems such as these are used in situations that require more quantifiable data, such as in research on the integration or comparison of different assessment methods (Thompson & Borrero, 2011). The main drawback limiting the clinical application of this method is the complexity of the data collection system. The system may be difficult to design and use, thus

requiring highly trained observers to implement. These limitations may make it only available to those with substantial resources.

Experimental Functional Analysis

An experimental functional analysis differs from indirect and descriptive functional assessments in that environmental antecedent and consequence events are systematically manipulated so that their individual effects on a target behavior may be identified and quantitatively measured (Cooper et al., 2007). Experimental analyses rely upon high levels of experimental control over environmental variables to clearly demonstrate functional relations. The environmental variables selected for manipulation in an experimental analysis should be based upon those variables present when the individual demonstrates the target behavior in the natural environment. Experimental functional analyses are often times referred to as analogue analyses because environmental variables are manipulated systematically as opposed to occurring as they would in the natural context.

Iwata, Dorsey, Silfer, Bauman, and Richman (1982/1994) describe a method for conducting an experimental functional analysis. The authors analyzed the function of self-injurious behavior (SIB) for nine individuals who demonstrated some degree of developmental delay. Their analysis consisted of one control condition and three test conditions, each correlated with a different hypothesis for the function of the participants' SIB. In one test condition, positive reinforcement in the form of attention was provided contingent upon the demonstration of SIB. In another, negative reinforcement in the form of removal of non-preferred activities was provided contingent upon the demonstration of SIB. In the third, participants were left alone to determine if the SIB was automatically maintained by a variable which was not socially

mediated. In the control condition, participants were given frequent access to attention and no non-preferred activities were presented to determine if this context would reduce or eliminate the demonstration of SIB. The participants were repeatedly exposed to each of the four conditions and for six of the nine individuals, higher levels of SIB were reliably associated with a specific condition. This differential responding indicated that the consequence correlated with that condition was the environmental variable maintaining that participant's SIB. Subsequent research has demonstrated that positive reinforcement in the form of access to preferred stimuli or events may also maintain a problem behavior (Betz & Fisher, 2011). Based upon this information, a fourth test condition which gives the individual access to a preferred stimuli or event contingent upon the demonstration of the target behavior is often included in functional analyses.

In an experimental functional analysis, each condition has three component mechanisms which facilitate differential responding by the participant between conditions (Iwata, Pace, Cowdery, & Miltenberger, 1994). Each condition has a unique antecedent discriminative stimulus which signals to the participant the consequence that will follow the demonstration of the target behavior. Each condition also employs a motivating operation to increase the reinforcing value of the consequence for that condition and increase the likelihood that the participant will engage in behaviors which have historically resulted in that consequence. Each condition also has a different reinforcing consequence that is delivered on a dense schedule contingent upon, and immediately following, the demonstration of the target behavior.

The main advantage of experimental functional analyses is that they provide clear, reliable, and valid information regarding the environmental variables maintaining the behavior

being evaluated (Betz & Fisher, 2011). This definitive information allows for the development of a function-based intervention, which has been demonstrated to be the most effective in the treatment of severe challenging behavior. These advantages make experimental functional analysis the most used assessment method in research on the assessment and treatment of challenging behavior (Arndorfer & Miltenberger, 1993). While this method is prevalent in the field of research, it is used much less frequently in clinical settings (Desrochers et al., 1997; Ellingson et al., 1999; Kern et al., 2004). Desrochers et al. (1997) reported that survey respondents believed that experimental functional analyses provide the least information about the function of their clients' severe problem behavior, and are the least used method when compared with other functional assessment methods. Similarly, Ellingson et al. (1999) reported that practitioners conducted functional analyses in a controlled environment with fewer than 20% of clients and that practitioners believed direct observation was a more effective functional assessment methodology. Kern et al. (2004) also reported that in schools serving individuals with emotional and behavioral disorders, analog functional analyses were only conducted in 20% of the reported studies.

Despite their effectiveness, experimental functional analyses have several distinct disadvantages which may limit their utility. Perhaps the most limiting factor is that this method requires extensive resources in the form of time, effort, and professional expertise (Cooper et al., 2007). Experimental analyses may result in the participant temporarily demonstrating the target behavior more frequently as it is reinforced on a dense schedule (Betz & Fisher, 2011), and the target behavior may acquire new functions as the participant is exposed to the different conditions (Cooper et al., 2007). Experimental analyses also may not be applicable to behaviors

which occur infrequently, or in very limited contexts. The validity of results may also be questionable as functional relations demonstrated to control a target behavior in the analog setting may not accurately represent functional relations controlling the behavior in the natural environment.

Comparing the Results of Assessment Methods

While descriptive methods have strong utility (Thompson & Borrero, 2011) and are frequently used by practitioners (Ellingson et al., 1999; Kern et al., 2004), the results may lack validity (Thompson & Borrero, 2011). Alternatively, the results of experimental functional analyses have superior validity, but the methods have less utility (Betz & Fisher, 2011) and are used much less frequently by practitioners (Desrochers et al., 1997; Ellingson et al., 1999). Several studies have compared the validity of results from the different assessment methods (Conroy, Fox, Crain, Jenkins, & Belcher, 1996; Hall, 2005; Lerman & Iwata, 1993; Thompson & Iwata, 2007).

Lerman and Iwata (1993) assessed the SIB of six adults diagnosed with mental retardation across a variety of settings using both descriptive and experimental methods and compared the results. The experimenters conducted the experimental functional analyses in an analog setting and conducted quantified A-B-C recordings across a variety of settings that each participant encountered in his or her natural daily schedule. All data were analyzed by calculating conditional probabilities that SIB would occur given the presence of certain antecedent and consequence events. Results of the descriptive and experimental analyses corresponded for only one participant whose behavior was maintained by automatic reinforcement. For the other five participants, the results of the descriptive assessment were not

consistent with the results of the experimental analysis. Specifically, the descriptive assessments indicated that social consequences were maintaining aberrant behavior, however they could not distinguish between social-positive reinforcement (e.g., attention) or social-negative reinforcement (e.g., escape) as the target behavior would contact both consequences at different points of the observation. The authors suggested that formal descriptive assessments may not be necessary or sufficient for identifying the variables maintaining an individual's problem behavior.

Conroy et al. (1996) evaluated a variety of challenging behaviors demonstrated by four young boys with developmental disabilities using both descriptive and experimental methods and compared the results. The researchers conducted the experimental functional analyses in a partitioned area in each participant's classroom and conducted quantified A-B-C recordings in each participant's classroom during a variety of times and activities. Results of the experimental functional analysis were conclusive for only two of the four participants, and the results of the experimental analysis matched the results of the descriptive assessment for only one of those two individuals. The authors acknowledged that the inconclusive results may have indicated that the participants' aberrant behaviors had multiple functions, but recommended that, in clinical settings, experimental functional analyses not be the first assessment choice but instead used when indirect and descriptive assessment methods prove inconclusive. They also recommended that, when used, experimental functional analyses be a component of a more comprehensive assessment package.

Hall (2005) assessed a variety of problem behaviors demonstrated by four adults diagnosed with severe or profound developmental disabilities using indirect, descriptive, and

experimental assessment methods and compared the results. The author conducted quantified A-B-C recordings at various times and locations, experimental functional analyses, and had the support staff who worked with the participants complete rating scale questionnaires. When compared, the results of the descriptive and experimental assessments matched for only one of the four participants when both assessments indicated attention as the variable maintaining problem behavior. The descriptive assessment actually identified attention as the maintaining variable for the problem behavior demonstrated by all four participants. For three out of the four participants, the results of the indirect and experimental assessments indicated the same maintaining variable. The author reported that the descriptive assessment took approximately ten hours to complete, the experimental analysis two hours, and the indirect assessment fifteen minutes. Due to the significant amount of time required to conduct the descriptive assessments and the uncertain validity of the results, Hall (2005) questioned the usefulness of including a descriptive assessment in a comprehensive functional assessment.

Thompson and Iwata (2007) compared the results of previously conducted descriptive and experimental functional assessments that evaluated a variety of problem behaviors demonstrated by twelve adults diagnosed with severe to profound mental retardation. The results showed that the consequence with the highest conditional probability identified by the descriptive assessment matched the maintaining variable identified via the experimental functional analysis for only three out of the twelve participants. The descriptive assessments often indicated attention as a potential maintaining variable of problem behavior when the experimental functional analysis demonstrated that it was not. For many of the participants, the experimental functional analysis demonstrated that problem behaviors were maintained by

access to tangibles or escape from demands, although during the descriptive assessment tangibles were not delivered following demonstrations of problem behavior and problem behavior did not follow the presentation of demands. The authors acknowledged that it was difficult to determine if these were cases in which the experimental functional analyses revealed variables which could maintain problem behavior, but were not doing so in the natural environment, or if these maintaining variables were just presented in the natural environment on very thin schedules. Thompson and Iwata (2007) concluded that results of descriptive assessments should be interpreted with caution and that hypotheses regarding functions of problem behavior be verified through experimental functional analysis.

Studies that have compared the results of descriptive assessments and experimental functional analyses have produced conflicting results (Conroy et al., 1996; Hall, 2005; Lerman & Iwata, 1993; Thompson & Iwata, 2007). Descriptive assessments may indicate several potential maintaining variables for aberrant behavior (Lerman & Iwata, 1993), or an incorrect maintaining variable (Hall, 2005), while a functional analysis may isolate a single controlling variable. Descriptive assessments are also likely to indicate attention as a maintaining variable when it is not (Hall, 2005; Thompson & Iwata, 2007), and may be more likely to effectively identify automatic reinforcement as the variable maintaining aberrant behavior than forms of social reinforcement (Lerman & Iwata, 1993). Descriptive assessments also may provide useful information about the function of problem behaviors when the results of experimental functional analyses are inconclusive (Conroy et al., 1996). Authors recommended both assessment methods as components in a comprehensive functional behavioral assessment (Cooper et al., 2007; Kelley et al., 2011).

