Linking a Functional Behavioral Analysis

to a Functional Behavioral Assessment in the School:

A Single Subject Case Design

by

Michelle Thompson

A Research Paper
Submitted in Partial Fulfillment of the
Requirements for the
Education Specialist Degree
in

School Psychology

Approved: 6 Semester Credits

Kelly E. Lamon Ed.S.

Jacalyn Weissenburger Ph.D.

Denise Brouillard Ph.D.

The Graduate School

University of Wisconsin-Stout

July, 2008

The Graduate School
University of Wisconsin-Stout
Menomonie, WI

Author: **Thompson, Michelle R.**

Title: ***Linking a Functional Behavioral Analysis to a Functional Behavioral Assessment in the School: A Single Subject Case Design***

Graduate Degree/ Major: Ed.S. Education Specialist Degree

Research Co-Advisors: **Kelly E. Lamon, Ed.S. and Jacalyn Weissenburger, Ph.D.**

Month/Year: **July, 2008**

Number of Pages: **75**

Style Manual Used: American Psychological Association, 5th edition

ABSTRACT

Current research in applied behavioral analysis suggests that connecting a functional behavioral analysis to a functional behavioral assessment (FBA) is the most accurate process to understanding behavior of children with emotional/behavioral problems (Cooper, Heron, & Heward, 2007). There are questions about whether it is necessary to connect functional behavioral analysis to an FBA, or if an FBA alone is sufficient. The proposed study used a single subject design to connect a functional behavioral analysis to an FBA in a school to see if this process provided more accurate information than only using an FBA (Cooper et al., 2007). Results from the behavioral analysis research design showed that only part of the hypothesis from the FBA was accurate. Therefore, the functional behavioral analysis and FBA process proved to be more accurate than the FBA alone. However, further research in applied behavioral

analysis would be valuable to understand how to link this process to a systematic intervention plan, while upholding ethical practices and keeping within resources allotted to public schools.

The Graduate School

University of Wisconsin Stout

Menomonie, WI

Acknowledgements

I would like to thank Kelly Lamon for guiding me through this research process, and providing continual support to help me gain more understanding and appreciation for this research topic. I also want to thank Jacalyn Weissenburger, as well as Denise Brouillard for providing insightful comments and questions to perfect this research paper. The time and commitment from all committee members is greatly appreciated.

I also want to express gratitude to the school district and to the family who allowed me to conduct this study. I am truly blessed to work with a fabulous Special Education Director who offered guidance while allowing me to find acceptable ways to work within district guidelines to approach my research design in a public school. I am grateful for the family who allowed their child to participate as the subject of this study. They shared my confidence that this process would benefit their child's learning in school.

Last, but not least, I want to thank my husband and immediate family for supporting me throughout graduate school and the completion of my specialist thesis.

TABLE OF CONTENTS

List of Figures

Chapter I: Introduction

Background

The 26th annual report from the United States Department of Education documents 5,959,282 students who are ages 6-21 are receiving special education services in school (United States Department of Education [U.S. Department of Education], 2006). This annual report also documents that over 8% of the total special education population are categorized with emotional and/or behavior disabilities (U. S. Department of Education, 2006). Emotional and/or behavioral disability is the fourth largest special education category nationally, and students under this category present emotional and/or behavior responses significantly different from their peers, which also can affect their social development and/or academic progress (Lehr & McComas, n.d.; U.S. Department of Education, 2006). According to educators, the most prevalent challenging behaviors exhibited by students with emotional and/or behavior concerns are the following: attention problems, off-task or disruptive behaviors, lack of organization skills, verbal or physical outbursts, impulsive behavior, and poor social skills (McConnell, 2001). Students categorized with emotional and/or behavior disabilities not only express behavioral issues in school, but also fail more courses, obtain lower GPAs, are absent more frequently, and are higher risk for substance abuse (Bullock & Gable, 2006). Based on research, 55% of these students studied do not graduate, and 58% are incarcerated during their lifetime (Bullock &Gable, 2006).

Developing sound assessments which accurately identify the function of behavior is critical to creating successful interventions. Yet, using assessment tools to understand the causes of behavior and linking this information to interventions has been a major challenge for educators (Acker, Boreson, Gable, & Potterton, 2005). Current studies suggest that many educators do not have confidence in identifying the challenging behavior or the function it provides within the school. Many professionals in schools have not been properly trained in

assessment and intervention planning (Acker et al., 2005) which might explain the reluctance of using these tools in the schools. This assessment and intervention process needs to be improved to help individuals with emotional and/or behavior concerns have successful futures.

Researchers and educators have been working on developing better ways to assess the multidimensional components of behavior with the goal of creating more successful individualized interventions. Educators have been strongly encouraged to use a functional behavioral assessment (FBA) when a child expresses emotional and/or behavioral challenges within the school environment (Gresham, Watson, & Skinner, 2001). When conducting an FBA, educators use interviews, observations, and reviews of records to understand the relationship between the environment and the target behavior (Gresham et al., 2001). The information from an FBA has also been used to understand the function of the target behavior as it occurs in the environment (O'Neill, Horner, Albin, Sprague, Storey, & Newton, 1997). Ultimately, the goal of this type of assessment has been to develop a behavioral intervention plan (BIP) to reduce the occurrence of the challenging behavior within the school setting (Gresham et al., 2001).

Best practice guidelines and legal mandates support using FBAs and BIPs when dealing with challenging behavior. The National Association of School Psychologists (NASP) is the world's largest association in charge of credentialing and formulating ethical codes for practicing school psychologists (National Association of School Psychologists [NASP], 2000). This organization creates best practice guidelines that should be utilized by school psychologists to uphold the highest standards of ethical conduct within the school environment (NASP, 2000). Conducting an FBA is considered best practice when children express behavioral challenges that impede their ability to succeed in school (Knoster & McCurdy, 2002). The NASP recognizes that school psychologists have a critical role in developing and collecting information for FBAs. In

addition, school psychologists also have the authority to provide policy guidance within the educational environment (Knoster & McCurdy, 2002). As such, the NASP holds school psychologists responsible for advocating for the use of FBAs when students perform challenging behaviors in school (Knoster & McCurdy, 2002). The NASP's ethical codes specifically state, "school psychologists use decision-making models (e.g., functional behavioral assessments) that consider the antecedent, consequence, function, and potential causes of behavior problems expressed by students with disabilities, which may impair learning or socialization (NASP, 2000, p. 44)." The NASP affirms that conducting an FBA develops effective behavioral interventions and supports (Knoster & McCurdy, 2002).

In addition to the NASP's ethical codes and best practice guidelines, IDEA 2004 provides legal mandates for conducting behavioral interventions when a child with a disability violates the code of student conduct (Building the legacy: IDEA 2004, n.d.). When a child with a disability is removed from their current school placement for more than 10 school days, the team determines if the child's behavior is a result of their disability by reviewing records, individual education plans (IEPs), observations, and any other relevant information about the child (Building the legacy: IDEA 2004, n.d.). If the information indicates that the child's behavior appears to be due to their disability, an FBA and BIP need to be conducted if these procedures have not already been completed. If an FBA and BIP have been recently conducted, then the IEP team needs to review this information and modify as necessary (Building a legacy: IDEA 2004, n.d.). Furthermore, if a child with a disability violates the student code of conduct and the behavior does not appear to be a result of their disability, IDEA 2004 states that an FBA and BIP should still be conducted as appropriate to ensure the behavior does not return (Building a legacy: IDEA

2004, n.d.). IDEA 2004 requires schools to use FBAs and BIPs as methods to understand behavioral concerns and develop effective interventions.

State guidelines can be more restrictive than federal guidelines from IDEA 2004 and require the completion of an FBA as part of the evaluation process before qualifying a student for emotional and/or behavioral disorder. For example, the state of Minnesota requires school personnel to conduct an FBA as part of the evaluation process for determining eligibility for emotional and/or behavioral disorder (Minnesota Department of Education [MDE], n.d.).

NASP and reauthorization of IDEA 2004 emphasize the need for FBAs in the school setting because they offer a problem solving and research-based approach to implementing effective interventions (Knoster & McCurdy, 2002). Developing a firm understanding of FBA components is essential to know how to conduct this process in public schools.

When completing an FBA, researchers suggest for educators to identify the antecedents, target behaviors, and consequences (Watson & Steege, 2003). Antecedents would be events in the environment which occur right before the challenging behavior was expressed (Barnhill, 2005). After educators predicted when the behavior occurred, then it has been essential to map the specific target behavior. The topography of the behavior, frequency, duration, and intensity should be documented (O'Neill et al., 1997). Next, the maintaining consequences need to be identified. The consequences of the behavior would be defined as the particular function the subject received after expressing the challenging behavior (O'Neill et al., 1997). Overall, the results of an FBA have created confident predictions of the conditions in which the problem behavior occurred (Crone & Horner, 2003). This information has been crucial when trying to develop successful intervention strategies for children who express behavioral challenges in school.

Functional behavioral analysis has been another approach to analyze the function of challenging behavior by showing how a specific manipulation in the environment reliably affects a behavior (Cooper et al., 2007). The goal of functional behavioral analysis has been to use the information collected from an FBA to develop controlled settings that recreate the challenging behavior (Shapiro & Kratochwill, 2000). In a sense, functional behavioral analysis has been a step beyond an FBA where an experimental design provides stronger predictors for understanding the cause of challenging behavior than an FBA alone (Cooper et al., 2007). The occurrence of the problem behavior should be observed across sessions, which could be divided into test and control conditions (Shapiro & Kratochwill, 2000). The test condition directly manipulated the events in the environment that appeared to be fulfilling the specific function (Iwata, Dorsey, Slifer, Bauman, & Richman, 1994). In the control condition, the environment needed to be arranged to minimize the occurrence of problem behavior by giving access to preferred activities, attention, and not requesting undesired activities (Iwata, Dorsey, et al., 1994; Shapiro & Kratochwill, 2000). After the experimental conditions have been conducted, it was crucial to document and graph the expression of the targeted behavior in both conditions (Cooper et al., 2007). Overall, the visual inspection of the graphed data had provided the strongest predictions of what might have caused challenging behavior; which, in turn, could help educators develop more effective intervention plans.

Even though research has shown that functional behavioral analysis has provided a more accurate picture of the relationship between the target behavior and its function, researchers have just begun to test functional behavioral analysis in applied settings such as outpatient facilities, home, and school settings (Hanley, Iwata, & McCord, 2003). Functional behavioral analysis was derived in controlled experimental settings in inpatient facilities by trained researchers in

behavioral analysis; and therefore, most studies have been conducted in analogue (i.e., experimental) settings (Iwata, Dorsey et al., 1994; Kazdin, 2001). Currently, there have only been a handful of published peer reviewed articles linking an FBA to functional behavioral analysis in the schools, and none of which linked assessment results to a BIP, a mandated intervention method used by public schools (Building a legacy: IDEA 2004, 2007; Mueller, Turner-Sterling, & Moore, 2005). Minimal research has been conducted on functional behavioral analysis in natural environments such as schools. Because there has been a lack of research, knowing how to use functional behavioral analysis in natural settings has been unclear. Further, there have also been concerns with external validity. In other words, most functional analysis studies pulled the subject under investigation out of their natural environment into a simulated setting to test the experimental conditions (Hanley et al., 2003). There were concerns in external validity because results derived from a simulated setting might not transfer to the subject's natural environment (Hanley et al., 2003). The lack of research about how to apply functional behavioral analysis in the schools has created a gap between the education and research fields.

Overall, there are many flaws when looking at the process and execution of FBAs and functional behavioral analysis in the schools today. It should be a priority to understand the usefulness of FBAs and functional behavioral analysis to determine if they are the best approach to accurately understand the function of challenging behavior. Furthermore, it is imperative to determine whether or not the process of conducting a functional behavioral analysis in addition to an FBA is realistic and feasible for educators in the schools.

Rationale

There are gaps between education and research on the use of functional behavioral analysis in addition to an FBA. Even though research has shown that functional behavioral

analysis provides stronger predictions in understanding the cause of challenging behavior, most traditional research studies have been conducted within inpatient facilities and used analogue settings (Hanley et al., 2003). Educational professionals need to know whether linking functional behavior analysis to an FBA generates more accurate results in understanding the function of challenging behavior in a school setting. Since there are few studies conducted in the schools linking functional behavioral analysis to an FBA, there is little guidance on how to use this method in the schools.

In addition, because adding functional behavioral analysis components to an FBA could be time consuming, determining whether this process is practical and feasible in the schools is important. Researchers in behavioral analysis have begun to understand that traditional functional behavioral analysis studies, which conduct over a dozen observations across the test and control conditions, would not be realistic in applied settings (Vollmer & Northup, 1990). More recent studies in applied settings tested the usefulness and accuracy of brief functional analysis studies which only conduct two or fewer observations across test and control conditions (Hanley et al., 2003). Brief functional analysis studies in natural settings have proven to accurately understand the function of problem behavior (Broussard & Northrup, 1995; Mueller et al., 2005; Vollmer & Northrup, 1990). Therefore, it is important to determine if conducting a brief functional analysis in addition to an FBA process can provide realistic time commitment for educators in the schools to help accurately understand the cause of behavior.

Statement of the Problem and Purpose of the Study

Given little research linking functional behavioral analysis to an FBA in natural settings exists, the purpose of this study is to determine whether linking a functional behavioral analysis to an FBA proves to be more helpful in accurately understanding the cause of challenging

behavior than just using an FBA alone in a school. A single-subject design in a public school was used to determine whether functional behavioral analysis offered further information to the FBA hypothesis statement.

Given educators in schools have limited time and resources, the purpose of the study is also to determine if linking functional behavioral analysis to an FBA in a public school is feasible. The teacher and experimenter who worked directly with the subject completed a debriefing teacher report, and this qualitative data was analyzed to determine the practical nature of the FBA and functional behavioral analysis process.

Research Questions

The following research questions were addressed by this single-subject design:

1. Can functional behavioral analysis, in addition to using an FBA, be a beneficial approach to accurately understanding the function of challenging behavior in an 8-year-old child within a public school setting?
2. Can a functional behavioral analysis and FBA process feasibly be implemented in a public school setting?

Definition of Terms

Functional Behavioral Assessment (FBA): The process of collecting data from multiple sources to understand the antecedent, target behavior, and consequence. This assessment provides descriptive connections between the environment and the behavior (O'Neill et al., 1997).

Antecedent: A specific signal in the environment that a particular behavior will be reinforced (Kerr & Nelson, 2002).

Maintaining Consequence: A reinforcement that a subject receives after behaving

a certain way in a setting (Kerr & Nelson, 2002).

Functional Behavioral Analysis: An experimental procedure, which manipulates environmental factors that appear to reinforce the challenging behavior in a controlled or naturalistic environment (Schloss & Maureen, 1998; Shapiro & Kratochwill, 2000). Data collected during the analysis of the challenging behavior is used to determine the functional relationships between variables in the environment that reliably increase the occurrence of the target behavior (Cooper et al., 2007).

Analogue Setting: A simulated setting used to test and observe isolated features of a subject's behavior. This setting serves as a predictor of how the subject is likely to act in their natural environment (Hanley et al., 2003; Shapiro & Kratochwill, 2000).

External Validity: The extend to which results of the function of behavior derived from a functional behavioral analysis study using simulated experimental conditions generalize to natural settings (Hanley et al., 2003)

Confounding Variables: When results from an experimental study appear to be affected by uncontrolled variables (Cooper et al., 2007).

Behavior Intervention Plan (BIP): Strategies derived from using results from indirect and direct measures to support appropriate behaviors and replace problem behaviors within the school setting (Kerr & Nelson, 2002).

Methodology and Limitations of the Study

This study used a single subject design. It was not the intent of this study to generalize the findings to other children who display similar behaviors. However, this research was directed to help educators determine what evaluation procedures would be needed to accurately understand what drives a student's challenging behavior in a public school setting. Another

purpose was to add to the body of research to determine whether both functional behavioral analysis and an FBA could be conducted in a natural setting.

