1998

Functional behavioral assessment: an evaluation of continuing education variables related to support staff use in school settings

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Functional behavioral assessment:
An evaluation of continuing education variables related to support staff use in school settings

by

Susan Marie Ward

A dissertation submitted to the graduate faculty in partial fulfillment of the requirements for the degree of DOCTOR OF PHILOSOPHY

Major: Psychology (School Psychology)
Major Professors: Daniel J. Reschly and Carla Peterson

Iowa State University
Ames, Iowa

1998

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ABSTRACT

There is an increasing need to address behavioral issues in the public schools. School psychologists and other support staff frequently consult with teachers and parents when students exhibit a variety of academic or behavioral problems, yet children with severe emotional disturbance (SED) or behavior disorders (BD) are often considered to present some of the most difficult cases (Shapiro, 1991). School districts are facing growing expectations to include all students; however many support staff do not have the training or resources to implement interventions that are effective for students with histories of aggression, self injury and property destruction (O’Neill, William, Sprague, Horner, & Albin, 1993).

The use of functional behavioral assessment to reduce the challenging behaviors of individuals with developmental disabilities is well documented in the research literature. The majority of the studies that rely on functional behavioral assessment have focused on challenging behavior with relatively few reported on students of average intelligence with emotional/behavioral disorders (Gable, 1996). The research base is promising in indicating that functional behavioral assessments can occur in the school setting, but the research has not addressed training relative to support staff developing skills in functional behavioral assessment and subsequent intervention development.

This study is designed to extend the application of functional behavioral assessment procedures to school settings using the schools’ assigned support staff. The purpose of the study was to evaluate and compare continuing education variables related to staff development model. A pretest – posttest design was utilized to compare a one day inservice
model, with an on-going inservice model of four sessions with homework practice and feedback. A wait control group was also included.

Results indicated that on measures of acceptance, attitude, and knowledge all groups improved from pretest to posttest as a result of training. There were no significant differences found due to model of training. Incentives were a key factor in completion of case studies.
CHAPTER 1. GENERAL INTRODUCTION

Nationally, there is a movement to redefine special education service delivery (Advocacy for Appropriate Educational Services for All Children, 1985; Cobb, 1990; Cobb & Dawson, 1989; Heller, Holtzman, & Messick, 1982; Knoff & Batsche, 1991; National Association of School Psychologists, 1994, 1995; Reschly, 1980, 1986, 1988a, 1988b; Reschly & Wilson, 1990; Reschly & Ysseldyke, 1995; Reynolds & Lakin, 1987; Reynolds, Wang, & Walberg, 1987; Shapiro, 1989; Shinn, Tindal, & Stein, 1988; Will, 1988; Wilson, 1991). Alternative delivery systems have been proposed in an effort to provide better services to all students, and to shift professionals’ emphasis from diagnosis and classification procedures to intervention design, implementation, and evaluation, and then to base educational decisions on student outcomes (Flugum & Reschly, 1994; Reschly, 1988a, 1988b).

Thus, as school psychologists’ and special educators’ roles change, there is a need to develop additional skills beyond the traditional, direct service model of individualized, standardized assessment. As a problem solver, professionals need to develop competencies in problem solving consultation, as well as skills in academic and behavioral assessment techniques that are linked to intervention development (Kratochwill & McGivern, 1996).

At this same time there is an increasing need to address behavioral issues in the public schools. School psychologists often consult with teachers when students exhibit a variety of academic or behavioral problems, yet children with severe emotional disturbance (SED) or behavior disorders (BD) are often considered to present some of the most difficult cases (Shapiro, 1991). For example, these students are the most difficult to include
successfully in general education settings, and the policies associated with the Individuals with Disabilities Education Act (IDEA) are challenged most significantly with regard to suspension, expulsion, and other discipline procedures for these students (Yell, 1995).

School discipline has been identified as the most serious problem faced by educators (Iowa Bureau of Special Education, 1994), and now the proposed regulations in the reauthorization of the Individuals with Disabilities Act (IDEA '97), require that a functional assessment of behavior leading to appropriate behavioral interventions be conducted when a suspension exceeds ten days or within 10 days for any change of placement resulting from a disciplinary action for any student served in special education. Classroom-based functional assessment can be defined as a broad set of procedures that include interviews, direct observation of the problem behaviors and environmental events, and may also include systematic manipulation of environmental events to examine the functional relationship between the problem behaviors and environmental events (DuPaul, Eckert, & McGoey, 1997).

School districts are facing growing expectations to include all students; however, many support staff do not have the training or resources to implement interventions that are effective for students who have histories of aggression, self injury and property destruction (O'Neill, William, Sprague, Horner, & Albin, 1993).

The use of functional assessment to reduce the challenging behaviors (aggressive, self injurious, self stimulatory) of individuals with developmental disabilities is well documented in the literature (Mace, Lalli, & Lalli, 1991; Carr, 1977; Carr & Durand, 1985; Iwata, Dorsey, Slifer, Bauman, & Richman, 1982). The majority of the studies that rely on functional assessment have focused on challenging behaviors with relatively few reported on
students of average intelligence with emotional/behavioral disorders (Gable, 1996; Broussard & Northup, 1995). There have been several studies that have examined the use of functional assessment and treatment in the schools. These studies have relied on a technical assistance model (Northup, Wacker, Berg, Kelly, Sasso, & DeRaad, 1994; O'Neill, Williams, Sprague, Horner, & Albin, 1993; McEvoy, Davis, & Reichle, 1993), in which experts are called in specifically to address challenging behaviors, and does not necessarily include the support staff assigned to that school.

The use of a technical assistance model has generally yielded positive results as reported in the literature; however, further research is needed to examine the utility of the various functional assessment methods for developing effective interventions and the practicality of their use in applied settings, such as schools (Gable, 1996; Arndorfer & Miltenberger, 1993).

Studies that have evaluated functional assessment procedures in the schools have focused on consumer evaluation, teacher and family implementation, and learner change or student outcome (Broussard & Northup, 1995; Dunlap, Kern, dePerczel, Clarke, Wilson, Childs, White, & Falk, 1993; McEvoy, Davis, & Reichle, 1993; Umbreit, 1995; Wacker & Steege, 1993). The research base is promising in indicating that functional behavioral assessments can occur in the school setting, but the research has not addressed training relative to support staff or teachers developing skills in functional behavioral assessment and subsequent intervention development.

Unfortunately, most continuing education efforts rely on a "train and hope" model, where there is a "one-shot" presentation of content without any opportunity for practice with feedback (Reschly & Ysseldyke, 1995). Showers, Joyce and Bennett (1987) analyzed the
effects on acquisition of knowledge, skill mastery, and transfer of training to professional roles of different components of continuing education. Although presentation of information and demonstration of skills had significant effects on knowledge, attitudes and, to a lesser degree, skill development, persistent changes in the services provided by professional required the additional training components of practice with feedback and coaching in the participant's job settings (Ikeda, 1997).

The research presented here is designed to extend the application of functional behavioral assessment procedures to school settings using the schools' existing support staff. The purpose of this study was to evaluate and compare a staff training model of functional behavioral assessment. This study will utilize a pretest - posttest design with random assignment to compare a one day inservice model, with an on-going inservice model of four sessions with homework practice and feedback. There will be a wait control group also. The independent variable will be model of inservice training, with the dependent variables of: (a) practitioners' attitude, (b) acceptability of functional assessment procedures, (c) practitioners' knowledge and skills in functional assessment procedures, and (d) evaluation of a case study submitted by practitioners following training. In addition, demographic variables, such as years of experience, discipline, level of education that may be related to practitioners' acceptance and behavior change will be explored to determine if there is an interaction with the above dependent variables.
CHAPTER 2. LITERATURE REVIEW

Nationally, over the last 20 years, there has been a movement to redefine special education service delivery and the practice of school psychology (Advocacy for Appropriate Educational Services for All Children, 1985; Cobb, 1990; Cobb & Dawson, 1989; Heller, Holtzman, & Messick, 1982; Knoff & Batsche, 1991; National Association of School Psychologists, 1994, 1995; Reschly, 1980, 1986, 1988a, 1988b; Reschly & Wilson, 1990; Reschly & Ysseldyke, 1995; Reynolds & Lakin, 1987; Reynolds, Wang, & Walberg, 1987; Shapiro, 1989; Shinn, Tindal, & Stein, 1988; Will, 1988; Wilson, 1991). Alternative delivery systems have been proposed in an effort to provide better services to all students, and to shift professionals' emphasis from diagnosis and classification procedures to intervention design, implementation, and evaluation, and then to base educational decisions on student outcomes (Flugum & Reschly, 1994; Reschly, 1988a, 1988b).

Survey results of the practices of school psychologists are consistent: school psychologists devote approximately two thirds of their time to special education classification and placement activities (Reschly & Wilson, 1995). Results also indicate that practitioners would prefer to spend more time in direct and indirect activities related to interventions. However, in most states, a specific disability must be designated as part of a classification and placement process whereby students are then entitled to receive special education and related services for learning and behavior problems. Often school psychologists have an important role in determining which disability is most appropriate for a specific student. A critical question regarding this role and the use of school psychologist's time, "Do the mild disability categories make any difference to treatment?" (Reschly, 1987, 1988; Reschly & Ysseldyke, 1995; Ysseldyke, 1973, 1988; Ysseldyke,
Algozzine, Regan, & McGue, 1981; Ysseldyke, Algozzine, Shinn, & McGue, 1982; Ysseldyke, Thurlow, Christenson, & Weiss, 1987). There is also the question of whether other means to determine entitlement are effective and valid. In addition, if determination of disability and labels (a time consuming and costly process) does not lead to a prescriptive treatment, then alternative eligibility strategies should be used, with an emphasis on determining program needs and subsequent design of individualized interventions.

**System Reform**

Most special education system reform efforts, involve noncategorical special education, with less emphasis on determining the disability category, and more emphasis on determination of programming needs and design of interventions. The shift away from the traditional refer-test-place model toward consultation and the development of effective interventions, requires all related services personnel, including school psychologists, to develop skills and competencies for which they may not have had adequate training (Reschly, 1988; Reschly & Grimes, 1991; Reschly & Ysseldyke, 1995; Shapiro, 1991). Reschly (1988) proposed that we use an outcomes criterion to evaluate special education effectiveness. This outcomes criterion would focus on the attainment of objective, specific, measurable goals to determine if special education placement conferred benefit to the student identified.

Another impetus for reform came from the Federal level where Madeline Will (1988), Office of Special Education Director, expressed concerns with the organization of the current service delivery system have focused on the inefficient use of funds, uncoordinated programs, curricular discontinuity and limited generalizability of effects across settings. The current system is viewed as a dual system; one of regular education and
one of special education. Reform efforts call for combining services to meet the needs of all children and to achieve better integration of services between regular and special education (Reynolds, Wang, & Walberg, 1987).

Traditional identification procedures are not only expensive and time consuming, but also rarely lead to effective intervention planning. The reliance on the use of standardized tests in the assessment process is usually only appropriate for one type of decision; entitlement for special education (Salvia & Ysseldyke, 1995). Alternative types of assessment are necessary to make additional educational decisions, such as instructional planning, behavioral interventions, and evaluating individual progress.

The changes recommended to improve current practices include changing service delivery models and labeling practices, and utilizing functional assessment strategies to identify target behaviors for intervention (Ikeda, 1997). Deno (1995) recommends that we replace the time currently spent on classification procedures with problem solving procedures utilizing curriculum based assessment, measurement, and evaluation procedures (Howell, Fox, & Morehead; Shinn, 1989), along with behavioral assessment activities (Alessi & Kaye, 1983; Shapiro & Kratochwill, 1988). Psychologists' roles would then be transformed from an individual assessment of disabilities and eligibility determination to support of classroom instruction through problem solving and developing interventions.

In 1985 the policy statement, “Advocacy for Appropriate Educational Services for All Children” was approved unanimously by the Delegate Assembly of the National Association of School Psychologists (NASP). One year later the policy statement, “Rights Without Labels” was also adopted unanimously. Both statements rejected the traditional refer-test-place methodology of classifying children in order to provide services. They
advocated for the development of systems that provide services and supports needed by children without labeling them as "disabled".

In addition, a recent policy statement on assessment and eligibility in special education identifies the system changes that need to be implemented regarding our current knowledge base of assessment and intervention (NASP-NASDSE-OSEP, 1994). First, there is an emphasis placed on changing the categorical classification system and funding services and supports needed without disability categories. This first step provides the context for applying the knowledge base on system reform (Graden, Zins, & Curtis, 1988) and principles of instructional design and behavioral change (Stoner, Shinn, & Walker, 1991), and sets the stage for a comprehensive problem solving approach. This approach would then be used to determine eligibility for services, to organize and provide those services, to monitor progress and change programs as needed, and to evaluate outcomes (Reschly & Ysseldyke, 1995).

**Problem Solving and Consultation**

As school psychologists' roles change, there is a need to develop additional skills beyond the traditional, direct service model of individualized, standardized assessment. School psychologists need to develop competencies in problem solving consultation as well as skills in academic and behavioral assessment techniques that are linked to intervention development. Assessment will continue to be an important activity in the roles of school psychologists, but the change will be in the assessment purposes, techniques and outcomes (Christenson & Ysseldyke, 1989; Reschly, 1989, 1986; Ysseldyke, 1984; Ysseldyke & Christenson, 1988; Ysseldyke & Thurlow, 1984). School psychologists and related services personnel need to adopt assessment procedures that are linked directly to developing school
based interventions (Kratochwill & McGivern, 1996; Lentz & Shapiro, 1986; Reschly & Ysseldyke, 1995).

A systematic problem solving approach can provide the overall structure for an alternative delivery system, and is viewed as an essential component to implementing advances in assessment and interventions (Reschly & Ysseldyke, 1995). There are several problem-solving approaches or models in the literature with slight variations among them. The common features involve problem definition, direct measures of behaviors, design of interventions, monitoring of progress (with data-based intervention revisions as needed), and outcomes evaluation.

Many of the competencies necessary to the success of an alternative service delivery system such as behavioral consultation, knowledge of problem solving process, behavioral observation, and curriculum based assessment would also meet the challenge of providing support to schools for students with behavioral as well as academic problems (Reschly & Grimes, 1991; Reschly & Ysseldyke, 1995; Shapiro, 1991).

**Heartland's Problem Solving Model**

One system wide reform effort based on a problem solving approach is the system developed by the Heartland Area Education Agency 11 in Iowa (Heartland). Heartland's model involves the use of four levels of problem solving, with each level involving increasing levels of intensity and resources necessary to develop plans to address the identified concern and resolve the problem. The problem solving process includes the following components: clearly defined problems, direct measures of behavior, baseline data, problem analysis, interventions designed and implemented with integrity, frequent

The model presented here (see Figure 1) guides all educators in Heartland through the systematic process of problem solving. Levels I and II could be referred to as informal problem solving, whereas Levels III and IV are more data-driven and systematic using a behavioral approach described in Bergan, 1977, and Bergan & Kratochwill, 1990.

Informal Problem Solving

Level I problem solving involves parent-teacher collaboration to address problems. This is a relatively common practice, and resolves a large number of school-related problems. Level II involves the teacher and parent from Level I, and a team of other teachers trained in problem solving. This team is often referred to as a Building Assistance Team (BAT) and usually consists of three to six team members, who may be fellow teachers, school counselors, a special education teacher, the principal or other support persons as needed. At this level the problem is defined, and an intervention is developed and implemented to address the problem, along with an outcome measure to determine the progress made. Problem analysis is usually nonexistent at this stage and there is wide variability in the quality of interventions at Level II, depending upon the sophistication of the BAT. Intervention selection is often that of a cookbook approach (pick one!), where the team generates a variety of solutions based on their collective experience and then the referring teacher chooses an intervention she feels is acceptable, often without data, and certainly without matching the intervention to the function of the behavior. Both Level I and II problem solving occur primarily within the general education realm, where support service personnel serve only in an ad hoc role as needed.

Systematic Problem Solving

In the model presented as the intensity of the problem increases, so does the amount of resources needed to resolve the problem. Thus, Level III problem solving involves the Heartland related services providers, and is considered a rigorous, data driven intervention effort that is intended to meet best practices for problem definition, systematic data collection, problem analysis, an intervention goal, intervention plan development,
intervention plan implementation, progress monitoring, and decision making. The Iowa Bureau of Special Education (1994) has developed standards for each of these components. Interventions that meet these quality indicators must be implemented and monitored for a reasonable period of time, and then based upon a resistance to intervention criterion (Gresham, 1991), Level IV problem solving (entitlement) may be initiated. Gresham (1991) defines resistance to intervention as the lack of change in target behaviors as a function of intervention. In other words, if the intervention implemented at Level III is not sufficient to change the behavior in the desired direction, then Level IV problem solving to increase the amount of resources to address the problem may be required.

At Level IV, classification of the student as needing special education (without using a category) may be determined by considering the degree of academic discrepancy based on peer norm data, the degree of behavioral discrepancy based on peer norm data, and the resistance to academic and behavioral change with high quality interventions implemented in the regular education setting. Within this system, there is a heavy reliance on problem solving and high quality interventions.

A problem solving approach is useful in designing the assessment and subsequent intervention to insure the target behavior and function are an integral part of the treatment. This problem solving process is consistent with the best practice model of intervention development for students (problem identification, problem analysis, goal setting, implementation, and treatment/plan evaluation) and has been empirically validated in the research literature (Bergan & Kratochwill, 1990; Bergan & Tombari, 1976; Deno, 1986; Flugum & Reschly, 1994; Fuchs & Fuchs, 1986; Shinn, 1989).
The problem solving consultation model developed by Heartland AEA 11 focuses on identifying resources needed to effectively implement problem specific interventions (Ikeda, Tilly, Stumme, Volmer, & Allison, 1996). The model guides all educators in AEA 11 through a systematic process for identifying and remediating problems, no matter what the nature of the problem may be. Moreover, the model provides a comprehensive framework for coordinating resource allocation across the many different programs and services available within local schools. Thus, the model assures that resources are used efficiently in that only the resources needed to resolve or improve the problem are allocated and engagement of more intensive resources is only pursued in cases where lesser resources were not sufficient.

A second critical feature of Heartland’s model is that problem solving at the various levels is, in fact, the same process. The process becomes more intensive and systematic as the nature of a problem warrants. The largest circle in Figure 1 describes the steps used to define problems, develop interventions and evaluate solutions. Information from a variety of sources (review of records, parent and teacher interviews, classroom observations, and perhaps testing of the child’s skills) are used to validate that the child’s academic, social, or behavioral performance does not meet the demands of the educational environment. The problem solving steps collect and analyze information on dimensions of the problems that can be used to develop interventions with a high likelihood of success. This distinction is critical because in a problem-solving model, assessment focuses less on attributes of the child (like retardation or ADHD-ness) and more on variables in the classroom and school that can be changed to better support the child.
Problem Solving Implementation

Implementation of intervention plans require on-going support, technical assistance, resource linking, design review, trouble shooting, and monitoring of student progress. Progress monitoring includes frequent data collection gathered under standardized conditions. Data are regularly analyzed so that modifications to the plan are implemented as needed based on progress toward pre-established goals.

Significant advances in assessment technology permit greater emphasis on measures that are functionally related to interventions. Most of these advances can be classified as behavioral assessment procedures (Shapiro & Kratochwill, 1988). The knowledge base for academic assessment has improved significantly with the development of curriculum-based assessment, curriculum-based measurement, and curriculum-based evaluation (Deno, 1985; Howell, Fox, & Morehead, 1993; Shapiro, 1989; Shinn, 1989). Systematic assessment of the instructional environment provides further support to academic and behavioral interventions (Christenson, Ysseldyke, & Thurlow, 1989; Ysseldyke & Christenson, 1987a, 1987b, 1993; Ysseldyke, Christenson, & Kovaleski, 1994; Ysseldyke & Marston, 1990). Finally, advances in behavioral assessment of social and emotional problems have led to improved practices in these areas (Alessi & Kaye, 1983; Shapiro & Kratochwill, 1988).

Reschly and Ysseldyke (1995) viewed continuing education opportunities as perhaps the single most important challenge in system reform (p.27). Traditional school psychology training provides an essential foundation for system reform, but to this knowledge base we need to add systematic problem solving, consultation, principles of behavior change, principles of instructional design, and functional assessment. Most programs do not
currently emphasize these areas (Reschly & McMaster-Beyer, 1991; Wilson & Reschly, 1996).

When Heartland implemented their problem solving approach, it was facilitated through the training of support services personnel, principals, and regular and special educators. Heartland has a training cadre that has provided training and support in the areas of Building Assistance Teams (BATs), Progress Monitoring and Collaboration as the foundations of its problem solving approach. BATs are typically involved in Level II problem solving, and then collaborate with AEA support personnel in Level III problem solving. The BAT team members receive training on identifying and defining problems, brainstorming interventions, selecting an intervention, gathering baseline data, and evaluating the effects of interventions. Training has typically focused on the process necessary to follow the above steps as a team, but has not focused as much on the content/knowledge base needed to develop specific interventions.

Any staff development that focuses on better linking of assessment-to-intervention-to-evaluation of outcomes will contribute to the efficiency of staff consultation in the problem solving model. Since 1991, Heartland AEA 11 has provided staff and teachers with training in areas like: consultation, collaboration, systematic progress monitoring, building assistance teaming, and implementing quality interventions. However, as staff development needs continue to evolve, it is apparent that a primary concern of educators is how to support students with behavior problems (Ikeda, 1997).

The implementation of Heartland's problem solving model at Levels III and IV requires that all related services personnel (e.g., consultants, psychologists, and social workers) develop competencies in behavioral assessment, curriculum-based assessment,
increased knowledge of effective and appropriate classroom intervention strategies, and improved skills in the consultation process (Shapiro, 1991). The technology and system-level support in some contexts now exists for linking assessment to intervention. Heartland is one agency that provides system-level support for an alternative delivery system that stresses the link between assessment and intervention. The knowledge base for this link is reasonably well established (Deno, 1985; Howell, Morehead, & Fox, 1993; Shapiro & Kratochwill, 1987; Shinn, 1989). The knowledge base for interventions using these assessment approaches is reasonably well established for academic problems (Fuchs & Fuchs, 1986; Howell, Morehead, & Fox, 1993) and for mild to moderate behavior problems (e.g. Stoner, et al., 1991). The knowledge base for dealing with severe behavior problems in school settings is less well established.

Components of Effective Interventions

There is an extensive literature demonstrating the effectiveness of behavioral interventions for reducing disruptive behavior problems, usually based on principles of operant conditioning. In addition, there are well documented interventions and behavioral approaches for nearly all types of student problems (Stoner, Shinn, & Walker, 1991).

"What then do we need to know and incorporate into practice to insure that intervention efforts are effective and that related new roles for school professionals do not end up on the trash heap of educational innovations?" (Lentz, Allen, & Ehrhardt, 1996, p. 119). According to the literature, the empirically validated critical components of effective interventions are (1) a behavioral definition of a problem; (2) a direct measure of the student's behavior in the natural setting prior to intervention; (3) problem validation; (4) analysis of the problem; (5) goal setting; (6) a step-by-step intervention plan; (7)
implementation of the intervention as planned; (8) data collection and graphing of results; (9) systematic formative evaluation; and (10) a direct comparison of a student’s post-intervention performance to baseline data (Flugum & Reschly, 1994; Tilly & Flugum, 1995; Bergan & Kratochwill, 1990; Deno, 1986; Shinn, 1989).

Further, according to Lentz et al. (1996) an intervention procedure cannot be strong unless it is correctly matched to the reason underlying the problem. Strong intervention results from a structured problem solving process that allows for the development of accurate hypotheses about the variables maintaining the problem, and then the type of intervention that matches the hypotheses. It would appear then that not only is identifying the behavior a critical first step in developing effective interventions (Bergan & Tombari, 1976), but that generating and testing hypotheses about the function of the student's behavior is necessary in order to develop a strong intervention that is correctly matched to the reason underlying the problem (Shapiro, 1991).

One assessment approach, functional behavioral assessment, focuses on the function of behaviors exhibited by children in an attempt to develop more effective and efficient interventions. Functional behavioral assessment refers to a broad set of procedures that examine those environmental events that maintain problem behaviors (Horner, 1994). Functional behavioral assessment procedures identifies maintaining variables for problem behaviors, as well as setting events that may precede and predict the occurrence for problem behaviors.