Combining Descriptive and Experimental Methodologies

Several researchers have worked on combining descriptive assessment and experimental analysis methodologies to capitalize on the strengths of each (Arndorfer et al., 1994; Freeman, Anderson, & Scotti, 2000; Harding, Wacker, Cooper, Asmus, Jensen-Kovalan, & Grisolano, 1999; Mace & Lalli, 1991; Sasso et al., 1992; Tiger, Hanley, & Bessette, 2006). The goal of this research is to develop methods with strong utility that obtain valid results as efficiently as possible (Thompson & Borrero, 2011).

Preliminary descriptive assessment generates hypotheses confirmed by experimental analysis. One approach is to conduct an initial descriptive assessment to generate hypotheses about the variables maintaining a target behavior, and then conduct an experimental functional analysis including only test conditions which are suggested by the descriptive assessment (Arndorfer et al., 1994; Harding et al., 1999; Mace & Lalli, 1991). Mace and Lalli (1991) used this approach to assess the function of bizarre speech demonstrated by a man diagnosed with developmental disability. The researchers first conducted a quantified A-B-C continuous recording assessment which indicated that escape from demands and access to attention were maintaining the man's aberrant behavior. Using this information, they then conducted an experimental functional analysis including only conditions that manipulated task demands and attention. The results of this analysis isolated contingent attention as the sole variable maintaining the man's bizarre speech and the authors prescribed an appropriate function-based treatment. The authors reported that the descriptive assessment contributed to the design and interpretation of the experimental analysis by providing information regarding the type of situations that the participant typically encountered, qualitative information about the

environmental variables that often accompanied the target behavior, and an estimate of the natural schedule on which the environmental variables were presented. This information permitted the conditions of the experimental analysis to reflect conditions in the natural context in which the target behavior was demonstrated, thus increasing the precision and generality of the experimental analysis. The authors reported that the main limitation of this method was the additional time required to conduct both assessments.

Mace, Lalli, and Lalli (1991) further recommended this approach and proposed that the method may increase the efficiency of a comprehensive functional behavioral assessment. As reported earlier, Arndorfer et al. (1994) implemented a similar method with success. An initial descriptive assessment was conducted and the results provided information from which the researchers generated hypotheses about the function of the participants' aberrant behavior. A subsequent experimental analysis was then conducted that only included conditions testing the hypotheses generated from the descriptive assessment. The method produced conclusive results about the functions of aberrant behaviors demonstrated by all participants and function-based interventions were prescribed.

Harding et al. (1999) implemented a comparable method to evaluate a variety of problem behaviors demonstrated by three preschool-aged boys diagnosed with developmental disabilities. Hypotheses were generated based upon the results of descriptive assessments and brief experimental functional analyses were conducted in the natural environment. Only conditions testing the hypotheses were included. The assessment method effectively identified the variables maintaining problem behaviors and function-based interventions were prescribed. The authors praised the flexibility the combined approach offered and reported that the advantages of the

method include the ability to initially gather information without disrupting the participant's natural environment, to refine hypotheses, and to conduct brief experimental analyses in the natural context. The main limitation of this method is that variables maintaining a target behavior may go unnoticed during the initial descriptive assessment and then a condition to test for those variables may not be included in the experimental analysis (Thompson & Borrero, 2011).

Structured descriptive assessment. A different integrated approach investigated by some researchers is the use of a descriptive assessment that is structured similarly to an experimental functional analysis (Freeman et al., 2000; Sasso et al., 1992). In a structured descriptive assessment, specific activities that represent the conditions which are typically evaluated in an experimental functional analysis are purposefully observed (Sasso et al., 1992). Sasso et al. (1992) assessed the aggressive behavior of two children diagnosed with autism in the school setting using both a structured descriptive assessment and an experimental functional analysis and compared the results. The experimenters first conducted an experimental functional analysis in an analog setting and then trained teachers to conduct a structured A-B-C recording and an experimental functional analysis in the classroom. A-B-C recording was scheduled during times when the participant was playing alone and when varying levels of demands and attention were given. Researchers found that all three assessment methods produced comparable results, suggesting the validity of both structured descriptive and experimental assessments in the natural setting. Critics, however, have argued that structuring descriptive assessments by selecting certain activities to observe because they resemble the typical conditions tested during an experimental functional analysis may, by default, increase the correspondence between the

results of the two, and may compromise the naturalistic features of the descriptive assessment (Lerman & Iwata, 1993).

Freeman et al. (2000) conducted an unstructured descriptive assessment, a structured descriptive assessment, and an experimental functional analysis to assess the function of problem behaviors demonstrated by two children diagnosed with developmental disabilities. The authors proposed that the structured descriptive assessment was advantageous as it would increase the likelihood that relevant environmental events and target behaviors would be demonstrated, thus increasing the efficiency of the assessment process. They compared the results of the unstructured and structured descriptive assessments and found that the structured assessment increased the frequency of occurrence for both relevant environmental variables and target behaviors. The authors also found that the structured descriptive assessment and experimental analysis produced similar results regarding behavioral function for both participants. Freeman et al. (2000) concluded that the structured assessment may produce more valid results than an experimental functional analysis since the method captures behavior as it occurs in the natural environment and recommended use of the method in situations when experimental analyses are not viable or when interventions based upon the results of experimental analyses are ineffective.

Descriptive assessment when results of experimental analysis are inconclusive. In an effort to increase the efficiency of the functional behavioral assessment process, some authors recommended conducting an experimental functional analysis initially, and then using descriptive assessment methods only when the results of the experimental analysis are inconclusive (Iwata, 1994). Information provided by the descriptive assessment may then be used to make modifications to the experimental analysis in an attempt to make conditions more

similar to the natural environment in which the target behavior occurs. Tiger et al. (2006) used this approach to assess the function of hand mouthing demonstrated by a young boy diagnosed with non-specified developmental delay. When the authors initially conducted an experimental functional analysis in a therapy room, the results were undifferentiated as the behavior rarely occurred. The authors then analyzed the results from a quantified A-B-C recording and determined that the target behavior only occurred at significant rates in a particular context. They used this information to incorporate stimuli from this context into the conditions of a subsequent experimental functional analysis. This modification resulted in elevated rates of responding across all conditions, indicating that the behavior was maintained by automatic reinforcement. The results from the informed experimental analysis allowed for the prescription of an effective function-based treatment. Tiger et al. (2006) recommended introducing stimuli from the natural environment into the experimental analysis instead of attempting to conduct the experimental analysis in the natural environment as this allows the assessors to maintain high levels of control which could be compromised in the natural setting, thus skewing results.

Functional Behavioral Assessment Training Programs

Several studies have investigated effective methods for training individuals to conduct functional behavioral assessments (Iwata et al., 2000; Sasso et al., 1992; Wallace, Doney, Mintz-Resudek, & Tarbox, 2004). Sasso et al. (1992) effectively taught two teachers to conduct A-B-C descriptive assessments and experimental functional analyses in the classroom setting. Each teacher assessed the aberrant behavior of a child diagnosed with autism in her own classroom. The researchers first conducted an experimental functional analysis for the aberrant behavior demonstrated by each child in an off-site clinic and the results of these analyses were the

standard to which the results of the teacher conducted assessments were compared. Training and skills assessment was conducted on A-B-C descriptive assessment procedures first. Training began by providing the first teacher with a written description of how to conduct the assessment procedures in the classroom. Then the researcher met with the first teacher for two one-hour training sessions on A-B-C descriptive assessment procedures. During the first session, the researcher provided descriptions of individuals engaging in a variety of maladaptive behaviors and had the teacher code the behavior that was described. The teacher then progressed to coding the behavior of a student in the classroom as it was occurring in real time. During the second session, the researcher and teacher discussed the specific behavior of the student who was going to be assessed, the data collection system that was going to be used, and created a schedule for observations. Observations were scheduled during activities that resembled the conditions of an analog functional analysis to increase the likelihood that aberrant behavior would be observed. During this session all questions were answered. Following training, the A-B-C descriptive assessment was conducted in the classroom. This entire procedure was then repeated with experimental functional analysis procedures. A replication was then conducted by having the first teacher serve as the trainer for the second teacher using the same methods. The results of the study found that, for both teachers, the results of the A-B-C descriptive assessment and the classroom based experimental functional analysis were very comparable to the results of the analog functional analysis conducted by the researchers. The study demonstrated an effective method for teaching classroom teachers to conduct descriptive assessments and experimental analyses in the classroom setting. A limitation of this method was that fidelity measures were not taken to determine if the teachers were implementing all procedural components correctly.

Instead, accuracy was based solely upon the final results of the assessments. It is possible that the teachers did not implement the procedures correctly and still ended up with accurate results. If this were the case, then future assessments conducted by the teachers may produce inaccurate results.