Chapter II: Literature Review

Conducting FBAs is becoming the best practice standard in intervention planning for students who show behavioral problems in schools (Knoster & McCurdy, 2002). Many authors have written about systematic approaches for conducting FBAs, functional behavioral analysis, as well as developing and implementing BIPs. This chapter addresses the current process and practice of FBAs, functional behavioral analysis, and BIPs in the school setting. A wide variety of models in the field exist; and, conceptually, these models are very similar in nature. Yet, authors have tended to use different language or terms to describe similar constructs. Additionally, authors make different recommendations on the specifics of the FBA and BIP process. Practices discussed in this chapter are largely derived from the models of O'Neil et al. (1997), Crone and Horner (2003), and Cooper et al. (2007), with the methods of other authors infused.

Current Practice of Functional Behavioral Assessments in School Settings

An FBA is a broad assessment process used to understand what factors in the environment reliably predict and maintain challenging behavior (O'Neil et al., 1997). An FBA consists of assessments such as record reviews, observations, and interviews (Crone & Horner, 2003; Gresham et al., 2001; O'Neil et al., 1997). Ultimately, the FBA process involves using several assessment tools with the goal of understanding the possible function of the behavioral concern and use this information in developing sound interventions.

Crone and Horner (2003) first recommended that the team of educators who have been responsible for conducting the FBA look at the child's cumulative school record. These school records provide information about the student's previous behavior, health history, and documentation of possible events that could influence the occurrence of the challenging behavior

(Crone & Horner, 2003). School records have a wealth of information, but were only the first source of information in the FBA process.

After completing the file review, most authors have agreed that the team of educators should determine if further information was needed from an FBA to understand the subject's behavior (Crone & Horner, 2003; O'Neil et al., 1997; Watson & Steege, 2003). Indirect assessments have been another source used when conducting an FBA (Crone & Horner, 2003; O'Neil et al., 1997; Watson & Steege, 2003). The educators involved in the FBA process would begin by interviewing the student's teachers and parents. Because the student's teachers and parents spend every day with the student, they have been usually the best source of information (Crone & Horner, 2003). O'Neil et al. (1997) outlined many goals of the initial interview process. The first goal of the interview was to create an operational definition of the challenging behavior. This definition should describe the frequency, duration, intensity, and topography of the target behavior. Identifying the antecedents, which predict the occurrence or nonoccurrence of the behavior, should then be determined (O'Neill et al., 1997). Next, the consequences of the target behavior would be identified. The consequences detect what functions were served as a result of the challenging behavior. The final goal of the interview was to develop summary statements describing situations which predict the occurrence of the target behavior, define what the behavior looked like, and the function it served (O'Neill et al., 1997).

Although this initial interview would generate a wealth of information about the specific student under investigation, O'Neil et al. (1997) suggested educators should interview at least two or more individuals. If possible, educators would be encouraged to try and conduct one of the interviews with the student who performed the challenging behavior. The student's self–

report could help describe their own behaviors in response to the questions asked by the interviewer (O'Neill et al., 1997).

Crone and Horner (2003) discussed the process of a simple FBA where only indirect data was used for the assessment. The authors believed that for some children, the assessment procedures could stop at this point and an intervention plan could be developed from only interview data. For some children Kerr and Nelson (2002), however, warned that the data collected from these indirect measures primarily assess the evaluator's opinion about the student's behavior. Therefore, many authors, including Crone and Horner (2003) in their approach to a full FBA, recommended performing both indirect and direct assessments to develop a comprehensive picture of the actual target behavior (Cooper et al., 2007; Kerr & Nelson, 2002; O'Neill et al., 1997).

Direct assessments have been additional procedures used to collect information about a child assessed for behavioral problems (Cooper et al., 2007; Crone & Horner, 2003; Kerr & Nelson, 2002; O'Neil et al., 1997). The advantage of using direct assessments has been to observe the antecedent, target behavior, and consequence as they occur in the environment (Barnhill, 2005). As a result, these assessments document more objective data than indirect measures because the observer does not rely on someone's memory or perceptions of the challenging behavior (Barnhill, 2005). Direct assessments should be conducted by a variety of educational personnel, such as teachers, school psychologists, and other support staff (O'Neill et al., 1997). Conducting direct assessments with different evaluators in multiple settings helps determine the variables that affect the student's challenging behavior (Kerr & Nelson, 2002).

O'Neil et al. (1997) suggested that most direct assessments start with a narrative recording system. During the observation period, the observer records a narrative about the

student's actions and behaviors. Specifically, the observer focused on documenting specific times the target behavior occurs to identify the antecedents and maintaining consequences. An example of a narrative recording system has been called an antecedent-behavior-consequence (ABC) analysis (Barnhill, 2005; O'Neil et al., 1997). During an ABC analysis, the observer recorded his or her observations on a piece of paper separated into three columns (Barnhill, 2005; O'Neil et al., 1997). The columns separate the notes regarding the immediate antecedents, the behavior, and maintaining consequences of the behavior (Barnhill, 2005; O'Neil et al., 1997). Crone and Horner (2003) referred to this type of recording system as a functional behavioral assessment observation form. In essence, these recording systems collect and organize qualitative data about the environmental factors which predicted or maintained the behavior.

Most authors have also recommended quantitative recording system in addition to qualitative data (Cipani, 2008; Cooper et. al, 2007; Crone & Horner, 2003; Kerr & Nelson 2002). Quantitative data allows researchers to compare baseline behaviors to intervention phases to determine whether or not an intervention plan reduced the challenging behaviors of a particular student in a school (Cipani, 2008; Cooper et al., 2007). Objective and quantitative recording systems typically used for FBAs have included interval recording, scatter plots, frequency recording, and duration recording systems (Kerr & Nelson, 2002; O'Neill et al., 1997).

After direct and indirect assessments have been completed, educators pool all of the data together to discuss the results of the FBA (Crone & Horner, 2003; Kerr & Nelson, 2002; O'Neil et al., 1997). Conducting these assessment tools provides information about possible events that trigger the occurrence or nonoccurrence of the problem behavior within the environment (Crone & Horner, 2003; Kerr & Nelson, 2002; O'Neil et al., 1997). The assessment tools also identify maintaining consequences, or those events, which happened after the target behavior reinforced

the student for inappropriate behavior. The overall goal of the assessment process has been to write a final statement, which described the link between the antecedents, behaviors, and functions of the student's behavior. This final statement has been referred interchangeably in the literature as a summary statement (O'Neil et al., 1997) and/or hypothesis statement (Cooper et al., 2007; Crone & Horner, 2003). Regardless of what researchers labeled this final statement, a BIP would then be developed from it (Crone & Horner, 2003; Kerr & Nelson, 2002; O'Neil et al., 1997).

Unfortunately, finding the relationship between the challenging behaviors and the environment has been extremely difficult because behavior has high variability (Kerr & Nelson, 2002). Teams who develop an FBA cannot prove what predicted or caused the target behavior with certainty (Kerr & Nelson, 2002). O'Neil et al. (1997) called the summary statements educated guesses based on the connections witnessed between the antecedents, behavior, and consequences. If interventions based on the FBA were unsuccessful, it would be concluded that the summary statements were faulty. Further assessment would be needed if the educators believed that the FBA had not provided enough information to develop a better understanding of the function the challenging behavior served (Crone & Horner, 2003; O'Neil et al., 1997).

Functional Behavioral Analysis in the School Setting

Functional behavioral analysis could be utilized after completing an FBA (Cooper et al., 2007; Crone & Horner, 2003; O'Neil et al., 1997). The purpose of conducting a functional behavioral analysis has been to understand the environmental events that have a strong correlation with the target behavior through experimental testing of the summary/hypothesis statements developed from the FBA (Shapiro & Kratochwill, 2000). By manipulating the environment and putting the subject through various test conditions, educators could determine

what environmental events have the strongest functional relationships to the target behavior (Cooper et al., 2007; Shapiro & Kratochwill, 2000).

Most functional behavioral analysis procedures were developed with a team of researchers and educators. Iwata, Dorsey, et al. (1994) have recommended that at least one person within the team has a specialization in behavioral interventions. Individuals proficient in behavioral interventions would be responsible for performing the actual experimental condition for the functional behavioral analysis (Iwata, Dorsey, et al., 1994). According to Iwata and colleagues, those trained in behavioral analysis have an obligation to educate other professionals about these procedures. The educators or specialists, who observed the child in experimental setting, would be trained before the actual experiment was conducted (Iwata, Dorsey, et al., 1994). This training would teach the observers how to accurately record challenging behavior as it occurred in controlled environments.

According to Shapiro and Kratochwill (2000), experimental conditions should be developed after educators and specialists were selected to participate in the functional behavioral analysis. These controlled settings were used to empirically measure the environmental variables that seemed to affect the occurrence of the target behavior (Shapiro & Kratochwill, 2000). The pioneers of functional analysis derived experimental conditions within a simulated environment (Iwata, Dorsey, et al., 1994). The experimenters initially pulled the students out of their natural setting and placed them into a controlled environment where all stimuli were held constant except for the variables thought to control the problem behavior (i.e., antecedents and/or consequences). In most cases, a trained investigator worked directly with the child in the experimental condition and a second investigator observed the prevalence of the target behavior in four experimental settings (Kazdin, 2001).

The first condition initially developed for functional behavioral analysis studies was called social disapproval. In this experimental condition, toys and activities would be available in the room where the experiment was taking place (Iwata, Dorsey, et al., 1994). The therapist sat in a corner in the therapy room and directed the student to play with the toys. The only time the therapist responded was when the target behavior was performed (e.g., stop that). Educators who predicted that the child's behavior was influenced by attention frequently used this condition to confirm their hypothesis (Iwata, Duncan, Zarcone, Lerman, & Shore, 1994). The second experimental condition was academic demand. In this condition, the therapist would request the child to complete an academic task. If the child did not respond, the therapist offered prompts to encourage the child to complete the task (Iwata, Dorsey, et al., 1994). This condition was used to determine whether the student frequently performed challenging behavior to escape from task demand (Iwata, Dorsey, et al., 1994; Iwata, Duncan, et al., 1994). A third experimental condition was called unstructured play. The child had access to preferred resources with no demands. This condition was used as a control (Iwata, Dorsey, et al., 1994). The fourth experimental condition was called the alone condition. The child was placed in a room alone without access to the therapist, toys, or other tangible materials (Iwata, Dorsey, et al., 1994). Researchers who predicted that self-stimulation, an automatic reinforcement, caused the target behavior would use the alone condition (Cooper et al., 2007; Iwata, Dorsey, et al., 1994).

The four conditions described above have been highly researched and replicated by other experts in functional behavioral analysis (Iwata, Dorsey, et al., 1994). Some researchers have modified these conditions to specifically match the perceived functions of the target behavior in more naturalistic environments, such as outpatient facilities and school settings (Mace, 1994). Functional behavior analysis studies conducted by researchers in applied settings seem to

typically adopt the four experimental conditions listed above and/or modify the conditions to fit the hypothesized functions of the target behavior.

A study conducted by Mueller et al. (2005) combined the escape and attention conditions into one. The hypothesis was that both functions maintained the target behavior and the two reinforcers together increased the prevalence of the target behavior instead of using the escape and attention condition separately (Mueller et al., 2005). Combining or changing the conditions initially developed by Iwata, Dorsey et al. (1994) has appeared effective based on current research in applied behavior analysis. Several researchers have outlined different types of test conditions which all center on examining the function of behavior.

Cooper et al. (2007) developed realistic guidelines for educators and researchers alike when creating test conditions in naturalistic setting such as public schools. Cooper et al. (2007) outlined three test conditions and one control. Each test condition had a motivating operation (i.e., antecedent) and a reinforcement (i.e., consequence) for performing a particular challenging behavior.

According to Cooper et al. (2007), the first test condition was called contingent attention. In this condition, attention could be withheld from the subject unless they performed the problem behavior. After the subject performed the problem behavior in the natural setting, they could receive attention (ranging from a mild reprimand to verbal redirection and guidance). Contingent attention could be used to determine if the subject performed problem behavior to receive attention (Cooper et al., 2007).

Cooper et al.'s (2007) second test condition was called contingent escape in which the subject would be given a task demand. When the subject performed problem behavior, a break such as removing the task demand or stop prompts to complete the activity could be used. This

test condition could determine if the subject performed problem behavior to escape the task demand.

Cooper at al.'s (2007) third test condition was called alone, which provided low levels of stimuli in the subject's environment. For example, in this condition, the child could be placed in a setting without task demands, materials, and people. Further, any objects used for play would be removed. If the problem behavior occurred, it should be ignored because nobody but the subject would be in that setting. This condition should be used when a subject seemed to perform problem behavior for self-stimulation (Iwata, Dorsey et al., 1994; Iwata, Duncan et al., 1994).

Cooper et al.'s (2007) fourth condition was the control and/or play. In this condition, the subject would be given access to preferred activities or attention, and there should not be academic demands. If the problem behavior occurred, it could be ignored or redirected. These four conditions developed by Cooper and colleagues have provided guidance for developing test conditions in applied settings such as public schools.

Current studies in applied settings has used fewer observations than those in traditional studies because the length and time involved in formal analogue/controlled settings have often not been realistic in applied setting such as schools. Findings from brief functional behavioral analysis studies have been shown to be as successful as formal studies in behavioral analysis (Cooper et al., 2007; Vollmer & Northrup, 1990). In a brief functional analysis studies, only two or fewer observations in each experimental condition are used, in more traditional studies, several 10-15 minute observations over many days were conducted (Hanley et al., 2003; Vollmer & Northrup, 1990).

After the conditions for either the brief or full functional behavioral analysis have been established, the design for the study should be selected (Hanley et al., 2003). The design would

affect how the data would be collected and recorded (Shapiro & Kratochwill, 2003). Three designs have been best suited for functional behavioral analysis procedures (Cooper et al., 2007; Iwata, Duncan, et al., 1994; O'Neill et al., 1997).

One design most commonly used for traditional functional analysis experiments has been the multi-element assessment (Iwata, Dorsey, et al., 1994). This design alternates all four conditions in a semi-random order. Typically, an experimenter rolled a dice to determine what condition was used. This process was repeated until a trend in the behavior was identified. Sometimes multi-element designs were unable to identify patterns of behavior (Iwata, Duncan, et al., 1994). Researchers who replicated the multi-element design found many confounding variables such as a sequence effect (Iwata, Duncan, et al., (1994). A sequential test-control pairwise condition was found more accurate to understand the underlying cause of behavior (Iwata, Duncan, et al., 1994)

A sequential test-control pairwise assessment has been another design used when the multi-element assessment was unable to differentiate behavioral patterns (O'Neill et al., 1997). The experimenter always paired the test conditions (e.g., social disapproval, academic demand, and alone) with the control condition (i.e., unstructured play) instead of semi-randomly choosing which order to conduct each condition. When using the sequential test-control method, each pair of conditions was conducted in alternating order (O'Neill et al., 1997). This design made it easier to see the trends in behavior. A sequential test condition pairwise design could be more time consuming than the other designs, but it might be one of the only methods which accurately show what conditions caused the behavior (Iwata, Dorsey, et al., 1994).