**Functional Assessment and Severe Behavior Problems**

In the past two decades, significant progress has been made in the development of intervention procedures to effectively address severe problem behaviors such as self-injury
and aggression. These procedures have grown out of seminal studies (Carr, 1977; Iwata et al., 1982) that have provided the conceptual and methodological basis for assessment and treatment of severe problem behaviors.

It is important to note that although these procedures have the potential to reduce the occurrence of severe problem behavior, no single intervention will be effective for every child. Indeed, implementation of the wrong intervention may actually increase the frequency or intensity of the problem behavior, and strengthen it, making it more resistant to future treatment. Therefore, it is critical to use assessment procedures that are useful for selecting the most appropriate treatment plan. Traditional assessment procedures, that are designed for diagnostic purposes do not always provide useful information for developing and implementing interventions. Research has consistently demonstrated that knowledge of the function (or purpose) behind the behavior is more important in the selection of an intervention than information regarding the form of the behavior (Berg, 1992), thus functionally assessing behaviors is critical for developing interventions unique to the individual child and their environmental needs (DuPaul, Eckert & McGoe, 1997).

"One of the most serious issues facing educators in special education is the presence of challenging behaviors" (Foster-Johnson & Dunlap, 1993). Additionally, Hunt, Johnson, Owen, Ormerod, and Babbit (1990) report that between 900,000 and 3.5 million individuals with developmental disabilities in the United States engage in severe challenging behaviors. Challenging behaviors are defined as behavior produced by a child that 1) results in self-injury or injury of others; 2) causes damage to the physical environment; 3) interferes with the acquisition of new skills; and/or 4) socially isolates the child (Doss & Reichle, 1991).
The focus of intervention research for problem behaviors of persons with developmental disabilities has been moving toward nonaversive interventions, partly due to the increasing recognition that most problem behaviors are environmentally based, and serve a function for the person (Repp & Karsh, 1994).

**Functions of Behavior**

In 1977, Carr proposed that environmental consequences such as increased attention, escape (avoidance of demands and access to preferred activities or items), and sensory stimulation may play a major role in the continued display of severe problem behaviors such as self-injury. Carr further identified these consequences as social or nonsocial reasons that were acting as reinforcers that maintained the problem behaviors. Studies have employed different methodologies directed toward identifying the function of problem behaviors and proposing interventions based on the identified function (Repp & Karsh, 1994). Positive reinforcers or negative reinforcers can maintain challenging behaviors, as well as biochemical factors (Barrett, Feinstein, & Hole, 1989; Carr & Durand, 1985b, Carr & McDowell, 1980; Durand & Crimmins, 1988; Edelson, Taubman, & Lovaas, 1983; Lovaas & Simmons, 1969).

"An assumption of functional assessment is that any behavior that occurs repeatedly is serving some useful function or producing some type of reinforcement" (O’Neill, et al., 1997, p. 12).

Behavior can be viewed as serving two major functions: (1) to *obtain* something desirable; and (2) to *avoid* or to *escape* something undesirable. O’Neill’s has conceptualized this further in that for each of the two basic functions of positive and negative reinforcement, challenging behavior can be either socially or nonsocially
motivated. Socially motivated behavior requires the mediation of others in order to achieve the desired outcome. For example, the child who screams in order to obtain the attention of the teacher. In contrast, nonsocially motivated behavior does not require the mediation of others in order to achieve the desired outcome. For example, the child who rocks back and forth in order to obtain sensory stimulation. In this model, biochemical factors would be classified as nonsocially motivated challenging behavior.

Families, teachers, and support staff of the child are frequently confused and distressed over the challenge of trying to change such behavior patterns. In many situations, problem behaviors may not only be dangerous but may not seem to make sense. One of the goals of a good functional assessment is to bring clarity and understanding to otherwise chaotic and confusing situations. Diagnostic labels, such as autism, mental retardation, or Down syndrome, do not necessarily help us understand the problem behavior. Neither does the form of the behavior, such as hitting, kicking, or spitting. Developing an understanding of the variables maintaining the behavior is achieved through a systematic functional assessment (O’Neill, et al., 1997).

**Functional Assessment**

Procedures to identify these functions have been called functional assessment or functional analysis. These procedures include interviews, direct observation of the problem behaviors and environmental events and systematic manipulation of environmental events to examine the functional relationship between the problem behaviors and environmental events (DuPaul, Eckert, & McGoey, 1997; Repp & Karsh, 1994).

An approach to developing individualized interventions is functional assessment which allows for linking intervention procedures to the results of pre-intervention
assessment data (Blakeslee, Sugai, & Gruba, 1994). The use of functional assessment to reduce the challenging behaviors (aggressive, self-injurious, self-stimulatory) of individuals with developmental disabilities is well documented in the literature (Carr, 1977; Iwata, Dorsey, Slifer, Bauman, & Richman, 1982; Mace, Lalli, & Lalli, 1991). The development of functional assessment and analysis has emerged in the area of behavioral intervention where intervention procedures are linked to the results of pre-intervention assessment data (Dunlap & Childs, 1996; Vollmer & Smith, 1996).

Indeed an intervention procedure can only be viewed as strong when it is correctly matched to the reason underlying the problem (Lentz, Allen, & Ehrhardt, 1996). The value of functional assessment rests on the assumption that treatment (intervention) effectiveness increases if the treatment matches the function of the target behavior (Gable, 1996).

Functional assessment is a process for gathering information that can be used to maximize the effectiveness and efficiency of behavior support (O’Neill, et al., 1997). Specifically, it is a process to determine the relationship between events in a person’s environment and the occurrence of challenging behaviors.

Iwata et al. (1982) developed a standardized procedure that manipulated conditions to test hypotheses regarding the function of the behavior. Results indicated that a clear pattern of behavior could be observed as a function of the condition being manipulated. As functional analysis techniques were developed, the methodology focused on direct observations, interviews, and rating scales to define and target behaviors for the environmental manipulations; all techniques that utilize low inference methods (Wolery, Bailey, & Sugai, 1987).
Purpose

Functional assessment is the general term used to describe a set of processes which define the events in an environment that reliably predict and maintain problem behaviors. Functional assessment can include interviews, rating scales, direct observations, and systematic, experimental analysis of problem situations. These experimental analyses, in which behavior is observed while elements of the environment are manipulated (such as giving rewards following problem behavior), are a part of functional assessment, specifically identified as functional analysis.

Functional assessment is a process of understanding the physiological and environmental factors that contribute to a person’s problem behaviors. The whole purpose of a functional assessment is to gain information that will improve the effectiveness and efficiency of behavioral interventions.

Strategies

A functional assessment involves the use of specific strategies or approaches for the collection of information. There are three basic methods of conducting a functional assessment: indirect/informant assessments, direct observation, and environmental manipulations/functional analysis (Arndorfer & Miltenberger, 1993, Lennox & Miltenberger, 1989, O’Neill, et al., 1997). Each method gives a slightly different perspective, however, ideally all three would agree on the function of the behavior. These assessment methods will be briefly reviewed here.

Indirect or Informant Methods

The first strategy is to talk to the person with problem behaviors (if possible) and to those people who have direct contact with and knowledge about the individual. Interviews
and other informant methods (questionnaires, rating scales) can be useful in defining and narrowing the range of variables that may affect the behaviors of concern.

**Interviews.** Interviews are usually a good way of pulling together the existing knowledge regarding a person’s patterns of behavior. A major goal of the interview is to identify which events in the environment seem to be linked to the specific problem behavior of a specific person. Two individuals in the same setting with the same diagnosis and the same type of problem behavior may be responding to extremely different aspects of the environment.

Indirect assessments of challenging behavior are designed to obtain information regarding the potential function of a challenging behavior (place the problem behavior in a context). Indirect assessments provide subjective reports from individuals who are familiar with the child. Typically, indirect assessments are used as part of a comprehensive assessment process, and are usually done at the beginning stages.

An interview is one tool for identifying the features of a context that are important for or associated with a person’s problem behavior. A variety of interviews and rating scales have been developed to solicit information from informants regarding the potential functions of problem behaviors as well as other information regarding the antecedents and consequences that are related to the behavior.

The focus of most will be on identifying the concerns or problem behaviors and beginning to develop a behavioral definition. Interviews also look at identifying prior events that may be useful for predicting the occurrence of the behavior, both those that are separated by time (setting events) or occur immediately before (antecedents). It is often just as important to identify those setting events and antecedents that predict when the behavior
will not occur. Next the interview seeks to determine what consequences always occur that may be maintaining the behavior. It is also useful to ask if the individual already has the skills to demonstrate appropriate behaviors that would achieve the same consequences as the problem behavior. Finally, we want to know about past interventions that have been used and their outcome (O'Neill, et al., 1997):

The Functional Analysis Interview (O'Neill, et al., 1990, 1997) was designed to describe the problem behavior, identify the physical and environmental factors that reliably result in the occurrence of the behavior, and determine the potential functions of the behavior and the consequences that maintain it. This interview is divided into nine sections which assist in obtaining information for developing hypotheses regarding the motivation(s) of the behavior as well as providing information which will be helpful in designing an intervention to decrease the likelihood that the child will engage in the problem behavior.

**Rating Scales.** A frequently used rating scale is the Motivation Assessment Scale (MAS) (Durand & Crimmins, 1988). This indirect method is comprised of a series of 16 questions designed to pinpoint the function(s) of a challenging behavior. The authors state that the purpose of the MAS is to identify the situations in which the child is likely to engage in the behavior and then use this information to assist the interventionist in making more informed decisions regarding the selections of appropriate interventions.

Specifically, the MAS addresses the extent to which the challenging behavior serves the function of obtaining attention, escaping or avoiding nonpreferred activities, obtaining preferred items or activities, or providing sensory stimulation. The authors further state that The MAS is designed to examine one behavior, in one setting, with one individual. Therefore, a separate MAS should be completed for each behavior of concern, as well as in
each setting, and with each individual (e.g., teacher) with whom the problem behavior occurs.

The Functional Analysis Screening Tool (FAST) is another checklist that examines the factors that may influence the occurrence of behavior problems. It should only be used as an initial screening tool and as part of a comprehensive functional analysis of the behavior problem (Iwata, 1996). Results can be used as the basis for conducting direct observations in several different contexts to verify likely behavioral functions, clarify ambiguous functions, and identify other relevant factors related to the occurrence of the behavior.

The scope and depth of information gathered from the indirect assessment methods may be influenced by the instrument’s format; whether it is open ended, or a combination of open ended, yes/no, or multiple choice. Additionally, the informants’ ability to accurately recall events associated with the occurrence of the behavior, and the informants’ subjective interpretation of the factors (antecedents and consequences) that predict and maintain the behavior will also influence the accuracy of the information obtained. Their advantage lies in the convenience and minimal time investment compared to the other assessment methods, however they may be susceptible to faulty recollections, lack of experience with the behavior, or bias (Lennox & Miltenberger, 1989). Thus the ability to develop accurate hypotheses as to the function of the behavior and the maintaining antecedents and consequences, is highly variable. A review of the research literature indicates inconsistent results regarding the reliability and validity of the various indirect methods. Therefore, they may best be viewed as an initial strategy to assist in the formulation of testable hypotheses regarding the function of the problem behavior.
Direct Observation

The second strategy for collecting functional assessment information is to systematically observe the child with problem behavior in typical daily routines. Teachers, support staff, and/or family members who already work or live with the child can use direct observation procedures. The observations must be done in a manner that does not interfere with normal daily events or require extensive training.

Direct observation involves selecting the categories of antecedents, behaviors, consequences, as well as settings to be recorded, developing an objective definition of the behavior(s) to be observed, and designing and implementing a systematic observation procedure. Information from the indirect methods; interviews, questionnaires, checklists, may be helpful in determining when to observe, or which antecedents to record, etc.

Some frequently used methods of direct observation include frequency recording, interval recording, scatterplot assessment, ABC chart, and functional assessment observation form (Bijou et al., 1968; O’Neill et al., 1997; Sulzer-Azaroff & Mayer, 1977; Touchette, MacDonald, & Langer, 1985). Frequency recording is a common method of direct assessment used by both teachers and support staff. The primary disadvantage of this method is that it does not provide any information regarding the antecedents or consequences that may be associated with and maintaining the challenging behavior.

Interval recording (partial, whole, or momentary) provides the teacher or support staff with information regarding the occurrence or the nonoccurrence of a behavior across a series of equal time intervals. Use of a scatter plot is helpful to determine if there is a pattern to the behavior related to time of day and pinpoint times of day when the identified behavior(s) are highly likely or highly unlikely to occur. Activities related to time of day
can then be analyzed to determine if there is a relationship between the behavior and task preferences, mealtimes (hunger), fatigue or medication dosage.

Other than to provide information regarding the occurrence of the behavior as a function of time of day (and estimates of frequency of occurrence) partial interval, whole interval, or momentary time sampling procedures provide little information useful to identify the relationships between the behavior and the environmental events.

Information from the scatterplot may be useful for completing the ABC observation during time periods when it is highly probable that the challenging behavior will occur. One method of recording is to write down what was happening just before the behavior, what happened after the behavior, and the observer’s perception of the function of the behavior (this is often referred to as an A-B-C chart; antecedent – behavior – consequence). The primary advantage of this type of system is that it provides the opportunity to describe any of the antecedents and/or consequences that are observed to occur immediately preceding or following the occurrence of the behavior.

Although this method provides a great deal of information, the disadvantage is that it involves written text, can be time consuming to record the information in a narrative format, and requires more trained observers to ensure reliability and validity (Arndorfer & Miltenberger, 1993). Again, it is suggested that this information might be useful in further defining behaviors and environmental events and developing preliminary hypotheses for later confirmation through further analysis.

O’Neill et al. (1990, 1997) has developed a direct observation system that combines many of the advantages of the previously mentioned methods. He refers to his system as the functional assessment observation form. This form combines the information obtained from
a scatter plot, in that it allows the observer to record information relative to time of day. It also combines the features of an A-B-C chart in that it has a place to record the specific setting events, antecedents, and consequences for each behavior. Patterns that may be revealed through this method are (a) the frequency of occurrence of behaviors, (b) the relationship between behaviors, (c) the time periods/activities in which the behaviors occur, (d) the time periods/activities in which the behaviors do not occur, (e) the antecedents or setting events that predict the occurrence of the behaviors, (f) the consequences that are delivered contingent upon the occurrence of the behavior, and (g) the functions served by the behaviors.

Overall, direct observation methods are preferred as they require less inference than indirect methods, and therefore are less influenced by subjectivity. However, direct observation methods may also have concerns regarding reliability and validity. In order to minimize potential confounds, best practice suggests that observers be trained in the observation system, that if resources permit reliability checks be conducted, and at a minimum the observer check with those familiar with the child to see if their observation was representative of the child's typical behavior.

Regardless of the direct observation system chosen, it is important to recognize that all direct observation data are correlational and not causative. Therefore, although patterns of behavior may appear as a result of direct observation data, it is not possible to infer causation based on these patterns. When patterns of behavior appear consistent over time, persons, settings, antecedents and consequences, then probable hypotheses can be developed. In some cases it is difficult to isolate the specific variables that are associated with the behaviors due to the multitude of variables that may be contributing to their
maintenance. When the environmental variables and their relationship to the behavior cannot be isolated, then the third strategy of a functional assessment may be necessary.

**Functional Analysis**

The third strategy or method of a functional assessment is a systematic manipulation of specific variables that are or are not associated with the problem behaviors. This is often referred to as a functional analysis, experimental analysis, or controlled environmental manipulations of the behaviors. These assessments are implemented through the use of single subject designs.

The manipulation of antecedents and/or consequences may occur in analog situations (e.g., Iwata et al., 1982) or in the natural environment (e.g., the classroom; Durand & Carr, 1987). One method of functional analysis involves the manipulation of consequences contingent on the occurrence of targeted behaviors. Another method involves manipulating variables such as task difficulty, task length, level of attention provided during an activity, or the presence of absence of choice in an activity. The functional analysis is conducted in such a manner as to allow for the determination of a functional relationship between the target behavior and the experimental variable (Lennox & Miltenberger, 1989). Functional analysis is a formal test of the relationship between environmental variables and the occurrence or nonoccurrence of problem behaviors.

Environmental manipulations are often done as an analog assessment in which all of the variables in the natural environment are not present but the variables that are present are tightly controlled. Thus experimental control is maintained while altering specific antecedents and/or consequences contingent with the child exhibiting problem behaviors.
These assessments are helpful for testing hypotheses that cannot be adequately confirmed as a result of direct observations.

First, the variables that are hypothesized to predict or maintain the behavior must be identified. Subsequently these variables are repeatedly introduced and withdrawn during structured conditions. The effect of each of the variables on the child's behavior is then documented and a hypothesis regarding the proposed function(s) of the behavior is confirmed or rejected.

Functional analysis is the most precise, rigorous, and controlled method of conducting a functional assessment. Functional analysis is the only approach that allows unambiguous demonstration of a functional relationship between environmental events and problem behaviors (O'Neil, et al., 1977). Brian Iwata and his colleagues (1982) pioneered these procedures, while David Wacker, Wendy Berg, Linda Cooper, K. Mark Derby, Mark Steege, John Northup, and Gary Sasso (1994) and others have adapted them. Functional analysis can be very time consuming, but may be the only way to complete an adequate functional assessment that will lead to development of effective interventions. An individual trained in conducting a functional analysis, as well as expertise in behavioral strategies and assessment procedures, must be involved in conducting the actual assessment. This is important because functional analysis involves creating situations that will provoke the problem behaviors and because the success of the process requires knowledge of single case design research.

O'Neil et al. (1990) outline a number of factors that should be examined prior to the use of controlled environmental manipulations. Included among these factors are: (a) they should be used only when the potentially relevant variables are manipulable by the
interventionist, (b) the potential benefits of this procedure should be weighed against the potential risks to the individual as well as other involved people, (c) analog conditions should only be implemented after receiving the required consent for its implementation, and (d) strategies should be developed and utilized to ensure the safety of both the individual and the interventionist.

It is also important to note that a functional analysis can require several weeks and an extensive amount of time and training, which limits its utility in applied settings (Arndorfer & Miltenberger, 1993). However, Wacker et al. (1994) modified Iwata’s functional analysis methodology for use in an outpatient clinic setting where evaluations are limited to 90 minutes. In a review of 79 cases, Derby, Wacker, Sasso, Steege, Northup, Cigrand, and Asmus (1992) concluded that brief, modified versions of functional analyses can be conducted in outpatient settings for the purpose of identifying potential treatments.

**Rationale for Functional Assessment**

Information about when, where, and why problem behaviors occur is extremely valuable in building effective and efficient behavioral interventions. The available literature suggests that determining the social function of problem behaviors and subsequently designing an intervention based on that function can result in a decrease in the challenging behavior. If interventions are developed without a functional assessment, they may actually make problem behaviors worse. For example, if a child tantrums when given a direction, and is then given a treat when she is quiet, or if a child tantrums when it is time to pick up toys and is then given a time out, in both cases the child’s problem behavior has been reinforced. In the first case the child obtained a tangible, and in the second case the child escaped the undesirable task. Thus it is highly likely that the next time the child wants a
treat, or its time to pick up toys that another tantrum will occur. Functional assessment not only helps in the development of effective and efficient interventions, but also helps us avoid programmatic errors.

The second reason a functional assessment should be done with severe behavior problems is that it is now considered professional best practices. The Association for Behavior Analysts published a “Right to Effective Treatment” (Van Houten et al., 1988), which includes the right of all individuals who receive behavioral intervention to a professionally competent functional assessment. The use of functional assessment not only makes programmatic sense; it is an expected practice in the field.

Additional Considerations

In developing a plan for programming, or an individual education plan (IEP) for school purposes, we need to actively involve all the significant individuals in a child’s life. It is important to view our efforts as programming for the child’s life, and the context of family and community, not just school settings. A process such as COACH may be useful in identifying family priorities and goals for the IEP.

We also need to incorporate the child’s activities and social life. Some issues to address may be the variety of activities they can independently perform, the degree of community/school integration, the number of social opportunities, and the child’s individual preferences.

Lastly, we need to examine any medical or physical conditions that may be influencing problem behaviors. For example, a child with Prader-Willi Syndrome will demonstrate an almost insatiable urge to eat, and may demonstrate behaviors in order to get food. Other conditions could be allergies, ear infections, toothaches, etc., that for the child
who cannot tell us what is wrong, may demonstrate challenging behaviors to alleviate the pain (such as head banging). We also need to examine the side effects of medications. For example, many individuals with developmental disabilities are on medications for seizure control, and there may be side effects, which contribute to the behaviors of concern. In order to determine the influence of medical or physical conditions, collaboration with medical personnel may be necessary to develop an effective intervention.

Investigation of Functional Assessment Methodology

Indirect/Informant Assessment

A majority of empirical investigations examining the functional assessment of challenging behaviors have looked at issues related to the interobserver reliability, intraobserver reliability, and validity of various assessment methods and tools (Crawford et al., 1988; Sasso, et al., 1992; and Zarcone et al., 1991).

Durand and Crimmins (1988) examined the interobserver reliability, intraobserver reliability, and the validity of the MAS. The MAS was administered to both the teacher and the paraprofessional of each of 50 target students (3 – 18 years old) who were reported to have developmental disabilities and engaged in self-injurious behaviors. The results revealed that the correlations on the raw Likert scores for the individual questions ranged from .66 to .92 and were all significant at the .001 level. The correlations for the raw mean scores ranged from .80 to .95 and were also significant at the .001 level. Spearman rank order correlation coefficients for the category scores ranged from .66 to .81 and were significant at the .001 level. Based on these results, Durand and Crimmins (1988) concluded that the MAS is a reliable tool in terms of its interrater reliability.
To assess intraobserver reliability the MAS was administered to the teacher again 30 days following the initial administration. The results of the intraobserver reliability of the assessment revealed that Pearson correlation coefficients for the individual questions ranged from .89 to .98 and were all significant at the .001 level. The Pearson correlation coefficients for the raw scores ranged from .92 to .98 and were also significant at the .001 level. Additionally, Spearman rank order correlation coefficients for the category scores ranged from .82 to .99 and were significant at the .001 level. Durand and Crimmins (1988) concluded that, in addition to being reliable in terms of interrater reliability, The MAS is a reliable instrument with regard to test-retest reliability.

Durand and Crimmins (1988) examined the validity of the MAS in a second phase of their investigation. That is, they asked the question, how well does the MAS assess what it claims to assess? The subjects included eight of the children with developmental delays who participated in part one of the investigation. Subjects were chosen randomly based on the teacher’s MAS so that there were two subjects in each of the four motivation categories (sensory, escape, attention, tangible). Comparisons were made by evaluating the results of the teacher’s MAS to direct observations of student behavior in specified environments (e.g., environments where adult attention was reduced, environments where access to preferred tangibles was reduced, etc.). The results revealed that the correlation between the teachers’ MAS ratings and the observational data was significant ($r = .99, p = .001$). Based on these results, the authors concluded that the MAS predicted student behavior in the experimental conditions. However, treatment was not evaluated treatment based upon the functional assessment results.
Additional validation of the MAS was obtained by comparing it to the results of a functional analysis of challenging behavior and by demonstrating that the treatment based on the identified function was effective (Durand & Carr, 1991).

Zarcone et al. (1991) failed in their attempts to replicate the findings of Durand and Crimmins (1988) regarding interrater reliability. Two staff members rated the self injurious behaviors of 55 children, adolescents, and adults on the MAS. The interrater reliability of the results was calculated according to two methods. The first method replicated that used by Durand and Crimmins (1988). Correlations were obtained for each pair of raters’ raw scores across all items of the questionnaire and each pair of raters’ mean scores for the four functions of challenging behavior. Additionally, each of the four functions of challenging behavior were ranked from highest to lowest for each rater and correlations were calculated for each pair of raters. The Pearson correlation between the two raters’ raw scores for each individual ranged from -.30 to .81 (mean = .27), the Pearson correlation by category for each individual ranged from -.80 to .99 (mean = .41), and the Spearman rank order correlations ranged from -.80 to 1.0 (mean = .41).