Iwata et al. (2000) evaluated the effects of a training program designed to teach undergraduate students to conduct experimental functional analyses in simulated conditions. In this study graduate students role-played as clients demonstrating maladaptive behaviors to ensure the safety of all participants. Training on experimental functional analysis procedures was conducted in two phases. Phase 1 consisted of group training in a classroom. Participants read written descriptions and outlines of the different conditions that were included in the functional analysis. Then a graduate student discussed the procedures with the participants and showed video simulations of each condition. Phase 1 concluded with a 20 question quiz about the assessment process. Participants were required to score 90% or above on the quiz to proceed to phase two. If participants scored less than 90% feedback was given about incorrect answers, procedures were reviewed, and the quiz was retaken. This process was repeated until all participants scored 90% or above. During phase two participants conducted functional analysis sessions using notes and outlines from the first phase of training as prompts. Feedback was provided by graduate students following each session. If a participant implemented the procedures with less than 95% fidelity, they were immediately shown a video recording of their session while a graduate student provided feedback on the procedures they implemented correctly and incorrectly. These procedures were repeated until all participants scored 95% or above for two consecutive sessions. The results of the investigation showed that the training

program was effective as, following training, participants implemented the procedures with an average fidelity of 98%. The authors noted that, perhaps because the participants were undergraduate students with some exposure to applied behavior analysis, baseline scores were high (M = 70%) and that these type of scores might not be expected with truly naïve participants. An advantage of this training program over that conducted by Sasso et al. (1992) was that fidelity measures were taken on all components of the functional analysis process instead of solely on the assessment's results, ensuring accurate procedural implementation. A limitation of this investigation was that all participants were assessed under simulated conditions and no generalization probes were conducted to determine if skills generalized to real life situations (Iwata et al., 2000). The authors also noted that training was focused on a pre-defined set of skills and that conducting experimental functional analyses in the field may require professional judgments and procedural modifications to accurately assess the function of maladaptive behavior.

Wallace et al. (2004) evaluated the efficacy of a group training workshop to teach experimental functional analysis procedures. Two teachers and a school psychologist with no previous experience with functional analysis implementation and who had never taken a course in applied behavior analysis participated. The participants were given the methods section from Iwata et al. (1982/1994) to read and then a simulated assessment in which participants acted as assessors and researchers acted as clients was conducted to collect baseline measures on the participants' ability to implement experimental functional analysis procedures. Following the assessment, a three-hour training workshop was conducted. The workshop began by presenting material on the description and purpose of each functional analysis condition. This was followed

by videotaped demonstration of each condition, role playing, and a question and answer session. Following the training workshop, another simulated assessment was conducted. If a participant failed to implement the procedures with a fidelity score of 90% or above, specific verbal corrective feedback was provided immediately following the assessment. The simulated assessment was then conducted again and this procedure was continued until all participants met mastery criteria. The results of this investigation demonstrated the efficacy of the training program. During baseline, no participant scored above 50% on procedural implementation and following the workshop two of the three participants met mastery criteria (90% or above). Only one of the participants required corrective feedback, and following the feedback he met mastery criteria as well. One participant also completed a generalization probe 12 weeks after completion of the training workshop during which she implemented the functional analysis procedures in her classroom with 100% accuracy. The authors reported that limitations of the study included that generalization was only demonstrated with one of the three participants and that all participants were not randomly selected (Wallace et al., 2004).

Each of these effective training programs began by providing the participants with written information regarding assessment procedures, followed by a presentation or discussion with specific examples of procedural implementation (Iwata et al., 2000; Sasso et al., 1992; Wallace et al., 2004). Each program provided the participants an opportunity to have their questions answered and all programs provided behavior specific feedback as the participants practiced implementing the procedures, although Wallace et al. (2004) only did this if the participant did not initially meet mastery criteria. Sasso et al. (1992) successfully demonstrated generalization with both participants, but did not score the fidelity of each participant's ability to

implement the different procedural components. Iwata et al. (2000) and Wallace et al. (2004) both demonstrated that participants could implement procedural components with fidelity, but none of the participants in Iwata et al. (2000) and only one out of the three participants in Wallace et al. (2004) demonstrated the ability to generalize the learned skill to the natural environment. Future research on functional behavioral assessment training should present an efficient and effective training program that demonstrates that participants can implement procedures with acceptable fidelity in the natural environment.

Caregivers as Assessors

It is integral that the utility of functional behavioral assessment technologies is improved so that their usage in the field may increase. A significant factor limiting clinical application is the time constraint that Board Certified Behavior Analysts (BCBAs) face. Typically, paraprofessionals deliver direct services to the client while BCBAs provide case supervision. The BCBA has an assortment of responsibilities including behavioral assessment, program design, paraprofessional and caregiver training, data analysis, progress monitoring, program adjustment and revision, and report writing. Time constraint has been reported by practitioners as a significant factor limiting the use of experimental functional analyses, the assessment technology with the strongest validity (Desrochers et al., 1997). Training caregivers to effectively conduct descriptive assessments may free up some of the BCBA's resources so that he or she may conduct experimental functional analyses, thus increasing the quality of services delivered.

Caregiver training may also increase the validity of descriptive assessment results. A reported limitation of descriptive assessments is that they may fail to identify maintaining

variables that only follow aberrant behavior occasionally, or in contexts not captured during observations (Lerman & Iwata, 1993). Since caregivers spend significantly more time with clients, they may be able to conduct descriptive assessments in contexts not usually accessible to BCBAs or paraprofessionals (e.g., morning and bedtime routines), thus allowing a more comprehensive assessment of aberrant behavior. This training may also increase a caregiver's awareness of his or her own responses to aberrant behavior and may facilitate behavior change on the part of the caregiver to respond in prescribed ways (e.g., withhold attention). The purpose of this study is to evaluate the efficacy of a training program in teaching caregivers to conduct a descriptive behavioral assessment in the natural setting.

Chapter II: Method

Participants and Settings

Parents. Two mothers, each with a child who had a recent history of engaging in challenging behavior, participated. Both participants were married with two children under the age of seven, and each lived with her spouse and children. Neither participant had any previous training with, or knowledge of, functional behavioral assessment.

Target individuals. Two typically developing children, each with a recent history of engaging in challenging behavior, participated as target individuals. The first target individual was the seven-year old son of the first participant and had a recent history of engaging in non-compliance and tantrums. The second target individual was the five-year old son of the second participant and had a recent history of engaging in non-compliance, tantrums, property destruction, aggression, and elopement.

Settings. Both the in-vivo observations and analog training sessions were conducted in the home of each participant. In-vivo observations were conducted in a variety of locations throughout the home (e.g., target individual's bedroom, play area, kitchen) and analog training sessions were conducted at the dining room table in each participant's kitchen.

Target Behaviors

Target parent behavior. The goal of the study was to evaluate the efficacy of the training package in teaching parent participants to accurately conduct an A-B-C checklist recording while observing an individual engage in challenging behavior. The primary behavior of interest was each parent participant's marking the occurrence of a variety of observed environmental events and target behaviors in the correct location on an A-B-C checklist data

sheet. Environmental events that were observed prior to the occurrence of target challenging behaviors were to be identified as antecedent events and those that followed behaviors were to be identified as consequence events. This target parent behavior was evaluated during both in-vivo observations and analog training sessions. During in-vivo observations, each parent participant observed her child as he engaged in challenging behavior in the natural context. During analog training sessions, each parent participant watched video recordings of individuals engaging in a variety of challenging behaviors. Each parent participant's completed A-B-C checklist data sheet was compared to one completed by the primary investigator for the corresponding in-vivo observation session or analog training video. Parent responses were scored as correct if they agreed with the response marked by the primary investigator. That is, if the primary investigator and parent participant both marked the occurrence or non-occurrence of a specific environmental event or target behavior on corresponding A-B-C checklist data sheets, the opportunity was scored as correct. If either the primary investigator marked an occurrence and the parent participant marked a non-occurrence, or the primary investigator marked a non-occurrence and the parent participant marked an occurrence of a specific environmental event or target behavior on corresponding A-B-C checklist data sheets, the opportunity was scored as incorrect.

Target individual behaviors during in-vivo observations. Target challenging behaviors for each target individual were identified and defined prior to in-vivo observations via a semi-structured interview with parent participants (see Appendix A) and direct observation of the target individual by the primary investigator. Customized A-B-C checklist data sheets were created for each target individual that included only the challenging behaviors that each individual had a history of engaging in (see Appendices B and C). The A-B-C checklist data

sheet for the first participant included non-compliance and tantrum in the behavior column. Non-compliance was defined as any episode in which the target individual failed to initiate the correct response to a known instruction within five seconds of the presentation of the instruction, or ceased engaging in the correct response for more than five seconds prior to completion. A tantrum was defined as any instance or episode in which the target individual cried, yelled, and/or screamed. The A-B-C checklist data sheet for the second participant included non-compliance, tantrums, elopement, property destruction, and aggression in the behavior column. For the second participant the same definitions of non-compliance and tantrum were used. Additionally, elopement was defined as any instance or episode in which the target individual left the room currently occupied by both the target individual and a parent, when not instructed to do so by the parent. Property destruction was defined as any instance or episode in which the target individual punched, slapped, scratched, slammed, kicked, threw, and/or interacted with any piece of property in any way that damaged or destroyed it. Aggression was defined as any instance or episode in which the target individual punched, slapped, scratched, kicked, grabbed, bit, or pulled the hair of another individual.

Target behaviors during analog training. The training videos used during analog training, and the corresponding A-B-C data sheets (see Appendix D), depicted all of the topographies of challenging behavior included in the in-vivo observations (i.e., non-compliance, tantrum, elopement, aggression, property destruction). The same operational definitions were also used during analog training. Additionally, these training materials also included dropping and self-injury as target behaviors. Dropping was defined as any instance or episode in which the target individual's torso and/or hips, or both hands/elbows and knees contacted the ground,

unless instructed to do so or contextually appropriate. Self-injury was defined as any instance or episode in which the target individual punched, slapped, scratched, and/or bit himself, and/or pulled his own hair.

Response Measurement and Agreement

All in-vivo sessions were video recorded and scored later by both the primary investigator and an independent Board Certified Behavior Analyst, each of whom marked the occurrence of antecedent and consequence environmental events, and target challenging behaviors. Inter-observer agreement (IOA) between the primary investigator and the independent observer was calculated for each in-vivo session by dividing the number of agreements by the number of opportunities and multiplying by 100%. The mean agreement score across all in-vivo sessions for both participants was 99.6% (range 94%-100%).