A reversal (ABAB) design, which has been considered among the most powerful method in identifying functional relationships, could be used to document the effects of one or more

experimental conditions (Cooper et al., 2007; O'Neill et al., 1997). This design begins with a baseline phase (A). The child's target behavior would be documented before the manipulations were added to the controlled environment (O'Neill et al., 1997). After baseline (A) was completed, the manipulation (B) would be added to the environment, and the child's target behavior was recorded (O'Neill et al., 1997). The baseline (A) and test conditions (B) were repeated in alternating order until the educators were convinced they found a functional relationship (Cooper et al., 2007; O'Neill et al., 1997). A reversal design was most useful when there have been only one test and control condition (Cooper et al., 2007). If more than one test condition existed, it would be possible to conduct a variation of the reversal design by adding more than one condition denoted by a C or D; however, using variations could be risky and might add a confounding variable such as a sequence effect (Cooper et al., 2007). A sequence effect means that a subject's behavior to a test condition results from the subject's experience in the previous test condition (Cooper et al., 2007). When needing to conduct a multiple experimental design with more than one test condition, the sequential test control pairwise design discussed previously limits confounding variables and may provide more accurate information than using a variation of an ABAB reversal design (Cooper et al., 2007; Iwata, Duncan, et al., 1994).

After the conditions from the functional behavior analysis have been completed, the data should be collected and graphed (Shapiro & Kratochwill, 2003). Line graphs have been commonly used in functional analysis studies, and this type of graph visually shows the relationship between the target behavior and the experimental conditions (Cooper et al., 2007; Kazdin, 2001). The x-axis represents the independent variable/experimental manipulation, and the y-axis represents the frequency of the target behavior. The visual analysis of the graphed data

determined whether or not there has been an increase in the target behavior across experimental conditions (Cooper et al., 2007). To find functional relationships between the manipulated conditions and the target behavior, researchers need to analyze variability of the data within and across conditions, and compare means between conditions when there has been little variability (Cooper et al., 2007). Statistical significance formulas have also been looked at to determine behavior change; however, some researchers claim that using formulas have created more type I and II error than visual inspection (Cooper et al., 2007). According to Cooper et al. (2007), methods of analyzing data through visual inspection have been more accurate and appropriate for measuring socially significant behavior change than statistical formulas.

After using these suggested strategies to understand the variables that seem to create behavior change, it has been important to compare the results from the functional behavioral analysis to the hypothesis statements from the FBA (Cooper et al., 2007; Kazdin, 2001; Shapiro & Kratochwill, 2003). This data could be used to either confirm previous hypothesis of the target behavior or show that revisions must be added to the hypothesis statements to accurately describe the cause of the challenging behavior. Identifying the environmental events that maintain the challenging behavior should be used to create effective behavioral interventions that serve the needs of the student (O'Neill et al., 1997).

Behavioral Interventions in the Schools

Once the hypothesis (i.e., summary statement) has been developed and confirmed through the FBA and functional behavioral analysis, the information could be used to develop interventions. An FBA, however, historically has been the only assessment approach legally mandated and used to logically match the perceived functions of a students target behavior to a systematic behavior intervention plan (BIP) in the school setting (O'Neill et al., 1997). The

following section describes how an FBA has been linked to a BIP, outlines the steps involved in developing a successful BIP, and also discusses the future direction in linking functional behavior analysis to improve intervention plans.

Many researchers have emphasized that in order to develop a successful intervention plan, educators need to focus on connecting the summary/hypothesis statements of an FBA to the BIP (Janney & Snell, 2000). These summary statements have helped teams of educators who have supervised the BIP understand the functions the behavior served for the subject (Acker et al., 2005).

Crone and Horner (2003), Janney and Snell (2000), and O'Neil et al. (1997) have addressed that the initial step in the BIP process has been for educators to analyze the hypothesis statements from the FBA and develop a competing behavior pathway. A competing behavior pathway has been a diagram which plots the summary statement and a replacement behavior. The first step in a competing behavior pathway has been to identify an appropriate behavior which replaced the challenging behavior. Janney and Snell (2000) and O'Neil et al. (1997) have called this an alternative behavior. Crone and Horner (2003) have used competing, alternative, and replacement behavior interchangeably to define this process. Regardless of what it has been called, the competing behavior needs to be mutually exclusive with the goal of extinguishing the challenging behavior (Crone & Horner, 2003; Janney & Snell, 2000; O'Neil et al., 1997). For example, an individual cannot run and walk at the same time. Both behaviors, in other words, cannot be expressed within the environment at the same time (Crone & Horner, 2003; Janney & Snell, 2000; O'Neil et al., 1997).

After the competing behavior pathway has been diagrammed, school staff then brainstorm and select strategies which make the challenging behavior irrelevant, ineffective, and

inefficient (Crone & Horner, 2003; O'Neill et al., 1997). To make the challenging behavior irrelevant, preventative strategies should be created to change the antecedents which supported the challenging behavior in the school environment (Crone & Horner, 2003; Janney & Snell, 2000; O'Neil et al., 1997). For example, the BIP might have requested changes in the physical setting, schedule, staff, or peers who were thought to influence the occurrence of the challenging behavior (Janney & Snell, 2000). After the factors thought to increase the prevalence of the challenging behavior were removed from the student's environment, it has also been helpful to create new environmental factors to nurture the more appropriate replacement behaviors (Crone & Horner, 2003). Common school based environmental events have included: providing curriculum appropriate for the student and creating opportunities to develop and foster relationships (Janney & Snell, 2000).

The next step in the competing behavior pathway has been to brainstorm, develop, and select teaching strategies that made the target behavior inefficient (O'Neill et al., 1997). Educators needed to teach the subject socially appropriate replacement behaviors which satisfied the student's needs in a more efficient manner. The goal of this strategy has been to help the student realize that the replacement behavior took less time and effort to obtain the same function within the school environment (Crone & Horner, 2003). Educators also needed to ensure that the replacement behaviors were taught beyond the state of learning acquisition (Janney & Snell, 2000). Students needed to be taught when, where, and how to use these alternative behaviors fluently. In order for the teaching strategies to be effective, the child must have received support and assistance from educators (Janney & Snell, 2000).

By brainstorming and selecting strategies which change or eliminate the maintaining consequences, school staff could make the target behavior ineffective (Crone & Horner, 2003;

O'Neill et al., 1997). A common technique used to change the consequence of the behavior was called non-reinforcement (Janney & Snell, 2000). Teachers and peers who were in the student's environment responded to the target behavior in a way that prevented the function from being reinforced (Janney & Snell, 2000). These individuals would not react to the challenging behavior, but showed the student what replacement behavior they should choose to obtain the desired function (Janney & Snell, 2000). For example, if a child frequently ran around the classroom to get attention from peers, the teacher and other support staff could teach the other students in the classroom to ignore this behavior. The inappropriate behavior would be extinguished if it was ineffective in getting the student's needs met (Janney & Snell, 2000).

After these strategies have been chosen and documented, the educators implement their systematic plan (Crone & Horner, 2003; Janney & Snell, 2000; O'Neil et al., 1997). As noted earlier, many authors have recommended continuing with quantitative data collection to evaluate the effectiveness of the intervention (Cooper et al., 2007; Kerr & Nelson; 2002; O'Neil et al., 1997). Evaluations should be ongoing to ensure the BIP continues to meet the child's needs. Also, this evaluation process could help educators be more accountable for their contributions to the BIP process (Janney & Snell, 2000).

Linking Assessment to Intervention

A BIP has been a comprehensive and systematic approach to shape the environment in ways that foster the learning of a new socially appropriate behavior (Janney & Snell, 2000). An FBA has been the only assessment process directly linked to a BIP in the schools today. Fortunately, researchers have begun to understand the effectiveness of using applied behavior analysis in addition to an FBA in schools; however, there has been little guidance in how to link functional behavioral analysis to a BIP (Cipani, 2008).

Since the 1960s applied behavior analysis has been used to test not only the function of behavior, but also the effectiveness of interventions by creating experimental designs (Cipani, 2008). The experimental design has created test conditions which manipulated the environment by adding an intervention and comparing this data to a control condition, which withheld the intervention from the environment (Cipani, 2008). This data was graphed and visually inspected as validating or invalidating the intervention.

Even with decades of applied behavior analysis studies, there has been many gaps in the literature and peer reviewed articles about how interventions were selected and conducted. Some peer reviewed articles focused on randomly finding an intervention strategy that withheld the reinforcement of the challenging behavior under investigation (Vollmer & Northrup, 1990). Other research studies simply developed interventions by finding a replacement behavior and altered the consequence in the environment to extinguish reinforcement of inappropriate behavior (Watson et al., 1999). Furthermore, other research investigators created lengthy experiments to understand the possible cause of behavior and provided suggestions for remedies (Mueller et al., 2005). The variety of research methodologies helps paint a picture of how daunting it may be to try and make sense of all of these different methods of selecting, conducting, and validating interventions based on applied behavior analysis research.

There have been no systematic guidelines or procedures found to link applied behavior analysis to a systematic intervention plan such as a BIP, which has been mandated in schools (Building a legacy: IDEA 2004, n.d.). Cooper et al. (2007) recently developed suggestions on how to link a functional analysis to an intervention plan. His guidelines on linking an FBA and functional behavioral analysis to a systematic intervention plan seem much like the BIP process.

Cooper et al. (2007) developed an outline for practitioners in research and schools to connect assessments to interventions. The first step has been to conduct descriptive data such as indirect and direct assessments, the current method of conducting an FBA in the schools. Cooper and colleagues document that these assessments could be used to develop a hypothesis about environmental factors that appear to affect the target behavior. A test could be developed to validate whether the initial hypothesis was correct by conducting a functional behavior analysis. The next step would be to map out the antecedents, target behavior, and consequences from the functional behavioral analysis study in preparation for the intervention. If the summary statements from the functional behavioral analysis validated the summary statements in the FBA, then the intervention could proceed. Cooper and colleagues then suggest assessors use an ABC mapping chart. The mapping chart should identify a replacement behavior, antecedents that reinforced the replacement behavior, and consequences that made the target behavior ineffective yet reinforced the new replacement behavior. This process seems much like the competing behavior model which has been used in the BIP process (Crone & Horner, 2003; Janney & Snell, 2000; O'Neil et al., 1997). The BIP must then be monitored by collecting and graphing data during the implementation of the intervention plan (Cooper et al., 2007). Because interventions could lose their effectiveness overtime, monitoring the plan has been an essential piece of the intervention.

Overall, Cooper et al. (2007) recommend that practitioners connect an FBA to a functional behavioral analysis and then link this information to a systematic intervention plan. Most of the steps involved in the intervention plan appear identical to the BIP process, with the additional component of collecting data after the intervention plan has been implemented. The additional component comprises an essential piece of the intervention by helping to validate the

effectiveness of the plan. This linking process of assessment to intervention has been imperative to help guide educators on ways to accurately understand the cause of behavior and use this information to develop effective BIPs, resulting in reducing the challenging behavior of students in schools.

Chapter III: Methodology

The purpose of this study was to conduct a single subject design research project to determine if adding a functional behavioral analysis was useful in providing support for a FBA summary/hypothesis statement. In addition, qualitative data from debriefing teacher report forms were conducted to determine if the process of adding a functional behavioral analysis to an FBA was feasible in a public school. This chapter specifically describes the subject selection, instrumentation, data collection, and data analysis.

Subject Selection and Description

The subject chosen for the study was a second grade student due for a mandated three-year special education reevaluation in a suburban Minnesota school district. The student received special education services under the primary category of Emotional or Behavioral Disorder (EBD) and a secondary category of Speech and Language Impairment. The Minnesota Department of Education mandates schools conduct FBAs for initial or three year re-evaluations on children who qualified for services under the category of EBD (MDE, n.d.). Therefore, an FBA was conducted routinely for this evaluation. The examiner received permission from UW-Stout's Human Subject Review Committee, the school district, and the subject's parent to conduct a functional behavioral analysis in addition to the FBA.

The special education records and a child history questionnaire filled out by the parent revealed the subject was adopted and brought to the Unites States when she was 16 months of age. When she was three years old, the subject's adoptive mother and an early childhood special education teacher expressed concerns about her development and behavior. When she was four years old, the subject was given a speech evaluation in early childhood and qualified for speech services under the area of articulation. She was given a formal speech and language assessment

in kindergarten and qualified for additional supports under the category of language disorder. In addition her hearing was assessed. Results ruled out hearing concerns as a contributing factor to her language disorder. She received speech and language therapy to work on receptive and expressive language skills.

Based on the subject's report card from her cumulative file, concerns related to her behavior and social development were prevalent. According to her report card, she demonstrated little self control, had difficulty focusing or following directions, refused to work, could be verbally distracting in the classroom, demonstrated poor work habits, and struggled to interact appropriately with her same-aged peers. The results of a comprehensive special education evaluation in kindergarten determined the subject was eligible for services as a child with an Emotional or Behavioral Disorder (EBD). She then received social/emotional support for self-esteem, friendship building, and coping skills in addition to speech and language therapy.

In first grade, the subject continued receiving special education services at the same elementary school for speech and language and social/emotional support. Her first grade report card from the cumulative file indicated that she demonstrated 'limited' to 'developing' skills in all academic areas. She showed limited skills in working independently, listening, and using pro-social behaviors in school.

The subject continued attending the same school in second grade. During the first week of second grade, the subject's mother provided medical documentation from the University of Minnesota's Medical Center showing that her daughter had a mild conductive right sided hearing loss. The mother requested the school conduct a deaf and hard of hearing evaluation. At that time, the subject was also due for a comprehensive evaluation. As such, the team decided to

conduct the three year re-evaluation in addition to hearing evaluation in the beginning of the school year.

Instrumentation, Data Collection, and Data Analysis

Functional behavioral assessment

After permission was granted, the indirect assessments for the FBA were conducted. The indirect assessment included a review of records and interviews (Barnhill, 2005). Reviewing the student's cumulative record provided background information such as school attendance, grades, and previous behavior concerns (O'Neill et al., 1997). Additionally, the review of records allowed the researcher to view specific assessments and interventions that were previously conducted (O'Neill et al., 1997). The previous section described the pertinent information collected from the subject's cumulative file, special education records, and a child history questionnaire completed by the subject's mother.

After the file review was completed, a functional assessment interview (FAI) was conducted jointly with the mother and general education teacher (see Appendix A). In addition to an FAI, a student directed functional assessment interview form was given to the subject (O'Neill et al., 1997). This interview had the same components of the FAI. The student interview was varied to make it shorter in length and to simplify the questions to aid in the subject's ability to understand the questions given during the interview process (see Appendix B).

The first step in the interviewing process was to have the parent, teacher, and student operationally define the target behavior (O'Neill et al., 1997). The subject's mother indicated that she did not see significant behavioral concerns at home. However, the classroom teacher reported that the subject frequently refused to do her work in the classroom. The teacher provided an operational definition of the subject's work refusal: the subject would say "I don't

want to do it," go to the bathroom or drinking fountain for a long period of time, put her head down on her desk, turn and talk to peers, or slap her pencil on her desk. During the self-report, the subject said that she found other things to do in school when work was difficult.

The second step in the interview was to identify antecedents which seem to predict and trigger the subject's work refusal. Antecedents included both setting events in the environment and immediate triggers that occurred right before the subject demonstrated work refusal (O'Neill et al., 1997). The mother, teacher, and subject were asked what ecological setting events seemed to increase the target behavior. Both mother and teacher reported the following ecological setting events: the subject's recent hearing loss, unexpected changes in routine, and the amount of choices offered to her, as choice seemed to impact the frequency of the work refusal behavior. The subject also reported the following factors made school work hard to complete: lack of sleep, hunger, being next to specific students in her class, and being requested to perform difficult activities. The teacher said that an immediate antecedent before the subject engaged in work refusal was being requested to do a non-preferred academic task at her desk and this occurred mostly during math, writing, and health/science. Other factors that seemed to immediately increase the frequency of the subject's work refusal were reported to be interruptions in desired activities, having a sudden change in routine, and not receiving immediate attention when she does not seem to understand an academic task. The subject also said that school has been difficult when class was boring, too hard, and long. Based on parent and teacher interviews, the subject appeared least likely to perform work refusal during morning meeting, recess, independent reading, and small group or one-on-one time with the teacher. The subject also reported that she liked morning meeting and recess the most in school.