Zarcone et al. (1991) used a second method based on an item-by-item scoring of agreement between the two raters because it was a more stringent test of reliability than that used by Durand and Crimmins (1988). Item-by-item agreement was calculated using procedures referred to by the authors as an “identical” procedure and an “adjacent” procedure.

For the item-by-item agreement between the two raters, agreement scores ranged from 1% to 63% (mean = 20%). The authors discussed that if one were to choose a minimum percent agreement of 80% as a cutoff for acceptable reliability, only 15% of the
correlation coefficients and none of the percent agreement scores met this standard. The results of this investigation, led Zarcone et al., (1991) to question the validity of the scale, and the usefulness of the MAS as a tool for identifying the functions served by a behavior.

In another investigation of functional behavioral assessment, Crawford et al. (1992) compared three different assessment methods in an attempt to examine whether or not each of the three approaches would produce the same results with regard to the identification of the function of a given challenging behavior. Specifically, the investigators (a) examined the interrater reliability of the MAS, and (b) compared the results of an informant assessment using the MAS, an A-B-C direct observation assessment, and an analog assessment. The subjects in this investigation were two men and two women with severe to profound mental retardation who engaged in high rates of stereotypic behavior. The procedures for collecting the assessment information using each of these three methods were as follows (a) the MAS was completed for each subject by eight staff who knew the subject well, (b) the analog assessment information was collected in a room with an observation window where the challenging behaviors exhibited by the subjects were recorded using a 10-second partial interval method, and (c) the A-B-C direct observation assessment information was collected in the subjects’ homes and vocational settings using a 1 minute time sampling procedure. After collecting the assessment information via each of these three methods, the results from each method were analyzed and coded as either serving the function of attention, escape/avoidance, tangible, or sensory motivation.

The investigators examined the interrater reliability of the MAS by obtaining Pearson correlation coefficients on the ratings of group home staff and the vocational staff. Fifteen of the 24 correlations were statistically significant (p=.05) in that range. Sixteen of
the 24 correlations for the group home staff were statistically significant (p=.05) in that range. Second, interrater reliability was computed for the rankings of the four functional categories using Pearson correlation coefficients. For the vocational staff, seven of the 24 correlations were statistically significant (p=.05) in that range. Eight of the 24 correlations were statistically significant (p=.05) for the group home staff. This investigation found that the interrater reliability on the MAS was less than that reported by Durand and Crimmins (1988).

Another finding of this study was that the analog assessment revealed different results than the MAS assessments completed by group home and vocational staff. The majority of vocational and group home staff rated the sensory highest for all subjects. When analog assessment only was used, however, only one subject showed a sensory motivation of the stereotypic behavior and the function of the challenging behavior for the other three subjects was unclear. An A-B-C assessment was conducted in both the group home and the classroom, revealing a sensory function for all subjects. The conclusion based on this information was that the A-B-C observation and the MAS most clearly identified the function of the challenging behavior for all four subjects (Crawford et al., 1992).

Consequently, even though the MAS and the A-B-C were somewhat consistent in identifying a sensory function for the subjects' behavior, it was not possible to determine from this investigation if these findings were valid. In order to demonstrate the validity of the findings, the authors would have had to show that treatment based upon the sensory function was more successful than other treatment.

Sasso et al. (1992) compared results obtained from different assessment procedures used in assessing high frequency challenging behaviors exhibited by two children aged 3
and 13 years old who had been given a diagnosis of autism. Three different assessment procedures were compared in this investigation: (1) investigator-completed analog assessments outside of the natural environment; (2) teacher-completed analog assessments in the natural environment; and (3) teacher-completed A-B-C assessments in the natural environment. The results of this comparison revealed that each of the three methods of assessments yielded similar findings regarding the motivation of the subjects’ challenging behaviors, and that the interventions based on the results were effective in reducing the subjects’ challenging behaviors. Based upon these findings, the authors concluded that any of the three methods of assessment might be used to identify the function of a challenging behavior. They also discuss the advantage of using two or more methods of assessment in an effort to find concurrence between the methods and thus increase the validity of the findings.

Amdorfer and Miltenberger (1993) conducted an evaluation of informant and direct observation assessment procedures and environmental analyses of aggressive/disruptive, and self-injurious behaviors in five children with development disabilities (ages 2 – 13 years old). Parents completed the MAS and then provided information through structured interviews. In addition, the parents and investigators conducted A-B-C assessments in the home, and parents participated in environmental analyses in the home. Results indicated that the functions of the problem behaviors identified through interviews were the same as those identified with A-B-C assessment and environmental analyses. Results of the MAS were not as consistent.

An important variable to consider in determining the most appropriate assessment for identifying the function of a challenging behavior that was not discussed by Sasso et al.
(1992) is the frequency of the behavior of concern. It is plausible that the function of a low frequency or erratic behavior may be best identified through an analog assessment, while the function of a high frequency behavior may be determined through an ABC assessment and/or an analog assessment.

In summary, the majority of empirical investigations surrounding functional behavioral assessment have been with students with developmental disabilities and severe, challenging behaviors. These studies have focused on issues related to the interobserver reliability, intraobserver reliability, and validity of various assessment methods (Crawford et al., 1988; Sasso, et al., 1992; Zarcone et al., 1991). Authors have reported that interview-based informant assessments helped them develop hypotheses which they subsequently tested using environmental manipulations (e.g., Dunlap, Kern-Dunlap, Clarke, & Robbins, 1991; Mace & Lalli, 1991). Further assessment of the MAS appears warranted. Additionally, it appears that the indirect or informant assessment is most useful as a beginning in a comprehensive functional assessment. In our problem solving model this would fit with identifying and defining the target behavior, and developing some preliminary hypotheses regarding the function of the problem behavior.

Direct Observation Assessment

Repp et al. (1988) used direct observation assessment to form hypotheses regarding the function of stereotypic and self-injurious behaviors in three young children with severe mental retardation. Their hypothesis was that head banging served an escape function for one child and that stereotypic behaviors served a self-stimulation function for the other two children. The authors compared two treatments in the intervention phase for each child by matching one treatment to the hypothesized function of the challenging behavior and not
matching the other treatment. The hypothesis-driven treatment was successful in decreasing the behavior, whereas the treatment that was not based on the assessment information was not effective. Therefore, conclusion was that the use of direct observation assessment was an effective method to develop hypotheses about the function of the challenging behaviors because it resulted in an effective treatment for that behavior.

In an A-B-C assessment of the function served by aggressive or disruptive behavior in two adults with autism, Smith (1985) demonstrated that the results led to effective functionally-based interventions. Bird, Dores, Moniz, and Robinson (1989) reported the use of direct observation and MAS results to develop effective functionally-based treatment for two adults with profound mental retardation. Based on their assessment results, hypotheses were developed about the function of the aggressive and self-injurious behaviors. Then communicative responses were taught that were functionally equivalent to the challenging behaviors.

These studies indicate that interventions that are functionally-based on the hypotheses developed as a result of the direct observations resulted in effective treatment. This suggests that not only is direct observation a useful technique for developing hypotheses for functions of challenging behaviors, but that when interventions are based on those identified functions they are effective.

In addition, research (Arndorfer & Miltenberger, 1993) has shown that parents can carry out valid A-B-C assessment in the home with minimal training using a format similar to the one described by O’Neill et al. (1990). For example, each time the child exhibited aggressive behavior against her sibling, her mother checked the appropriate column on the A-B-C form to record antecedents and consequences of the behavior. Arndorfer &
Miltenberger (1993) found that the parents' A-B-C data were consistent with A-B-C data collected by trained research assistants, and that the A-B-C results were also consistent with the results of a structured interview and environmental analysis of the behavior conducted in the home.

Direct observation appears appropriate to validate the information generated by the rating scales and interview. It allows for identification of antecedents and consequences that informants may not be able to provide during interviews. Through the use of the direct observation form (O’Neill, et al., 1997) or an A-B-C analysis, and clear consistent data patterns, hypotheses may be developed, and further assessment may not be needed.

Heartland’s problem-solving model provides a guide for using resources efficiently and effectively in assessment and intervention development. Numerous studies have investigated training parent and teachers to perform data collection (e.g., Arndorfer & Miltenberg, 1993; Arndorfer, et al., 1994; Broussard & Northup, 1995; Cooper, et al., 1990, Lalli, et al., 1993; Northup, et al., 1994; Wacker et al., 1994). Overall, the results have been favorable in that parents and teachers have been able to participate in the assessment process, and implement effective interventions that have been functionally-based. Remember, a functional analysis is conducted only when the results from interviews and direct observations fails to reveal consistent patterns of behavior or if hypotheses cannot be clearly confirmed through direct observation data (O’Neill, 1997).

**Functional Analysis**

O’Neill (1997) states that the basic focus of a functional analysis is to identify associations between events in the environment (antecedents and/or consequences) and problem behaviors. Functional analysis is the only method that allows documentation of a
true functional relationship (causal relationship) and thus it provides the greatest confidence in building our understanding of when, where, and why problem behaviors occur. This is possible because these assessments are implemented through the use of single subject designs.

The three common variations of the functional analysis procedure are: (1) antecedent manipulations, (2) consequence manipulations, and (3) a combination of descriptive and experimental analyses. Carr and Durand (1985) alternately introduced and withdrew antecedent stimulus conditions, and then after reviewing the pattern of behavior, inferred the operant function of the behavior. Iwata et al. (1982) varied the consequences, believing this permitted a more direct inference regarding the contingencies maintaining the challenging behavior. Mace & Lalli (1991) followed Iwata et al.'s (1982) basic procedure, but added descriptive analysis (A-B-C assessment). Specific studies have been conducted to evaluate the different functional analysis procedures and their effectiveness.

**Antecedent Manipulations**

Carr, Newsom, and Binkoff (1980) evaluated the influence of demands on aggressive/disruptive behavior. Weeks and Gaylord-Ross (1981) manipulated antecedent conditions in a functional analysis of aggressive/disruptive and self-injurious behavior in children. They analyzed the effects of task difficulty on these behaviors in a classroom setting. The authors found that high demand and difficult tasks produced higher rates of challenging behaviors. However, since Weeks and Gaylord-Ross (1981) did not implement treatment as part of their study, we cannot validate that assessment and hypotheses led to effective treatment. Carr et al. (1980) demonstrated the effectiveness of three treatments on
escape-related aggressive behavior: increasing positive reinforcement during demands, reinforcing an alternative behavior, and extinction of escape behavior.

Several studies using an experimental analysis procedure involving antecedent manipulations have been published by Durand and Carr and colleagues (e.g., Carr et al., 1980; Carr & Durand, 1985; Durand & Carr, 1987, 1991; Durand & Crimmins, 1988; Durand & Kishi, 1987). Durand and Carr (1987) used three experimental conditions; baseline, decreased attention, and increased task difficulty; that were conducted in the classroom in an alternating fashion to assess the impact of attention and demand upon the frequency of the students’ stereotypic behavior. They found that stereotypic behavior was most probable when the task difficulty was increased, suggesting that the behavior served an escape function.

Carr and Durand (1985) and Durand and Carr (1987, 1991, and 1992) have conducted several studies on functional communication training as an intervention/treatment for challenging behaviors. Following the completion of a functional analysis, communicative responses are taught that will result in the same social outcome (maintaining contingencies) as the children’s challenging behavior. The belief is that if the communicative response was functionally equivalent to the challenging behavior, that the communicative response would actively compete with and reduce the frequency of the challenging behavior. In each case, functional communication training, which taught the children to obtain attention, escape, or assistance more appropriately, proved to be an effective intervention.

Recently, Horner and Day (1991) and Horner, Sprague, O’Brien, and Heathfield (1990) demonstrated that functional communication training based intervention was most
effective when the functionally equivalent communication response was more efficient for the child than the challenging behavior. A more efficient response required less response effort and therefore resulted in more frequent and immediate reinforcement than the challenging behavior.

In another study, Dunlap et al. (1991) conducted a functional analysis involving curriculum manipulations with a 12 year old girl exhibiting disruptive behavior. Informant and direct observation assessments were conducted over five weeks to develop hypotheses about the challenging behavior. To test these hypotheses, four curriculum variables (e.g., fine motor versus gross motor tasks, short versus long duration tasks) were manipulated and found functional relationships between these variables and the behavior. Treatment involved modification of the curriculum, and resulted in elimination of the disruptive behavior.

The above research findings are not intended to be an exhaustive search, but it does appear that functional analyses involving antecedent manipulations can successfully identify the variables that are functionally related to the occurrence of challenging behavior. In addition, the authors have demonstrated that effective treatments can be developed and implemented based on the functional analysis findings.

Consequence Manipulations

In their classic study, Iwata et al. (1982) used four analog conditions in an analysis of the function served by self-injurious behavior (SIB) in children with mild to profound retardation. In the social disapproval condition, statements of concern and disapproval were provided along with physical contact contingent upon self-injury in order to determine whether attention was maintaining SIB. The academic demand condition assessed whether
or not self-injury was maintained through negative reinforcement as a result of escaping or avoiding the demand situations following SIB. Next, the unstructured play condition was served as a control for the experimenter's presence, the availability of materials, the absence of demands, the delivery of approval for appropriate behavior, and the lack of approval for self-injury. Finally, to test the hypothesis that SIB served a sensory function an alone condition was utilized.

Iwata and his colleagues (e.g., Iwata et al., 1982; Iwata et al., 1990; Mason & Iwata, 1990) have published several studies using functional analysis of consequence variables. In his classic study of functional analysis, Iwata et al. (1982) found that, for six of the nine children, for their self-injurious behavior one function was identified. This study did not implement interventions. Another study by Iwata et al. (1990) examined the functions of SIB in children and adolescents with mild to profound mental retardation, for all the children, the SIB served an escape function. This time treatment was implemented using escape extinction (not allowing escape from task following SIB), and was highly effective.

Iwata et al.'s functional analysis methodology has been systematically replicated over the years (e.g., Sturmey, Carlsen, Crisp, and Newton, 1988; Steege, Wacker, Berg, Cigrand, and Cooper, 1989; Steege et al., 1990; Cowdery, Iwata, and Pace, 1990). Further, a brief version of the functional analysis procedures has also been evaluated. Cooper, Wacker, Sasso, Reimers, and Donn (1990) and Northup et al. (1991) used a brief functional analysis procedure with aggressive/disruptive behavior in children with conduct disorders and adults with mental retardation.

In Cooper et al.'s (1990) study, the parents conducted the functional analysis sessions. In both studies, the function of the challenging behaviors was identified based on
the brief functional analysis. This information was then used to develop treatment
recommendations for parents or staff outside the clinic to implement, but effectiveness data
were not reported.

Descriptive and Experimental Analysis

Mace and his colleagues (e.g., Mace & Belfiore, 1990; Mace & Knight, 1986; Mace
& Lalli, 1991; Mace, Page, Ivancic, & O’Brien, 1986) developed techniques that began with
a descriptive analysis, and then utilized an experimental functional analysis of consequence
variables. The descriptive analysis procedure consisted of gathering direct observation data
which showed the relationship between an individual’s challenging behavior and
antecedents and/or consequences of the behavior under typical conditions (Mace, Lalli, &
Lalli, 1991). The purpose of conducting the descriptive analysis first was to allow the
investigators to identify and manipulate the most relevant environmental contingencies for a
particular subject during the experimental analysis sessions. Dunlap et al. (1991) used a
similar approach to examine the influence of curriculum variables on a student’s challenging
behavior.

In a similar approach, O’Neill et al. (1997) suggests that a behavioral intervention
can be designed when you have the following; assessment information which predicts the
conditions in which the problem behavior is likely to occur and not occur, and agreement
about the consequences that appear to maintain the problem behavior. Thus procedures are
recommended in which the intensity of the assessment matches the complexity of the
problem behavior. If less rigorous and easy to implement assessment procedures produce a
confident description of the events that predict and maintain a problem behavior, there is no
reason to use more rigorous and precise procedures. However, if procedures such as
interviews and direct observations do not generate clear and consistent patterns, then more intense and precise observations and environmental manipulations may be warranted.

Therefore, the techniques utilized by Mace et al. (1991) would be consistent with O’Neill et al.’s (1997) procedure, except that O’Neill et al. (1997) would not automatically proceed to the experimental manipulations unless the analysis of the data suggested the hypotheses required direct testing.

Functionally-based Interventions

Functional treatments are designed to address behavior problems in at least three ways: (a) eliminate the identified reinforcement (extinction) for the challenging behavior; (b) differentially reinforce alternative behavior to replace the challenging behavior; and/or (c) alter antecedents or ecological variables that are related to the challenging behavior (Arndorfer & Miltenberger, 1993, Iwata, 1996). While specific treatments will vary depending on the individual situation and the nature of the functional assessment information, a functional treatment will incorporate at least one of these strategies and it may be appropriate to have all three as part of the intervention.

It is clear by now that intervention strategies that focus primarily on the form of the challenging behavior are not sufficient. Interventions must directly address the function served by the challenging behavior (Carr, 1977; Carr & Durand, 1985a; Doss & Reichle, 1989; Doss & Reichle, 1991; Iwata, Dorsey, Slifer, Bauman, & Richman, 1982; O’Neill, Horner, Albin, Storey, & Sprague, 1990; O’Neill, Horner, Albin, Sprague, Storey & Newton, 1997; Taylor & Carr, 1992; Wacker et al., 1990). Interventions that address the function of a challenging behavior can be divided into two major categories. The first category consists of strategies that involve replacing challenging behaviors with more
socially appropriate communicative alternatives. The second category involves strategies
the do not directly teach a communicate alternative. These strategies would be used when
the function served by the behavior can not be honored, for example when attention is
maintaining SIB.

**Functional Communication Training**

Based on the premise that all behavior serves a communicative function,
investigations have targeted the relationship between a child’s communicative abilities and
his engagement in challenging behaviors (Carr, 1977). When given (or taught) a socially
appropriate communicative form that is matched to the identified social function of the
child’s challenging behavior, results have shown that an increase in the appropriate behavior
as well as a decrease in the challenging behavior will occur. Carr (1977) states that in order
to successfully replace challenging behaviors with socially acceptable communicative
alternatives, the replacement behavior must be functionally equivalent to the social function
served by the challenging behavior.

**Functional Equivalence**

Functional equivalence is defined as the maintenance of two or more response
classes by the same class of reinforcers (Parrish and Roberts, 1993). In other words, the
alternative to challenging behavior must serve the same function as the challenging
behavior. If both responses occur within the same contexts and result in the same
consequences, then they are said to be functionally equivalent. Numerous investigations
have examined the concept of functional equivalence when designing interventions to
replace challenging behavior with communicative alternatives (e.g., Carr & Durand, 1985b;
One study will be reviewed here to illustrate the importance of functional equivalence versus just increasing communicative responses. Carr and Durand (1985b) investigated the importance of selecting a functionally equivalent communicative alternative to replace challenging behavior. Four students (7 to 14 years old) with challenging behaviors were involved to determine the effects that attention from others and task demands had on the frequency of the challenging behaviors exhibited. The results of this analysis revealed that two of the subjects engaged in challenging behavior to escape difficult tasks, one subject engaged in challenging behavior to obtain attention, and the remaining subject engaged in challenging behavior in order to obtain attention as well as to escape difficult tasks.

There were two phases to the intervention procedure; “relevant response” and “irrelevant response”. The relevant response phase taught the subjects a communicative behavior that was functionally equivalent to their challenging behavior, such as “I don’t understand” for the function of requesting assistance during difficult tasks. The irrelevant response phase, consisted of teaching the subjects a communicative behavior that was not functionally equivalent to their behavior, such as “Am I doing good work?” for the function of requesting assistance during a difficult task. Communicative responses that were not functionally equivalent (irrelevant responses) were not effective in replacing the challenging behavior. These results are representative of the results obtained from similar investigations regarding functional equivalency (Durand & Carr, 1987; Durand & Crimmins, 1987).
Response Efficiency

Another factor that must be considered when developing functionally-based interventions is the relative efficiency of the replacement response in comparison to the already existing challenging behavior (e.g., Carr & Newsom, 1985; Horner & Day, 1991; Horner et al., 1990, 1997; Wacker et al., 1990).

Matching theory (Mace & Roberts, 1993) proposes that when an individual has the opportunity to choose between two or more possible responses, the learner will choose the response perceived as the most efficient. Mace and Roberts (1993) reviewed several empirical investigations demonstrating that an individual's concept of efficiency is effected by the following four components: rate of reinforcement, quality of reinforcement, response effort, and immediacy of reinforcement. The probability that an individual will choose one response option over another is based on the interaction of these components.

The principle of response efficiency can also be applied to functional communication training and efforts to reduce challenging behaviors. Interventionists have discovered that the manipulation of the rate of reinforcement, the quality of reinforcement, the immediacy of reinforcement, and/or the response effort will all influence a learner's choice of one behavior (e.g., a socially acceptable communicative response) over another one (e.g., challenging behavior; Carr & Newsom, 1985; Horner & Day, 1991; Horner et al., 1990, 1997; Wacker et al., 1990).

Additional Intervention Strategies

In addition to strategies that teach socially appropriate communication as a replacement behavior, other strategies are used when it is not always appropriate to teach a communicative alternative. This is done when it is determined that the communicative
function of the challenging behavior cannot be honored. For example, a child cannot escape taking their medication for seizures. Strategies exist that have been identified through the research literature and are based on behavioral principles. These strategies are effective in reducing the probability that a child will engage in challenging behavior (e.g., Carr & Carlson, 1993; Davis & Brady, 1993; Davis et al., 1993; Foster-Johnson, et al., 1994; Fredericksen & Fredericksen, 1977; Horner, 1980).

Fredericksen and Fredericksen (1977) examined the effect of scheduling planned activities on the behaviors of adolescents with developmental delays. In this study, activities were scheduled in either a predictable (fixed) order or an unpredictable (random) order. The results indicated that a predictable schedule resulted in higher rates of completed activities and lower rates of disruptive behavior.

Other strategies have utilized immediate antecedent manipulations. Foster-Johnson et al. (1994) examined the relationship between students' preference for activities and the occurrence of challenging as well as socially appropriate behaviors. The investigators measured the percentage of intervals with the occurrence of challenging behavior during preferred and nonpreferred activities for 3 students with disabilities. They found that preferred activities were associated with reduced levels of challenging behavior and increased levels of desirable behaviors.

Horner, Day, Sprague, O'Brien, and Heathfield (1991) examined the effect of high probability request sequences on challenging behaviors exhibited by 4 individuals with severe mental retardation in order to avoid difficult tasks. Investigators delivered a set of simple requests immediately prior to delivering a request identified as discriminative stimuli for problem behavior. Results indicated that high probability request sequences were an
effective means of increasing the student' responsiveness to instructions and reducing students’ engagement in challenging behavior.

The outcomes of the studies by Foster-Johnson et al. (1994) and Horner et al. (1991) are representative of other investigations that have utilized immediate antecedent manipulations to decrease challenging behaviors and increase socially acceptable behaviors (e.g., Carr & Carlson, 1993; Davis et al., 1992; Foster-Johnson et al., 1994; Harchic & Putzier, 1990; Mace & Belfiore, 1990; Singer, Singer & Horner, 1987).

**Functional Assessment and Interventions in School Settings**

The majority of the studies that rely on functional assessment have focused on challenging behaviors with relatively few reported on students of average intelligence with emotional/behavioral disorders (Gable, 1996; Broussard & Northup, 1995). There have been several recent studies that have examined the use of functional assessment and treatment within the schools. These studies have relied on a technical assistance model (Northup, Wacker, Berg, Kelly, Sasso, & DeRaad, 1994; O'Neill, Williams, Sprague, Horner, & Albin, 1993; McEvoy, Davis, & Reichle, 1993), called in specifically to address challenging behaviors, and does not necessarily include the support staff assigned to that school.

Recently, functional assessment and analysis procedures have been extended to school settings (e.g., Lalli, Browder, Mace, & Brown, 1993; Northup, et al., 1994) and to populations other than developmental disabilities. Cooper, Wacker, Sasso, Reimers, and Donn (1990) and Cooper et al. (1992) used brief functional analysis procedures to assess conduct problems for children of average intelligence and demonstrated that the children’
behavior problems were related to levels of parental and teacher attention and the difficulty of academic demands.