IOA was also calculated for participant A-B-C checklist data sheets and analog training videos. All A-B-C checklist data sheets completed by parent participants were independently scored by both the primary investigator and the independent observer. IOA was calculated by dividing the number of agreements by the number of opportunities and multiplying by 100%. The mean agreement score for all A-B-C checklist data sheets for both participants was 100%. IOA for all analog training videos was calculated using the same method as that used for the in-vivo sessions. The mean agreement score for all analog training videos was 100%, as only videos that received IOA scores of 100% were used for training.

Materials

A-B-C checklist data sheets. We used individualized A-B-C checklist data sheets during in-vivo observations and generalized A-B-C checklist data sheets during analog training.

Both data sheets consisted of a chart with three columns, one to mark the occurrence of antecedent environmental events, one for target behaviors, and one for consequence environmental events. In each column were a list of events with a small box next to each one. The individualized and standardized data sheets included identical antecedent and consequence events that were typical events either preceding or following instances or episodes of challenging behavior (e.g., instruction given, item removed, attention diverted, instruction avoided, item presented, attention provided). The standardized data sheets included all seven topographies of challenging behavior defined in the target behavior section (see Appendix D). The individualized data sheets included only those topographies of challenging behaviors identified by each parent participant during the initial interview (see Appendices B and C).

Analog training videos. We created a variety of short training videos that depicted individuals engaging in episodes of challenging behavior for use during analog training. Each video ranged from 10 to 30 seconds and contained one or more antecedent and consequence environmental events and one or two of the topographies of challenging behavior defined above. Videos were classified as either simple or complex. Simple videos had two or fewer antecedent, behavior, and consequence events. For example, a simple video may have shown a single antecedent, behavior, and consequence event, two antecedents and a single behavior and consequence events (or two consequence and a single antecedent event), or two antecedent, behavior, and consequence events. Complex videos contained three or more antecedent and/or consequence events. Each video depicted an episode of challenging behavior maintained by either access to a tangible item or activity, escape from a demand, or access to attention. For training purposes, videos were organized into banks of six videos. One bank of videos was

shown during each training session and each contained two examples of challenging behavior maintained by access to tangibles (one simple and one complex), two maintained by escape from demands (one simple and one complex), and two maintained by access to attention (both simple). All videos depicting attention maintained challenging behavior were simple because if more antecedent and consequence events were included, the behavior could have been interpreted as being maintained by multiple functions.

Microsoft PowerPoint training presentation. We presented information about A-B-C checklist recording assessments to parent participants via a Microsoft PowerPoint presentation (see Appendix E). The presentation contained basic information about applied behavior analysis, the effects that the environment can have on behavior, the three-term antecedent-behavior-consequence relationship, functional behavioral assessment, and common functions of challenging behavior. The presentation explained A-B-C checklist recording assessments in detail, showing sample data sheets and going through a task analysis of the procedures for completion. Common patterns of environment-behavior relations were also included for discussion (e.g., instruction given, non-compliance, instruction removed; item removed, challenging behavior, item presented), as well as examples of how those relationships would be depicted on data sheets.

Baseline In-vivo Assessment

Baseline in-vivo data were collected prior to training on each participant's marking of antecedent, behavior, and consequence events while she observed her son engage in challenging behavior. We scheduled observations during typical daily activities that were likely to evoke challenging behavior (e.g., homework time, morning routine, play time), as reported by each

parent participant during the initial semi-structured interview. Observations were structured so that the parent participant observed the target individual interact with another person (i.e., the other parent, a sibling), rather than themselves. We gave each participant her individualized A-B-C checklist data sheet and a list of operational definitions for the target behaviors on it. We instructed her to observe her child and mark the occurrence of events that she observed. Each baseline session captured one episode of challenging behavior. After the episode of challenging behavior and the parent participant informed us that she had finished completing the A-B-C data sheet, we collected it from her and took a break for at least 10 minutes before proceeding to the next session. Baseline in-vivo observations were conducted during a variety of activities and over the course of one to two days.

Analog Training

The first analog training session began with a pre-test during which each participant completed A-B-C checklist data sheets while watching a bank of videos. Following the pre-test, we showed each participant the PowerPoint presentation and answered any questions that she had. Next, we went back through each training video from the pre-test and provided feedback on her performance. We watched each video again, pausing the playback each time that a relevant event occurred, pointing out where on the data sheet it should be indicated, and providing rationale. We praised participants for the events that each of them had correctly identified and provided explanations and corrective feedback for events that had occurred but had failed to be marked, or for events that had been marked but had not occurred. We answered any questions that were posed and then had participants watch the same videos again, ensuring that data sheets

were completed correctly this time. This same process was then repeated with all videos that had been recorded during baseline in-vivo sessions.

Following this training, a post-test was conducted. Each post-test was identical to the pre-test. A different bank of videos was viewed and participants completed an A-B-C checklist data sheet for each video. We calculated participants' scores during analog training using two different methods. First, we calculated the percentage of events that had occurred that participants marked correctly. For example, if a video showed an instruction being given, non-compliance, and an instruction being removed, and the participant marked all three events on her data sheet, she would score 100% for that video. If the participant only marked instruction given and non-compliance but not instruction removed, she would score 67% for that video. As this method of calculation did not account for the marking of extraneous events, we also calculated the percentage of events that both occurred and did not occur that participants marked correctly. Using this method, participants had 19 opportunities on each data sheet during analog training sessions (six antecedents, seven behaviors, and six consequences) and scores represented the percentage of those opportunities that participants either correctly marked the occurrence or non-occurrence of an event.

Mastery criteria for post-test scores was set at 90% for both methods of calculation across two consecutive training sessions. That is, participants had to score 90% or above using both calculation methods to pass. No more than one training session was conducted each day. If the participant earned a passing score on a post-test, then the following training session consisted of answering any questions that the participant had before conducting another post-test. If the participant did not earn a passing score on a post-test, then during the next training session we

reviewed and provided feedback on the bank of videos from the previous post-test. Specific areas of error were addressed and practiced. Once each participant met mastery criteria across two consecutive sessions, analog training was complete.

Post-Training In-vivo Assessment

After the completion of analog training, we conducted more in-vivo observations to determine if participants were able to accurately mark the occurrence of antecedent, behavior, and consequence events while observing her child engage in challenging behavior. Post-training in-vivo observation sessions were structured the same as the baseline in-vivo observation sessions and scores were calculated just as they were during analog training. Mastery criteria was set at 90% or above for both methods of calculation across two in-vivo observations. If mastery criteria was not met during an in-vivo observation session, the video recording for that session was reviewed, feedback was provided, questions were answered, and similar videos from the analog training were reviewed for practice.

Follow Up

One follow up in-vivo assessment was conducted at least two weeks after the completion of the last post-training assessment. This session was identical to the baseline and post-training in-vivo observation sessions.

Experimental Design

The effects of the analog training on participants' completion of A-B-C checklist data sheets while observing challenging behavior both on video and in the natural context were evaluated in a non-concurrent multiple baseline across subject's design. We conducted three

sessions under baseline conditions with the first participant and seven sessions under baseline conditions with the second participant prior to beginning training.

Chapter III: Results

Figures 1 and 2 (see Appendix F) show participants' performance during analog training while Figures 3 and 4 (see Appendix F) show participants' performance during in-vivo observations. Table 1 (see Appendix F) shows the function of target behaviors indicated by participant completed A-B-C checklist data sheets and the actual function of target behaviors, as determined by the principal investigator and the independent observer, for each in-vivo observation or training video. Figures 1 and 3 show the percentage with which participants correctly marked the occurrence of events using two methods of calculation. The first method, labeled "Events that occurred," reflects whether participants correctly marked events that actually occurred and does not account for whether participants incorrectly marked the occurrence of additional extraneous variables that did not occur. The second method, labeled "Total events," reflects whether participants correctly marked events that actually occurred and omitted marking events that did not occur. This second calculation method accounts for whether participants incorrectly marked the occurrence of additional extraneous variables that did not occur. Figures 2 and 4 show the total number of events that occurred during each session, the total number of events that participants correctly marked during each session, and the total number of events that participants marked (both correctly and incorrectly) during each session, during analog training and in-vivo observations respectively.

Figure 1 shows that, on analog training pre-tests, neither participant achieved scores that met mastery criteria using either method of calculation. Participant 1 correctly marked 68% of events using both calculation methods and Participant 2 correctly marked 51% of the events that occurred and 85% of the total events. After the first training session, Participant 1 correctly

marked 84% of the events that occurred and 90% of the total events, narrowly missing mastery criteria. Following the second and third training sessions, the first participant met the 90% correct mastery criteria using both calculation methods. The second participant met mastery criteria using both calculation methods following the first and second training sessions earning scores of 95% and 98% using the first calculation method and 94% and 98% using the second calculation method for the first and second training sessions, respectively.

Figure 2 shows that, during the analog training pre-test, Participant 1 marked that she observed 50 events, when in fact only 31 occurred. Following training, the number of events that she marked was much more reflective of the actual number of events that occurred as she marked 32 events when 31 occurred, 27 events when 29 occurred, and 26 events when 26 occurred following Training Sessions 1, 2, and 3, respectively. During the analog training pre-test, Participant 2 marked that she observed 18 events when in fact 31 occurred. Of the 18 events that she marked, 16 of them were correct. Following training, the number of events that she marked was also much more representative of the actual number of events that occurred as she marked 34 events when 31 occurred and 29 events when 29 occurred following training sessions one and two, respectively.

Figure 3 shows that, during baseline in-vivo observations, neither participant achieved scores that met mastery criteria using either calculation method. Participant 1 correctly marked an average of 37% of the events that occurred and 59% of the total events while Participant 2 correctly marked an average of 54% of the events that occurred and 84% of the total events. Participant 1's baseline trend was relatively stable using both calculation methods while Participant 2's trend was increasing when considering her scoring of events that had occurred

and relatively stable when considering her scoring of total events. Following analog training and during follow up, both participants correctly marked 100% of all events, using both calculation methods, during in-vivo observations.