Maintaining consequences, in other words, possible function of behavior were also identified (O'Neill et al., 1997). The classroom teacher, mother, and subject were asked to explain possible hypothesized consequences for work refusal. The classroom teacher said that the subject appeared to engage in work refusal in class to get extra attention and reassurance from adults before attempting her work. She also seemed to avoid tasks that were difficult for her to understand. The classroom teacher said that immediately after the subject performed work refusal, the teacher either tried ignoring the behavioral issue or walk over to the subject and provide reassurance as well as guidance to continue working. The subject's mother said her daughter performed work refusal in school because she did not understand the task and had difficulty communicating her needs. The subject reported that she was unsure why she refused to complete work in school.

At the conclusion of the interview, a summary/hypothesis statement that described the relationship between the predictors, target behaviors, and maintaining consequences (see Appendix A) was developed. The summary statement from the FAI and student directed functional assessment interview concluded the following: When the subject was requested to complete a challenging academic task independently at her desk in school, she performed work refusal to escape the non-preferred task, continued to engage in preferred non-threatening activities, and immediately received attention from the teacher to help break down the task.

Direct assessments in the subject's classroom were conducted by the examiner/researcher of this study to solidify the summary/hypothesis statement developed in the interviews. An ABC recording form (see Appendix C) was used when observing the subject to objectively collect immediate antecedents (A), the behavior (B), and maintaining consequences (C) (Barnhill, 2005; Crone & Horner, 2003; O'Neil et al., 1997). Four observations were conducted in different types

of classroom activities to ensure the subject was seen in a variety of settings. The student was observed for a total of 80 minutes over the observation periods for the FBA. These observation periods included: independent reading, health/science, morning meeting, and literacy. The subject performed work refusal in all observations except during the morning meeting. The following work refusal behaviors were observed during the observations: the subject requested for a bathroom break, gazed around the room, talked to peers during instruction, yelled "I don't want to sit down," tapped pencil on her desk, colored during independent work time, and had a tantrum by kicking legs on the floor while whining. An analysis of the observation periods recorded the following antecedents which occurred before the subject engaged in work refusal: the teacher requested students to complete independent seat work, the teacher requested the students to transition from listening to teacher examples about a task to completing the task independently, and having sudden unexpected changes in routine. The following consequences occurred immediately after the subject performed the target behavior of work refusal across observations: the teacher provided verbal redirection (e.g., asked the subject to continue working), the teacher provided verbal guidance (e.g., the teacher gave the subject a reminder about her job/responsibilities), the subject avoided her work (e.g., sat in a corner of the classroom and gazed around the room), the subject engaged in preferred activity (e.g., color instead of writing), and verbal attention from a peer (e.g., talking to a peer about a topic unrelated to the assignment).

After the subject was observed, notes from the ABC recording forms were compared to the initial summary/hypothesis statements from the indirect assessment to try and validate the possible function of the target behavior (see Appendix D). Overall, the information collected from the ABC recording system matched the summary statements from the informal measures.

Both direct and indirect measures from the FBA concluded that when the subject was requested to independently complete a non-preferred academic task (i.e., reading, writing, math, or health/science) that she did not understand or find interesting, she engaged in work refusal to escape and gain immediate attention. Appendix D is a chart form of the narrative summary/hypothesis statement above (O'Neil et al., 1997).

Functional behavioral analysis

Since the purpose of this study was to determine whether a functional behavior analysis was useful in providing support for the FBA summary statement, a functional behavioral analysis was the next step to test the summary/hypothesis statement (Shapiro & Kratochwill, 2000). In order to verify the summary/hypothesis statements, control/baseline and test conditions were developed (Shapiro & Kratochwill, 2000). The control/baseline and test conditions were used to manipulate the environmental factors thought to influence the target behavior in the subject's classroom (Shapiro & Kratochwill, 2000). District ethical guidelines limited the amount of control allowed for the conditions in the functional behavior analysis. Based on district guidelines, the test conditions could not purposely alter the subject's environment to determine if specific factors increased or decreased the challenging behavior. Instead the examiner could only purposely observe the subject at times that naturally occurred during the school day where the subject appeared to perform varied ranges of the challenging behavior.

The experimental conditions from Cooper et al. (2007) were used as a guide when conducting the control/baseline and test conditions based on the perceived antecedents and functions of the challenging behavior. The prevalence of the target behavior was measured by using an interval recording system which tallied the frequency of intervals the work refusal behavior occurred using 30-second time intervals (see Appendix E). The examiner of this study

conducted all observations. In an attempt to use the brief functional behavioral analysis, each observation was conducted for only 20 minutes. It was the intention to use another blind observer to measure inter-observer agreement. However, the time commitment involved deterred staff participation.

An ABC reversal design was used to document the effects of the test conditions (Cooper et al., 2007; O'Neill et al., 1997). This design began with the control/baseline (A) condition. This control condition minimized environmental factors that seemed to increase the prevalence of the challenging behavior (Broussard & Northrup, 1995; Cooper et al., 2007; Iwata, Dorsey et al., 1994). Based on the FBA, the subject seemed to behave most appropriately during morning meeting, and this activity was used as the control/baseline condition. Both test conditions discussed in the following section were compared to the control (Iwata, Dorsey and et al., 1994; Mueller et al., 2005).

The second phase in the ABC reversal design was the escape (B) condition. This condition was conducted when the subject completed independent seat work during literacy workshop. The teacher was instructed to place academic demands on the subject continuously during literacy by having her complete independent seat work. If the subject performed work refusal, then the teacher was asked by the examiner to immediately allow the subject to escape by taking a break at her desk for a few minutes or use the bathroom pass (Cooper et al., 2007). The purpose of this condition was to see if escaping/avoiding work increased the subject's work refusal behavior (Cooper et al., 2007; Dorsey, Iwata et al., 1994; Mueller et al., 2005).

The last phase in the ABC reversal design was the attention (C) condition which was also conducted during literacy workshop when the subject completed independent seat work. During the attention condition, the teacher provided classroom instruction about how to complete the

independent writing activity. The teacher withheld any type of verbal or visual attention to the subject during independent seat work unless she performed work refusal. If work refusal occurred, the classroom teacher walked over to the subject's desk to help break down the task and provided reassurance. This condition was used to see if an immediate verbal response and guidance from the teacher increased work refusal (Cooper et al., 2007). All three conditions were repeated twice in alternating order.

When the ABC reversal design was finished, the interval recordings from the control, escape, and attention conditions were collected and graphed using chart wizard from Excel (Shapiro & Kratochwill, 2003). A line graph was used to visually show the relationship between the target behavior and the experimental conditions (Cooper et al., 2007). The x-axis represented the independent variable/experimental manipulation and the y-axis represented the percentage of intervals the target behavior occurred. A visual analysis of the graphed data determined whether or not there was an increase in the target behavior across experimental conditions (Cooper et al., 2007). To find functional relationships between the test conditions and the target behavior, it was important to compare means between conditions (Cooper et al., 2007). The results section shows figures of the line graphs used to interpret the data.

Comparing FBA hypothesis to functional behavioral analysis results

After analyzing the data from the functional behavior analysis, the results were compared to the initial summary/hypothesis statement from the FBA (see Appendix D). This comparison was used to determine if the functional behavior analysis provided more helpful information than using the FBA alone (Shapiro & Kratochwill, 2000). The results section compared the initial summary/hypothesis statement to the data derived from the functional behavior analysis.

Debriefing teacher reports

After the functional behavioral analysis and FBA processes were finished, a debriefing teacher report was completed separately by the teacher who was involved in this study and the experimenter/researcher of this study. The debriefing teacher report was used to determine if this process was realistic and feasible in a public school. The debriefing teacher report was developed to answer the second research question. It was important to identify whether or not the benefits outweighed the time and cost of adding the functional behavior analysis to an FBA in a public school.

The debriefing teacher report completed by the teacher and experimenter of this study consisted of five questions (see Appendix F). The debriefing teacher report required the teacher and experimenter/researcher to separately document how many hours/minutes of training were involved to implement the FBA and functional behavioral analysis in the classroom setting. The second question asked if the time commitment for conducting this process was manageable in a public school. The third and fourth questions asked if adding the functional behavioral analysis to the FBA provided more accurate results than the FBA. Lastly, the question was raised of whether the functional behavioral analysis, in addition to the FBA, improved intervention planning for the subject in this study.

The questions developed in the debriefing teacher report were used to obtain qualitative information about the single subject design used in this study. The questions inquired whether the process of adding a functional behavioral analysis to an FBA improved the understanding of the behavior and intervention planning. Even if this process improved the accuracy of understanding the behavior, it was important to raise the question of whether adding this

component was realistic given time constraints in a public school. The information reported separately from the classroom teacher and experimenter/researcher was documented in the results section. The information was reported descriptively as a summary and the individual responses were analyzed qualitatively.

Chapter IV: Results

The purpose of this study was to analyze all the data conducted from the FBA and functional behavioral analysis to answer the research questions. The first research question was to determine if functional behavioral analysis provided useful support to an FBA. A single subject ABC reversal design was used to answer the first research question. The second research question was to determine if this process could be manageable in a public school. The debriefing teacher reports were used to gain qualitative information to answer the second research question.

Research Question One: Can Functional Behavioral Analysis, in Addition to an FBA, Accurately Understand the Function of Behavior?

Functional behavioral analysis results

The classroom teacher and examiner of this study brainstormed ways to test the initial hypothesis/summary statement from the FBA in naturalistic classroom settings. It was concluded to have three experimental conditions called baseline/control, escape, and attention conditions. The method of observing and collecting data was based on an ABC reversal design to identify patterns in the subject's work refusal behavior (Cooper et al., 2007). The A phase represented baseline/control condition, B phase represented the escape condition, and C phase represented the attention condition. Each condition was repeated twice in alternating order to analyze the possible function of the subject's work refusal behavior (Cooper et al., 2007). An interval recording system was used to document the percentage of intervals the target behavior occurred across conditions (see Appendix E). Each observation was conducted for 20 minutes.

The method of visual inspection was used to determine the relationship of behavior to the test conditions (Cooper et. al., 2007). Figure 1 shows the relationship between the test conditions and the frequency of intervals in which the target behavior was present. Figure 2 shows the mean

level lines of each condition (Cooper et al., 2007). The means of each test condition was graphed and shown in figure 2. The mean was 0% for control/baseline, 7% for attention, and 54% for escape. Figure 2 provides a summary of the average performance between each test condition. Based on visual inspection, the frequency of work refusal increased most during the escape condition compared to the baseline condition. There was a slight increase of behavior during the first attention condition, but not at all during the second condition compared to the baseline condition.

Figure 1. Frequency of intervals the target behavior occurred across conditions using an experimental ABC reversal design

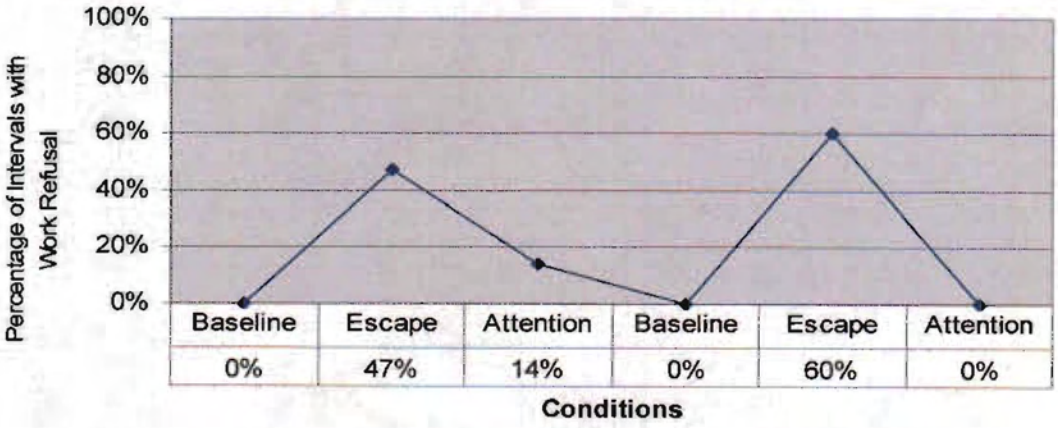
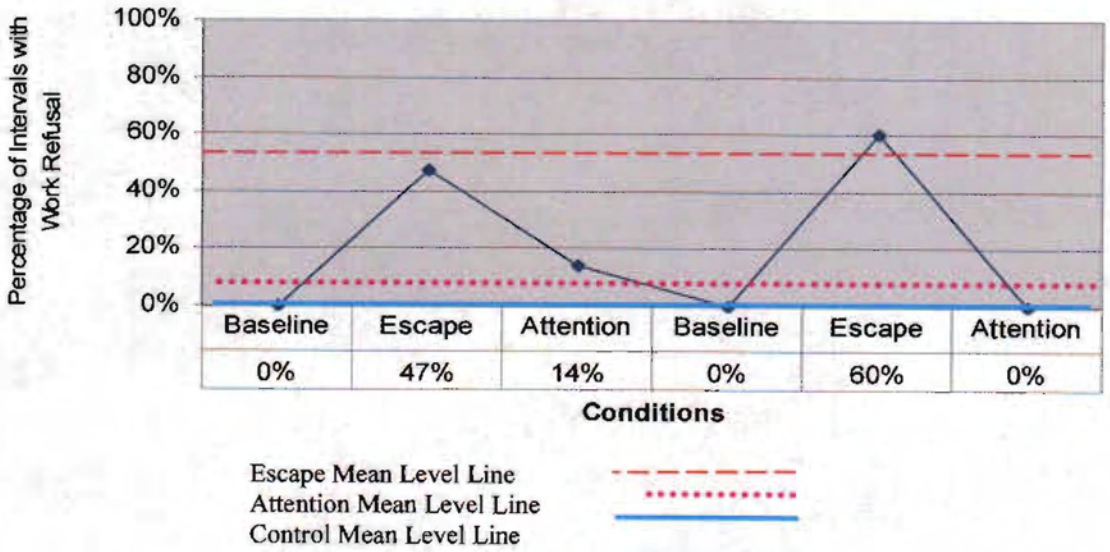


Figure 2. Condition mean level lines using an experimental ABC reversal design



Comparing functional behavioral analysis results to the FBA

After the data from the functional analysis was collected and analyzed, it was important to compare this information to the initial hypothesis/summary statements from the FBA. The FBA hypothesized that when the subject was requested to complete a non-preferred academic task that she did not understand and/or find interesting, she engaged in work refusal to escape completing the non-preferred activity and to gain immediate attention from the teacher.

When comparing the summary/hypothesis statement from the FBA to the functional behavior analysis, the data verified that when the subject was presented with a non-preferred academic task (i.e., didn't understand, didn't find interesting) that she tried to escape by performing work refusal (see Figure 1 and 2). During the escape test condition (B), the subject was given directions to complete independent seat work during literacy continuously until she performed work refusal. Immediately after the subject engaged in work refusal, she was allowed to take a break. When the subject engaged in work refusal and was allowed to escape/avoid work by taking a break, she asked for more breaks and was less likely to return back to the non-preferred activity as verified by the graphed data in both figures.

The functional behavioral analysis, however, did not confirm the second hypothesis. Based on the data analysis from the attention test condition (C), the subject did not appear to perform work refusal to simply get attention from the teacher. In the attention condition (C), the teacher was requested to only provide the subject with attention during task demands if she were to engage in work refusal. As shown in both figures, attention did not have a significant impact on the subject's work refusal behavior. In fact, the subject reduced work refusal when given attention and guidance from the teacher. By giving verbal responses and support, the subject was able to stay on task and reduce the frequency of intervals the target behavior occurred. Therefore,

the subject's behavior was not attention seeking, but might have been a response from being frustrated when presented with challenging or non-preferred independent academic tasks. Once the subject understood the task from teacher guidance, she was less likely to perform work refusal.