Dunlap, Kern-Dunlap, Clarke, & Robbins (1991) and Dunlap et al. (1993) conducted functional assessments for children described as seriously emotionally disturbed. The functional assessments generated multiple hypotheses concerning the effects of curriculum and instructional variables, at least one of which was subsequently demonstrated to result in an effective intervention.

A series of studies relevant to school-based problems (e.g., Dyer, Dunlap, & Winterling, 1990; Horner, Day, Sprague, O’Brien, & Heathfield, 1991; Weeks & Gaylord-Ross, 1981; West & Sloan, 1986; Winterling, Dunlap, & O’Neill, 1987) generated the following results: (a) three general hypotheses seemed to account for most environmentally based problem behaviors, (b) several instructional variables were demonstrated to be salient and fit within these three hypotheses, and (c) experimental assessment procedures were available that could address these hypotheses.

Some of the instructional variables identified and demonstrated to be directly related to the occurrence of problem behavior were: (a) presenting students a choice of tasks (e.g., Dyer, Dunlap, & Winterling, 1990); (b) varying the tasks presented (e.g., Winterling, Dunlap, & O’Neill, 1987); (c) increasing the pace of instruction (e.g., West & Sloan, 1986); (d) embedding low probability demands in a series of high probability demands (e.g., Horner, Day, Sprague, O’Brien, & Heathfield, 1991); and (e) reducing task difficulty (e.g., Weeks & Gaylord-Ross, 1981).

The bulk of the studies that rely on functional assessment have focused on challenging behavior; however, relatively few have been reported on behavior disordered
students or have included the entire process within the school setting without additional technical assistance beyond that normally available. Indeed, there have been questions regarding the boundaries of functional assessment in terms of who can and who cannot feasibly apply it, in relation to what target behaviors and under what conditions it is appropriate. This information remains limited (Gable, 1996).

The recent work of Dunlap et al. (1993), Karsh et al. (1995), and Umbreit (1995) does substantiate the potential of functional assessment with behavior disordered students in the school setting. At this same time there is an increasing need to address behavioral issues in the public schools. School psychologists often consult with teachers when students exhibit a variety of academic or behavioral problems, yet children with severe emotional disturbance (SED) or behavior disorders (BD) are often considered to present some of the most difficult cases (Shapiro, 1991).

School discipline has been identified as the most serious problem faced by educators (Iowa Bureau of Special Education, 1994). Gresham (1981) linked drop out rates with social skill deficits, absenteeism, and suspensions. Problems such as aggression, arguing, and tantrums appear to remain stable over many years without systematic interventions (Achenbach & Edelbrock, 1981). According to Jenson, Walker, Clark & Kehle (1991) the most difficult classroom problem facing teachers is the challenge of the student with behavior disabilities. Specific behaviors of concern may be behavioral excesses, such as physical and verbal aggression, tantrums, property destruction, noncompliance, arguing; and behavioral deficits, such as impulsive behavior, need for immediate reinforcement, lack of remorse, lack of social skills, attention seeking, poor peer relationships, poor academic skills, off task, and truancy.
In addition, these students are the most difficult to successfully include in general education settings, and the policies associated with the Individuals with Disabilities Education Act (IDEA) are challenged most significantly with regard to suspension, expulsion, and other discipline procedures for these students (Yell, 1995).

The use of a technical assistance model has generally yielded positive results as reported in the literature, however further research is needed to examine the utility of the various functional behavioral assessment methods for developing effective interventions and the practicality of their use in applied settings, such as schools (Gable, 1996; Arndorfer & Miltenberger, 1993). School districts are facing growing expectations to include all students, however many support staff do not have the training or resources to implement interventions that are effective for students who have histories of aggression, self injury and property destruction (O’Neill, William, Sprague, Horner, & Albin, 1993).

**Reauthorization of IDEA**

The new Individuals with Disabilities Education Act (IDEA '97) that was recently reauthorized includes requirements for school districts to conduct functional behavioral assessments, and develop positive behavioral intervention plans based on that information. Specifically, there are three components that have particular implications for support personnel: 1) positive behavioral support methodologies are indicated when the behavior of a student impedes his or her learning, or that of others; 2) the Individual Education Plan (IEP) team is encouraged to have as a member someone knowledgeable about positive behavioral supports; and 3) the role of the school psychologist has been expanded to include assisting in developing positive behavioral interventions (Steege, 1998). IDEA also requires the local education agency to conduct a functional behavioral assessment and implement a
behavioral intervention plan within 10 days of taking certain disciplinary action against disabled student. Although it is not yet clear how this will be defined in the regulations, it is clear that support staff and school psychologists in particular, will need to be competent in functional behavioral assessments and developing positive behavioral interventions based on the assessment information.

**Continuing Education**

The need for staff development is indisputable. New knowledge about effective instructional and behavioral intervention practices are continuously increasing, so even the best-trained professionals will need frequent updates to stay current in best practices (Green, 1995). In particular, the half-life of a school psychologist’s training has been estimated as ranging from 3 to 5 years (Hynd, Pielstick, & Schakel, 1981). So the question is not if the need for continuing education exists, but rather what the content should be, and how to deliver the content, if indeed we are to effectively change practices (Ikeda, 1997).

The field of school psychology views consultation as a service delivery model that is both acceptable and desirable in comparison to the traditional testing (Curtis & Meyers, 1988; Wilson, 1991). The shift away from assessment/identification toward consultation and the development of effective interventions, requires all related services personnel, including school psychologists, to possess competencies for which they may not have had adequate training (Reschly, 1988).

Shapiro (1991) states that it is not enough for school psychologists to learn about intervention strategies in classes or simply implement a few interventions during their assigned practica. Children who demonstrate behavioral excesses such as aggression, noncompliance, disruptive verbalizations, tantrums, or inappropriate or deficient social skills, are often referred
to as having emotional or behavioral disorders in the schools (Dunlap & Childs, 1996; Jenson, Walker, Clark & Kehle, 1991).

According to the 10th Annual Report to Congress on the Implementation of 94-142 (1988), these students make up the smallest percentage of all major categories of identified disabilities (8.7%). Yet these individuals pose the greatest challenge to educators, who then call upon school psychologists and other support personnel for assistance (Shapiro, 1991). It is critical that school psychologists (and other support staff), if they do not have these skills when they exit their training program, receive continuing education with firsthand, direct experiences in the assessment and development of effective interventions for this population.

Unfortunately, most continuing education efforts rely on a “train and hope” model, where there is a “one-shot” presentation of content without any opportunity for practice with feedback (Reschly & Ysseldyke, 1995). Showers, Joyce and Bennett (1987) analyzed the effects on acquisition of knowledge, skill mastery, and transfer of training to professional roles of different components of continuing education. Although presentation of information and demonstration of skills had significant effects on knowledge, attitudes and, to a lesser degree, skill development, persistent changes in the services provided by professionals required the additional training components of practice with feedback and coaching in the participant’s job settings (Ikeda, 1997). The majority of literature on staff development in education, focuses either on teachers or on evaluation of graduate training programs.

One continuing education effort, Relevant Educational Assessment and Interventions Model (RE-AIM), was designed specifically for support services personnel; such as school
psychologists, school social workers, and special education consultants (Grimes & Reschly, 1986). RE-AIM was organized around three continuing education modules. Each module provided intensive workshops, extensive follow-up activities, and completion of case studies, feedback to participants, and evaluation of changes at the individual and systems level. Reschly & Grimes (1991) concluded that the changes were not as widespread as hoped for, and appeared to be more related to eligibility efforts than to prereferral interventions. Thus, they identified that individual commitment and system wide support are critical for practitioner change.

They asked the basic question, "Do school psychologists agree with reform themes?" If yes, do school psychologists want to change their behavior? Results were mixed. Participants indicated dissatisfaction with spending about 65% of their time on special education eligibility determination and placement, and indicated preferences for consultation and intervention activities. Additional support that practitioners were in favor of change, came from a survey of beliefs and attitudes regarding students classified as learning disabled (Wilson, 1991), however these positive beliefs and attitudes did not always lead to changes in practice (Reschly & Grimes, 1991).

Practitioner competencies and preferences for types of assessment procedures and interventions also influence the provision and quality of services (Flugum & Reschly, 1994). Typically, the concept of acceptability has been applied primarily in areas related to treatment and intervention. In fact, there is a strong research base regarding the acceptability of behavioral treatments as rated by parents (Reimers, Wacker, Cooper, & DeRaad, 1992a, 1992b), preservice teachers (Witt, Elliott, & Martens, 1984), regular and special education teachers, and children (Elliott, Turco, & Gresham, 1987). Eckert, Hintze, & Shapiro (1997) examined school psychologists' acceptability of behavioral and traditional assessment procedures using a survey
based on analogue case study methodology. Behavioral assessment procedures were found to be more acceptable than traditional assessment procedures.

Thus for continuing education efforts, in addition to developing the necessary competencies, typically defined by knowledge and skills gained, practitioners' beliefs and attitudes appear to play a critical role in their implementation of an innovation into their daily practice.

**Rationale For Training**

According to IDEA functional behavioral assessments and behavioral intervention plans are now required for students with behavioral disabilities. If for no other reason than this, continuing education efforts in functional behavioral assessment will be critical for support services personnel. If school psychologists do not have this training, this is an opportunity to expand beyond that role of traditional assessment that reform efforts have been working on for the last 20 years.

This is also an opportunity for functional assessment methodologies to be proven in the school settings, an area that they have only recently ventured into. Functional assessment is uniquely suited to meet the needs of emotionally and behaviorally disordered children, in that the focus is on teaching functional skills to replace problem behaviors. Functional assessment also provides a direct link between assessment and intervention, promoting a hypothesis driven intervention plan. Interventions based on functional assessment are more likely to target the function of the behavior, and thus more likely to be effective. An emphasis is placed on skill building and promoting an increase in alternative appropriate behavior, with less emphasis on consequences or punishment. This increases the chances of a positive outcome. It is possible to demonstrate a causal relationship
between the intervention and outcomes, thus validating the accountability of services. Outcome data serve as documentation of practitioner effectiveness and accountability as well as a measure of student progress.

Functional assessment is based on the premise of testing hypotheses and identifying the conditions that maintain the behavior. By identifying the payoff of the behavior, we can then develop an intervention that teaches appropriate replacement behavior, while utilizing behavioral principles to reinforce the new behavior and reduce the inappropriate behavior. Additionally, these procedures lend themselves to an outcomes criterion through the use of single case experimental designs (Steege & Wacker, 1995).

By extending functional behavioral assessment methodology to the school settings, we will reduce difficulties associated with a "call-in technical assistance team" such as, staff turnover, repeat referrals due to student regressions or development of new problem behaviors. By developing competence at the front lines, those individuals already in the local school system and the assigned support staff, the potential for long term benefits in regards to teacher training and successful student outcomes is a distinct possibility.

The existing research literature supports the need to carefully identify the environmental antecedents and consequences that motivate a child to exhibit challenging behavior. Unless this is accomplished, the interventionist will not be in a position to develop an intervention strategy that will result in a significant reduction in the challenging behavior. According to Lentz, Allen, & Ehrhardt (1995), the value of functional assessment rests on the assumption that treatment effectiveness increases if the treatment matches the function of the target behavior. The recent work of Broussard and Northup (1995), Dunlap et al. (1993), Karsh et al. (1995), and Umbreit
(1995) substantiate the potential of functional behavioral assessment with behavior disordered students in the public school setting.

**Effective Training Methods**

In order to achieve this a training model for functional behavioral assessment, needs to address attitudes, beliefs, acceptability of assessment techniques, as well as teach skills and knowledge, if we are to develop long lasting and pervasive changes in the services provided by professionals in the schools (Reschly & Grimes, 1991).

Effective training methods include modeling, role playing, trial implementation with feedback, and didactic instruction techniques (Anderson & Kratochwill, 1988). Green (1995) states that providing professionals with information about new knowledge or practices is inadequate for producing behavior change in educators. Much of the research on training has focused on behavioral consultation methods, with evaluation focused on developing competencies in practitioners or more often graduate students and/or using analogue methods (Brown, Kratochwill, & Bergan, 1982, Kratochwill, VanSomeren, & Sheridan, 1989). Training has also been indirectly evaluated through gathering student outcome data as verification of external and social validity.

Utilizing a one day inservice format, McDougall, Reschly, and Corkery (1988) evaluated the effectiveness of a workshop on behavioral consultation using a competency based approach. Significant changes from pre-training to post-training were found, suggesting that a one day model based on pre-identified competencies can be effective in teaching problem solving skills.

A federally funded continuing education program, The Relevant Educational Assessment and Interventions Model (RE-AIM), utilized a two day workshop on behavioral consultation through lecture, reading, modeling, demonstration of competencies, role playing with feedback, questions/answers and discussion, and extensive interview outlines. Based on
their evaluation of RE-AIM, Reschly and Grimes (1991) conclude that the following are critical to the successful design and implementation of continuing education programs: (1) resources should be focused on agencies that make appropriate commitments; (2) commitment is essential on the part of practitioners and immediate supervisors; (3) the number of participants during training should allow for on-going involvement among participants, local mentors and module developers, (4) time, as well as on-site support, must be provided to participants; and (5) system priorities and incentives must be changed as well as individual behavior.

**Purpose of Study**

The purpose of this study then was to address practitioners' needs for functional behavioral assessment training and to evaluate the effectiveness of the training model. Heartland has demonstrated agency commitment to a problem-solving model and has also committed resources to the on-going continuing education needed to equip practitioner's with the necessary knowledge and skills. However, much of the training has been in areas like: consultation, collaboration, systematic progress monitoring, building assistance teaming, and implementing quality interventions. While necessary to a problem solving approach, these efforts do not specifically address educators' concerns about how to support students with behavior problems in the general education setting (Ikeda, 1997).

We need to address educators' concerns, while examining the question of how to provide the content. That is, how does the design of continuing education experiences contribute to the likelihood that it will result in actual changes in practitioners' daily practices in the schools? Joyce, Showers, and Bennett (1987) analyzed the effects on acquisition of knowledge, skill mastery, and transfer of training to professional roles of different components of continuing education. Although presentation of information and demonstration of skills had significant effects on knowledge, attitudes, and to a lesser degree, skill development, the
additional training components of practice with feedback and coaching on site were necessary to
effect persistent changes in professionals daily practices.

The goal of this study is to evaluate staff development training in functional behavioral
evaluation at several levels. First, changes in acceptability and attitude related to functional
behavioral assessment will be examined. Heartland's practices have changed significantly as a
result of a problem-solving approach, practitioner acceptability has not been formally evaluated.
Second, it is often assumed that practitioners have an adequate knowledge base to implement
problem-solving consultation, to complete functional academic and behavioral assessments, and
and then to develop and implement interventions based on the assessment information. In this study,
knowledge of functional behavioral assessment procedures will be evaluated by comparing two
training models; a one day inservice with four ongoing sessions; using acceptability, attitude,
and knowledge as the dependent variables.

The last, and perhaps, most important area to be evaluated will be practitioners' actual
use of assessment procedures in their daily practice. Unfortunately, as Reschly and Grimes
(1991) noted, positive attitudes and beliefs were not always accompanied by action.

With this focus in mind, the following research questions were developed for this study:

1. What impact does model of training have on practitioners' acceptance of functional
assessment procedures?

2. What impact does model of training have on practitioners' knowledge of functional
assessment techniques and procedures?

3. What impact does model of training have on practitioners' use of functional
assessment procedures in their daily practice?

4. Is there an interaction between years of experience and posttest measures of
functional assessment?

5. Is there a relationship between years of experience and use of functional assessment
procedures used at follow-up?
CHAPTER 3. METHODS

Participants and Sampling

Training Sample

Iowa is divided into 15 regional intermediate agencies called Area Education Agencies (AEAs). AEAs provide services to school districts in a variety of areas including staff development, media, professional library and special education support personnel. The Heartland AEA 11 Division of Special Education employs more than 300 professionals who serve 56 public school districts. Workshops on philosophy and techniques of functional behavioral assessment procedures were offered to Heartland Area Education Agency (Heartland) support personnel (school psychologists, consultants, social workers). The effects of these workshops were studied in this investigation.

Heartland has implemented an alternative service delivery system based on a problem solving approach (Heartland, 1997) for determining student entitlement to special education. As Heartland employees, all workshop participants were familiar with problem solving consultation and the requirement of individualized interventions as part of the process of special education entitlement. Training occurred at a centralized location within the geographical region of Heartland and participants utilized skills learned during training with both regular and special education teachers and children in their current assigned school districts.

Training

AEA support personnel were informed as to the training and given an opportunity to enroll voluntarily during staff orientation meetings at the beginning of the school year, August, 1997. At this time they were given a flyer (see appendix A), and procedures, group
assignment and training expectations were explained. Participants indicated their first, second, and third choice preference for training sessions. From this list, participants were grouped based on their position (school psychologists, consultants, social workers) and matched by team assignment. The intent was to balance the number of specific support personnel across conditions and, if possible, train teams of support personnel together. All participants received either their first or second choice for the training session.

Conditions

Participants were then assigned to one of three conditions: 1) one day training 2) ongoing (4 sessions) training with feedback over an 8-9 week period, or 3) wait control group. The control group received training after the first two groups' training was completed. The content of the workshop as well as the total presentation time of six hours was held constant in each condition. Group II and III consisted of four sessions over a nine week time period (approximately two weeks apart) with each session having 90 minutes of presentation and approximately thirty minutes allotted for feedback.

Participants

All participation in this study was voluntary. Fifteen of 38 (39%) eligible educational consultants, fifteen (100%) early childhood educational consultants, twenty-one of 39 (55%) eligible school psychologists, nineteen of 31 (65%) school social workers, employed by Heartland participated. First year school psychologists and educational consultants were not eligible for this training.

Eleven practitioners were male (16%) and 59 (84%) were female, proportions that are representative of Heartland's proportions of male (20%) and female (80%) support staff.
Seven percent held bachelor’s degrees, 30% held masters degrees, 63% held masters plus 30, or specialist degrees and/or had doctoral degrees.

Fifty-one percent (n = 36) of the practitioners indicated that they were participating in this study as part of their Phase III project. Phase III is an Iowa Department of Education program that provides performance based pay incentives to educators. Heartland’s Phase III plan is approved by the Iowa Department of Education, and encourages collegial learning with peer observations, conferences and feedback to assist practitioners to meet performance based goals that are related to a research based model.

Procedure

Training curricula were developed and written during Summer, 1997. The curriculum was based on *Functional assessment and program development for problem behavior: A practical handbook* (O’Neill, et al., 1997). Four modules were developed to cover key areas of functional behavioral assessment: 1) history, philosophy, background of functional analysis; behavior identification, use of the descriptive data techniques, rating scales, and preliminary interviews; 2) direct observation techniques, hypothesis development related to identifying the function of the behavior and diagramming the behavior; 3) interpreting data, revising hypotheses, and testing the hypotheses; and 4) building intervention plans, linking assessment data to intervention (matching function to treatment), report writing, and identifying a case study for practice (see Appendix B).

The three groups were compared before and after training using the following measures at the times specified in Figure 2. Each participant was asked to submit a case study by March 14, 1998, although case studies were accepted through the end of the school year, June 5, 1998.
Design

This study utilized a pretest - posttest design to compare a one-day training model with a training sequence involving four sessions with homework, practice, and feedback. In addition, a wait condition control group was included. The content of the training was held constant. Differences in treatment involved time between sessions to practice and implement assessment procedures in daily practice, and opportunities for feedback at the beginning of the next training session.

Independent and Dependent Variables

The independent variable was the model of training; a one-day model (Group I) versus a series of four sessions occurring over a 9 week time period with homework, practice, and feedback (Groups II and III).

Dependent variables consisted of practitioners’ (a) attitudes and acceptability of functional assessment procedures, (b) knowledge of functional assessment procedure; and
(c) application of functional assessment procedures. The dependent variables were assessed using pretest and posttest measures as described below. Further analyses were conducted to determine if relationships exist between demographic variables such as total years of experience, years of experience at Heartland, and the dependent measures. Case studies were turned in at a later follow-up date to assess actual use of the assessment procedures that were trained.

Measures

Acceptability Rating Profile (ARP)

This is a scale that was developed based on a modification of Martens, Witt, Elliott, & Darveaux, (1985) Intervention Rating Profile (IRP-15). The IRP-15 has 15 items and has yielded a Cronbach's alpha of .98. Items have been adapted to substitute the term, "functional assessment procedures" for "intervention" where appropriate and with wording changes as necessary to preserve meaning. A likert scale was used with a rating from strongly disagree to strongly agree. Items are scored from 1 to 6, with a higher score indicating a higher level of acceptability.

This modification of the IRP-15 has appeared in studies to assess the acceptability of academic measures such as curriculum based assessment (Shapiro & Eckert, 1994). Previous research examining the psychometric properties of the ARP has suggested that the ARP has overall adequate internal consistency (Cronbach's alpha = .94 to .96) (Eckert, Hintze, & Shapiro, 1997; Eckert, Shapiro, & Lutz, 1995; Shapiro & Eckert, 1994).

Practitioners were presented with a case study (Appendix C) describing the assessment procedures utilized, a copy of a calendar with meetings and observations scheduled, the interview summary, Motivation Assessment Scale results, behavioral
observation summary, and then asked to respond to the ARP. Cronbach's alpha was calculated to determine reliability for the sample in this study. The overall internal consistency based on the total sample pretest scores (n = 62), using Cronbach's coefficient alpha was .90. Across time 2 (posttest for groups 1, and 2, repeat pretest for group 3) and time 3 (posttest for group 3), coefficient alpha was .91 (n =57) and .90 (n = 18), respectively.

**Behavior Modification Attitude Scale (BMAS)**

The BMAS is a 20-item questionnaire developed by Musgrove (1974) to assess respondents' attitudes toward behavior modification. It uses a 5 point Likert scale format, ranging from strongly agree to strongly disagree. Items are scored from 1 to 5, with a higher score thus indicating a more positive attitude toward behavior modification. Participants' attitudes toward behavior modification should be a strong indicator of their attitudes toward functional assessment since both rely on the principles of applied behavior analysis. According to Kratochwill, et al. (1995) the internal consistency was not correctly calculated, so at this time the internal consistency of the scale is not known. While the sample size in Musgrove's study was adequate, he used the Kuder-Richardson formula, which is appropriate for a dichotomous format. However, the BMAS uses a likert scale format, thus Cronbach's alpha coefficient should have been used.

Cronbach's alpha coefficient was calculated on the sample used in this study to determine reliability. For consistency with the other likert scale used in this study, the BMAS was modified from a 5 point scale to a 6 point scale. The overall internal consistency of the BMAS based on pretest data for all groups (n=54), using Cronbach's coefficient alpha across participants, was .88. Based on data at time 2 (posttest for groups 1,
and 2, repeat of pretest for group 3) for all groups \((n=49)\), coefficient alpha was .87, and for
data at time 3 (group 3 posttest, \(n = 16\)) coefficient alpha was .75.

**Knowledge of Functional Behavioral Assessment Procedures (Knowledge)**

Participants were given a case study to review and a problem solving worksheet that
is consistent with Heartland's problem solving approach. The same case study was utilized
for the ARP and the Knowledge test. In addition, this test used a criterion referenced,
multiple response format of true-false, short answer and fill in the blank items. For each
correct response on the problem solving worksheet and the test, one point was given, for a
total possible 36 points. Scoring criteria were developed in advance (see Appendix C).

To examine the internal consistency of the Knowledge test, Cronbach's alpha was
calculated for the three times it was administered. At Time 1 which consisted of the pretest
data for the entire sample \((n = 69)\), coefficient alpha was .76. Coefficient alpha for time 2
(posttest data for groups 1, and 2, repeated pretest data for group 3) \((n = 61)\) was .85, and for
time 3 (posttest data for group 3) \((n = 16)\) \( .57 \). The reliability for time 3 is lower due to the
small sample size and the existence of seven items that did not have any observed variance.
That is they all were answered correctly by all participants.