Figure 4 shows that, during baseline in-vivo observations, Participant 1 marked that she observed approximately the same number of events that actually occurred, as she marked four events when five occurred during the first two observation sessions, and five events when four occurred during the third observation session. During these sessions, of those events that she marked, only two, one, and two of them were correct responses for Sessions 1, 2, and 3, respectively. Following training, Participant 1 correctly recorded the occurrence of all events and did not record the occurrence of any extraneous events. During baseline in-vivo observations, Participant 2 marked that she observed fewer events than actually occurred, as she marked an average of 2.9 events per session when an average of 4.7 events per session actually occurred. Many of the events that she did mark were correct, as she averaged 2.4 correct responses per session during baseline. Following training, Participant 2 also correctly recorded the occurrence of all events and did not record the occurrence of any extraneous events.

Table 1 shows that, prior to training, both participants completed A-B-C checklist data sheets either did not indicate the function of the challenging behavior observed, or indicated an incorrect function for that challenging behavior. During all baseline in-vivo observations, the first participant failed to mark the occurrence of any consequence events, and therefore no function of the challenging behavior observed was indicated. Similarly, during baseline in-vivo observations, the second participant failed to mark any consequence events during three of the seven sessions and marked antecedent and consequence events that indicated incorrect functions

of the challenging behavior observed during another three of the seven sessions. The second participant's data sheet indicated the actual function of the challenging behavior observed during the fifth baseline observation session. During the analog training pre-test, both participants marked the occurrence of antecedent and consequence events for almost all of the videos viewed (Participant 2 did not mark the occurrence of any consequence events for the third training video), but all but one of the completed data sheets indicated an incorrect function of the challenging behavior observed. Following training, both participants' completed data sheets indicated the actual function of the challenging behavior observed during each training video or in-vivo observation session.

Chapter IV: Discussion

Descriptive assessments can provide practitioners with useful information regarding the function of an individual's challenging behavior, but require direct observation of the challenging behavior in the natural environment. For individuals who engage in challenging behavior in specific or limited contexts (e.g., morning or bedtime routines, only with certain individuals), it may be difficult for a practitioner to directly observe behaviors of concern. Training caregivers to complete an A-B-C checklist recording is an option which may provide practitioners with information regarding the function of challenging behaviors when they cannot be directly observed. In the present study, we assessed the efficacy of a training program in teaching caregivers to mark the occurrence of antecedent and consequence environmental events and target behaviors while observing episodes of challenging behavior for both training videos and in the natural environment.

Prior to receiving training, both participants were unable to accurately mark the occurrence of these relevant events on an A-B-C checklist data sheet, either while observing their own child engage in challenging behavior in the natural environment or while observing episodes of challenging behavior on training videos. Following three training sessions for the first participant and two for the second participant, both exceeded the 90% accuracy criterion using two different calculation methods across two consecutive post-tests when scoring videos at the conclusion of each session. Subsequently, both participants correctly identified 100% of environmental events and target behaviors that occurred while observing their own child engage in challenging behavior in the natural environment during two consecutive in-vivo observations and one follow-up observation several weeks later. These results suggest that caregivers can

acquire the skills necessary to record the occurrence of relevant environmental events and target behaviors while observing episodes of challenging behavior in just a couple of brief training sessions.

The training package evaluated in this study was comprised of several components. We initially presented information via a PowerPoint presentation containing relevant background information, a detailed task analysis describing procedures, and examples of various topographies and functional classes of challenging behavior. We modeled the marking of observed events in the correct location on A-B-C data sheets and then prompted participants to do the same while viewing an array of training videos. As training progressed, prompts were faded and supportive and corrective feedback were provided contingent upon correct and incorrect responses, respectively. We answered all questions and drew parallels between examples in the training videos and episodes of challenging behaviors that participants observed during in-vivo observations. For both participants this initial training took approximately 1 hour and 30 minutes. As the first participant did not achieve the 90% mastery criterion on the post-test following the first training session, her second session consisted of a brief review of the task analysis and examples from the PowerPoint presentation, and then review, feedback, and practice with the bank of videos that she scored during her first post-test. Specific areas of difficulty were assessed and focused on. For example, we found that she was failing to identify the occurrence of antecedent events in training videos that depicted challenging behavior maintained by access to tangible items or activities. Therefore, we explained in detail the difference between the removal of an item and denied access to an item and highlighted the importance of attending to the presentation or removal of relevant stimuli prior to the occurrence

of challenging behavior. We reviewed multiple training videos that depicted this class of challenging behavior, prompted correct marking of antecedent events that occurred, and provided supportive and corrective feedback. This second training session took approximately 40 minutes and she achieved the 90% mastery criterion on the post-test conducted at the conclusion of the session. During the third training session, we briefly answered several of the participant's questions and then conducted the third post-test. As the second participant achieved mastery criterion on the first post-test, her second training session resembled the first participant's third training session, during which we briefly answered her questions and then conducted the second post-test.

Several previous studies have investigated the efficacy of training packages in teaching individuals or groups to conduct experimental functional analyses (e.g., Iwata et al., 2000; Wallace et al., 2004). Both Iwata et al. (2000) and Wallace et al. (2004) presented relevant information via a written handout and/or a presentation, provided a demonstration of the desired behaviors, answered all participants' questions, and then had participants practice engaging in the desired behaviors while receiving feedback. In both studies, practice and feedback were continued until participants achieved a score that exceeded a pre-determined mastery criterion. The current study reproduced the findings of Iwata et al. (2000) and Wallace et al. (2004) in that similar training components were combined into a training package that effectively taught participants to engage in the behaviors necessary to conduct a functional behavioral assessment. We also extended the findings of those studies in that we demonstrated the efficacy of the training package in teaching participants to engage in the behaviors necessary to conduct an A-B-C checklist recording rather than a functional analysis. One limitation of the current study was

that, as all components of the training package were implemented simultaneously, with the exception of the individualized assessment and feedback provided to participant one during the second training session, we cannot determine if any specific component, or the combination of all of them, was responsible for the acquisition of skills. For the first participant, we also cannot be certain whether it was the repeated presentation of the material in the PowerPoint presentation, the practice and feedback with the second video bank, the individualized assessment and feedback during the second training session, or the sequence of the components that resulted in her subsequent increase in scores. Future research should investigate which particular component or combination of components that make up these training packages is responsible for the observed acquisition of skills.

We anticipated that, prior to training, participants would be more successful identifying the occurrence of target behaviors than environmental events. More specifically, we hypothesized that they would have difficulty understanding and classifying the environmental events that they were observing, as well as how to mark those occurrences on the A-B-C checklist data sheets, resulting in failures to mark the occurrence of observed events or the marking of incorrect events. Figures 2 and 4 show how each participant responded during each analog training and in-vivo observation session, respectively. Figure 4 shows that, during baseline in-vivo observations, while the first participant had a total number of responses that was similar to the actual correct number of responses for each session, few of those responses were correct identifications. That is, she was correctly identifying that events were occurring, but she was not correctly identifying what those events were. Those events that she did mark correctly were nearly all antecedent events, specifically, the presentation of instructions. Figure 2 shows

that, during the analog training pre-test, while she correctly identified 71% of the total events that occurred, she also incorrectly marked the occurrence of an additional 19 events that did not occur. At the conclusion of the study, when we asked the first participant about her responses on the analog pre-test, she indicated that she did not understand the organization of events into antecedent and consequence categories and that she had marked the occurrence of any event that she had observed in every column where it appeared. It is unclear why she did not also do this during the baseline in-vivo observations. One possibility is that, during in-vivo observations, she was scoring situations that she was familiar with. That is, she had a long history of observing her son be given instructions and engage in non-compliance and tantrums, and perhaps she believed that she understood the reasons why he was engaging in them. Although she did not correctly mark the consequence events that occurred, perhaps her confidence in what she believed was happening led her to identify and mark the occurrence of fewer events. Alternatively, during the analog training pre-test she observed several target behaviors that she was unfamiliar with (i.e., aggression, self-injury, elopement, dropping) and perhaps this caused her to mark the occurrence of more extraneous variables. Figure 2 shows that, as training progressed, she learned to mark only events that had occurred, as shown by the converging data paths.

Figure 4 shows that, during baseline in-vivo observations, the second participant marked the occurrence of few events, but those that she did mark were mostly correct. The majority of these events were antecedents and target behaviors. Figure 2 shows a similar pattern of responding during the analog training pre-test. At the conclusion of the study, when we asked the second participant about her responses prior to training, she indicated that she only marked

events that she was confident had occurred, but that she had a general idea that antecedent events occurred prior to challenging behavior and that consequence events followed it.

When considering the responses of both participants prior to training, neither participant was able to accurately identify the occurrence of consequence events. During in-vivo baseline observations the first participant did not correctly identify the occurrence of a single consequence event and the second participant only identified all of the correct consequence events during one out of seven sessions. This information shows that parents may understand when their child is having challenging behavior, what that behavior is, and what is occasioning it, but fail to understand the variables maintaining it. When considering the implications of this information as to how they may be managing their child's challenging behavior, parents may be avoiding situations that they know will evoke challenging behavior when possible, but likely do not understand how they can alter their responses to it to decrease the likelihood of it happening in the future. Future research should investigate how being aware of the consequences maintaining a child's challenging behavior affect the future responses of the caregiver to that behavior.