Based on the additional information provided by the results from the functional behavioral analysis, the original summary/hypothesis statement from the FBA was denied and revised. The summary/hypothesis statement was changed to reflect the actual function of the subject's work refusal. The original summary statement stated the following: When the subject was requested to independently complete a non-preferred academic task (i.e., reading, writing, math, or health/science) that she did not understand or find interesting, she engaged in work refusal to escape and gain immediate attention. The revision of the summary statement concluded the following: When the subject was requested to independently complete non-preferred academic tasks that she perceived as too difficult or did not understand, she performed work refusal to escape the non-preferred task demand. Once the subject immediately received direct support from an adult to break down the task and was provided guidance, she stopped engaging in work refusal, complied, and completed her work. This information was used to revise the subject's behavior intervention plan. In this case, the functional behavioral analysis proved important to the FBA and BIP process. The goal of the plan was to meet the subject's academic needs by developing an effective communication system to help advocate for her social, emotional, and academic needs in school.

Research Question Two: Can Functional Behavioral Analysis and FBA Processes Feasibly be Implemented in School?

The classroom teacher was requested to independently complete a debriefing teacher report after she was presented with the results from the current study (see Appendix F). The classroom teacher documented that it took her approximately 45 minutes, including filling out observation forms and discussions with the school psychologist, the experimenter of this study. The classroom teacher reported that she was successfully able to manage the extra time along with her other duties. The classroom teacher found the results from the functional behavioral analysis in addition to the FBA true in the classroom and provided more information than was originally provided from the FBA. The classroom teacher documented that the complete process helped her better understand how the school staff could best meet the student's needs and help her be most successful.

The examiner/researcher of this study also separately completed a debriefing teacher report. This report was used so that the readers could understand the time commitment and preparation involved from the assessor/researcher's standpoint. The FBA alone took approximately 13 hours and the functional behavior analysis took approximately six hours to prepare and conduct. The total time involved was approximately 19 hours to conduct, interpret, and document in the special education report. Based on the examiner/researcher's opinion, there was extensive planning involved and it was challenging to conduct all the test conditions around several work schedules. Finding times to observe the subject for the specific test conditions was difficult because there were many changes in the classroom schedule, and the teacher went on a temporary leave of absence for a week. This study was conducted during the first month of school, and only a few evaluations occur that early in the school year. If this study was

conducted in the middle or end of the school year, the examiner/researcher believes that the functional behavior analysis would not have been manageable. The examiner/researchers thinks that if this study was conducted during winter or spring, other job duties would have been compromised in order to complete the functional behavior analysis and FBA process.

The examiner/researcher of this study believed that this process provided a more accurate picture of the subject's work refusal behavior and assisted in developing better interventions. The functional analysis validated part of the initial hypothesis/summary statement from the FBA and also showed that part of the initial hypothesis was inaccurate. The functional behavioral analysis allowed the examiner to edit and clarify the actual function of the student's challenging behavior to develop a more effective intervention plan. In the examiner's opinion, the functional analysis helped, but would not be a feasible or realistic tool to use in a public school with similar resources as this suburban district.

Chapter V: Discussion

The purpose of this study was to determine whether or not conducting a functional behavioral analysis provided useful support to an FBA and to discover if this process was feasible in a public school. The first portion of this chapter discusses the major conclusions of this study: the usefulness of functional behavioral analysis to an FBA and its feasibility in a public school. Secondly, this chapter addresses major limitations to this specific single subject design along with implications of using a functional behavioral analysis to current practices in education. This chapter ends with recommendations for future research in behavioral analysis, recaps the purpose, and summarizes the study.

Conclusions of the Study

The first research question in this study was to determine if a functional behavioral analysis provided useful support to an FBA in a public school. Based on the conclusions from this study, adding a functional behavioral analysis to an FBA provided more accurate information about the antecedents and functions of the target behavior than the FBA alone. Based on the additional information provided by the results from the functional behavioral analysis, the original summary/hypothesis statement from the FBA was denied and revised. The summary/hypothesis statement was changed to reflect the actual function of the subject's work refusal. Interestingly, the behavioral analysis determined that one of the test conditions thought to increase the behavior (attention) actually decreased the problem behavior. Once the subject immediately received direct support from an adult to break down the task and was provided with guidance, she stopped engaging in work refusal. These findings were congruent with research in applied behavioral analysis in that an FBA provides educated guesses about the cause of behavior, but only provides correlations that have been generated by educators (Kerr & Nelson,

2002). A functional behavioral analysis, on the other hand, offered stronger predictions about the function of behavior (Cooper et al., 2007; Crone & Horner, 2003).

The second research question was to determine if this lengthy process was feasible in a public school. The classroom teacher reported that she was able to manage her part in the functional analysis process on top of her typical job responsibilities. The classroom teacher documented that the functional analysis process took her approximately 45 minutes, including filling out observation forms and discussions with the school psychologist, the examiner/ researcher of this study. In the opinion of the examiner/researcher, however, adding the functional analysis process was not manageable on top of additional job responsibilities. The examiner/researcher of this study reported that it took her 19 hours to conduct, interpret, and document the results in a special education report. Overall, the examiner deemed this process difficult even using a brief behavioral analysis approach supported in the literature (Cooper et al., 2007; Hanley et al., 2003; Vollmer & Northrup, 1990).

Limitations of the Study

The current study proved that connecting functional behavior analysis to an FBA could provide more accurate information about the cause of behavior than an FBA alone. However, there were many limitations to conducting this extensive process in a public school. This study could not be replicated because challenging behavior has multidimensional components and could serve different functions (O'Neill et al., 1997). Even though this study could not be replicated, it does serve as a model for the process of assessing behaviors accurately which might help with the successful implementation of intervention plans in school.

There were many ethical constraints to this single subject case design. Understandably, the special education director of the school district would not allow the experimenter to

manipulate the school environment to recreate or escalate problem behavior. As a result of having little environmental control in the test conditions, there were many extraneous variables that could have influenced the results of the study (Cooper et al., 2007).

In addition to lack of control over the test conditions, the examiner/researcher lacked time and resources. The examiner/researcher was unable to find another educator to conduct blind observations to calculate inter-observer agreement to determine reliability of each test condition, which has been used by researchers who conducted functional analysis studies (Iwata, Dorsey, et al., 1994; Iwata, Duncan, et al., 1994). Further the examiner/researcher was only able to conduct each condition twice in alternating order. Even though the number and length of the observations periods were kept short to reflect a brief functional behavioral analysis, the small amount of observations in the natural setting may not have provided enough information to support or deny the FBA summary statement. Experimental conditions in clinical settings where variables have been highly isolated have often been 10-20 minutes in lengths with up to 20-30 sessions to provide support for a hypothesis (Broussard & Northup, 1995; Iwata, Dorsey, et al., 1994; Iwata, Duncan, et al., 1994). Fewer observations when other variables are not isolated could cause confusing results with intervening variables.

Because the teacher had little training in behavioral theory, the examiner had to take on the vast majority of the responsibility of this research. The teacher reported 45 minutes of responsibility, yet the examiner reported 19 hours. Many educators in the school setting might have difficulty understanding the complexity and specificity of this design (Iwata & Worsdell, 2005). If conducted in a school system where more staff was well trained in behavioral analysis, this project may not have been determined unmanageable. The examiner, doing the bulk of work

herself, was overwhelmed and deemed the process difficult. Yet, these results cannot be generalized to schools with different organization, resources, and job delineations.

Implications on Current Practices in Education

Conducting a study of this nature in a natural setting brings forth several issues in the field of education and the behavioral intervention process in schools. Many of the issues raised have implications for current practice in education. Ethical considerations, training, and allocation of resources are issues which arose during the implementation of this project.

Ethical considerations

When conducting this study, many ethical considerations were brought forth. Ultimately, the objective of behavioral analysis has been to determine the source of problem behavior by replicating it. When this research study was proposed to the district, the Director of Special Education had major ethical concerns regarding increasing problem behavior in test conditions. In some circumstances, a student's target behavior may result in self-injury or harm to the experimenter (Crowl, 1993). Practitioners interested in conducting this process need to think about the risk of recreating the target behavior in a simulated or natural environment to determine if there might be a possibility of harming the subject or someone else. If there could be grave risks in conducting this process, the practitioner would want to consider alternatives. Given this, school districts might not support an educator using functional behavioral analysis in a public school.

This study only used natural observation for the test conditions. The subject was observed at times naturally occurring in school when the subject performed varied ranges of work refusal. The school environment created very little control in the test conditions, but it allowed the examiner to conduct behavioral analysis while upholding the ethical guidelines of

the school district. If an educator were thinking about using this process in the schools and had to follow similar ethical protocols, it might not be worth the time and effort to complete this process. Because there is little control in the environment, the summary/hypothesis statements could still be questionable and may not lead to more accurate information than what was originally provided by an FBA. There is a need for more research to determine whether behavior analysis in natural settings can both preserve the integrity of the behavioral analysis process by controlling for external variables and uphold ethical guidelines. Overall, any professional thinking about using functional behavioral analysis in the schools should strongly consider the above factors to determine if this process would likely benefit and improve behavior in the schools.

Training

This particular approach required the experimenter to be properly trained in functional behavioral analysis (O'Neill et al., 1997). If researchers have no experience using functional behavioral analysis, they will need to be trained and supervised by someone highly qualified in behavioral analysis (O'Neill et al., 1997). Educators in the public school may not have the expertise or the resources to hire a trained researcher to implement an FBA or use functional behavioral analysis with feasibility in a public school.

Allocation of resources

Even if practitioners in the school have been trained in functional behavioral analysis, time might be a barrier. This school-based study was time consuming as discussed in the debriefing interview completed by the experimenter of the study. If there have been practitioners trained in behavioral analysis within a school district, it might be beneficial for those knowledgeable in behavioral analysis to train other school staff to distribute responsibility of

conducting this process in a school. Redistributing the amount of responsibility of conducting a functional behavioral analysis within a school district could make this process more feasible in a public school setting.

Recommendations for Future Research

The current study was based on recent discoveries in the field of applied behavioral analysis which connected a functional behavioral analysis to an FBA. As discussed in chapter one and two, conducting functional behavioral analysis in naturalistic settings has been newly researched, and there have been only a few published peer reviewed studies linking this analysis to an FBA in public schools (Cooper et al., 2007; Mueller et al., 2005). More guidance for public school practitioners such as school psychologists and special educators is needed, to learn how to best conduct and link a functional behavioral analysis to an FBA. In addition, there has been even less research on how to link this process to interventions. Cooper et al. (2007) published suggestions on how to link this process to interventions in the public schools. Researchers need to understand that educators are mandated to conduct BIPs in the public schools and need to have a systematic process of linking assessments to interventions (Building a legacy: IDEA 2004, 2007). Without best practice guidelines, it would be unrealistic for educators to spend the time and resources conducting a functional behavioral analysis in addition to an FBA in public schools without knowing how to connect this information to interventions. Lastly, substantial research in this area could guide educators in establishing ethical guidelines for this process, minimizing the risk of confounding variables, as well as finding cost effective ways to manage this process in the public schools. With further research to answer these questions, more educators might be motivated to use best practice approaches when conducting this process to help improve the behavior of students in schools.

Summary

Challenging behavior has been a serious concern within the school system and many educators strive to develop interventions that serve the needs of students with behavioral problems (Bell, Carr, Denno, Johnson, & Philips, 2004). To develop successful interventions, functional assessments need to be conducted to understand the characteristics of the challenging behavior, the environment in which the behavior occurs, and the function it provides within the school setting (Kerr & Nelson, 2002). Conducting an FBA and functional behavioral analysis within the school environment could allow educators and researchers to identify the sources of the behavior issue and find interventions that serve the needs of students who exhibit behavioral challenges within the educational environment (O'Neill et al., 1997). Even though the current single subject design proved effective in linking this process in the public schools, it was time consuming and was limited by many ethical concerns. Further, there has been little research and guidance on how to link this process in the public schools and connect to a behavior intervention plan (Cooper et al., 2007; Mueller et al., 2005). As discussed above, further research in the field of behavioral analysis might provide more guidance in connecting this process to intervention, provide direction for following district's ethical policies, and help create a system that could be more time efficient and cost effective. Additional research would likely benefit educators by providing direction in how to use this process in the public school to reduce behavioral concerns and increase the success of all students.

References

Acker, V. R., Boreson, L., Gable, R. A., & Potterton, T. (2005). Are we on the right course? Lessons learned about current FBA/BIP practices in schools [Electronic version]. *Journal of Behavioral Education, 14*(1), 32-56.

Barnhill, G. P. (2005). Functional behavioral assessment in schools [Electronic version]. *Intervention in School and Clinic, 40*(3), 131-143.

Bell, H. S., Carr, V., Denno, D., Johnson, L. J., & Phillips, L. R. (2004). *Challenging behaviors in early childhood settings creating a place for all children.* Baltimore, MD: Brooks Publishing Company.

Bellack, A. S., & Hersen, M. (1977). *Behavior modification an introductory textbook.* Baltimore, MD: The Williams and Wilkins Company.

Broussard, C. D., & Northup, J. (1995). An approach to functional assessment and analysis of disruptive behavior in regular education classrooms. *School Psychology Quarterly, 10*(2), 151-164.

Building the legacy: IDEA 2004. (n.d.). Retrieved June 21, 2007, from http://idea.ed.gov.

Bullock, L. M., & Gable, R. A. (2006). Programs for children and adolescents with emotional and behavioral disorders in the united states: A historical overview, current perspectives, and future directions [Electronic verson]. *Preventing School Failure, 50*, 7-13.

Cipani, E. (2008). *Classroom management for all teachers: Plans for evidence based practice (3rd ed.).* Upper Saddle River, NJ: Prentice Hall Inc.

Cooper, J. O., Heron, T. E., & Heward, W. L. (2007). *Applied behavior analysis (2nd ed.).* Upper Saddle River, NJ: Pearson Education Inc.

Crone, D. A., & Horner, R. H. (2003). *Building positive behavior support systems in school.* New York, NY: The Guilford Press.

Crowl, T. K. (1993). *Fundamentals of educational research.* Dubuque, IA: Brown and Benchmark Publishing.

Dwyer, K. P. (2005). IDEA'97 using functional assessments of behavior [Electronic version]. *Communiqué, 26*(5), 1-4.

Gresham, F. M., Watson, S. T., & Skinner, C. H. (2001). Functional behavioral assessment: Principles, procedures, and future directions. *School Psychology Review, 30*(2), 156-172.

Hanley, G. P., Iwata, B. A., & McCord. B. E. (2003). Functional analysis of problem behavior: A review. *Journal of Applied Behavior Analysis, 36*(2), 147-185.

Individual with disabilities education improvement act of 2004. (n.d.). Retrieved June 9, 2005, from http://www.frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?Dbname= 108_cong_public_laws&docid.html.

Iwata, B. A., Dorsey, M. F., Slifer, K. J., Bauman, K. E., & Richman, G. S. (1994). Toward a functional analysis of self-injury. *Journal of Applied Behavioral Analysis, 27*(2), 197-209.

Iwata, B. A., Duncan, B. A., Zarcone, J. R., Lerman, D. C., & Shore, B. A. (1994). A sequential, test-control methodology for conducting functional analyses of self-injurious behavior. *Behavior Modification, 18*(3), 289-306.

Iwata, B. A, & Worsdell, A. S. (2005). Implications of functional analysis methodology for a design of intervention programs. *Exceptionality, 13*(1), 25-34.

Janney, R., & Snell, M. E. (2000). *Teacher's guides to inclusive practices behavioral supports*. Baltimore, MD: Paul H. Brookes Publishing Company.

Kazdin, A. E. (2001). *Behavior modification in applied settings.* Belmont, MD: Wadsworth Thomson Learning.