**Final Case Study Report**

At the conclusion of training, practitioners were asked to submit a case study
wherein they had practiced and implemented the functional behavioral assessment
procedures covered in the training. The presence or absence of twelve components (see
Appendix D) was coded by simply noting whether they were present. Each component was
given one point, thus the possible score range was 0-12.
Case studies were also evaluated for inclusion of the specific methods of functional behavioral assessment and those quality indicators of interventions (Flugum & Reschly, 1994; Tilly & Flugum, 1995; Flugum-Upah, 1998) that were emphasized in the training (see Appendix D). The quality indices were coded by the researcher from the case studies submitted. Flugum-Upah's (1998) innovation configuration for intervention quality was modified to be consistent with the training presented and the following quality indicators were coded: (1) behavioral definition; (2) hypothesis statement; (3) functional direct observation; (4) test hypothesis; (5) problem analysis; (6) intervention plan; and (7) progress monitoring.

Data Analysis

Descriptive Analyses

Data analyses consisted of descriptive statistics and parametric examinations of group data. Frequencies and percentages were obtained for all items and means. Standard deviations and ranges were obtained for variables with continuous distributions.

Sample Demographics

The first set of analyses were descriptive data for demographic information, such as sex, years of experience at Heartland, years of experience in education, discipline, education level, and urban vs. rural assignment (see Appendix E). ANOVAs or chi-square statistics were calculated for a comparison of demographic variables, i.e., level of education and years of experience between groups.

Missing Data

Descriptive statistics revealed that data were missing for a number of variables. If an item was missing from a likert scale measure, the respondent’s mean item response for that
scale was calculated and then substituted for the missing item response, and then the total score was summed for the scale. On the ARP nine persons had missing items on the pretest for a total of 15 missing items. Four persons had missing items at Time 2, with four items missing. Nine persons had missing items on the BMAS pretest with a total of 19 missing items. At Time 2 there were 5 persons with missing items, for a total of 15 missing items. Lastly at Time 3, there were only 2 persons with 6 missing items in all. On the knowledge test, items left blank were assumed to indicate a lack of knowledge and were then coded as zero.

If respondents left entire measures blank, the group mean score was calculated and, then, substituted in order to increase the sample size for data analyses. Nine individuals failed to complete the ARP at Time 2. And at Time 3, there were three individuals with missing ARP measures. At Time 1, seven participants failed to complete the BMAS. Fourteen participants were missing BMAS measures at Time 2 and three participants were missing the BMAS at Time 3. One individual failed to complete the Knowledge test at Time 1, with nine and five individuals missing Knowledge at Time 2 and Time 3, respectively. Analyses were run using both sets of data, that is, with and without substitutions for missing values.

**Posttest Analyses**

**Repeated Measures ANOVA**

The repeated measures analysis of variance (ANOVA) statistical procedure was used to analyze practitioners’ posttest scores on the Acceptability Rating Profile (ARP) and Behavior Modification Attitude Scale (BMAS) from time 1 to time 2. Analyses also
compared models of training on practitioners' knowledge of functional behavioral assessment techniques (Knowledge) and procedures.

**Regression Analysis**

The hierarchical regression analysis procedure was utilized when significant results from the repeated measures ANOVA procedure were found to determine if the difference from pre to posttest was due to time or due to model of training.

**Case Studies Analyses**

Additional analyses were conducted to evaluate the effect of functional behavioral assessment training on case studies. Comparisons of the mean number of intervention quality indices (Flugum & Tilly, 1995; Flugum-Upah, 1998) and the total level of quality were made between training groups. One way analyses of variance (ANOVAs) were calculated for comparisons among groups. To evaluate the relationship between number of quality indicators present and overall quality of case studies with the other dependent measures (ARP, BMAS, Knowledge) Pearson correlation coefficient statistics were calculated. Finally, to compare mean post-test scores between those who completed case studies and those who did not, t-tests were calculated.

**Years of Experience**

Data on experience was collected in two ways; (a) total years of experience; and (b) years of experience at Heartland. Analyses were conducted to see if there was a relationship between experience and the dependent measures.
Hierarchical Regression

For the three posttest measures, ARP, BMAS, and Knowledge, hierarchical regression analyses were conducted to examine the influence of years of experience on posttest results.

Pearson Correlation Coefficient

The relationship between experience and total case study score and level of quality of case studies was evaluated using the Pearson correlation coefficient.
CHAPTER 4. RESULTS AND DISCUSSION

Results

The results will be organized to answer the research questions in the order in which they were presented. First, demographic information will be presented and examined for differences between groups. Pretest scores also will be compared between groups. Second, the effect of the training on acceptance, attitude and knowledge will be presented as evidenced by pretest and posttest measures. The case studies will be examined to evaluate the impact of the training on participants’ skills in their daily practice. Finally, practitioners’ years of experience will be examined to see if there is a relationship with posttest measures and case studies.

Pretest and Posttest Mean Scores

Table 1 shows the results from pretest to posttest for all groups with both the original mean scores and the scores generated through mean substitution for missing data (MS). All groups showed improvement from pretest to posttest. Time 1 indicates pretest for all groups, Time 2 indicates post test for Groups I and II, and repeat of pretest for Group III, and time 3 indicates post test for Group III.

As Table 1 demonstrates the use of mean substitution resulted in minimal, if any change in the mean scores. Therefore all cases were included in the analyses. Analyses were conducted using both the original summed scores and the summed scores with means substituted for missing values. Unless noted otherwise the results reported in the narrative will be based on the complete data using substitutions for missing values, but both results will be included in tables.
Table 1. Mean original score and mean substitution score on pretest and posttest measures across groups

<table>
<thead>
<tr>
<th></th>
<th>Time 1(n)</th>
<th>MS Time 1(n)</th>
<th>Time 2(n)</th>
<th>MS Time 2(n)</th>
<th>Time 3(n)</th>
<th>MS Time3(n)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ARP</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>87.86 (24)</td>
<td>87.86 (24)</td>
<td>96.35 (22)</td>
<td>96.35 (24)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>80.37 (25)</td>
<td>80.37 (25)</td>
<td>88.00 (19)</td>
<td>88.00 (25)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>88.61 (21)</td>
<td>88.61 (21)</td>
<td>87.55 (20)</td>
<td>87.55 (21)</td>
<td>95.11 (18)</td>
<td>95.11(21)</td>
</tr>
<tr>
<td><strong>BMAS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>93.94 (20)</td>
<td>93.95 (24)</td>
<td>97.10 (20)</td>
<td>97.10 (24)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>90.30 (25)</td>
<td>90.30 (25)</td>
<td>92.71 (18)</td>
<td>92.71 (25)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>93.79 (18)</td>
<td>93.79 (21)</td>
<td>93.39 (18)</td>
<td>93.39 (21)</td>
<td>97.38 (18)</td>
<td>97.38 (21)</td>
</tr>
<tr>
<td><strong>Knowledge</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>19.30 (23)</td>
<td>19.30 (24)</td>
<td>27.67 (21)</td>
<td>27.67 (24)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>19.68 (25)</td>
<td>19.68 (25)</td>
<td>27.20 (20)</td>
<td>27.20 (25)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>17.67 (21)</td>
<td>17.67 (21)</td>
<td>18.40 (20)</td>
<td>18.40 (21)</td>
<td>28.06 (16)</td>
<td>28.06 (21)</td>
</tr>
</tbody>
</table>

*aTime 1 refers to pretest administration for all groups, Time 2 refers to posttest for groups I and II, repeat of pretest for group III, and Time 3 refers to posttest for group III.

*ARP, BMAS, and Knowledge mean test scores are by Group I, Group II, and Group III.

**Equivalency of Groups**

**Demographic Analyses**

In order to examine if groups were equivalent before training, chi-square analyses were conducted on nominal demographic data. The results indicated no significant
differences by discipline, gender, degree, rural assignment, elementary vs. secondary assignment, or Phase III participation. Urban assignment was the only area where significant differences were found with 61% (group I), 78% (group II) and 33% (group III) indicating yes, chi-square = 9.10, p < .01. It is highly unlikely that this variable influenced the results. Although fewer practitioners in group III were assigned to an urban geographical area, the literature does not support either a positive or negative response to this kind of training due to urban vs. rural assignment. It is also important to note that Group III served as the control group.

One-way analyses of variance (ANOVAs) were conducted on the demographic variables, years in education and years employed by Heartland. Results did not indicate differences between the three groups for either years in education $F(2,67) = .102, p > .05$ or years employed by Heartland $F(2,67) = .265, p > .05$.

Pretest Measures

Groups were also compared on pretest measures using ANOVA (see Table 2). For the Acceptability (ARP) pretest, significant differences were found between groups $F(2,67) = 4.25, p < .05$. Post-hoc analysis using Tukey-B's test indicated that group II mean ARP score was significantly lower than group III and I.

ANOVA results comparing groups on their BMAS pretest scores as well as the Knowledge scores were not significant, $F(2,67) = 1.141, p > .05$ (BMAS), $F(2,67) = 1.211, p > .05$ (Knowledge). These analyses suggest that the groups were comparable on their pretest knowledge of functional behavioral assessment procedures, and in their attitude towards behavior modification.
Table 2. Mean score on pretest measures across groups with both original mean score and mean substitution scores (MS)

<table>
<thead>
<tr>
<th>Pretest</th>
<th>Group</th>
<th>Mean Score(MS)</th>
<th>F</th>
<th>Post-Hoc&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARP</td>
<td>I (n = 24)</td>
<td>87.86 (87.86)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>II (n = 25)</td>
<td>80.37 (80.37)</td>
<td>4.249*</td>
<td>III &amp; I &gt; II</td>
</tr>
<tr>
<td></td>
<td>III (n = 21)</td>
<td>88.61 (88.61)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMAS</td>
<td>I (n = 20)</td>
<td>93.94 (93.95)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>II (n = 25)</td>
<td>90.30 (90.30)</td>
<td>.958</td>
<td>(1.141)</td>
</tr>
<tr>
<td></td>
<td>III (n = 18)</td>
<td>93.79 (93.79)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge</td>
<td>I (n = 23)</td>
<td>19.30 (19.30)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>II (n = 25)</td>
<td>19.68 (19.68)</td>
<td>1.190</td>
<td>(1.211)</td>
</tr>
<tr>
<td></td>
<td>III (n = 21)</td>
<td>17.67 (17.67)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>Tukey-B’s test

*<sup>p</sup> < .05

**Comparison Between Groups**

The next set of analyses was done to examine the effect of training and to determine if there was a difference between Group I (all day training) and Group II (four sessions).

Posttest comparisons between groups were conducted using repeated measures ANOVA. This procedure analyzes groups of related dependent variables while controlling differences between groups, such as the differences in ARP mean scores, as well as the use of repeated measures with pre and post testing. Results will be presented separately for each dependent variable.
Acceptability (ARP)

Repeated measures ANOVA uses the analysis of variance procedure to test for significance at time 1 and time 2 between groups, adjusting for group differences at time 1. Significant differences for ARP were found, $F(2,67) = 6.03, p < .01$. The next analysis tests for significance at time 2, but does not separate the group from time effect when testing. Significant results were obtained for the interaction of group by time, $F(2,67) = 4.90, p = .01$, indicating that changes in ARP scores from time 1 to time 2 were significant.

To further test if there are significant differences due to model of training (group I vs. group II), a hierarchical regression procedure was used. Regression analyses were conducted with a priori contrasts to examine if differences in the dependent variables between time 1 and time 2 were influenced by model of training. In order to control for preexisting group differences, pretest scores were entered in block one, the group variable was entered in block 2, and pretest by group interaction in block 3. For the dependent variable of acceptability, both interaction terms for pretest by group 1, and pretest by group 2 were significant at the .05 level, producing a multiple $R = .365, p < .05$. This result indicates that both groups' ARP scores increased significantly from time 1 to time 2 as a result of the training, but that there was not a difference in scores due to model of training, that is, there were no differences found between the one day inservice group versus the four session inservice group acceptability ratings.

BMAS

In order to evaluate the difference in BMAS scores from time 1 to time 2 the repeated measures ANOVA procedure was again utilized in order to control for pretest scores. At time 1 there were no significant differences between groups, $F(2,67) = 1.53, p >
The interaction of group and time at time 2 did not produce any significant differences, $F(2,67) = 1.33, p > .05$, therefore regression analysis was not necessary. This means that training model had no effect on attitudes towards behavior modification procedures.

**Knowledge**

The first level of the repeated measures ANOVA tests for differences between groups at time 1. For knowledge significant differences were found between groups at time 1 (pretest), $F(2,67) = 15.52, p < .001$. The repeated measures ANOVA then controls for pretest scores to evaluate posttest results at time 2. The results from time 2 are significant for the interaction effect of group and time, $F(2,67) = 21.56, p < .001$. A hierarchical regression analysis was conducted next to examine the effects of group and time separately. The results indicate that there are no significant differences in knowledge scores at time 2 due to group. Group I by knowledge interaction and group II by knowledge interaction produced a multiple $R = .659, p > .05$.

These results indicate that significant differences on ARP and Knowledge were obtained between time 1 and time 2. These differences appear to be due to training in functional behavioral assessment; however, model of training had no effect. It apparently made no difference how the training was provided, in a single session or over four sessions. No differences were apparent on the BMAS due to time or model of training.

**Case Studies**

**Phase III**

Participants were asked to complete a case study using the functional behavioral assessment procedures from the training. Fifty-one percent of the practitioners in the study also participated in Phase III. The chi-square statistic was calculated to examine the
relationship between case study return rate and Phase III participation, $x^2 = 5.803$, $p < .05$. This indicates that Phase III incentives were significant in practitioners’ completion of case studies.

**Presence of Indicators**

Thirty-three of 70 participants (47%) turned in case studies. Twelve indicators of functional behavioral assessment were identified based on the training and a modification of Flugum-Upah’s (1998) quality indicators of interventions. The first step in the coding process was to indicate a yes or no to the presence of the indicators. The number of “yes” codes was summed to obtain a total number present (0-12). Table 3 presents the percentage (of the 33 case studies) of quality indicators by group. Three case studies (9%) had all 12 quality indicators present. All case studies included a behavioral definition, and over 80% identified antecedents and functions, as well as completing a functional observation and problem analysis. However it is disappointing to note that less than half test their hypothesis or showed evidence of progress monitoring.

Only three of the seven indicators – behavioral definition, functional observation, and problem analysis – obtained ratings of 3.00 or above across all three groups. Thus, considerable room for better implementation existed on most of the quality indicators.

**Level of Quality**

The next step in coding the case studies involved developing innovation configurations for coding the level of quality for seven of the twelve indicators. Each indicator was then coded for quality from 1 to 5 (1 indicating not present while 5 indicating complete implementation). The ranking of each quality indicator for the case study was then
Table 3. Percentage of quality indicators present across groups

<table>
<thead>
<tr>
<th>Quality Indicators</th>
<th>Group I (n = 13)</th>
<th>Group II (n = 10)</th>
<th>Group III (n = 10)</th>
<th>Total (n = 33)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview</td>
<td>69%</td>
<td>70%</td>
<td>70%</td>
<td>70%</td>
</tr>
<tr>
<td>MAS</td>
<td>62%</td>
<td>90%</td>
<td>70%</td>
<td>73%</td>
</tr>
<tr>
<td>Behavioral Definition</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Predictor/Antecedent</td>
<td>92%</td>
<td>90%</td>
<td>80%</td>
<td>88%</td>
</tr>
<tr>
<td>Consequence/Function</td>
<td>92%</td>
<td>90%</td>
<td>90%</td>
<td>91%</td>
</tr>
<tr>
<td>Hypothesis</td>
<td>92%</td>
<td>40%</td>
<td>80%</td>
<td>73%</td>
</tr>
<tr>
<td>Functional Observation</td>
<td>85%</td>
<td>90%</td>
<td>80%</td>
<td>85%</td>
</tr>
<tr>
<td>Problem Behavior Diagram</td>
<td>54%</td>
<td>70%</td>
<td>50%</td>
<td>58%</td>
</tr>
<tr>
<td>Test Hypothesis</td>
<td>46%</td>
<td>30%</td>
<td>10%</td>
<td>30%</td>
</tr>
<tr>
<td>Problem Analysis</td>
<td>100%</td>
<td>90%</td>
<td>70%</td>
<td>88%</td>
</tr>
<tr>
<td>Intervention Plan</td>
<td>100%</td>
<td>40%</td>
<td>40%</td>
<td>64%</td>
</tr>
<tr>
<td>Progress Monitoring</td>
<td>54%</td>
<td>50%</td>
<td>10%</td>
<td>39%</td>
</tr>
</tbody>
</table>

totaled to obtain a total quality score (7 to 35). Mean levels of quality for each indicator by group are presented in Table 4.

Case Study Comparisons

One-way analysis of variance was used to evaluate differences between groups for both the total case study (TCS) score and the total level of quality (TQCS) indicators score. Tables 5 and 6 present mean TCS and mean TQCS by group and ANOVA results. Results for the TCS were not significant $F(2,30) = 1.635, p > .05$, nor were they significant for the
Table 4. Mean level of quality indicators across groups

<table>
<thead>
<tr>
<th>Quality Indicators</th>
<th>Group I (n = 13)</th>
<th>Group II (n = 10)</th>
<th>Group III (n = 10)</th>
<th>Total (n = 33)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral Definition</td>
<td>3.85</td>
<td>3.50</td>
<td>3.60</td>
<td>3.67</td>
</tr>
<tr>
<td>Hypothesis</td>
<td>4.00</td>
<td>2.40</td>
<td>3.70</td>
<td>3.42</td>
</tr>
<tr>
<td>Functional Observation</td>
<td>3.38</td>
<td>4.00</td>
<td>3.10</td>
<td>3.48</td>
</tr>
<tr>
<td>Test Hypothesis</td>
<td>2.31</td>
<td>1.70</td>
<td>1.30</td>
<td>1.82</td>
</tr>
<tr>
<td>Problem Analysis</td>
<td>4.08</td>
<td>3.00</td>
<td>3.10</td>
<td>3.45</td>
</tr>
<tr>
<td>Intervention Plan</td>
<td>2.31</td>
<td>2.20</td>
<td>1.90</td>
<td>2.52</td>
</tr>
<tr>
<td>Progress Monitoring</td>
<td>1.25</td>
<td>2.00</td>
<td>1.40</td>
<td>1.94</td>
</tr>
</tbody>
</table>

Table 5. Mean total number of indicators present (TCS) by group and ANOVA results

<table>
<thead>
<tr>
<th></th>
<th>Mean TCS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I</td>
<td>9.46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group II</td>
<td>8.50</td>
<td>1.635</td>
<td>.212</td>
</tr>
<tr>
<td>Group III</td>
<td>7.50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 6. Mean total level of quality indicators present (TQCS) by group and ANOVA results

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean TOCS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I</td>
<td>23.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group II</td>
<td>18.80</td>
<td>2.72</td>
<td>.082</td>
</tr>
<tr>
<td>Group III</td>
<td>18.10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TQCS F (2,30) = 2.722, p > .05. This means that there were no differences due to model of training for the number of functional behavioral assessment components included, or the level of quality of the case studies.

Relation Between Case Studies and Post Tests

Pearson’s R correlations were calculated to examine the relation between the number of indicators present in case studies (TCS) and the total level of quality (TQCS) with the dependent measures of acceptability (ARP), attitude (BMAS), and knowledge of functional behavioral assessment (Knowledge). Results reported in Table 7 were calculated using post-test scores from those practitioners who turned in a case study (n = 33). Results reported in Table 8 were calculated using post-test scores from all practitioners (n = 70). There were no significant correlations found in either group. These results suggest that there is not a relation between scores on measures of acceptability, attitude and knowledge and quality of case studies. Other variables not included in this study apparently influenced the case studies.
Table 7. Pearson’s R correlations between TCS, TQCS, ARP, BMAS, and Knowledge for case study sample

<table>
<thead>
<tr>
<th></th>
<th>TCS</th>
<th>TQCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARP</td>
<td>.219</td>
<td>.244</td>
</tr>
<tr>
<td>BMAS</td>
<td>.229</td>
<td>.167</td>
</tr>
<tr>
<td>Knowledge</td>
<td>.129</td>
<td>.090</td>
</tr>
</tbody>
</table>

Table 8. Pearson’s R correlations between TCS, TQCS, ARP, BMAS, and Knowledge for total sample

<table>
<thead>
<tr>
<th></th>
<th>TCS</th>
<th>TQCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARP</td>
<td>.187</td>
<td>.193</td>
</tr>
<tr>
<td>BMAS</td>
<td>.196</td>
<td>.177</td>
</tr>
<tr>
<td>Knowledge</td>
<td>.055</td>
<td>.042</td>
</tr>
</tbody>
</table>
To further examine relationships between the posttest measures, ARP, BMAS, and Knowledge, simple comparisons were done between practitioners who completed a case study and those who did not. Results are reported in Table 9. This means that those practitioners who completed a case study did not obtain different scores on the dependent measures when compared to those practitioners who did not complete a case study. Scores on the dependent measures do not appear to have had any influence in practitioners' completing a case study.

Table 9. Comparison of posttest scores across case study and no case study groups with original summed scores and mean substitution summed scores (MS)

<table>
<thead>
<tr>
<th></th>
<th>No Case Study(n)</th>
<th>Case Study(n)</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARP MS</td>
<td>92.355 (37)</td>
<td>94.3217 (33)</td>
<td>-1.005</td>
</tr>
<tr>
<td></td>
<td>92.0997 (29)</td>
<td>94.4257 (29)</td>
<td>-1.002</td>
</tr>
<tr>
<td>BMAS MS</td>
<td>94.7665 (37)</td>
<td>96.5911 (33)</td>
<td>-1.024</td>
</tr>
<tr>
<td></td>
<td>94.3536 (25)</td>
<td>96.7241 (29)</td>
<td>-1.023</td>
</tr>
<tr>
<td>Knowledge MS</td>
<td>27.5998 (37)</td>
<td>27.7044 (33)</td>
<td>-0.127</td>
</tr>
<tr>
<td></td>
<td>27.5862 (29)</td>
<td>27.7143 (30)</td>
<td>-0.127</td>
</tr>
</tbody>
</table>
Years of Experience

Relationship with Posttest Measures

Hierarchical regression analyses were conducted to evaluate if there was a significant relationship between years of experience and the three dependent measures for acceptability, attitude, and knowledge. In this study years of experience was coded separately for total years of experience (Yrs/Exp) and years of experience at Heartland (Yrs/AEA).

Table 10. Mean years of experience and mean years of experience at Heartland by group

<table>
<thead>
<tr>
<th>Group</th>
<th>Yrs/Exp</th>
<th>Yrs/Heartland</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>12.25</td>
<td>7.54</td>
</tr>
<tr>
<td>II</td>
<td>13.24</td>
<td>8.32</td>
</tr>
<tr>
<td>III</td>
<td>12.48</td>
<td>6.95</td>
</tr>
</tbody>
</table>

Results will be reported for both variables. Pretest scores and years of experience were entered in the same block for the analyses. Neither years of experience or years at Heartland were significant in predicting posttest scores for any of the measures. This means that years of experience or years at Heartland did not influence posttest scores in this study. Results are summarized in Table 11 for all three post-test measures.
Table 11. Repeated measures ANOVA results for relation with post-test scores and years of experience and years of experience at Heartland

<table>
<thead>
<tr>
<th>Yrs/Exp</th>
<th>Beta</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARP</td>
<td>-.601</td>
<td>-.518</td>
<td>.606</td>
</tr>
<tr>
<td>ARP (MS)</td>
<td>-.657</td>
<td>-.607</td>
<td>.546</td>
</tr>
<tr>
<td>BMAS</td>
<td>-.432</td>
<td>-.465</td>
<td>.644</td>
</tr>
<tr>
<td>BMAS (MS)</td>
<td>-.173</td>
<td>-.216</td>
<td>.830</td>
</tr>
<tr>
<td>Knowledge</td>
<td>-.403</td>
<td>-.572</td>
<td>.570</td>
</tr>
<tr>
<td>Knowledge (MS)</td>
<td>-.492</td>
<td>-.760</td>
<td>.450</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Yrs/Heartland</th>
<th>Beta</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARP</td>
<td>-.468</td>
<td>-.395</td>
<td>.694</td>
</tr>
<tr>
<td>ARP (MS)</td>
<td>-.331</td>
<td>-.302</td>
<td>.763</td>
</tr>
<tr>
<td>BMAS</td>
<td>.346</td>
<td>.383</td>
<td>.703</td>
</tr>
<tr>
<td>BMAS (MS)</td>
<td>.527</td>
<td>.659</td>
<td>.512</td>
</tr>
<tr>
<td>Knowledge</td>
<td>-.579</td>
<td>-.861</td>
<td>.393</td>
</tr>
<tr>
<td>Knowledge (MS)</td>
<td>-.526</td>
<td>-.840</td>
<td>.404</td>
</tr>
</tbody>
</table>
Relationship with Case Studies

Pearson R correlations were conducted to examine if there was a relationship between years of experience and case study total scores and level of quality of case studies. Based on the results of the correlations, there was no significant relationship (see Table 12) between years of experience and case studies, meaning that years of experience was not a positive or negative influence in completing case studies or their level of quality (or lack thereof).