During analog training, the second participant struggled to specifically identify the provision of attention as a consequence event when it occurred in some of the complex training videos. When we inquired about this at the conclusion of the study, she indicated that she did not mark its occurrence because she did not believe that it was a pertinent variable maintaining the challenging behavior depicted. For example, if, during a training video, the occurrence of challenging behavior resulted in a potentially desirable item being presented in conjunction with attention, she may have marked item presented in the consequence column but not attention

provided. Interestingly, this reflects a limitation that has been identified with descriptive assessments—the identification of attention as a maintaining variable that is not confirmed via functional analysis (Hall, 2005; Thompson & Iwata, 2007). Regardless of whether attention was actually maintaining challenging behavior, the purpose of the training was to teach participants to objectively identify the occurrence of all events. In application, it is important for practitioners to have a complete and objective account of environmental variables that might be affecting challenging behavior so that each may be addressed during analysis and the development of treatment packages. Future research and trainings should highlight and discuss the effect that attention may have on challenging behavior and emphasize that even if the observed event may not be thought to be contributing to the occurrence of challenging behavior, it should still be marked.

At the conclusion of the study, both participants commented that when trying to apply what they had learned during the training to their daily lives they found challenging behavior in the natural context to be more complex than episodes depicted in the training videos. The second participant articulated that she had particular difficulty identifying when an episode of challenging behavior was complete and distinguishing one episode from another. A limitation of this study was that, as the training videos depicted singular, relatively discrete episodes of challenging behavior that had a clear beginning and ending (i.e., the conclusion of the video clip), there was no ambiguity as to when an episode was complete. While we attempted to create training videos that emulated the natural environment in that multiple antecedent, behavior, and consequence events occurred during many of the clips, we did not capture the complexity of the continuous nature of human behavior. In many real life situations, the consequence events that

follow one occurrence of challenging behavior may serve as the antecedent events for another (Bijou et al., 1968). While both participants were able to successfully identify 100% of events that occurred during two in-vivo observations and a single follow-up observation following the completion of training, it is possible that they may have failed to identify all of the relevant events surrounding the occurrence of challenging behaviors in other contexts. We also acknowledge that our presence and behavior as observers, as well as the structure of the in-vivo observations to only capture a single episode of challenging behavior, may have signaled to the participant when episodes of challenging behavior were complete, thus prompting them to conclude marking relevant consequence events. Future research should investigate training procedures that effectively teach participants how to identify when episodes of challenging behavior are complete, to fill out multiple A-B-C checklist data sheets when multiple target behaviors occur in succession, and that events that are temporally distant from the occurrence of challenging behavior may still affect its occurrence.

A final limitation to note is that only two participants took part in the study. With a non-concurrent multiple baseline across participants' design such as this one, replication of the effect of the training package across multiple participants is necessary to demonstrate experimental control. As the effect of the treatment package was only replicated a single time, experimental control is rather weak. We recommend that further replications be conducted to increase the validity of the results.

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Appendix A: Scripted Questions Asked during Semi-Structured Interview with Participants

Interview Questions

1. Please describe the behavior of concern for me.
2. When does it usually occur? How frequently? How long does it last? How intense is it? During what activities? During what time of day? Where? With who?
3. What typically happens right before the behavior occurs?
4. How do you usually handle the behavior? What do you do after it? What do you do to get it to stop?
5. Why do you think he/she is doing it?
6. When does it usually not occur? During what activities? During what time of day? Where? With who?
7. Why do you think it doesn't occur in those situations?
8. If you were going to try and make it occur what would you do?
9. Does the behavior put anyone at risk of harm? Your child? You? Anyone else?
10. How long has the behavior been happening for?
11. What are the child's strengths?
12. What does the child enjoy?

Appendix B: Individualized A-B-C Checklist Data Sheet Used During In-Vivo Observations for Participant 1

Date:	Time:	Location/activity:
Antecedent	**Behavior**	**Consequence**
□ Instruction given □ Item/activity/person presented □ Item/activity/person disrupted/terminated/removed □ Denied/delayed access to requested item/activity/person (i.e., told no, wait) □ Attention removed/diverted □ Physical guidance provided	□ Non-compliance □ Tantrum	□ Instruction removed/avoided □ Item/activity/person removed/disrupted □ Item/activity/person presented/resumed □ Attention provided □ Physical guidance terminated □ Given choice/asked what they want/asked if they want something
Notes:		

Appendix C: Individualized A-B-C Checklist Data Sheet Used During In-Vivo Observations for Participant 2

Date:	Time:	Location/activity:
Antecedent	**Behavior**	**Consequence**
□ Instruction given □ Item/activity/person presented □ Item/activity/person disrupted/terminated/removed □ Denied/delayed access to requested item/activity/person (i.e., told no, wait) □ Attention removed/diverted □ Physical guidance provided	□ Non-compliance □ Tantrum □ Elopement □ Property destruction □ Aggression	□ Instruction removed/avoided □ Item/activity/person removed/disrupted □ Item/activity/person presented/resumed □ Attention provided □ Physical guidance terminated □ Given choice/asked what they want/asked if they want something
Notes:		

Appendix D: A-B-C Checklist Data Sheet Used During Analog Training

Date:	Time:	Location/activity:
Antecedent	**Behavior**	**Consequence**
□ Instruction given □ Item/activity/person presented □ Item/activity/person removed/disrupted □ Denied/delayed access to requested item/activity/person (i.e., told no, wait) □ Attention removed/diverted □ Physical guidance provided	□ Non-compliance □ Tantrum □ Elopement □ Dropping □ Property destruction □ Aggression □ Self-injury	□ Instruction removed/avoided □ Item/activity/person removed/disrupted □ Item/activity/person presented/resumed □ Attention provided □ Physical guidance terminated □ Given choice/asked what they want/asked if they want something
Notes:		

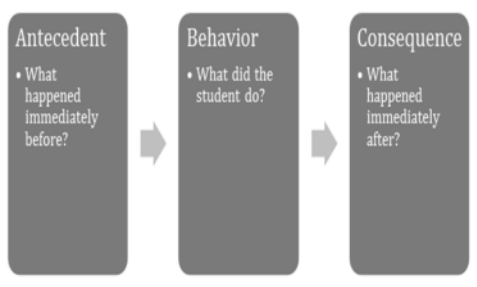
Appendix E: Microsoft PowerPoint Presentation Used During Analog Training

CONDUCTING A DESCRIPTIVE BEHAVIORAL ASSESSMENT

Behavior & ABA

- There are orderly and reliable relationships between a person's behavior and a variety of environmental events, or variables
- Behaviors do not happen randomly, **every behavior has an environmental function**, or a purpose
- Applied behavior analysis (ABA) is the scientific study of these behavior-environment relations
- The goal of ABA is to improve individuals' socially important behaviors
- This is accomplished by:
  1. *Identifying the environmental variables that control an individual's behavior*
  2. *Manipulating these variables to decrease maladaptive behaviors and increase pro-social alternatives*

Behavior-Environment Relations



- **Antecedent-Behavior-Consequence** is the 3-term contingency that describes a behavior of interest and the environmental variables that control it
- **Antecedent** refers to the environmental events that happen before the behavior
- **Behavior** refers to the behavior of interest (problem behavior)
- **Consequence** refers to the environmental events that happen after the behavior
- By identifying the environmental events that are likely to occur with a behavior we can discover patterns and identify the function of the behavior

Functional Behavioral Assessment

- Functional behavioral assessment (FBA) is the process of identifying the environmental reasons why a behavior is occurring
- We will focus on an A-B-C checklist recording assessment
- With this assessment, as you observe your child have problem behavior you check off different events that you observe as they occur
- This is a simple, easy to use, and objective form of FBA
- One big advantage is that once you are trained on the procedures you can conduct the assessments on your own and then an analyst can look over them and try to analyze the function of the behavior

A-B-C Checklist Data Sheet

- Here is an example of an individualized A-B-C checklist data sheet
- Only the target behaviors identified for the specific individual and relevant antecedent and consequence events are included
- Information about the context in which the behavior occurs is also recorded at the top of the data sheet

Date:	Time:	Location/activity:
Antecedent	Behavior	Consequence
□ Instruction given □ Item/activity/person presented □ Item/activity/person removed/disrupted □ Denied/delayed access to requested item/activity/person (i.e., told no, wait) □ Attention removed/diverted □ Physical guidance provided	□ Non-compliance □ Tantrum □ Elopement □ Property destruction □ Aggression	□ Instruction removed/avoided □ Item/activity/person removed/disrupted □ Item/activity/person presented/resumed □ Attention provided □ Physical guidance terminated □ Given choice/asked what they want/asked if they want something
Notes:		

How To Conduct an A-B-C Checklist Recording

1. Objectively observe your child – mark events that occur from their perspective
2. Keep your data sheet and pen on hand and watch your child and the other things that are happening in the area– if they leave the room, follow them
3. When a target behavior occurs carefully observe the events that happen prior to and following the behavior.
4. Check off **any and all** antecedents that happen before the behavior **AS THEY HAPPEN**. **Be objective – meaning only mark what you see, and think in the perspective of your child.**
5. Check off any and all problem behaviors that occur
6. Check off any and all consequences that follow the behavior **AS THEY HAPPEN**. **Be objective.**
7. Fill out the notes section if there is any additional information that you think is relevant. **Be objective.**
8. Fill in the information about the context including the time, date, and activity engaged in when the problem behavior occurred.

Important Things to Remember

- If you are involved in the occurrence of a problem behavior (e.g., you gave an instruction immediately prior to its occurrence) and feel responsible for its occurrence it is **essential** that you give an **accurate account** of what happened and that you are as **objective** as possible.
- Recording inaccurate data because you are embarrassed or regret something that you did may alter assessment results and lead to the prescription of an ineffective or contraindicated intervention.
- **Honest**, **accurate**, and, **objective** recording of information will result in the most accurate assessment, effective treatment, and efficient behavior change.