Kerr, M. M., & Nelson, M. C. (2002). *Strategies for addressing problems in the classroom (4th ed.).* Upper Saddle River, NJ: Pearson Education, Inc.

Knoster, P. T., & McCurdy, B. (2002). Best practices in functional behavioral assessment for designing individualized student programs. In A. Thomas, & J. Grimes (Eds.), *Best practices in school psychology IV* (pp. 1007-1025). Bethesda, MD: NASP Publication.

Koltz, B., & Nealis, L. (2005). *The new IDEA: Summary of significant reforms.* Retrieved May 15, 2005, from the National Association of School Psychologist Web site: http://www.nasponline.org/advocacy/IDEIAfinalsummary.pdf.

Lehr, C. A., & McComas. J. (n.d.). *Impact.* Retrieved June 26, 2007, from University of Minnesota, Institute on Community Integration Web site: http://ici.umn.edu/products/impact/182/over1.html.

Linear Regression (n.d.). Retried July 11, 2007, from http://stat.yale.edu/Course/ 1997-98/101/linreg.htm.

McConnell, M. E. (2001). *Functional behavioral assessment.* Denver, CO: Love Publishing Company.

Minnesota Department of Education (n.d.). Retrieved June 27, 2007, from http://education.state.mn.us/MDE/Learning_Support/Special_Education/Categorical_Disability_Information/Emotional_and_Behavioral_Disabilities/index.html.

Mueller, M. M., Turner-Sterling, H. E., & Moore, J. W. (2005). Towards developing a classroom-based functional analysis condition to assess escape-to-attention as a variable maintaining problem behavior. *School Psychology Review, 34*(3) 425-431.

National Association of School Psychologists. (2000). *Professional conduct manual: Principals for professional ethics guidelines for the provision of school psychological services.* Bethesda, MD: NASP Publication.

O'Neill, R. E., Horner, R. H., Albin, R. W., Sprague, J. R., Storey, K., & Newton, J. S. (1997). *Functional assessment and program development for problem behavior.* Pacific Grove, CA: Brooks/Cole Publishing Company.

Repp, A. (1994). Comments on functional analysis procedures for school-based behavior problems. *Journal of Applied Behavior Analysis, 27*(2) 409-411.

Schloss, P. J., & Smith, M. A. (1998). *Applied behavior analysis in the classroom.* Needham Heights, MA: Allyn and Bacon.

Shapiro, E. E., & Kratochwill, T. R. (2000). *Conducting school-based assessments of child and adolescent behavior.* New York, NY: The Guilford Press.

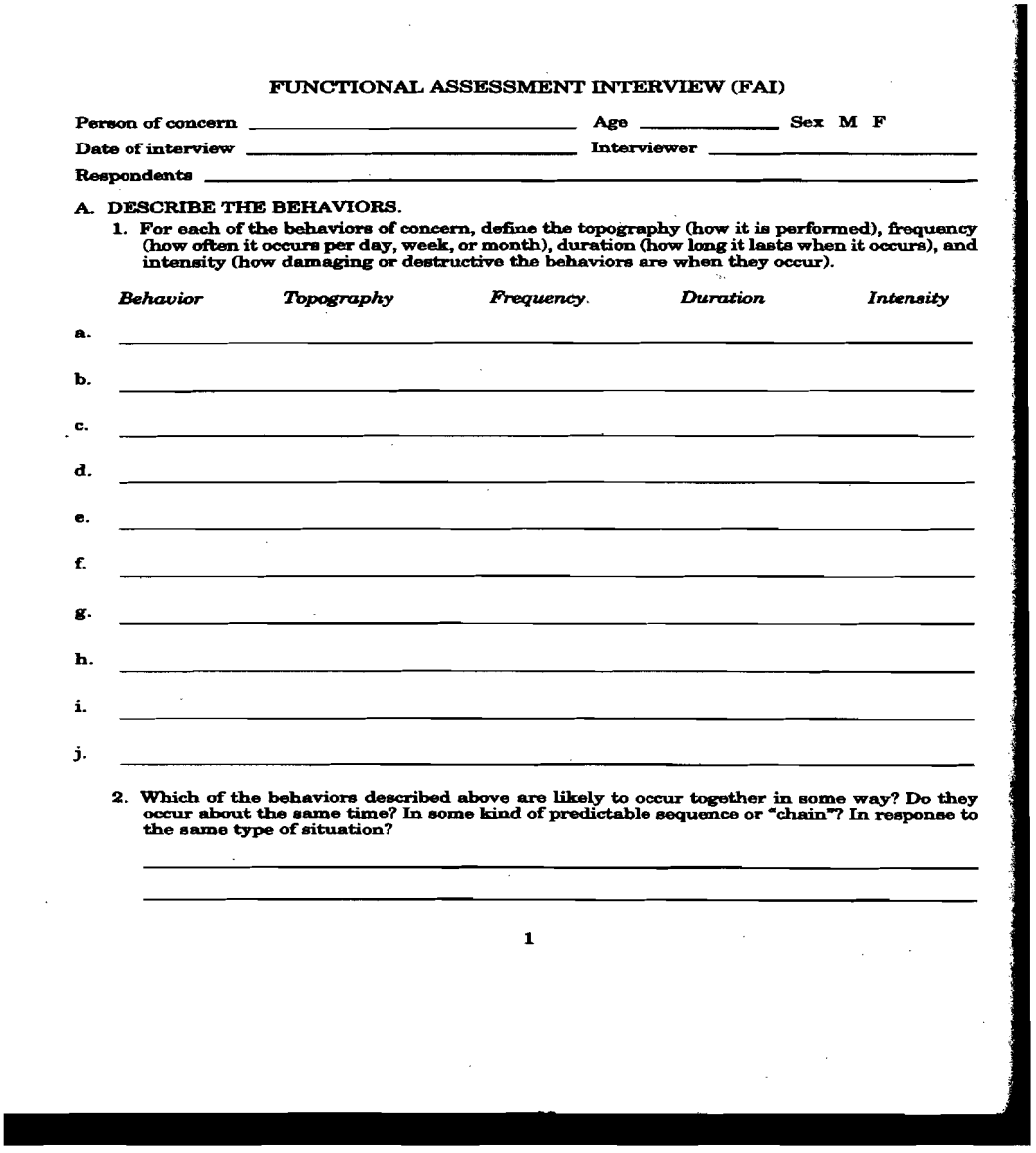
Turner, H. E., Robinson, S. L., & Wilczynski, S. M. (2001). Functional assessment of distracting and disruptive behavior in the school setting [Electronic version]. *School Psychology Review, 30*(2), 211-226.

United States Department of Education. (2006). *26th annual report to congress on the implementation of the individuals with disabilities* (ED Pubs Publication No. ED000675P). Jessup, MD: ED Pubs.

Vollmer, T.R., & Northup, J. (1990). Some implications of functional analysis for school psychology. *School Psychology Quarterly, 11*(1), 70-92.

Watson, S. T., & Steege, M. W. (2003). *Conducting school-based functional behavioral assessments: A practitioner's guide.* New York, NY: The Guilford Press.

Appendix A: Functional Assessment Interview Form (FAI)



FUNCTIONAL ASSESSMENT INTERVIEW (FAI)

Person of concern _____ **Age** _____ **Sex M F**

Date of interview _____ **Interviewer** _____

Respondents _____

A. DESCRIBE THE BEHAVIORS.

1. **For each of the behaviors of concern, define the topography (how it is performed), frequency (how often it occurs per day, week, or month), duration (how long it lasts when it occurs), and intensity (how damaging or destructive the behaviors are when they occur).**

	Behavior	*Topography*	*Frequency*	*Duration*	*Intensity*
a.					
b.					
c.					
d.					
e.					
f.					
g.					
h.					
i.					
j.					

2. **Which of the behaviors described above are likely to occur together in some way? Do they occur about the same time? In some kind of predictable sequence or "chain"? In response to the same type of situation?**

_____

_____

1

Note. From "*Functional* Assessment *and Program Development from Problem Behavior, A Practical Handbook 2nd edition* (p. 100)," by R. E. O'Neill, R. H. Horner, R. W. Albin, J. R. Sprague, K. Storey, and J. S. Newton, 1997, Pacific Grove: Brooks/Cole Publishing Company.

B. DEFINE ECOLOGICAL EVENTS (SETTING EVENTS) THAT PREDICT OR SET UP THE PROBLEM BEHAVIORS.

1. What *medications* is the person taking (if any), and how do you believe these may affect his or her behavior?

2. What *medical* or *physical conditions (if any)* does the person experience that may affect his or her behavior (e.g., asthma, allergies, rashes, sinus infections, seizures, problems related to menstruation)?

3. Describe the *sleep patterns* of the individual and the extent to which these patterns may affect his or her behavior.

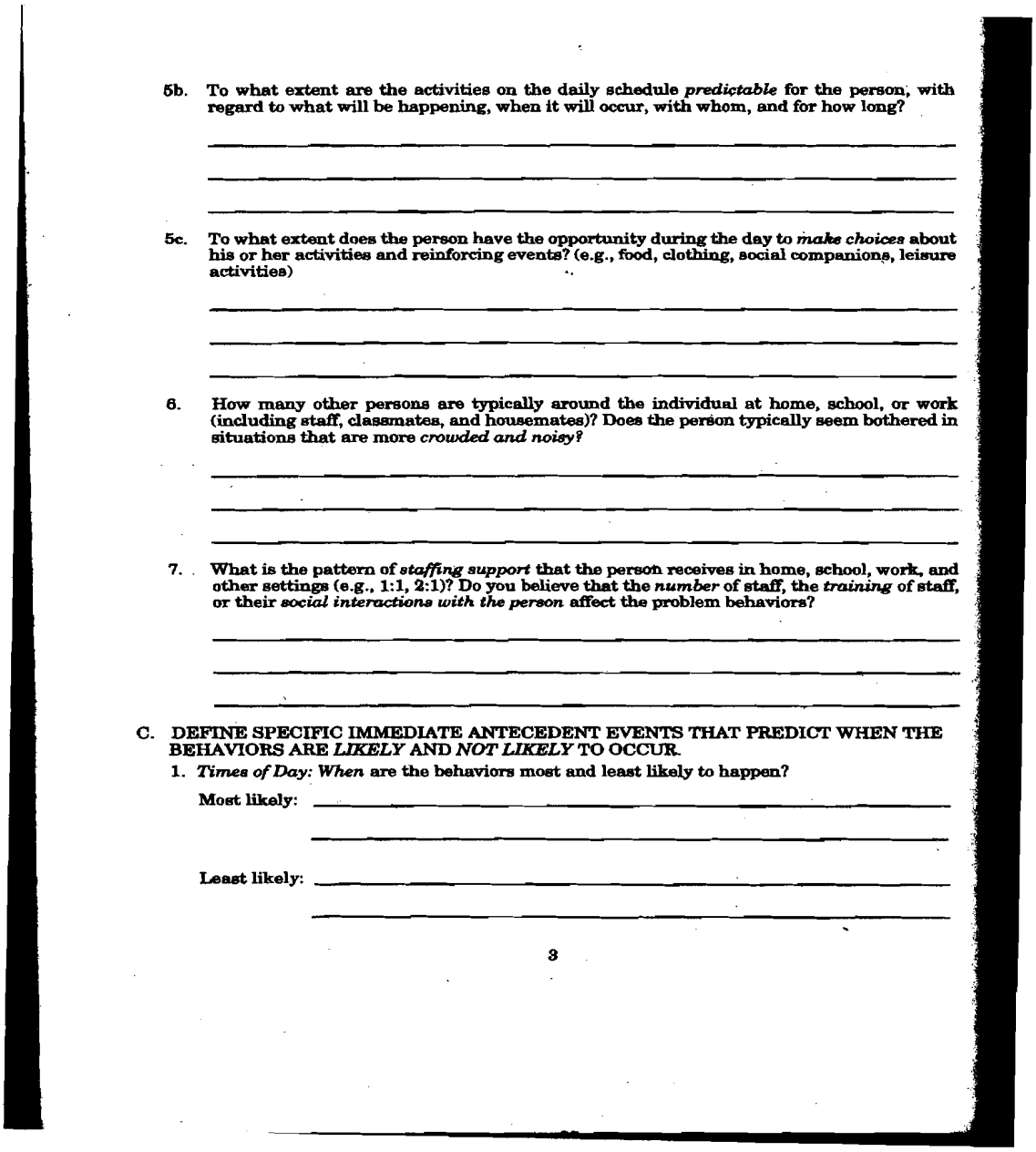
4. Describe the *eating routines and diet* of the person and the extent to which these may affect his or her behavior.

5a. Briefly list below the person's typical daily schedule of activities. (Check the boxes by those activities the person enjoys and those activities most associated with problems.)

Enjoys	*Problems*		*Enjoys*	*Problems*	
☐	☐	6:00	☐	☐	2:00
☐	☐	7:00	☐	☐	3:00
☐	☐	8:00	☐	☐	4:00
☐	☐	9:00	☐	☐	5:00
☐	☐	10:00	☐	☐	6:00
☐	☐	11:00	☐	☐	7:00
☐	☐	12:00	☐	☐	8:00
☐	☐	1:00	☐	☐	9:00

2

Note. From "*Functional* Assessment *and Program Development from Problem Behavior, A Practical Handbook 2nd edition* (p. 101)," by R. E. O'Neill, R. H. Horner, R. W. Albin, J. R. Sprague, K. Storey, and J. S. Newton, 1997, Pacific Grove: Brooks/Cole Publishing Company.



5b. To what extent are the activities on the daily schedule *predictable* for the person, with regard to what will be happening, when it will occur, with whom, and for how long?

5c. To what extent does the person have the opportunity during the day to *make choices* about his or her activities and reinforcing events? (e.g., food, clothing, social companions, leisure activities)

6. How many other persons are typically around the individual at home, school, or work (including staff, classmates, and housemates)? Does the person typically seem bothered in situations that are more *crowded and noisy*?

7. What is the pattern of *staffing support* that the person receives in home, school, work, and other settings (e.g., 1:1, 2:1)? Do you believe that the *number* of staff, the *training* of staff, or their *social interactions with the person* affect the problem behaviors?

C. DEFINE SPECIFIC IMMEDIATE ANTECEDENT EVENTS THAT PREDICT WHEN THE BEHAVIORS ARE *LIKELY* AND *NOT LIKELY* TO OCCUR.

1. *Times of Day: When* are the behaviors most and least likely to happen?

Most likely:

Least likely:

3

Note. From "*Functional* Assessment *and Program Development from Problem Behavior, A Practical Handbook 2nd edition* (p. 102)," by R. E. O'Neill, R. H. Horner, R. W. Albin, J. R. Sprague, K. Storey, and J. S. Newton, 1997, Pacific Grove: Brooks/Cole Publishing Company. Copyright 1997 by Wadsworth, a division of Thomson Learning. Reprinted with permission.

2. ***Settings:*** ***Where*** **are the behaviors most and least likely to happen?**

   Most likely: _____

   _____

   Least likely: _____

   _____

3. ***People:*** ***With whom*** **are the behaviors most and least likely to happen?**

   Most likely: _____

   _____

   Least likely: _____

   _____

4. ***Activity:*** ***What activities*** **are most and least likely to produce the behaviors?**

   Most likely: _____

   _____

   Least likely: _____

   _____

5. **Are there particular or idiosyncratic situations or events not listed above that sometimes seem to "set off" the behaviors, such as particular demands, noises, lights, clothing?**

   _____

   _____

6. **What *one thing* could you do that would most likely make the undesirable behaviors occur?**

   _____

   _____

7. **Briefly describe how the person's behavior would be affected if . . .**

   a. You asked him or her to perform a difficult task.

   _____

   _____

   b. You interrupted a desired activity, such as eating ice cream or watching TV.

   _____

   _____

   c. You unexpectedly changed his or her typical routine or schedule of activities.