Table 12. Pearson correlations for total case study score (TCS) and level of quality for case studies (QCS)

<table>
<thead>
<tr>
<th></th>
<th>TCS</th>
<th>QCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yrs/Exp</td>
<td>.092</td>
<td>.042</td>
</tr>
<tr>
<td>Yrs/AEA</td>
<td>-.238</td>
<td>-.254</td>
</tr>
</tbody>
</table>

Discussion

The reauthorization of IDEA requires school districts to conduct functional behavioral assessments and develop positive behavioral intervention plans for students demonstrating behavioral difficulties. The Iowa Bureau of Special Education has identified school discipline as the most serious problem faced by educators (1994). Concurrently, school districts are facing growing expectations to include all students; however, many support staff do not have the training or resources to implement effective interventions for students with severe behavior difficulties.
Maintaining, improving, and updating professional competencies are universally recognized goals in education. Yet most current continuing education efforts can be characterized as “train and hope” because actual supervised practice with feedback in implementation of new skills is not provided (Reschly & Ysseldyke, 1995). Showers, Joyce and Bennett (1987) concluded after a comprehensive literature review that the most effective staff development efforts not only provided information, but also provided opportunities for practice and feedback. Guskey (1985) also pointed out educators’ attitudes toward new practices often change after they have seen positive student outcomes.

This suggests that staff development should teach only well-documented, effective techniques, with supervised practice included to insure successful outcomes for both teachers and students. Research has also shown that one-shot inservices are rarely as effective as ongoing staff development efforts (Green, 1995). Green (1995) states that one session efforts usually fail because they cannot provide for the need for practice and feedback necessary so that new techniques are incorporated into staff’s everyday practice.

Currently, the use of functional analysis for the assessment of severe behavior problems is considered a best practice in the area of developmental disabilities (NIH, 1989). In addition, recent research indicates that functional behavioral assessment procedures may be useful in developing effective interventions for students with behavioral difficulties (Vollmer & Northup, 1996).

This study compared and evaluated two staff development models for training support staff to use functional assessment procedures in the schools. Although the staff development literature emphasizes the importance of ongoing staff development with opportunities for practice and feedback, the majority of this research has been conducted
with teachers, and not support services providers, such as school psychologists, educational consultants and school social workers. Thus, this study compared a one-day inservice model with a four session model (with time between sessions for staff to practice procedures).

Again, while the importance of commitment and attitude toward training has been emphasized in the literature, the majority of studies have also focused on teachers. With the exception of RE-AIM (Reschly & Grimes, 1991), there is little in the research literature that examines support staff attitudes or acceptance toward innovations. The role of acceptance has primarily been explored in response to behavioral interventions with teachers and parents as consumers. Research in treatment acceptability for teachers indicates an inverse relationship between years of experience and acceptability (Elliott, 1988; Witt, Moe, Gutkin & Andrews, 1984). There is little empirical literature regarding the acceptance of professionals’ assessment practices by current practitioners. Thus, this study also examined support staff attitude and acceptance of functional behavioral assessment procedures.

In order to assess if this training affected practitioners’ skills, both knowledge and actual implementation through a case study were evaluated. The true test of staff development is not only that participants gain additional knowledge, but that they actually use the knowledge and skills in their daily practice. Actual use should lead to improved student outcomes; the ultimate goal of staff development. Pretests and posttests, along with case studies were utilized to examine these issues, with a focus on comparing the two models of staff development.

**Group Comparison**

All groups showed improvement from pretest to posttest on the measures of acceptability, attitude and knowledge. Acceptability ratings of functional assessment
procedures increased significantly from pre to post test; however, there were no differences between model of training.

Ratings on the behavior modification attitude scale did not change significantly from pre to post test for either group. The mean pretest score ranged from 90.30 to 93.94, while the mean posttest score ranged from 92.71 to 97.10. The top score possible was 120. This indicates that individuals started the training with high positive attitudes toward behavior modification, and there simply may not have been room to increase on this rating scale. Scores on the knowledge pre and post test also increased significantly as a result of training, but again there were no differences found due to model of training.

**Case Studies**

Model of training did not affect completion of a case study or the quality of the case study; there were no differences between the training groups. Practitioners had the option of participating in Phase III, a performance based incentive program, implemented by the State of Iowa Department of Education. Forty-seven percent of the practitioners turned in case studies, thirty-one percent of those also participated in Phase III. Only 16% of the practitioners who did not participate in Phase III completed a case study. Incentives appeared to be a significant factor in completion of a case study.

The following quality indicators were present in at least 80% of the case studies: behavioral definition (100%), antecedent (88%), function (91%), direct observation (85%), and problem analysis (88%). This covers four of the five outcomes of a functional analysis as identified by Horner, et al. (1997). The fifth outcome was developing a hypothesis. Two of the three groups were at 80% or above for hypothesis, but the overall percentage was lower.
In addition, there did not appear to be any significant relations between posttest scores on the dependent variables and completion of a case study or quality of the case study. The use of incentives (Phase III) is the only variable identified in this study as significant in practitioners’ completion of a case study.

**Years of Experience**

Years of experience was evaluated at two levels in this study; overall years of experience and years of experience at Heartland. These variables were examined in relationship to posttest measures and to total case study score and level of quality of case studies. No significant relationships were found. This means that total years of experience as well as years at Heartland did not influence the posttest measures or case studies.
CHAPTER 5. CONCLUSIONS

There is an increasing need to address behavioral issues in the public schools. School districts are facing growing expectations to include all students, yet many school and support staff do not have the training or resources to implement effective interventions, especially for students with histories of aggression, self injury and property destruction (O’Neill, et al., 1993).

Functional Behavioral Assessment

The use of functional behavioral assessment to reduce the challenging behaviors of individuals with developmental disabilities is well documented in the literature (Mace, Lalli, & Lalli, 1991; Carr, 1977; Carr & Durand, 1985; Iwata, et al., 1982). The majority of the studies that rely on functional behavioral assessment have focused on challenging behaviors with relatively few reported on students of average intelligence with emotional/behavioral disorders (Gable, 1996; Broussard & Northup, 1995). Recently, there has been an increased interest in examining the use of functional behavioral assessment and treatment in the schools. These studies have relied on a technical assistance model or the use of an expert consultant (Northup, et al., 1993; O’Neill, et al., 1993; McEvoy, et al., 1993). These studies have demonstrated the effective use of functional assessment and analysis, and subsequently effective treatment outcomes for the students involved. Many of these studies have used teachers and/or parents to assist with data collection and the functional analysis. Results are often reported in a single case study design reporting data on the child’s challenging behavior. This research base is promising in indicating that functional assessments can occur in the school settings. However, the missing component is what happens after the
study, when the technical assistance team or expert consultant (from the university) is no longer available.

Nationally, there is a call for regular and special education reform that links assessment, intervention, and improved student outcomes (Reschly & Ysseldyke, 1995). At this same time, the reauthorization of IDEA calls for functional behavioral assessments and behavioral intervention plans for students with behavioral disabilities, following suspensions, and preceding expulsions. For these reasons, functional behavioral assessment and analysis has become an increasing popular topic in the professional literature.

The existing research literature supports the need to carefully identify the environmental antecedents and consequences that motivate a child to exhibit challenging behavior. Functional behavioral assessment provides a direct link between assessment and intervention, promoting a hypothesis driven intervention plan. According to Karsh, et al. (1995), the value of functional assessment rests on the assumption that treatment effectiveness increases if the treatment matches the function of the behavior. In addition, an emphasis is placed on identifying replacement behaviors, promoting skill development and increasing alternative, appropriate behaviors that obtain the same function as the inappropriate behavior.

The half-life of a school psychologist’s training has been estimated as ranging from 3 to 5 years (Hynd et al., 1981) and there is no reason to believe this would not be true for other support staff as well. Therefore, given the increasing demand on educators to deal with difficult students, the new requirements of IDEA (1997), and the promising technology of functional behavioral assessment, support staff trained in functional behavioral
assessment is a necessity. Many support staff do not have the training to implement interventions that are effective for these students (O’Neill, et al., 1993).

**System Reform**

Iowa has a history of implementing and evaluating educational reform efforts, most recently with the Renewed Service Delivery System (RSDS) (Tilly, Grimes, & Reschly, 1993). As part of this reform effort, Heartland has implemented a problem-solving model for special education service delivery. Since 1991, Heartland has provided staff and teachers with training in consultation, collaboration, systematic progress monitoring, building assistance teaming, and implementing quality interventions. However, it has become clear that staff development efforts need to address educator’s concerns regarding more effective interventions for supporting students with behavior problems in the schools.

With this foundation in place, “Hypothesis Based Functional Assessment” training was offered to the Heartland support staff (school psychologists, special education consultants, and school social workers). Since most continuing education efforts can be characterized as “train and hope” where opportunities for practice and feedback are rarely provided, this training attempted to incorporate those factors identified in the literature as necessary for effective continuing education that leads to actual changes in practice. Most of these factors have been identified from the literature on teacher continuing education efforts, as research on the evaluation of support personnel continuing education efforts is very limited.

**Continuing Education**

In a comprehensive review of the literature on staff development, Showers et al., (1987) concluded that the most effective training involved not only the presentation of
information, but also provided opportunities for practice and feedback. Further, Reschly & Grimes (1991) in evaluating RE-AIM (a state-wide continuing education effort) stated that positive attitudes and beliefs did not always accompany action. Guskey (1985) states that practitioners' attitudes often do not change until they see the strategies being learned actually work. We also know from the treatment acceptability literature that there can be an inverse relationship between teachers' years of experience and acceptability. Again this is based on teacher research, and applies to intervention practices, not assessment practices. It is not known if this is a factor in assessment practices for support staff. Finally, the importance of administrative support and incentives for change cannot be overlooked (Reschly & Grimes, 1991).

**Current Study**

This study evaluated and compared two models of continuing education in functional behavioral assessment for support personnel. A one day inservice model was compared with four sessions provided over approximately eight weeks with opportunities for practice and feedback. Areas evaluated consisted of acceptability of functional behavioral assessment procedures, attitude towards behavior modification and knowledge of functional assessment. In addition, practitioners completed a case study and submitted it to be evaluated for components included and level of quality as evidence of their application of skills learned.

**Posttest Comparison by Group**

All groups showed improvement from pretest to posttest on the measures of acceptability, attitude and knowledge. Both acceptability ratings of functional assessment procedures and scores on the knowledge posttest increased significantly from pre to post
test; however, there were no differences between model of training. Ratings on the behavior modification attitude scale did not change significantly from pre to post test for either group.

**Case Studies**

Model of training did not affect completion of a case study or the quality of the case study; there were no differences between groups. The practitioners who participated in Phase III, a performance based incentive program, were twice as likely to complete and turn in a case study (22 vs. 11). Incentives appeared to be a significant factor in completion of a case study.

The following quality indicators were present in at least 80% of the case studies: behavioral definition, antecedent, function, direct observation, and problem analysis. This covers four of the five outcomes of a functional analysis as identified by Horner, et al. (1997). The fifth outcome was developing a hypothesis. Two of the three groups were at 80% or above for hypothesis, but the overall percentage was lower.

In addition, there did not appear to be any significant relations between posttest scores and completion of a case study or quality of the case study.

**Experience**

Research in treatment acceptability for teachers indicates an inverse relationship between years of experience and acceptability (Elliott, 1988; Witt, Moe, Gutkin & Andrews, 1984). There is little empirical literature regarding the acceptance of professionals’ assessment practices by current practitioners. This study examined the relationship of total years of experience as well as years of experience at Heartland to see if there was an influence on the dependent measures. Elliott’s (1988) and Witt et al.’s (1984) findings for teachers regarding intervention acceptability suggested that practitioners with more
experience might be more resistant to change. This was not found in this study. Again, conclusions are somewhat limited by the initial high ratings on the acceptability and attitude measures, and the fact that all participation was voluntary. It is also possible that given Heartland's problem solving model, practitioners at this point in time are more accepting of procedures that are focused toward linking assessment to intervention.

**Limitations of the Study**

It was expected that there would be a difference between groups; with the four session group performing at a higher level when compared to the one day inservice group. These results did not support that expectation. There may be several reasons why this study did not find the expected results.

**Sample and Measurement Issues**

Groups were made up of practitioners with different backgrounds and experiences. It is possible that there were differences between groups that were not controlled. Assignment of subjects to group was not random. Practitioners indicated their preference for first, second or third group, and in some cases attended with their teammates. Practitioners who received training with teammates may have produced differences that were not accounted for statistically. This may be an area to examine in the future. The advantages to team training seem obvious. During the training, teammates can use actual cases for the practice exercises. After the training, teammates can collaborate and support each other as they implement their new skills.

Further, the measures used in this study may not have had enough ceiling. Scores on pretest measures for both acceptability and attitude were initially very positive. This may be due to the fact that Heartland has been implementing problem solving practices since
1991, and practitioners have had many opportunities for training to increase their competencies in functionally based assessments and developing interventions.

**Training Integrity**

Another concern is the treatment integrity of the training between the two groups. The training curriculum was developed in advance and both groups received the same curriculum. However, the four session group was given “homework” at the end of each session. There was not a formal measure of how many practitioners actually completed the homework between sessions. Thus, while they had the opportunity to practice, actual amount of practice was not monitored. Time between sessions may have been time when functional behavioral assessment was forgotten or at least not used or practiced. This would suggest that higher scores from the one day inservice may be due to recency effects.

**Case Studies**

Case studies were evaluated after completion of the training. No baseline data were gathered. It is possible that if practitioners had been asked to submit a behavioral case prior to the study, that differences after training may have been noticed. Another factor is the poor return rate. Differences may have been noted if the sample had been larger. Although supervisors endorsed the training and completion of a case study, the performance based pay incentive (Phase III) was key to the completion of cases. This suggests that in both practice and research, the role of incentives cannot be overlooked. Researchers and supervisors should examine the current incentives available to practitioners, and consider what incentives they can offer, particularly when asking individuals to incorporate new procedures and implement new skills in their practice. Although Phase III resulted in a monetary payment, there may be other incentives to encourage practitioners as they change
their behavior. Some possibilities may be incorporating functional behavioral assessment competencies as part of performance reviews, and adjusting practitioners' case load to recognize the increased time needed to implement functional behavioral assessments. The use of peer reviews might also encourage practitioners to utilize best practice techniques, while also providing support and feedback as they practice new skills.

The Phase III process does provide for coaching and feedback conferences, so those participants did interact with a peer partner to receive feedback on their case study. However, given that practitioners picked the case study to submit, it is somewhat disappointing that the quality was not higher. It is possible that the quality was higher, and that practitioners just did not turn in appropriate documentation. As this was a voluntary training, all materials and procedures demonstrated were suggested as helpful to complete a functional behavioral assessment, but they were not mandatory, nor was a specific problem solving protocol mandatory. Practitioners were asked to submit a case study and evidence of what procedures from the training they utilized.

**Practitioner Concerns**

Anecdotal comments and concerns expressed by many of the practitioners addressed the amount of time functional behavioral procedures require. Another common question was if every procedure was necessary before developing an intervention. It is possible that if a team approach was utilized, the time element may not be as significant a concern. Further training, especially including teachers, may also be beneficial.

**Conclusion**

The results of this study indicated that the training in functional behavioral assessment was effective. Although the results of this study did not support differences in
the training model, it is still believed that ongoing staff development is more effective than one-shot inservice. As stated previously, Heartland has engaged in a problem solving model of assessment for several years, and has provided staff development on a variety of related topics; e.g., progress monitoring, collaboration, problem solving and building assistance teams, and best practices in interventions. It is possible that this training is more accurately viewed as one topic in a series of topics, and therefore when examined in isolation the results are not consistent with the staff development research base. This study also examined conclusions from research on teachers and staff development, and extended that research to support staff and staff development.

It may be that additional follow up would yield differences or the measures utilized did not demonstrate the differences. All groups responded to a questionnaire regarding follow-up, and only three individuals indicated no interest in follow up activities.

It is also important to note that while functional behavioral assessment practices are not common in the schools, neither are they unheard of. Thus, these results may reflect Heartland’s practitioners and their acceptance of problem solving, and functional behavioral assessment procedures which extend skills they may already possess. It is important, then, to not generalize these results to all staff development efforts, but to frame them within the existing research base, keeping in mind the unique characteristics of the study sample.

Evaluation of staff development also may need to occur at longer intervals in order to effectively judge if change has occurred. The importance of administrative support and expectation of competencies cannot be overlooked. Supervisors at Heartland are planning for additional training; this time making it mandatory for those who did not attend
voluntarily. Perhaps one of the most important findings from this study is the verification of
the key role of incentives in promoting change in professionals' practice.

Although not directly examined, this study provided further support for the use of
functional behavioral assessment practices in the schools and extends their use beyond the
developmentally disabled to students of a variety of ages and abilities. And finally, this
study illustrates that it is not sufficient merely to offer the content, but it is equally important
to evaluate staff development efforts to determine their effectiveness.
APPENDIX A

TRAINING FLYER AND REGISTRATION

PHASE III INFORMATION
A.1 Training flyer and registration

USING "HYPOTHESIS BASED FUNCTIONAL ANALYSIS" to DEVELOP EFFECTIVE, INDIVIDUALIZED INTERVENTIONS for CHALLENGING BEHAVIORS

Training in "hypothesis-based functional analysis" will be offered this fall through Special Projects as part of Heartland's ongoing training and research efforts. This training will teach you to use a structured interview, rating checklists, and direct observation methods to determine the "function" of the child's behavior, and then, to link your assessment results to your intervention plan.

As this is part of a research project you will be expected to complete the following as part of your participation:
1. attend all training sessions
2. pretests and posttests - done during training sessions
3. homework assignments - practicing the techniques taught
4. complete one case study by March 15, 1998.

What's in it for you?
Functional analysis and assessment methods will assist you in your problem analysis for intervention development in Heartland's Problem Solving Approach. If interventions are matched to the "function" of the behavior there is a greater likelihood that they will be effective.

- This training would make a great Phase III project!
- The required case study may be submitted to your supervisor as one of your required interventions in the spring!
- Time spent in training sessions may be counted for continuing education/professional development - check with your supervisor for your discipline!

How do I sign up?
Send in the registration form to Barb Guthrie, Johnston office by Friday, August 22, 1997. There will be 3 different training groups, please indicate a 1st, 2nd, 3rd choice and we will try to honor your preference. There will be 1 all day training, the other 2 groups will receive training in 4 sessions over an eight week period. Please note the dates and times. Assignments to groups will be done at the orientation meeting on Tuesday, August 26, 1997.

Questions?
Contact: Marty Ikeda 270-9030
Susan Ward 289-4575
REGISTRATION FORM *** REGISTRATION FORM *** REGISTRATION FORM

"HYPOTHESIS-BASED FUNCTIONAL ANALYSIS" TRAINING

NAME: ________________________________  
DISCIPLINE: ____________________________  
BRANCH OFFICE: ________________________

SESSION CHOICE: (mark 1st, 2nd, 3rd choice)  
Group 1: ____________________________  
Group 2: ____________________________  
Group 3: ____________________________

<table>
<thead>
<tr>
<th>Meeting dates and times:</th>
<th>Group 1: (all day)</th>
<th>Group 2: (4 sessions)</th>
<th>Group 3: (4 sessions)</th>
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<td>Tues., 8/26/97, 3:00-4:30 p.m.</td>
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Return to Barb Guthrie, Johnston office by Friday, August 22, 1997.
A.2 Phase III information

FUNCTIONAL ANALYSIS TRAINING AND PHASE III

"Hypothesis-Based Functional Analysis" Training would make a great Phase III project. Each individual is responsible for their own Phase III application; however, the following information is provided to assist you. Each application should be based on your individual needs, and following these recommendations does not guarantee Phase III approval. In addition, the information provided is only one example that you might use.

The specific Phase III activity that this training lends itself to is Collegial Learning, coach/coachee. Attendance at training sessions does not meet the requirements for feedback sessions. This training is intended to help you further develop your assessment skills, with an emphasis on problem analysis and determining the function of children's behaviors and then linking your assessment information to the development of an intervention. Based on this, you will want to select the appropriate Phase III and Special Education goals, as well as indicators of excellent practice that are appropriate for your Phase III project.

The model that this is based on is Functional Assessment and Program Development for Problem Behavior: A Practical Handbook, by O'Neil, et al. (ala Marty & Susan!).

One method for measurement would be to break the training down into steps and measure your completion of each step in a case study. Following is a sample checklist to illustrate that approach.

Another approach would be to integrate the attached steps into Heartland's problem solving model, and using the Problem Analysis Worksheet provided by either Sharon or through our training.

If you have further questions regarding this training and your Phase III project, please contact Susan Ward at 289-4575, X115. Hopefully my past experience as Phase III chair will help, or I will try to clarify with the current Phase III committee.
# CHECKLIST FOR HYPOTHESIS BASED FUNCTIONAL ANALYSIS

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<tr>
<td><strong>NAME:</strong></td>
<td><strong>DATE:</strong></td>
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<tr>
<td>1. Functional assessment interview</td>
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<td>2. Student-directed interview (if appropriate)</td>
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<td>3. Define target behavior</td>
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<td>4. Motivation Assessment Scale</td>
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<td>5. Develop summary statements/hypotheses</td>
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<td>6. Identify function of behavior</td>
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<td>7. Conduct functional assessment observation</td>
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<td>8. Revise/refine hypothesis/summary statements</td>
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<td>9. Test hypothesis</td>
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/9 TOTAL
APPENDIX B

"HYPOTHESIS-BASED FUNCTIONAL ANALYSIS" TRAINING HANDOUTS
Hypothesis-Based Functional Analysis
Marty Tenney and Susan Ward

Purpose of Learning
Process with tools and activities different from learning to learn, learning to behave in a context. Functional tools will help you (collaboratively) develop hypotheses

Expectations We Have
- You’ll take notes
- Linking Old and New Learning
- Examples and Practice
- Questions
- Case Study
Expectations: We Hope You Have

- New Learning
- Application to all learners
- Willingness to try new things

Why Functional Assessment?

- Examine Problem Behavior
- Develop Intervention Plans
- Respect Identity of Individual
- Teach Replacement Behaviors
- Putting Behavior in Context
  - Consider FUNCTION instead of FORM (what it looks like)

What is Functional Assessment?

Learning the patterns of behavior
Exploring factors that contribute to behavior
Examining the context: instruction, curriculum, environment
Hypothesize about what event occurs to obtain something, increase, or remove something
What functional assessment is NOT

- A search for a diagnosis
- medical
- psychological
- educational
- A cookbook process
- A guaranteed cure

Functional Assessment is NOT valuable

1. Evaluation of personal preferences and strengths
2. Impact on access to services and behavior-related participation
3. Behavior occurs because of a disability, but because it has a payoff for the individual

Acknowledgments

We would like to acknowledge NF-B, O'Neal, Robert Hunter, Richard Allen, Geoff Sturges, Keelin Hay, and Stephen Newton as the primary source of information. Information was also modeled from original work at University of Florida and Osceola (FL) Public Schools.
Goal of Functional Assessment

- Take behavior out of the learner realm and place it in context.
- Instead of labeling the "DHD" help teachers get to: "When involved with math worksheets following instruction and group guided practice, Charlie leaves his seat more than three times, even when I remind him to work."