Common Functions of Problem Behavior

- There are four common functions of problem behavior

1. Access to tangible items (preferred toys, foods, etc.)
2. Access to attention
3. Escape from aversive conditions (oftentimes instructions/demands)
4. Automatic or non-social reinforcement (sensory seeking behaviors)

- There are also some common patterns that coincide with these functions

Access to tangibles

- Your child is having problem behavior because afterwards he is getting access to a preferred tangible item that he wants
- Common patterns to be aware of:

1. Denied access to item – problem behavior – requested item delivered
   - *Example: Jimmy asks for a cookie, Dad says "no", Jimmy drops to the floor and starts crying, Dad says "Ok, stop crying" and gives him the cookie*
2. Removal of preferred item (or termination of preferred activity) – problem behavior – preferred item (activity) given back (or resumed)
   - *Example: Jimmy is playing Xbox, Mom comes in, says "you've had enough time we are all done", and turns off the Xbox, Jimmy cries and screams, Mom says, "Ok fine you can have 5 more minutes but they we have to go"*

Access to attention

- Your child is having problem behavior because afterwards he gets your attention
- Sometimes reprimands, or types of attention that you or I may not desire or like, are actually reinforcing and maintaining problem behavior. Just because you don't like it doesn't mean he or she doesn't like it.
- Common patterns to be aware of:

1. Diverted attention – problem behavior – attention given
   - *Example: Jimmy and his Mom are playing a game, Jimmy's Mom gets a phone call and walks away talking on the phone, Jimmy comes up to his Mom and starts yelling at her and pulling on her shirt, Jimmy's Mom hangs up the phone and begins reprimanding Jimmy for bothering her*
2. Denied access to preferred item or preferred item removed – problem behavior – preferred item NOT presented, but attention given
   - *Example: Mom comes in and takes away Jimmy's snacks, Jimmy cries and screams, Mom does not give him the snacks back but instead sits down and comforts him because he is crying. While this behavior may have originated because it resulted in the return of a preferred item, it may continue because it gets access to attention.*

- **An important note about attention** – attention is a bit different than the rest as it NEARLY ALWAYS follows problem behavior. If you say anything to your child after they have problem behavior you are providing attention to them. Attention can also come from siblings or peers which may be out of your control. If any attention is provided by ANYONE mark it, even though it may not be the variable that is actually maintaining problem behavior, it may be a contributing factor and it is important to get a complete account of what is happening.

Escape from aversive conditions (demands)

- Your child is having problem behavior because he or she wants to get away from something they don't like or get out of doing something they don't want to do
- Common patterns to be aware of:

1. Instruction given – problem behavior – instruction avoided/postponed
   - *Example: Mom tells Jimmy to do his homework, Jimmy whines and cries, Mom tells Jimmy that he can do it later*
2. Aversive sensory stimulus – problem behavior – aversive stimulus removed
   - *Example: A loud alarm goes off – Jimmy covers his ears and starts screaming – Mom removes Jimmy*

- Note: while a child is having problem behavior and effectively avoiding doing something they don't want to do, if you are reasoning or talking to them you are providing attention as well

ANY QUESTIONS?

LET'S PRACTICE!

Appendix F: Table and Figures

Table 1

Participant Indicated and Actual Functions of Target Behaviors Observed

	Participant 1		Participant 2	
Observation/Video Number	Indicated Function	Actual Function	Indicated Function	Actual Function
Baseline in-vivo				
1	None	Escape	None	Escape
2	None	Escape, Tangible	None	Escape
3	None	Escape	None	Escape
4			Tangible	Escape
5			Attention	Attention
6			Tangible	Escape
7			Tangible	Escape, Tangible
Analog training pre-test				
1	Escape, Tangible, Attention	Tangible	Tangible	Escape
2	Attention	Escape	Tangible	Attention
3	Tangible	Escape	None	Attention
4	Escape, Tangible	Tangible	Tangible	Tangible
5	Escape	Attention	Escape	Tangible
6	Escape	Tangible	Escape	Escape
Analog training post-test #1				
1	Escape	Escape	Tangible	Tangible
2	Tangible	Tangible	Attention	Attention
3	Tangible	Tangible	Escape	Escape
4	Attention	Attention	Tangible	Tangible
5	Escape	Escape	Escape	Escape
6	Tangible	Tangible	Attention	Attention
Analog training post-test #2				
1	Attention	Attention	Tangible	Tangible
2	Tangible	Tangible	Attention	Attention
3	Tangible	Tangible	Escape	Escape
4	Attention	Attention	Escape	Escape
5	Escape	Escape	Attention	Attention
6	Escape	Escape	Tangible	Tangible
Analog training post-test #3				
1	Escape	Escape		
2	Escape	Escape		
3	Attention	Attention		
4	Tangible	Tangible		
5	Attention	Attention		
6	Tangible	Tangible		

Table 1 Continued

Observation/Video Number	Participant 1		Participant 2	
	Indicated Function	Actual Function	Indicated Function	Actual Function
Post-training in-vivo				
1	Escape	Escape	Escape	Escape
2	Escape	Escape	Escape	Escape
Follow-up				
1	Escape, Tangible	Escape, Tangible	Tangible	Tangible

Note. Indicated functions are functions of target behaviors indicated by participant completed data sheets. Actual functions are functions of target behaviors as determined by principal investigator and independent observer.

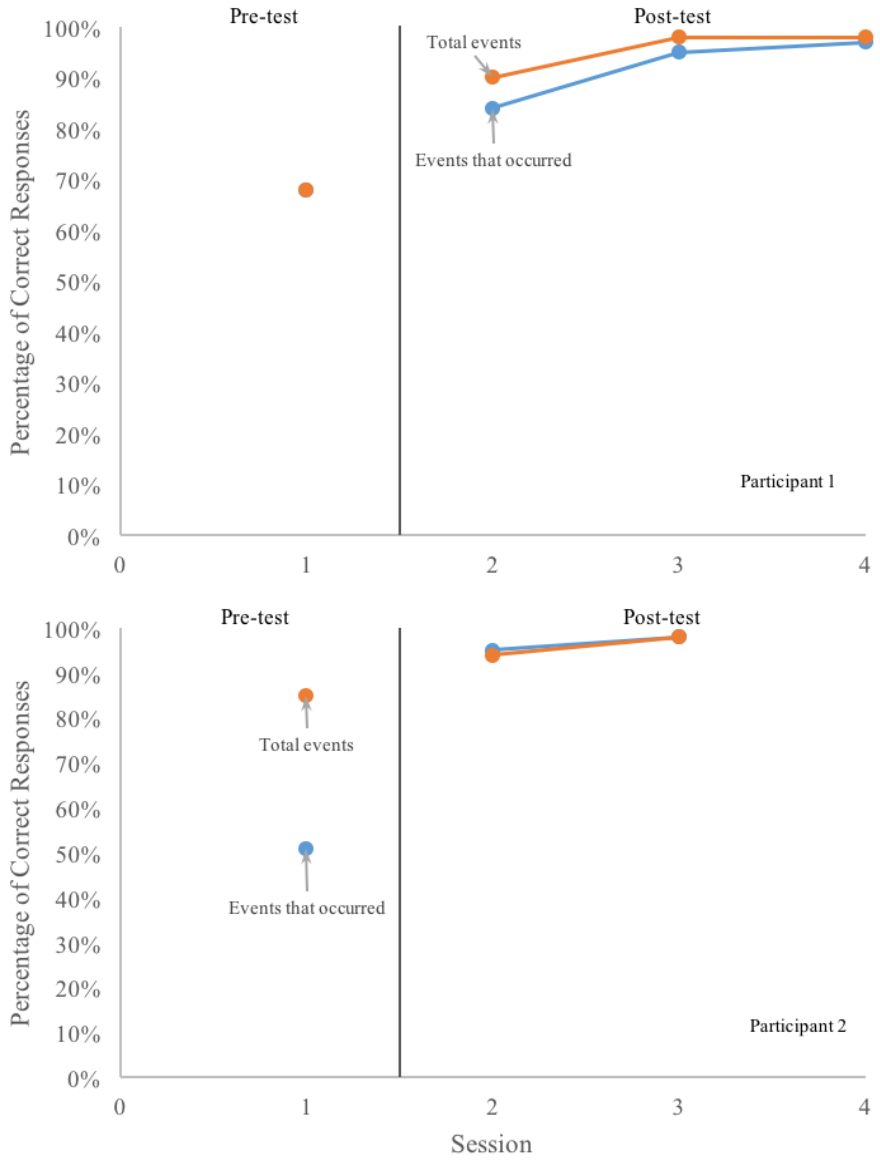


Figure 1. Average percentage of events that each participant marked correctly during analog training session assessments. Data path titled "Total events" shows the average percentage of total events during each session that each participant marked correctly. Data path titled "Events that occurred" shows the average percentage of the total events that occurred during each session that each participant marked correctly.