   _____

   _____

4

Note. From "*Functional* Assessment *and Program Development from Problem Behavior, A Practical Handbook 2nd edition* (p. 103)," by R. E. O'Neill, R. H. Horner, R. W. Albin, J. R. Sprague, K. Storey, and J. S. Newton, 1997, Pacific Grove: Brooks/Cole Publishing Company.

d. She or he wanted something but wasn't able to get it (e.g., a food item up on a shelf).

e. You didn't pay attention to the person or left her or him alone for a while (e.g., 15 minutes).

D. IDENTIFY THE CONSEQUENCES OR OUTCOMES OF THE PROBLEM BEHAVIORS THAT MAY BE MAINTAINING THEM (I.E., THE FUNCTIONS THEY SERVE FOR THE PERSON IN PARTICULAR SITUATIONS).

1. Think of each of the behaviors listed in Section A, and try to identify the *specific* consequences or outcomes the person gets when the behaviors occur in different situations.

Behavior	*Particular situations*	*What exactly does he or she get?*	*What exactly does she or he avoid?*
a.			
b.			
c.			
d.			
e.			
f.			
g.			
h.			
i.			
j.			

E. CONSIDER THE OVERALL *EFFICIENCY* OF THE PROBLEM BEHAVIORS. EFFICIENCY IS THE COMBINED RESULT OF (A) HOW MUCH *PHYSICAL EFFORT* IS REQUIRED, (B) *HOW OFTEN* THE BEHAVIOR IS PERFORMED BEFORE IT IS REWARDED, AND (C) *HOW LONG* THE PERSON MUST WAIT TO GET THE REWARD.

	Low Efficiency				High Efficiency
_____	1	2	3	4	5
_____	1	2	3	4	5
_____	1	2	3	4	5
_____	1	2	3	4	5
_____	1	2	3	4	5

5

Note. From "*Functional* Assessment *and Program Development from Problem Behavior, A Practical Handbook 2nd edition* (p. 104)," by R. E. O'Neill, R. H. Horner, R. W. Albin, J. R. Sprague, K. Storey, and J. S. Newton, 1997, Pacific Grove: Brooks/Cole Publishing Company.

F. WHAT *FUNCTIONAL ALTERNATIVE* BEHAVIORS DOES THE PERSON ALREADY KNOW HOW TO DO?

1. What socially appropriate behaviors or skills can the person already perform that may generate the same outcomes or reinforcers produced by the problem behaviors?

G. WHAT ARE THE PRIMARY WAYS THE PERSON COMMUNICATES WITH OTHER PEOPLE?

1. What are the general expressive communication strategies used by or available to the person? These might include vocal speech, signs/gestures, communication boards/books, or electronic devices. How consistently are the strategies used?

2. On the following chart, indicate the behaviors the person uses to achieve the communicative outcomes listed:

Communicative Functions	Complex speech (sentences)	Multiple-word phrases	One-word utterances	Echolalia	Other vocalizing	Complex signing	Single signs	Pointing	Leading	Shakes head	Grabs/reaches	Gives objects	Increased movement	Moves close to you	Moves away or leaves	Fixed gaze	Facial expression	Aggression	Self-injury	Other
Request attention																				
Request help																				
Request preferred food/objects/activities																				
Request break																				
Show you something or some place																				
Indicate physical pain (headache, illness)																				
Indicate confusion or unhappiness																				
Protest or reject a situation or activity																				

6

Note. From "*Functional* Assessment *and Program Development from Problem Behavior, A Practical Handbook 2nd edition* (p. 105)," by R. E. O'Neill, R. H. Horner, R. W. Albin, J. R. Sprague, K. Storey, and J. S. Newton, 1997, Pacific Grove: Brooks/Cole Publishing Company.

3. With regard to the person's receptive communication, or ability to understand other persons . . .
   a. Does the person follow spoken requests or instructions? If so, approximately how many? (List if only a few.)

   b. Does the person respond to signed or gestural requests or instructions? If so, approximately how many? (List if only a few.)

   c. Is the person able to imitate if you provide physical models for various tasks or activities? (List if only a few.)

   d. How does the person typically indicate *yes or no* when asked if she or he wants something, wants to go somewhere, and so on?

H. WHAT ARE THINGS YOU *SHOULD DO* AND THINGS YOU *SHOULD AVOID* IN WORKING WITH AND SUPPORTING THIS PERSON?
   1. What things can you do to improve the likelihood that a teaching session or other activity will go well with this person?

   2. What things should you avoid that might interfere with or disrupt a teaching session or activity with this person?

I. WHAT ARE THINGS THE PERSON LIKES AND ARE REINFORCING FOR HIM OR HER?
   1. *Food items:*

7

Note. From "*Functional* Assessment *and Program Development from Problem Behavior, A Practical Handbook 2nd edition* (p. 106)," by R. E. O'Neill, R. H. Horner, R. W. Albin, J. R. Sprague, K. Storey, and J. S. Newton, 1997, Pacific Grove: Brooks/Cole Publishing Company.

2. *Toys and objects:* _____

3. *Activities at home:* _____

4. *Activities/outings in the community:* _____

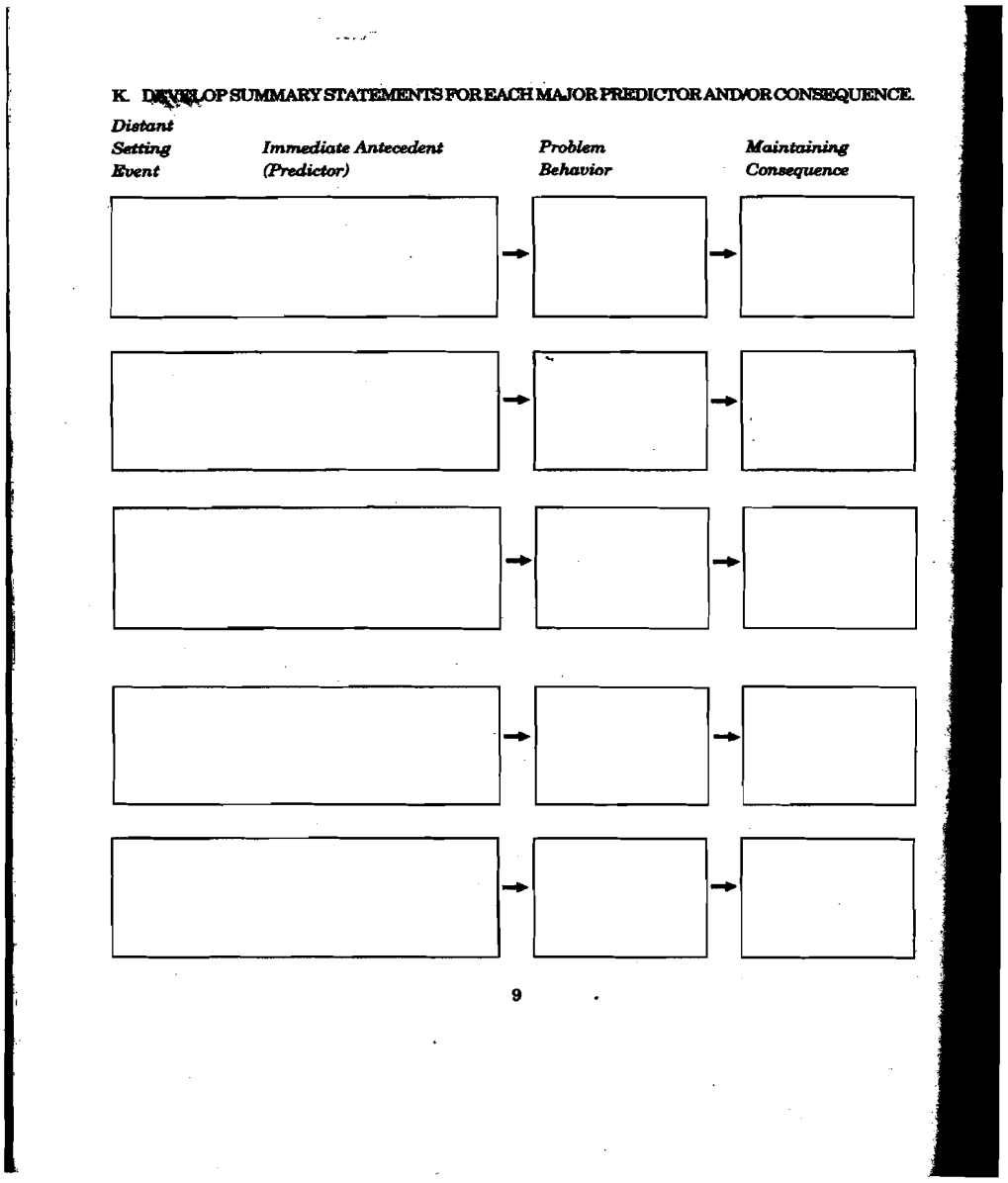
5. *Other:* _____

J. **WHAT DO YOU KNOW ABOUT THE HISTORY OF THE UNDESIRABLE BEHAVIORS, THE PROGRAMS THAT HAVE BEEN ATTEMPTED TO DECREASE OR ELIMINATE THEM, AND THE EFFECTS OF THOSE PROGRAMS?**

Behavior	*How long has this been a problem?*	*Programs*	*Effects*
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

8

Note. From "*Functional* Assessment *and Program Development from Problem Behavior, A Practical Handbook 2nd edition* (p. 107)," by R. E. O'Neill, R. H. Horner, R. W. Albin, J. R. Sprague, K. Storey, and J. S. Newton, 1997, Pacific Grove: Brooks/Cole Publishing Company.



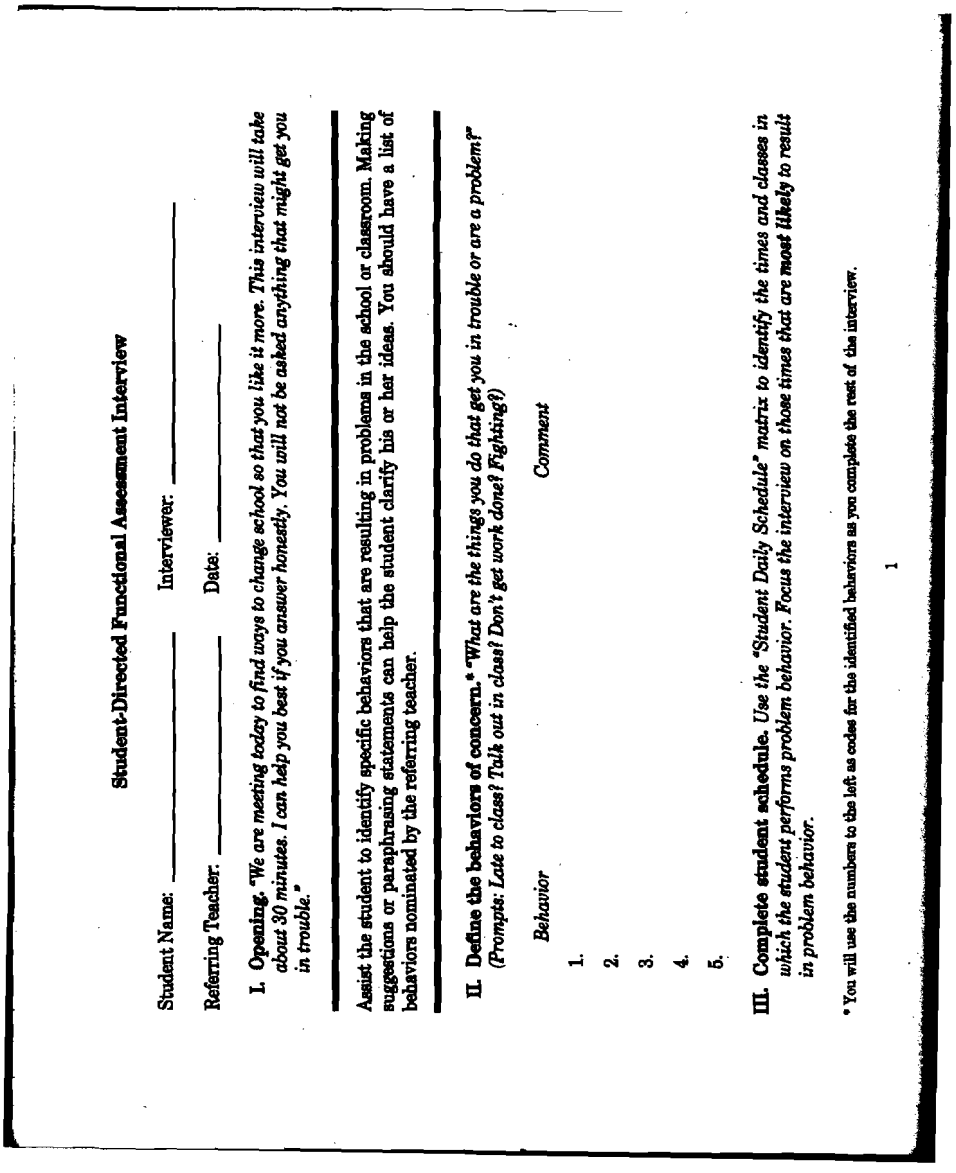
K. DEVELOP SUMMARY STATEMENTS FOR EACH MAJOR PREDICTOR AND/OR CONSEQUENCE.

Distant Setting Event	*Immediate Antecedent (Predictor)*	*Problem Behavior*	*Maintaining Consequence*

9

Note. From "*Functional* Assessment *and Program Development from Problem Behavior, A Practical Handbook 2nd edition* (p. 108)," by R. E. O'Neill, R. H. Horner, R. W. Albin, J. R. Sprague, K. Storey, and J. S. Newton, 1997, Pacific Grove: Brooks/Cole Publishing Company. Copyright 1997 by Wadsworth, a division of Thomson Learning. Reprinted with permission.

Appendix B: Student Directed Functional Assessment Interview Form



Student-Directed Functional Assessment Interview

Student Name: _____ Interviewer: _____

Referring Teacher: _____ Date: _____

I. Opening. *"We are meeting today to find ways to change school so that you like it more. This interview will take about 30 minutes. I can help you best if you answer honestly. You will not be asked anything that might get you in trouble."*

Assist the student to identify specific behaviors that are resulting in problems in the school or classroom. Making suggestions or paraphrasing statements can help the student clarify his or her ideas. You should have a list of behaviors nominated by the referring teacher.