Five Primary Outcomes of Functional Assessment (FO-HIP)

- Description of behavior and elements of behavior that occur together
- Observe behavior in context to provide support for written statements

Five Primary Outcomes (continued)

- Hypothesize statements about behavior, situation of occurrence, and outcomes
- Identify whether the behavior serves an individual or social need
- Predict when behavior will occur and will not occur
Methods of Functional Assessment

- Indirect
  - Informational: interviews, rating scales, checklists
- Direct
  - Observations: settings outside of natural
    conditions over time
  - Manipulations: Systematic manipulation
    potential consequences and measure the effect
    on the target behavior

Indirect Methods

- Functional Assessment Interview: Focus
  - Ask: what is behavior for? Why is it difficult?
    to complete?
  - Schools: DISADVANTAGE: demographic
    data intake intake: 1st 6-9th: Brief
    interview w/ teacher
  - This is equivalent to viewing "potential
    Unknowns" for baseline

Indirect Methods

- Functional Assessment Interview: Focus
  - Downs: After the data is through and answer the
    questions, if a DISADVANTAGE (e.g., if the child is
    more mildly disabilities and this language, 20% of
    the community attendees might not contribute to the
    problem analysis
  - Problem Analysis Worksheet
  - Functional Analysis Worksheet
Before you even start!

- Examine medical factors that could be impacting behavior: allergies, ear infections, toothache, urinary tract infections, medication side effects.

Goals of Interview

- Narrow down range of potential conditioning factors.
- Integrate in the place what is known about the behavior pattern.

Using checklist/rating scales

Activity: Why do you give a patient rating scales?
What information does an interview provide?

- What are the behaviors of concern?
- What events seem to occur significantly before the behavior (setting event)?
- What events consistently precede the occurrence of the behavior?

What information does an interview provide?

- What consequences maintain the behavior?
- What behaviors could replace the problem behavior and be "followed" by the caregivers?
- What efforts have been done to address the behavior, and what was the impact of these efforts?

Areas of Focus:

- Early Childhood: Routines at home
- Primary and Middle: Routines of classroom and school
- Secondary: After school schedule, extracurricular participation
Indirect Methods: The Functional Assessment Interview

- Asks questions about: Behavior, Descriptions, Setting Events, Antecedents, Consequences, Efficiency, Alternatives, Behaviors, Communication, Supports/Avoidance, History of Intervention
- Target behaviors for direct Observation

Student Interviews

- The purpose of the student interview is to:
  - gain participant's insight on problem
  - get participant's opinions on things child finds reinforcer or things that do not reinforce

When Functional Analysis?

- Antecedents
  - Are there certain times in which participants engage in certain type of functional analysis?
Motivation Assessment Scale

- Use the MAS to help pinpoint function.
- Use MAS to determine behaviors identified and to supplement interview information on function of behavior.
- 4 items for each behavior. Sum and obtain average. Rank the functions.

Key Points

- 5 behaviors (DACHIP)
- 3 strategies for collecting information:
  - interviews
  - observations
  - manipulations
- Trying to put behaviors in context.
- Interviews are used for large behaviors for direct observation.

What case would you apply this to?

- We Recommend:
  - look at operating procedures and routines
  - consider cases where part of level III intervention, but teachers think strategies worked well in the past
- We DON'T Recommend:
  - cases at Level IV
FUNCTIONAL ASSESSMENT INTERVIEW (FAI)

Person of concern ________________________ Age ________ Sex M F
Date of interview ________________________ Interviewer ________________________

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).

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<th>Behavior</th>
<th>Topography</th>
<th>Frequency</th>
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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?

____________________________________

____________________________________
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)?

_________________________________________________________________________

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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.

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________

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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.)

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<th>Problems</th>
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<th>Problems</th>
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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:

   ______________________________________________________________________

   ______________________________________________________________________

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

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


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.

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Particular situations</th>
<th>What exactly does he or she get?</th>
<th>What exactly does he or she avoid?</th>
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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.

<table>
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<tr>
<th>Low Efficiency</th>
<th>High Efficiency</th>
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</table>
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 | Single signs | Pointing | Shakes head | Grabs/aches | Moves close to you | Moves away or leaves | 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 | | | | | | | | | | | | | | |
3. With regard to the person's receptive communication, or ability to understand other
   a. Does the person follow spoken requests or instructions? If so, approximately
      (List if only a few.)

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

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

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

H. WHAT ARE THINGS YOU SHOULD DO AND THINGS YOU SHOULD AVOID IN WITH AND SUPPORTING THIS PERSON?

   1. What things can you do to improve the likelihood that a teaching session or
      will go well with this person?

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

I. WHAT ARE THINGS THE PERSON LIKES AND ARE REINFORCING FOR HIM

   1. Food items: 
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?**

<table>
<thead>
<tr>
<th>Behavior</th>
<th>How long has this been a problem?</th>
<th>Programs</th>
<th>Effects</th>
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STUDENT-ASSISTED FUNCTIONAL ASSESSMENT INTERVIEW

STUDENT_____________________

DATE_______________________

INTERVIEWER_________________

SECTION I

1. In general, is your work too hard for you? ALWAYS sometimes never
2. In general, is your work too easy for you? ALWAYS sometimes never
3. When you ask for help appropriately, do you get it? ALWAYS sometimes never
4. Do you think work periods for each subject are too long? ALWAYS sometimes never
5. Do you think work periods for each subject are too short? ALWAYS sometimes never
6. When you do seatwork, do you do better when someone works with you? ALWAYS sometimes never
7. Do you think people notice when you do a good job? ALWAYS sometimes never
8. Do you think you get the points or rewards you deserve when you do good work? ALWAYS sometimes never
9. Do you think you would do better in school if you received more rewards? ALWAYS sometimes never
10. In general, do you find your work interesting? ALWAYS sometimes never
11. Are there things in the classroom that distract you? ALWAYS sometimes never
12. Is your work challenging enough for you? ALWAYS sometimes never
SECTION II

1. When do you think you have the fewest problems with ________ in school?

__________________________________________________________________________

__________________________________________________________________________

Why do you not have problems during this/these time(s)?

__________________________________________________________________________

__________________________________________________________________________

2. When do you think you have the most problems with ________ in school?

__________________________________________________________________________

__________________________________________________________________________

Why do you have problems during this/these time(s)?

__________________________________________________________________________

__________________________________________________________________________

3. What changes could be made so you would have fewer problems with ________?

__________________________________________________________________________

__________________________________________________________________________

4. What kind of rewards would you like to earn for good behavior or good school work?

__________________________________________________________________________

__________________________________________________________________________

Kern, Dunlap, Clarke & Childs
SECTION III

Rate how much you like the following subjects:

<table>
<thead>
<tr>
<th>Subject</th>
<th>not at all</th>
<th>fair</th>
<th>very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spelling</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Handwriting</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Studies</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Music</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P.E.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computers</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Art</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECTION IV

What do you like about Reading? ___________________________________________
______________________________________________________________________

What don’t you like about Reading? ______________________________________
______________________________________________________________________

What do you like about Math? ___________________________________________
______________________________________________________________________

What don’t you like about Math? ______________________________________
______________________________________________________________________
What do you like about Spelling?

What don't you like about Spelling?

What do you like about Handwriting?

What don't you like about Handwriting?

What do you like about Science?

What don't you like about Science?

What do you like about Social Studies?

What don't you like about Social Studies?

What do you like about English?

What don't you like about English?

What do you like about Music?

What don't you like about Music?
What do you like about P.E.?

What don't you like about P.E.?

What do you like about Computers?

What don't you like about Computers?

What do you like about Art?

What don't you like about Art?

Probes
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UMI
Hypothesis Based Functional Analysis

Marty Taylor Steadward

Purpose of Training

Provide a different way of thinking to look at behaviors in context of functionality. The tools will help you (collaboratively) develop hypotheses.

Goal of Functional Assessment

- Rule behavior one of the learner, teacher, and placement into a context.
- Instead of saying "He's just HD" help teachers get to: "When presented with math worksheets following instruction and group guided practice, Charles leaves his seat more than three times when I remind him to work."
Key Points:
- 5 outcomes (DGHP)
- 3 strategies for collecting information are
  - interviews
  - observations (direct)
  - manipulation
- Trying to put behaviors in context
- Interviews are used to gather behaviors for direct observation

Summary Statements
- Developing Specific Hypotheses (Hypotheses)
- Event or Active Variables
- Curricular Variables
- Setting Variables
- Outcomes/Reinforcement-maintaining Variables

Reinforcement
- Application or removal of a stimulus that increases the probability that, under similar situations, a given behavior will occur
- "Tried reinforcement, didn't work"
- Function versus Form
Summary Statements

- Describe immediate situation, problem, behavior, and possible maintaining function. This describes how setting event may impact problem.
- When given an instruction, Jenny says, "no" in order to escape completing the task. She is more likely to say, "no" when she has not eaten lunch.

More examples of summary statements:

- When prompted to move from one activity to another, Jeremy will stall on the floor in order to be able to continue working on the first activity.

More examples of summary statements:

- During a science group instruction, Bob blurted out that he did not understand the math problem. When he was called upon to answer a math question, he did so mainly on clue when Bob did complete homework with 80% accuracy.
More examples of summary statements.

When Carrie is instructed to work at her workstation, she rips up materials and throws them at her instructor in order to get her instructor’s attention. This pattern is more likely if she slept fewer than 8 hours.

Write your summary statement

Remember the format: Immediate Antecedent
Problem Behavior Resulting in Hypermotivated Maintaining Function
Include Setting Event Information if appropriate.

From Words to Diagrams

Now draw a visual summary of statements you are testing. Look for replacement behaviors, desired behaviors, and the problems.
Why Diagram?

- Trying to identify where changes might be made to prevent or solve the problem.

Ways to:
- Change conditions: changing arrangements, get more sleep at night.
- Prevent the problem behavior: shorter tasks, more monitoring by.
- Increase expected behaviors: practice and feedback using replacement behaviors.

Activity

- Using the information from our interview, diagrams, setting events, problems, behaviors, and maintaining consequences.

Validating Interview Information

- Examine information from all of our respondents not.
- Common themes:
- Areas of disagreement:
- Observe the context in which the behavior is occurring.

"Is what you say true?"
Direct Observation

- Cannot interfere with classroom or home routine
- Can be observer, teacher, LEA support staff, AEA support staff, or parent
- Record: behavior, antecedents, what followed
- Keep it simple

Direct Observation

- Observe for patterns of behavior and stated during interview, when it occurs, and when it DOES NOT occur
- Might target an problem behavior and acceptable behavior
- Tally events within any period; less burdensome to record every 5-10 minute blocks

Direct Observation

Many programs share responsibility for observations. Wide sample of times may provide important information.

At a minimum, you should observe the context in which the behavior is occurring.

Observe until you have seen the behavior about 10 times.
Functional Assessment Observation Form

<table>
<thead>
<tr>
<th>Name:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starting Date:</td>
<td>Ending Date:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>Behaviors</th>
<th>Predictors</th>
<th>Get/Obtain</th>
<th>Escape/Avoid</th>
<th>Actual Conseq.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Perceived Functions

| Events: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Date:   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

How do I record?

- Complete identifying information
- Designate time intervals (could be 5 minutes, 10 minutes, 30 minutes)
  - The more the behavior occurs, the smaller your time block should be, because it is easier to record without time slipping outside of the boxes

How do I record (2)

- Describe behavior of concern or interest
  - (could be negative or positive behavior)
- If the premature is not pre-printed, write down the predictors
  - You could include things of settings, tasks, conditions (noisy)

How do I record (3)

- Ask the observer make "best guess" in function
- Write in actual consequence student receives, including information from interview, or observe until you see consequence, and write in
How do I record (4)

- As behavior occurs, tally behavior, predictor, response, function, and actual consequences. First event is "1." Cross off the "1" on your form of observation format. The next string of tally is numbered "2." This tally could be in the same time interval as the first occurrence or could be in a time interval not even near the first occurrence (depending on how you define cut-up time).

Practice using the observation form.
Setting Event

Predictor +

Behaviors

Maintaining Consequences

Preferred

Problem

Replacement
| Time | Predictors | Get/Obtain | Escape/Avoid | Actual Conseq.
<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Events:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>21</th>
<th>22</th>
<th>23</th>
<th>24</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td></td>
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</tr>
</tbody>
</table>

Hypothesis-Based Functional Analysis
Marty LeBlanc, Susan Ward

Purpose of Training

Provide tools and strategies to understand differences in students' behavior in context. Functionally, these tools will help (and collaboratively) develop hypotheses.

Overview of Functional Assessment

- Write behavioral rules of the learned teaching and placement procedures.
- Instead of: "Charles has ADHD," help (and can get to: "when presented with math worksheets following instruction and group guided practice, Charles leaves his seat more than three times, even when I remind him to work"

-
Key Points

- Data Collection (DOCHIP)
- 3 strategies for collecting information are:
  - interviews (indirect)
  - observation (direct)
  - manipulation (direct)
- Trying to put behavior in context.
- Interviews are used to elicit behaviors for direct observation.

Summary Statements

- Developing Specific Hypothesis (Hypothesis)
- Event or Reenactment Variables
- Curricular Variables
- Setting Variables
- Outcomes/Reinforcement Maintenance Variables

Summary Statements

- Describes Immediate Situation, Problem Behavior, and Possible Maintainers.
  Function. States describe how setting or task may impact behaviors.
- When given an instruction, Tony says, "No," in order to escape completing the task. She is more likely to say, "No," when she has not eaten lunch.
Diagramming Problem Behavior

Setting Event  Predictor  Behaviors  Maintaining Consequences

Why Diagram?

- Identify conditions where change cannot be made and prevent or solve the problem.
- Ways to help include:
  - Change conditions during treatments, getting more sleep at night.
  - Prevent the problem behavior: stricter tasks, more monitoring by teachers.
  - Increase expected behavior, practice and feedback using replacement behavior.

Validating Interview Information

- Check information from all sources.
- Respond to the common theme and level of disagreement.
- Other in the context in which the behavior is occurring.

"Is what you say true?"
Direct Observation

- Looking for patterns of behavior targeted during interview: when it occurs and when it DOES NOT occur.
- Might target both problem behavior and acceptable behaviors.
- Tally events within time periods: less burdensome to record data in 5-15 minute blocks.

Interpreting Functional Analysis Observation (data)

- Behavior
- Predominant behavior
- Identify function of behavior
- Confirming statements of statements

Example of Interpreting Observation Data
Decisions you can make after gathering observational data

- Gather more information
- Conduct Statement Manipulations
- Begin Program Development

Gather More Information

- Write patterns of behavior and location
- Review with observers what they are doing and why
- Review your summary statements to see if the statement accurately captures the behavior
Functional Analysis Manipulations

- Experimental manipulation of a variety of conditions
- Shows instructional control over the behavior
  - when this antecedent occurs with this consequence, the behavior rate increases

Functional Analysis Manipulations

- Eliminate the behavior
  - preinstruction, don't do this
- Target the 'Not Behavior' for manipulation
  - if misbehavior occurs for attention, ideally give the child attention for misbehaving, and see if the rate of misbehavior increases

Testing your hypothesis

- Using the functional analysis worksheet
  - Your child's summary statement
  - Observe and confirm your summary statement
- Make a prediction about the 'Not Behavior'
  - When consequence is next
  - Predicted Result
  - During group instruction, he is in a break when Steve is given attention every 10 minutes

6
What is Your Prediction?

<table>
<thead>
<tr>
<th>When Consequence is Met</th>
<th>Predicted Result</th>
</tr>
</thead>
</table>

Is your hypothesis confirmed?
- If so, you may need intervention
- If not, go back to your summary statements

For Attention: reinforce before it is sought
For Escape: teach breaking smaller chunks and reinforce; skill building
Hypothesis-Based Functional Analysis

Marty Reisch, Susan Ward

Purpose of Functioning

Problem behavior results and should not be a different way of doing to look at behaviors in context, ask questions that will help you, collaboratively, develop hypotheses

Goal of Functional Assessment

- Take behavior of the learner, task, and place into context
- Instead of "Charles is ADHD," help teachers get to: "when presented with math worksheets following instruction and group guided practice, Charles leaves his seat more than three times even when I remind him to work"
Key Points

- 5 conditions (DOHP)
- 3 strategies for collecting information are:
  - interview
  - observation
  - manipulation

- Trying to put behaviors in context
- Interviews are used to infer behaviors for direct observation

Summary Statements

- Developing Specific Hypotheses
- Event or Antecedent Variables
- Curricular Variables
- Setting Variables
- Outcomes/Reinforcement/Variation Variables

Summary Statements

- Identify immediate situational problem
- Behavioral and possible maintaining functions
- Describe how setting event may impact problem
- When given an instruction, Jenny says, "No" in order to escape completing the task. She is more likely to say "no" when she has not eaten lunch.
Diagramming Problem Behavior

Why Diagram?
- Identify where changes must be made to prevent or solve the problem.
- Ways to:
  - Change context and arrangements, persuade to sleep at night.
  - Prevent the problem behavior: short tasks, more monitoring by teachers.
  - Increase expected behavior: increase and feedback using replacement behavior.

Validating Interview Information
- Examine information from all perspectives, responses, and common themes to find areas of disagreement.
- Observe the context in which the behavior is occurring.
- "Is what you say true?"
Building Intervention Plans

- Intervention Plan indicates how others who are supporting the student will change their behavior, not only how the student's behavior will change.

Intervention Plans (cont'd)

- If an intervention plan acknowledges the values, resources, and skills of those responsible for implementation, the plan is more likely to be implemented with integrity.
- "treatment acceptability"

Activity

- What would you do:
  - a behavior matrix on using time-out, consultation of your analysis to see if the behavior is maintained by others?
  - a principal meets with recurring student, even after your analysis suggests that the behavior is maintained by another?
Lining the Interventions...?

- Many published "forms" of intervention.
- Need to look at function of intervention.
- Values.

Mystery Motivator

- Give child a chance at a prize.
- Problem behavior is for attention and child does not earn a chance, then the behavior will escalate. If the child needs to earn a chance more frequently than s/he displays the problem.
- Remember: efficiency.

Home Note

- High behavior is some motivation for student may be getting up early at school but not at home by missing dinner.
- If the behavior is motivated by attention, then a bad note home will have higher payoff than a good note home.
- Infrequent reinforcement, remember, the alternate behavior needs to be reinforced frequently so that it is effective.
**Penalty Systems**

- A teacher coming over and saying, "that's a mistake" might be maintaining misbehavior that is motivated by attention.

**Time Out**

- If the teacher is going to get up and do a different or unpleasant task, then the time out reinforces that behavior.
- If the learner receives attention from peers for misbehaving and being sent to time out, and the behavior is maintained by attention, then the unwanted behavior will increase in frequency.

**Self-Monitoring**

- Effective in teaching student to self-monitor, or to monitor attention for appropriate behavior. If not, be effective with some maintained behavior because there is no opportunity for the student to select an alternative task, or re-enter task.
Behavioral Contracting

- Need two components:
  - What will the child do to earn what privilege?
  - What will the child do to maximize the likelihood that the child will learn the privilege?

So, Now, What Do You Do?

If the behavior is maintenance situation:

- Begin by assessing the usual costs and benefits that EXIST to the target behavior.
- Assess target areas and then brainstorm effective changes.
- Set the new target behavior by informing her that X behavior will yield tangible and attention. Then reinforce that the teacher solicits that other behaviors and praise, as frequently as your teacher and indicate.

What would this look like?

- Behavioral contract
- Token system
  - tokens for target behavior
  - lots of attention for other behaviors
- Home school link
  - frequent ratings (home guidance feedback)
  - success at home
  - establish baseline; criterion for baseline ($1$)
Use your system:
- Reinforce work completion, work on task
- Break completion
- Provide break once completion of X minutes
  - Use contract to lower expectations for break
  - Review contract daily
  - Limit # of breaks per day
- Reinforce use of breaks

Escape
- Teach student to request a break
- Have a necessity request
  - set verbal or written the student to complete task
  - teach the use, reinforce compliance with task
- Use signal to cue student to keep working or waiting. When they see the signal, they know that they will be given a break within X minutes.

Escape
- Contingent
- Point System

"After you've earned X points, you can ask for a break."

Baseline - 1 rule
Points System: Things to look for:
- High rates of points/reprimands
  - 5X number of points/little reprimands
- High rates of noncontingent points
- High rates of times for alternate behavior
- Set up occurrence for alternate behavior
- Ignore problem behavior

Pitfalls of Point System:
- Too many "response cost" points
- Too many "neglect" points
- Rate of reinforcement is too low
- Plan for fade to non-sufficiently developed
- Reinforcer may not be reinforcing
- Remember: if a targeted behavior does not increase as planned, then its reinforcer form is not functioning as a reinforcer.

Reporting Results of Functional Assessment:
- Describe behavior use plain language
- Summarize your information about predicting when the behavior will and will not occur.
Reporting Results

- Summarize your supporting data and think the intervention has a certain function or payoff.
  - Include a summary statement in your report that the assessment shows "linking assessment and intervention.
  - Summarize your intervention data
  - Remember your interventions reinforce alternatives, inappropriate behavior.

- Therefore, "cans" are as important as "cant's in any data from your assessment and school.

Focus Here

- 1. Calm
- 2. Trigger
- 3. Peak
- 4. Decline
- 5. Peak
- 6. Decline
- 7. Recovery
APPENDIX C

PRE/POSTTEST MEASURES

CASE STUDY

KNOWLEDGE SCORING KEY
Demographics

Group: 1 2 3 4

Code (we recommend last 4 digits of your Social Security #): _________________________

Discipline: ________________________________________________________________

Gender: ______________________________

Years in Education: ________________________________________________________

Number of Years employed by AEA 11: _________________________________________

Are you intending to include this training as part of a Phase III project? Y N

Level of Training (circle):

- Masters
- Masters +15
- Master +30
- Ed. S.
- Doctorate

Check all that you serve: ___ Rur. ___ Urban

Check all that you serve: ___ Preschool
- ___ Elementary School
- ___ Middle School
- ___ High School

For Post Test only

How many of the scheduled trainings were you able to attend? _______
Directions: Using the following assessment information, complete the unshaded spaces of the Functional Analysis Worksheet

### FUNCTIONAL ASSESSMENT INTERVIEW

**Person of Concern:** John Q. Student  
**Age:** 11  
**Sex:** M  
**Date of Interview:** 9/5/97  
**Interviewer:** Susan Ward  
**Respondents:** Teacher & Parent

#### A. DESCRIBE THE BEHAVIORS

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Topography</th>
<th>Frequency</th>
<th>Duration</th>
<th>Intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calling out</td>
<td>Repeatedly says</td>
<td>5-6x/day</td>
<td>5-10 secs</td>
<td>easily audible</td>
</tr>
<tr>
<td>teacher's name</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### B. DEFINE ECOLOGICAL/SETTING EVENTS THAT PREDICT PROBLEM BEHAVIORS

<table>
<thead>
<tr>
<th>Event</th>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medications</td>
<td>none</td>
</tr>
<tr>
<td>Medical or physical conditions</td>
<td>seasonal allergies, over-the-counter meds</td>
</tr>
<tr>
<td>Sleep patterns</td>
<td>bedtime at 9:00, gets up at 6:00, Has bedtime routine</td>
</tr>
<tr>
<td>Eating routine and diet</td>
<td>breakfast daily, school lunch, snack at 3:15, dinner, snack at 8:00</td>
</tr>
<tr>
<td>Daily Schedule</td>
<td>6:00-8:00 gets ready for school; 8:00-2:30, regular school schedule (except Wednesdays, early out); 3:15, gets home, watches tv; 4:30 does homework; 5:30 dinner; 6:30, plays with siblings; 7:00 tv; 8:00 bedtime routine, snack.</td>
</tr>
</tbody>
</table>

**Predictability of Schedule**  
Consistent during school week  
Not much, can choose some activities at school; chooses snack at home.

**Opportunity to make choices**  
Classroom has 10 other students, child does not appear to be bothered by noise and crowds, but seems to need more attention when all students are present.  
There is one teacher and one associate in the classroom. John does better when he gets more 1:1 attention.