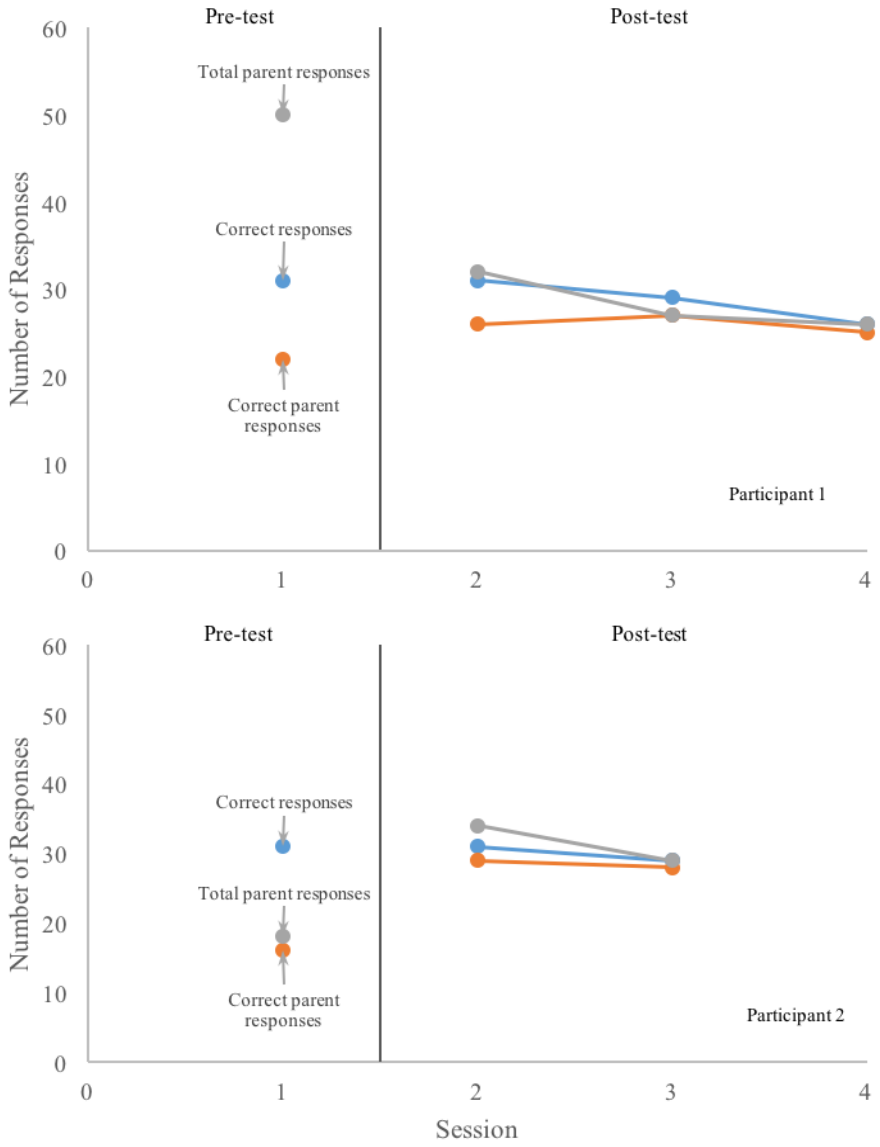


Figure 2. Number of actual correct responses, correct participant responses, and total participant responses during analog training session assessments.

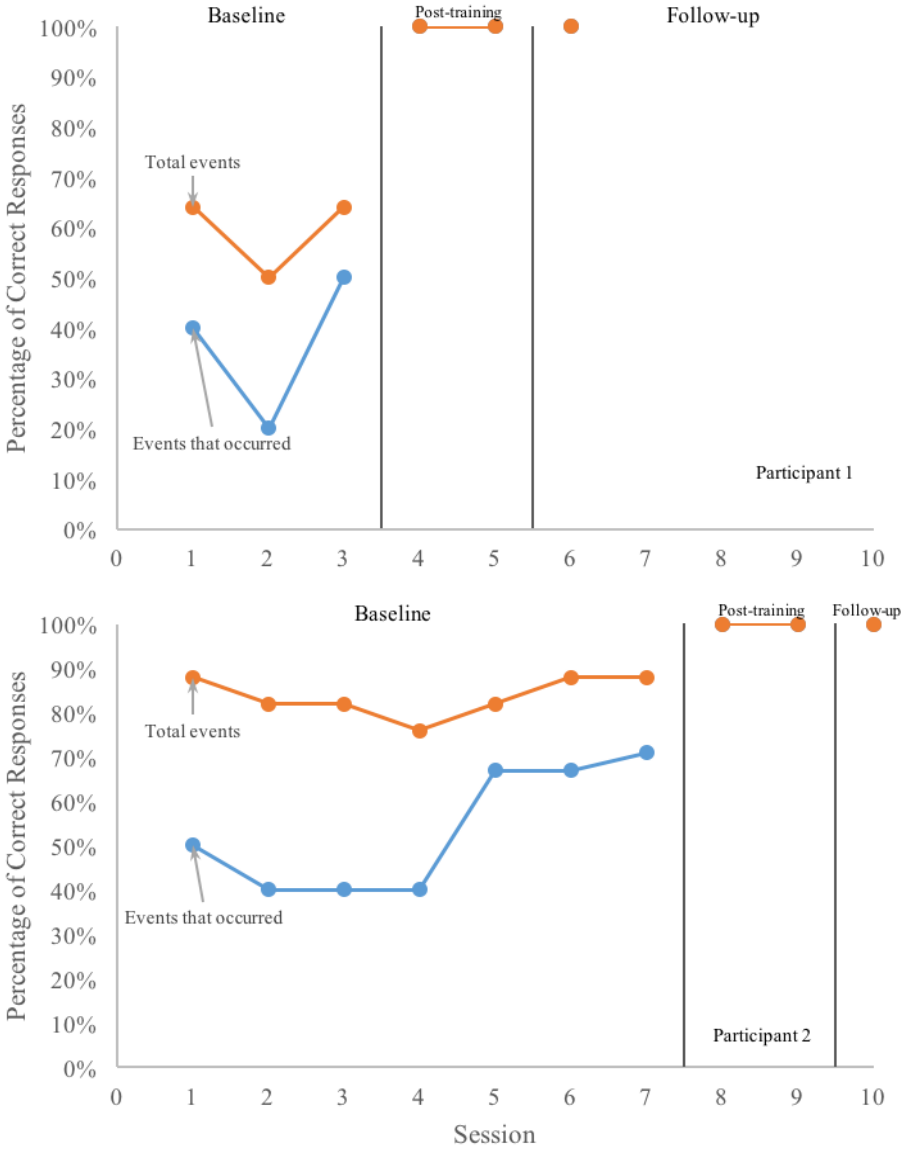


Figure 3. Percentage of events that each participant marked correctly during in-vivo observation sessions. Data path titled "Total events" shows the percentage of total events during each session that each participant marked correctly. Data path titled "Events that occurred" shows the percentage of the total events that occurred during each session that each participant marked correctly.

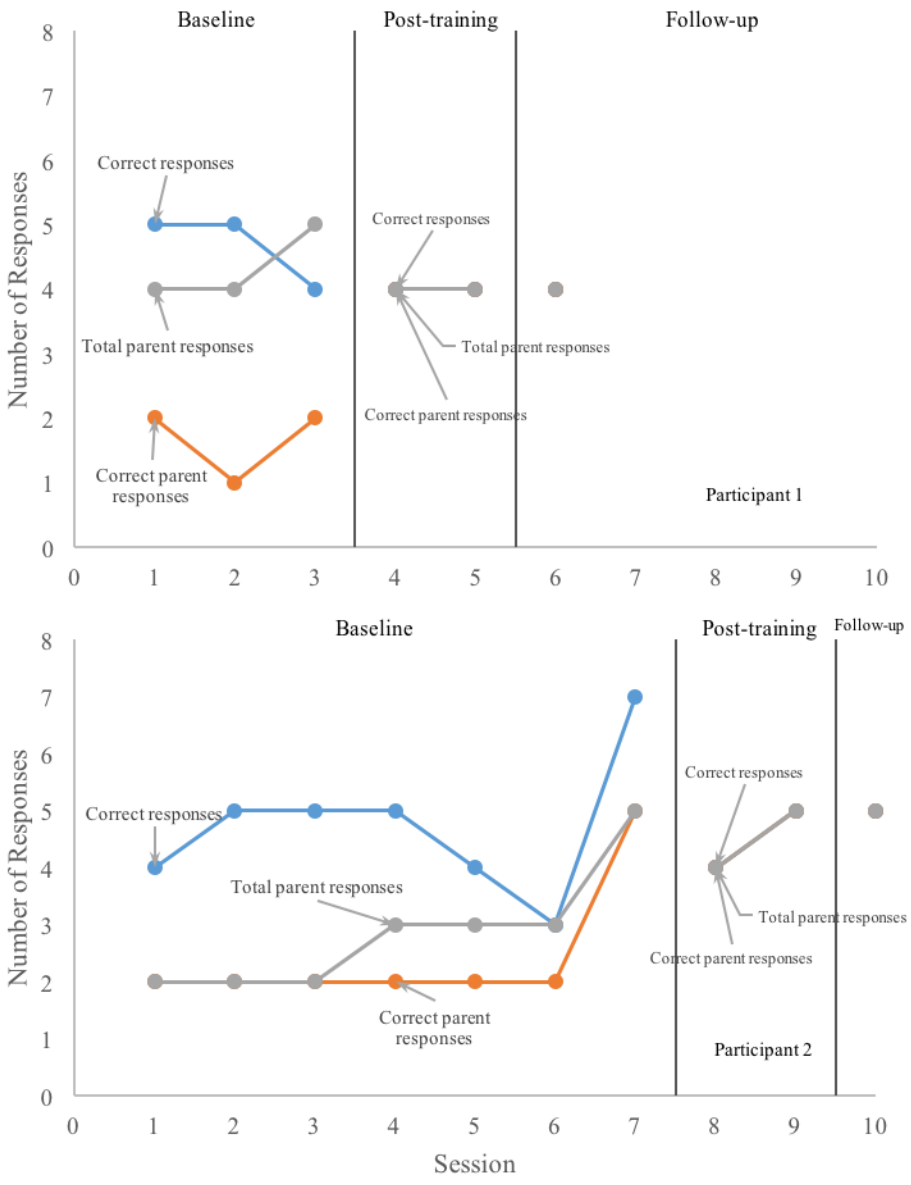


Figure 4. Number of actual correct responses, correct participant responses, and total participant responses during in-vivo observation sessions.