II. Define the behaviors of concern.* *"What are the things you do that get you in trouble or are a problem?" (Prompts: Late to class? Talk out in class? Don't get work done? Fighting?)*

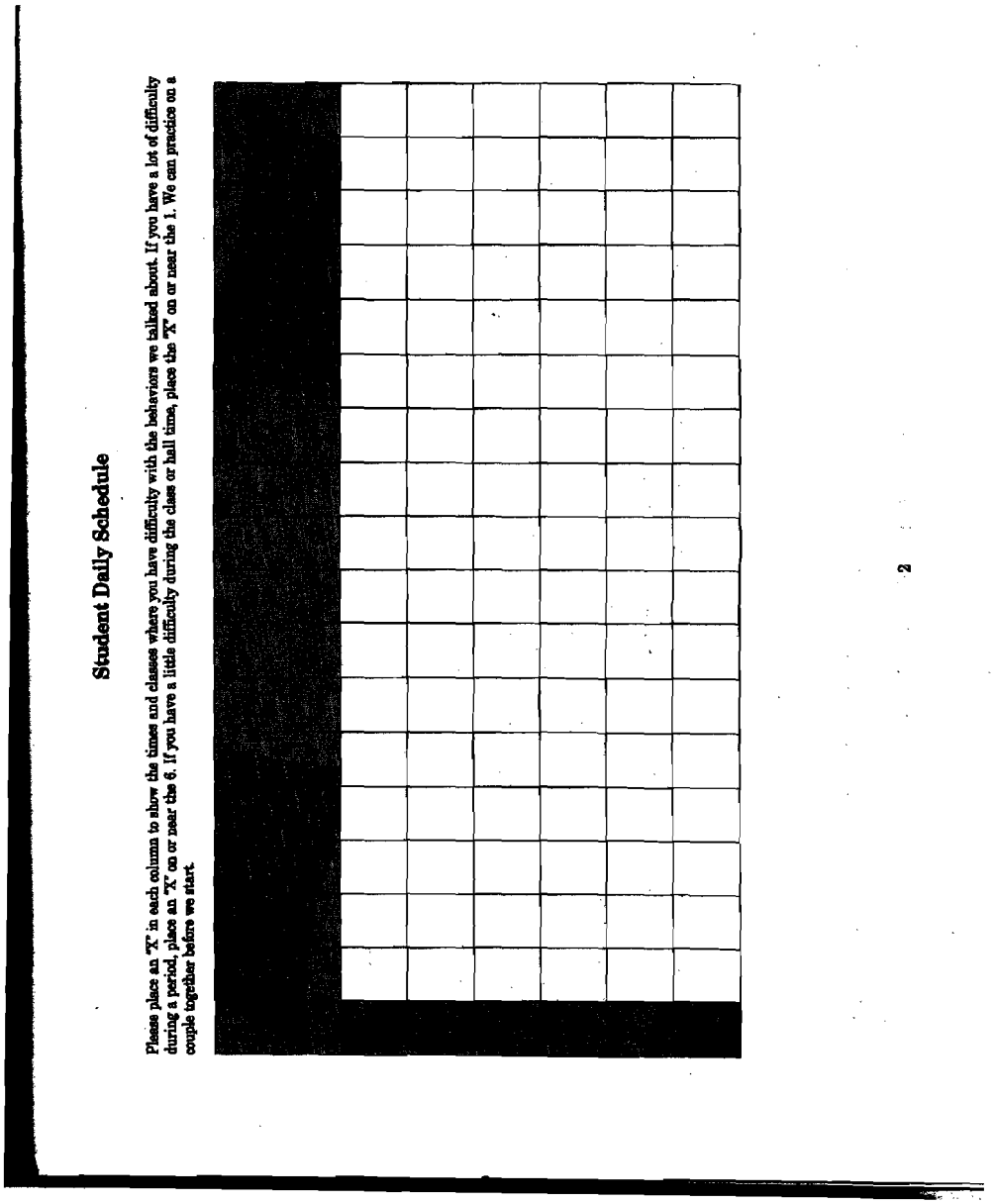
	Behavior	*Comment*
1.		
2.		
3.		
4.		
5.		

III. Complete student schedule. *Use the "Student Daily Schedule" matrix to identify the times and classes in which the student performs problem behavior. Focus the interview on those times that are most likely to result in problem behavior.*

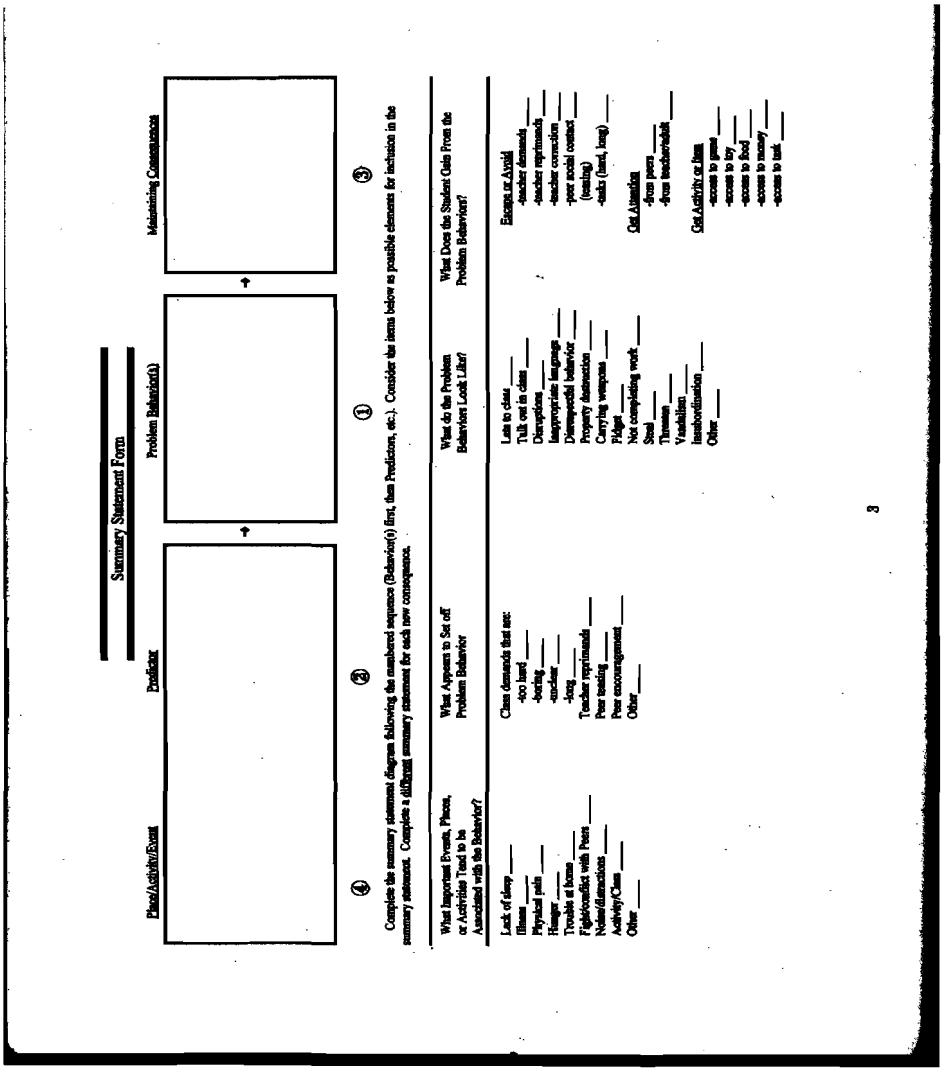
* You will use the numbers to the left as codes for the identified behaviors as you complete the rest of the interview.

1

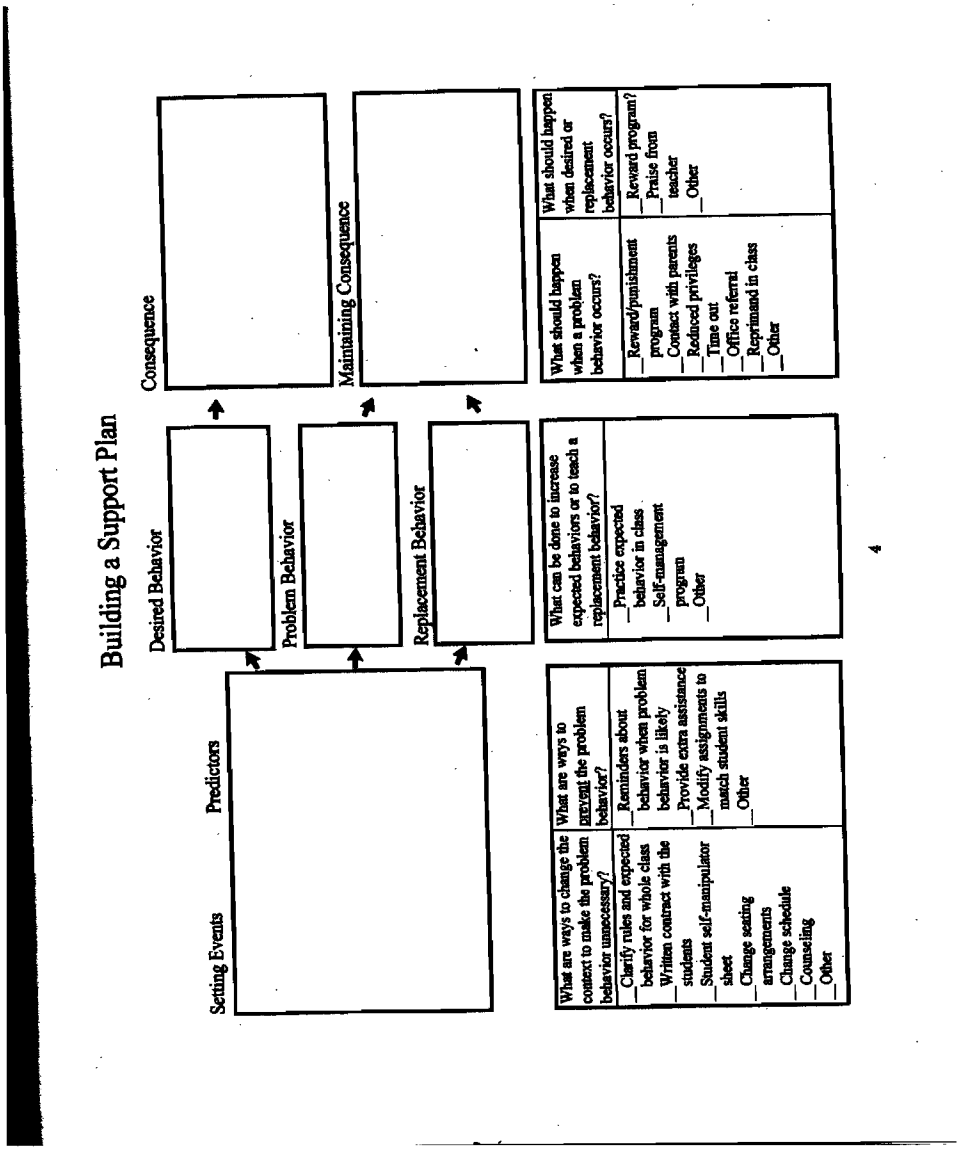
Note. From "*Functional* Assessment *and Program Development from Problem Behavior, A Practical Handbook 2nd edition* (p. 110)," by R. E. O'Neill, R. H. Horner, R. W. Albin, J. R. Sprague, K. Storey, and J. S. Newton, 1997, Pacific Grove: Brooks/Cole Publishing Company. Copyright 1997 by Wadsworth, a division of Thomson Learning. Reprinted with permission.



Note. From "*Functional* Assessment *and Program Development from Problem Behavior, A Practical Handbook 2nd edition* (p. 111)," by R. E. O'Neill, R. H. Horner, R. W. Albin, J. R. Sprague, K. Storey, and J. S. Newton, 1997, Pacific Grove: Brooks/Cole Publishing Company. Copyright 1997 by Wadsworth, a division of Thomson Learning. Reprinted with permission.



Note. From "*Functional* Assessment *and Program Development from Problem Behavior, A Practical Handbook 2nd edition* (p. 112)," by R. E. O'Neill, R. H. Horner, R. W. Albin, J. R. Sprague, K. Storey, and J. S. Newton, 1997, Pacific Grove: Brooks/Cole Publishing Company. Copyright 1997 by Wadsworth, a division of Thomson Learning. Reprinted with permission.



Note. From "*Functional* Assessment *and Program Development from Problem Behavior, A Practical Handbook 2nd edition* (p. 113)," by R. E. O'Neill, R. H. Horner, R. W. Albin, J. R. Sprague, K. Storey, and J. S. Newton, 1997, Pacific Grove: Brooks/Cole Publishing Company. Copyright 1997 by Wadsworth, a division of Thomson Learning. Reprinted with permission.

Appendix C: ABC Recording Form for FBA

ABC Recording Form
(FBA)

School Setting: _____

Target behavior: _____

Observer: _____

Date/Time	**Antecedent**	**Behavior**	**Consequence**

Appendix D: Summary Statements

Summary Statements

Setting Events	Antecedents	Problem Behaviors	Maintaining Consequences
1.Hearling loss Lack of Sleep Unexpected Change in routine Hunger	Request to complete non-preferred/ challenging tasks Interruptions in desired activity Not receiving attention	Work refusal	Avoid difficult/challenging task and to gain immediate attention to break down task demands

Note. From "*Functional* Assessment *and Program Development from Problem Behavior, A Practical Handbook 2nd edition* (p. 48)," by R. E. O'Neill, R. H. Horner, R. W. Albin, J. R. Sprague, K. Storey, and J. S. Newton, 1997, Pacific Grove: Brooks/Cole Publishing Company. Copyright 1997 by Wadsworth, a division of Thomson Learning. Reprinted with permission.

Appendix E: Interval Recording for the Control/Baseline and Test Conditions

Interval Recording
(Control/Baseline condition)

Target behavior: _____

Date (MM/DD/YYYY): _____

Observer: _____

Time	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

■ Target behavior occurred

☐ Target behavior had not occurred

Interval Recording
(Test condition)

Test Condition _____

Target behavior: _____

Date (MM/DD/YYYY): _____

Observer: _____

Time	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

■ Target behavior occurred

☐ Target behavior had not occurred

Appendix F: Debriefing Teacher Report

Debriefing Teacher Report

1. Approximately how many hours/minutes of training were involved to successfully implement the FBA and functional behavioral analysis?

2. In your opinion, did you feel like the time commitment needed to train and conduct the FBA and functional behavioral analysis was manageable on top of your additional duties as an educator in school (please provide a yes/no response and then explain)?

3. Do you think the results from the functional behavioral analysis in addition to the FBA provided accurate results?

4. Do you think the FBA provided the same information about the function of the challenging behavior as the functional behavioral analysis?

5. Did this process help with intervention planning?

Appendix G: Copyright Permission for FAI, Student Directed Functional Assessment Interview, and Summary Statements

Thomson Learning Global Rights Group
Servicing rights and permission for
Thomson Brooks/Cole • Thomson Course Technology • Thomson Custom Publishing •
Thomson English Language Training • Thomson Delmar Learning • Thomson Heinle •
Thomson Nelson in Canada • Thomson Peterson's • Thomson South-Western • Thomson Wadsworth
10 Davis Drive, Belmont, California 94002 USA Phone: 800 730-2214 Fax: 800 730-2215
Email: thomsonrights@thomson.com
Submit all requests online at www.thomsonrights.com.
Response **# 118457**
07/15/2005
Michelle R Thompson
University of Wisconsin-Stout
500 12th ave west apt #46
Menomonie, WI 54751
Thank you for your interest in the following Wadsworth material
Title: Functional Assessment and Program Development for Problem Beha
vior: A Practical Handbook 2nd edition
Author(s): O'Neill/ Horner/ Albin/ Sprague/ Storey/
Newton
ISBN: 0534260225
Publisher: Wadsworth © Year: 1997
Specific material: pages 99-108; 109-114; 115-116; 121-122;
Total pages: 20
For use by:
Name: Lamon
School/University/Company: University of Wisconsin-Stout
Course title/number: Problems in School Psychology (SPSY 735)
Term of use: Summer Term 2005
Intended use:
To copy or display for lecture or presentation, nonprofit research, training or counseling purposes use for which recipients are not charged. The number of copies may be changed to accommodate actual enrollment. The permission granted in this letter extends only to material that is original to the aforementioned text. As the requestor, you will need to check all on-page credit references (as well as any other credit / acknowledgement section(s) in the front and/or back of the book) to identify all materials reprinted therein by permission of another source. Please give special consideration to all photos, figures, quotations, and any other material with a credit line attached. You are responsible for obtaining separate permission from the copyright holder for use of all such material. For your convenience, we may also identify here below some material for which you will need to obtain separate permission. This credit line must appear on the first page of text selection and with each individual figure or photo:

From Functional Assessment and Program Development for Problem Behavior , A Practical Handbook 2nd edition by O'Neill/ Horner/ Albin/ Sprague/ Storey/ Newton. © 1997. Reprinted with permission of Wadsworth, a division of Thomson Learning: www.thomsonrights.com. Fax 800 730-2215.

Sincerely,
Karen Lee84
Permissions Coordinator
Page 1 of 1 Response # 118457 Requestor email: michellethwork@yahoo.com