**Extent to which school setting and other people impact the behavior**

**Staffing support**

#### C. DEFINE SPECIFIC IMMEDIATE ANTECEDENT EVENTS THAT PREDICT WHEN THE BEHAVIOR(S) ARE LIKELY AND NOT LIKELY TO OCCUR:

<table>
<thead>
<tr>
<th>Events</th>
<th>Most Likely</th>
<th>Least Likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Times of day</td>
<td>Morning</td>
<td>Afternoon</td>
</tr>
<tr>
<td>Settings</td>
<td>Academic content areas</td>
<td>Specials (Art, music, PE)</td>
</tr>
<tr>
<td>People</td>
<td>Equal across staff</td>
<td>Nonacademic activities</td>
</tr>
<tr>
<td>Activity</td>
<td>Reading group instruction; group activities with little 1:1 attention</td>
<td></td>
</tr>
</tbody>
</table>

1. Other situations not listed above that set off the behavior: none identified
2. What is one thing that you could do to make the undesirable behavior occur? Call on other students during group instructional time.
3. Would the behavior be affected if:  
   - Difficult task was presented? No  
   - Desired activity was interrupted? No  
   - Routine was changed unexpectedly? No  
   - Student unable to obtain desired item? No  
   - You ignored the student? Yes
D. IDENTIFY FUNCTIONS OF THE PROBLEM BEHAVIORS THAT MAY BE MAINTAINING THEM:

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Particular Situation</th>
<th>What exactly does student get?</th>
<th>What exactly does student avoid?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calling out</td>
<td>Reading group work (little attention)</td>
<td>attention (peers and teachers)</td>
<td>nothing</td>
</tr>
</tbody>
</table>

E. HOW EFFICIENT IS THE PROBLEM BEHAVIOR FOR ACCESSING THE FUNCTION?

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Low Efficiency</th>
<th>High Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calling Out</td>
<td>1 2 3 4</td>
<td>5</td>
</tr>
</tbody>
</table>

F. WHAT FUNCTIONAL ALTERNATIVE BEHAVIORS DOES THE PERSON KNOW HOW TO DO?
1. Student can raise hand to ask for help or to indicate that he wants to give an answer to a question directed at the group.

G. WHAT ARE THE PRIMARY WAYS THE PERSON COMMUNICATES WITH OTHERS?
1. Describe expressive communication: John is verbal; he can adequately express wants and needs using words.
2. Describe receptive communication: John can follow multiple-step instructions.

H. WHAT ARE THINGS YOU SHOULD DO AND THINGS YOU SHOULD AVOID WHEN WORKING WITH THIS PERSON?
1. What will improve the likelihood the session will go well? Lots of verbal praise.
2. What things should you avoid that might disrupt a teaching session? Lots of instructions during large group settings.

I. WHAT ARE THINGS THE PERSON LIKES AND ARE REINFORCING?
1. Johnny likes Jolly Ranchers; he likes baseball cards; he likes to play with computers; he likes time with his dad; he enjoys television.

J. WHAT OTHER INTERVENTIONS HAVE BEEN IMPLEMENTED? WHAT WERE THE OUTCOMES OF THOSE INTERVENTIONS?

<table>
<thead>
<tr>
<th>Behavior</th>
<th>How long it has been a problem?</th>
<th>Intervention</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calling out</td>
<td>1 year</td>
<td>ignoring</td>
<td>didn’t work</td>
</tr>
<tr>
<td>Calling out</td>
<td></td>
<td>reprimands</td>
<td>some decrease in behavior</td>
</tr>
</tbody>
</table>

SUMMARY OF MOTIVATION ASSESSMENT SCALE

<table>
<thead>
<tr>
<th></th>
<th>Sensory</th>
<th>Escape</th>
<th>Attention</th>
<th>Tangible</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0</td>
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<tr>
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<td>2.5</td>
</tr>
<tr>
<td>Relative Ranking</td>
<td>4</td>
<td>12</td>
<td>1</td>
<td>12</td>
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</table>

SUMMARY OF FUNCTIONAL ASSESSMENT OBSERVATION FORM

Calling out occurred during reading and math (2 of 7 school periods). John was not receiving attention from teachers nor students during the reading and math periods. After each occasion of calling out, the teacher or associate attended to John. Each time the behavior occurred, John was reprimanded.
Functional Analysis Worksheet

<table>
<thead>
<tr>
<th>Relevant Known Information</th>
<th>Relevant Unknown Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Instruction</strong></td>
<td></td>
</tr>
<tr>
<td>• Behavior occurs more during group instructional time.</td>
<td></td>
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<tr>
<td>• Performs better when given 1:1 attention</td>
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</tr>
<tr>
<td><strong>Curriculum</strong></td>
<td></td>
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<tr>
<td>• Curriculum appears to be at appropriate level.</td>
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<tr>
<td><strong>Environment</strong></td>
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</tr>
<tr>
<td>• There are 10 students in classroom, 1 associate, 1 teacher</td>
<td></td>
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<tr>
<td>• Responds well to 1:1</td>
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<tr>
<td>• More problems in morning</td>
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<tr>
<td><strong>Learner</strong></td>
<td></td>
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<tr>
<td>• No known hearing or vision deficit</td>
<td></td>
</tr>
<tr>
<td>• Has behavior disorder</td>
<td></td>
</tr>
<tr>
<td>• Seasonal allergies</td>
<td></td>
</tr>
</tbody>
</table>

Summary Statements/Hypotheses

- **Distant Setting Event**: Should be none.
- **Immediate Antecedent (Predictor)**: John calls student out during group time/reading little, lol, all.
- **Problem Behavior**: John calls out.
- **Maintaining Consequence/Function**: Icm all.

Make Prediction: When consequence/function is met, then behavior changes

If John calls out, then teacher will return reading or cutsit.

Results: Call outs will decrease.
Directions: Using the previous case study of John Q. Student, and reviewing the attached excerpts of a calendar of the practitioner involved with John’s case, examine the sequence of the assessment process. Following your review, respond to the statements below.

Please rate the following statements according to this scale:

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>disagree</th>
<th>slightly disagree</th>
<th>slightly agree</th>
<th>agree</th>
<th>strongly agree</th>
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</thead>
</table>

1. This would be an acceptable assessment strategy for the child’s problem.  
   1 2 3 4 5 6
2. Most practitioners would find this approach to assessment appropriate for problems in addition to the one described.  
   1 2 3 4 5 6
3. This assessment should prove effective in identifying the child’s problem.  
   1 2 3 4 5 6
4. I would suggest the use of this assessment to other practitioners.  
   1 2 3 4 5 6
5. This child’s problem is not severe enough to warrant the use of this assessment procedure.  
   1 2 3 4 5 6
6. There are better assessment methods available that could have been used to assess the problem described.  
   1 2 3 4 5 6
7. I would be willing to use this assessment procedure in the school setting.  
   1 2 3 4 5 6
8. This assessment would result in negative side-effects or misdiagnosis for the child.  
   1 2 3 4 5 6
9. This assessment would be appropriate for a variety of children.  
   1 2 3 4 5 6
10. This assessment is consistent with evaluations I have conducted in school settings.  
    1 2 3 4 5 6
11. This assessment should prove effective in analyzing the child’s problem.  
    1 2 3 4 5 6
12. This assessment is reasonable for the problem described.  
    1 2 3 4 5 6
13. This assessment was not helpful for intervention planning.  
    1 2 3 4 5 6
14. I like the procedures used in this assessment.  
    1 2 3 4 5 6
15. This assessment procedure was overly intrusive into the teacher’s time.  
    1 2 3 4 5 6
16. This assessment procedure was overly intrusive into the student’s classroom instructional time.  
    1 2 3 4 5 6
17. Overall, this assessment would be beneficial for the child.  
    1 2 3 4 5 6
18. This assessment is likely to be helpful in the development of intervention strategies to change behavior.  
    1 2 3 4 5 6
19. This assessment was a good way to handle the child’s problem.  
    1 2 3 4 5 6
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**September 8-14, 1997**

We must never get too busy working to take time to sharpen the saw. Never too busy driving to take time to get gas.

—Stephen R. Covey

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<th><strong>Tuesday 10</strong></th>
<th><strong>Wednesday 11</strong></th>
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</table>

**Action Items**

- *M&I, 2nd Job 1st Hour 30 mins*
- *Interview*
- *Review interview*

**Notes**

- *Pick up MAS!*
- *Schedule observation*
TEST OF KNOWLEDGE OF FUNCTIONAL ASSESSMENT

Functional assessment procedures are applicable only to children with certain diagnostic labels.

True [ ] False [X]

Five outcomes of the functional assessment process are:

1. Describe behavior
2. Observe behavior
3. Hypothesize
4. Identify function
5. Disturb antecedents & consequences

What type of assessment would be considered an indirect method of functional assessment?

[ ] interview
[ ] observation

What are the three strategies for collecting functional assessment information?

1. Antecedent manipulation
2. Consequent manipulation
3. Setting manipulation

Part of a good functional assessment is to place the problem behavior in a ________.

How is a functional analysis different from a functional assessment?

[ ] analysis involves predicting data
[ ] analysis involves manipulating experimental data

It is not important to consider medical issues as part of a functional assessment.

True [ ] False [X]

A functional analyst would agree with the statement, "John engages in self-injurious behavior because he is severely retarded."

True [X] False [ ]

Functional analysis interviews help to identify settings, events, and behaviors that can be targeted for direct intervention.

Two general functions of behavior are: ________ or to escape

For the same person, in different situations, the same behavior may serve different functions.

True [ ] False [X]

Screaming is one form/type of behavior, but may serve two different functions(s), depending on the situation.

In order to change the behavior of a child who is hitting for attention, the alternative behavior must be at least as effective as hitting in accessing attention.
The value of functional assessment is that it translates assessment results to intervention plans. A summary statement or hypothesis should include: (1) problem, (2) function, and (3) consequences. Direct observations verify and clarify summary statements about problem behaviors.

Functional assessment is a one-shot process

True (False)

How will you know when you have enough direct observation data?

Pattern of behavior is consistent or observed at least 10 times.

Hypothesis allows you to test hypotheses regarding the function of the behavior.

The conditions tested in a hypothesis-based functional analysis would be the same as the conditions tested in an experimental functional analysis.

True (False)
Please rate the following statements according to this scale:

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Slightly disagree</th>
<th>Slightly agree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The benefits of applied behavior analysis have been exaggerated.</td>
<td>1 2 3 4 5 6</td>
<td></td>
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<td>2</td>
<td>Behavioral methodology has unlimited possibilities.</td>
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<tr>
<td>3</td>
<td>I wish my graduate training emphasized behavioral methods.</td>
<td>1 2 3 4 5 6</td>
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<tr>
<td>4</td>
<td>Behavioral techniques are unable to meet the demands of a complex social order.</td>
<td>1 2 3 4 5 6</td>
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<td>5</td>
<td>The extra time involved in dispensing rewards is worth the improvement seen as a result of using behavioral methods.</td>
<td>1 2 3 4 5 6</td>
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<td>6</td>
<td>Behavioral methods cause too much friction among the children in the classroom.</td>
<td>1 2 3 4 5 6</td>
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<td>7</td>
<td>Behavioral methods help a child to learn how to cope with his environment.</td>
<td>1 2 3 4 5 6</td>
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<td>8</td>
<td>More resources should be committed to developing and supporting programs based on behavioral methods.</td>
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<td>9</td>
<td>Behavioral techniques make a child stop working when rewards are not available.</td>
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<td>10</td>
<td>Behavioral methods strengthen moral development.</td>
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<td>11</td>
<td>Behavioral methodology will advance education to a higher level.</td>
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<td>12</td>
<td>More people would support (favor) behavioral methodology if they knew more about it.</td>
<td>1 2 3 4 5 6</td>
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<td>13</td>
<td>Behavioral methods enable us to make the best possible use of our lives.</td>
<td>1 2 3 4 5 6</td>
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<td>14</td>
<td>All teachers should be prohibited from using behavioral techniques in their classrooms.</td>
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<td>15</td>
<td>Applied behavior analysis is just another name for tyranny.</td>
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<td>16</td>
<td>The added expense involved in purchasing rewards is not worth the eventual gain from a program based on behavioral methods.</td>
<td>1 2 3 4 5 6</td>
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<td>17</td>
<td>The use of behavioral instruction improves overall classroom conditions.</td>
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<td>18</td>
<td>Behavioral methods aid student learning.</td>
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<td>19</td>
<td>Behavioral techniques help to improve relationships between children.</td>
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<td>Behavioral interventions help to produce desired behavior.</td>
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APPENDIX D

DIRECTIONS FOR CODING CASE STUDIES

CASE STUDY CODING GRID

FUNCTIONAL ASSESSMENT INNOVATION CONFIGURATION
D.1 Directions for Coding Functional Behavioral Assessment Case Studies

Materials

1. Case study coding grid
2. Case studies
3. Quality indicators innovation configurations

Directions

1. Record the ID number or name on the coding grid.
2. Read the innovation configurations – this provides definitions for each of the functional behavioral assessment indicators.
3. Read the case study.
4. For each indicator, code “0” to indicate it is not present, or “1” if present.
5. For the unshaded indicators (behavioral definition, hypothesis, direct observation, test hypothesis, problem analysis, intervention plan, and progress monitoring), if the response for the quality indicators presence is no (“0”), mark 1 for the numerical quality code.
6. If the response for the quality indicators presence is yes (“1”), compare the information contained on the case study documentation with the innovation configuration. Mark the number that most appropriately reflects the information in the case study.
D.2 Case Study Coding Grid

Functional Assessment Coding Grid

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<th>YES = 1</th>
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<td>Progress</td>
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<td></td>
<td>Monitoring</td>
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<td>TOTAL</td>
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</tr>
<tr>
<td>Behavioral Definition</td>
<td>4 Definition meets only two of the three criteria (i.e., objective, clear, complete)</td>
<td>3 Definition meets only one of the three criteria (i.e., objective, clear, complete)</td>
<td>2 Problem behavior is stated in general terms (e.g., temper tantrums, aggressive behavior)</td>
<td>1 Behavioral definition is not written</td>
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<tr>
<td>1 Behavioral definition is not written</td>
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<tr>
<td>2 Problem behavior is stated in general terms (e.g., temper tantrums, aggressive behavior)</td>
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<tr>
<td>3 Definition meets only one of the three criteria (i.e., objective, clear, complete)</td>
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<td>4 Definition meets only two of the three criteria (i.e., objective, clear, complete)</td>
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</tr>
<tr>
<td>5 Definition is (a) objective — refers to observable and measurable characteristics of behavior; (b) clear — so unambiguous that it could be read, repeated, and paraphrased by observers; and (c) complete — delineates both examples and nonexamples of the behavior</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Summary Statement</th>
<th>4 Includes 2 of 3 components (i.e., antecedents, behavior, function) Information should be integrated in a statement.</th>
<th>3 Summary statement/hypothesis is stated in general terms, it is not clearly identified. May include 1 to 3 components (i.e., antecedents, behavior, function).</th>
<th>2 Includes 1 of 3 components (i.e., antecedents, behavior, function) Information should be separate from measures used, and may be developed into a statement, or provided in general terms and not necessarily clearly identified.</th>
<th>1 Summary statement is not written.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Summary statement is not written.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2 Includes 1 of 3 components (i.e., antecedents, behavior, function) Information should be separate from measures used, and may be developed into a statement, or provided in general terms and not necessarily clearly identified.</td>
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<tr>
<td>3 Summary statement/hypothesis is stated in general terms, it is not clearly identified. May include 1 to 3 components (i.e., antecedents, behavior, function).</td>
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<tr>
<td>4 Includes 2 of 3 components (i.e., antecedents, behavior, function) Information should be integrated in a statement.</td>
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</tr>
<tr>
<td>5 Includes 3 components: (1) a situation — setting events and immediate antecedents in which problem behaviors occur; (2) the behaviors that are occurring; and (3) the function the behaviors serve, or the reinforcing outcomes they produce in that situation Information should be integrated in a statement.</td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Functional Direct Observation</th>
<th>4 Functional Assessment Observation form used: dates of observations, time and settings identified, behaviors, predictors, consequences individualized, data recorded using number tally system Summary of observation information reported.</th>
<th>3 Functional Assessment Observation form used: Information recorded not complete, not understandable to others besides the recorder</th>
<th>2 Direct observation conducted using some other format</th>
<th>1 No direct observation conducted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 No direct observation conducted</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2 Direct observation conducted using some other format</td>
<td></td>
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<tr>
<td>3 Functional Assessment Observation form used: Information recorded not complete, not understandable to others besides the recorder</td>
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<tr>
<td>4 Functional Assessment Observation form used: dates of observations, time and settings identified, behaviors, predictors, consequences individualized, some type of tally system used.</td>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Hypothesis</th>
<th>4 Prediction (or hypothesis) is made, brief description of “test intervention” and data are collected, or outcome reported, but not both.</th>
<th>3 Prediction (or hypothesis) is indirectly made (information is there, but not explicitly identified as such) and reference to testing made, there may or may not be information regarding data collection or outcome.</th>
<th>2 Prediction (or hypothesis) is made (information is there, but not explicitly identified as such), no information provided regarding “test intervention”.</th>
<th>1 Hypothesis was not tested.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Hypothesis was not tested.</td>
<td></td>
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<td>2 Prediction (or hypothesis) is made (information is there, but not explicitly identified as such), no information provided regarding “test intervention”.</td>
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<table>
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<th>Test Hypothesis</th>
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<table>
<thead>
<tr>
<th>Quality Indicators Innovation Configurations</th>
<th>5 Prediction regarding behavior is made: <em>when consequence/function is met, then behavior changes.</em> Data is collected (baseline &amp; outcome), brief description of &quot;test intervention&quot;, and summary of outcome of brief intervention.</th>
<th>4 Prediction (or hypothesis) is made, brief description of &quot;test intervention&quot; and data are collected, or outcome reported, but not both.</th>
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<th>1 Hypothesis was not tested.</th>
</tr>
</thead>
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<tr>
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<tr>
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<tr>
<td>4 Prediction (or hypothesis) is made, brief description of &quot;test intervention&quot; and data are collected, or outcome reported, but not both.</td>
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<tr>
<td>Problem Analysis</td>
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</tr>
<tr>
<td>5 Problem solving worksheet or problem behavior diagram utilized.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information from multiple sources (record reviews, rating scale, interviews, observations) summarized. Information provides link from assessment to intervention developed (intervention reflects identified function, altering antecedents, changing consequences).</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>4 Problem solving worksheet or problem behavior diagram utilized. Information from 2-3 sources (one must be a direct observation) summarized. Information provides link from assessment to intervention (intervention reflects meeting identified function, altering antecedents, changing consequences).</td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>3 No structured format used to integrate information – notes may be present. Information from 2 sources evident. Intervention is developed but is not based on function, antecedents or consequences identified.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2 Information from at least 2 sources evident – no notes or use of system to integrate information. No indication if information was used for intervention development.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Problem analysis not conducted.</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Intervention Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Plan stated (a) procedures/strategies, (b) materials, (c) persons responsible, (d) beginning and review dates, (e) goal stated, and (f) data collection plan.</td>
</tr>
<tr>
<td>4 Plan stated (a) procedures/strategies, (b) materials, (c) persons responsible, (d) goal and (e) data collection plan BUT no beginning or review dates.</td>
</tr>
<tr>
<td>3 Plan stated procedures/strategies, goal and data collection, BUT no persons responsible or materials. Dates may or may not be present.</td>
</tr>
<tr>
<td>2 General description of an intervention procedure (e.g. use positive reinforcement) and goal stated, BUT no data collection described, persons responsible, dates, materials may or may not be present.</td>
</tr>
<tr>
<td>1 Intervention plan not Written or only general description (e.g. behavior management plan) without any other components.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Progress Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Data are collected and charted/graphed 2-3 times per week. Appropriate graphing/charting conventions are used.</td>
</tr>
<tr>
<td>4 Data are collected and charted/graphed once a week. Appropriate graphing/charting conventions are used.</td>
</tr>
<tr>
<td>3 Data are collected and charted/graphed irregularly and infrequently (less than once a week, but more than pre/post). Appropriate graphing/charting conventions are used.</td>
</tr>
<tr>
<td>2 Data are collected but not charted or graphed. OR only pre/post data collected and/or charted/graphed.</td>
</tr>
<tr>
<td>1 Progress monitoring data not collected.</td>
</tr>
</tbody>
</table>
APPENDIX E

CHARACTERISTICS OF PARTICIPANTS IN STUDY
Table E.1 Participants’ disciplines by group

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Early Childhood</th>
<th>Educational School</th>
<th>School</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>Consultant</td>
<td>Consultant</td>
<td>Psychologist</td>
<td>Social Worker</td>
</tr>
<tr>
<td>I</td>
<td>N 4</td>
<td>6</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>% 17%</td>
<td>25%</td>
<td>29%</td>
<td>29%</td>
</tr>
<tr>
<td>II</td>
<td>N 6</td>
<td>3</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>% 24%</td>
<td>12%</td>
<td>36%</td>
<td>28%</td>
</tr>
<tr>
<td>III</td>
<td>N 5</td>
<td>6</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>% 24%</td>
<td>29%</td>
<td>24%</td>
<td>24%</td>
</tr>
</tbody>
</table>

Table E.2 Participants’ gender by group

<table>
<thead>
<tr>
<th>Gender</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I</td>
<td>N 5</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>% 21%</td>
<td>79%</td>
</tr>
<tr>
<td>Group II</td>
<td>N 4</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>% 16%</td>
<td>84%</td>
</tr>
<tr>
<td>Group III</td>
<td>N 2</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>% 10%</td>
<td>90%</td>
</tr>
</tbody>
</table>
Table E.3 Participants’ level of education by group

<table>
<thead>
<tr>
<th>Degree</th>
<th>Bachelor’s</th>
<th>Master’s</th>
<th>Master’s + 30, + 45, Specialist, Ph.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I</td>
<td>N 1</td>
<td>6</td>
<td>17</td>
</tr>
<tr>
<td>%</td>
<td>4%</td>
<td>25%</td>
<td>71%</td>
</tr>
<tr>
<td>Group II</td>
<td>N 1</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>%</td>
<td>4%</td>
<td>36%</td>
<td>56%</td>
</tr>
<tr>
<td>Group III</td>
<td>N 3</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>%</td>
<td>14%</td>
<td>24%</td>
<td>62%</td>
</tr>
</tbody>
</table>

Table E.4 Practitioners’ Urban and Rural Assignment by group

<table>
<thead>
<tr>
<th></th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Group II</td>
<td>18</td>
<td>12</td>
</tr>
<tr>
<td>Group III</td>
<td>7</td>
<td>15</td>
</tr>
</tbody>
</table>

^ Practitioners could indicate both urban and rural as their assignment.
Table E.5 Practitioners’ school assignment by groups¹

<table>
<thead>
<tr>
<th>Group</th>
<th>Preschool</th>
<th>Elementary</th>
<th>Middle</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I</td>
<td>15</td>
<td>19</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>Group II</td>
<td>17</td>
<td>17</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>Group III</td>
<td>11</td>
<td>16</td>
<td>16</td>
<td>13</td>
</tr>
</tbody>
</table>

¹ Practitioners could indicate more than one

Table E.6 Phase III participation by group

<table>
<thead>
<tr>
<th>Group</th>
<th>Phase III – yes</th>
<th>Phase III – no</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I</td>
<td>N 13</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>% 54%</td>
<td>46%</td>
</tr>
<tr>
<td>Group II</td>
<td>N 13</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>% 52%</td>
<td>44%</td>
</tr>
<tr>
<td>Group III</td>
<td>N 10</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>% 48%</td>
<td>52%</td>
</tr>
</tbody>
</table>
REFERENCES


ACKNOWLEDGMENTS

I would like to acknowledge and extend my deepest appreciation to those individuals who have supported me in the completion of my doctoral program and this dissertation. I want to thank the members of my committee, Drs. Norm Scott, Mary Jane Brotherson, and Fred Brown for their interest, advice, and long term support of me as a student. I would like to thank Dr. Carla Peterson for her friendship, professional guidance, and continuing encouragement throughout my many years as a graduate student. My deepest respect and sincere appreciation are extended to Dr. Daniel Reschly, my major professor, for his ongoing support and belief in me over the years.

I would also like to thank my colleagues at Heartland Area Education Agency for their support as I completed my graduate studies. Special thanks are extended to my supervisor, Randy Allison, for his continuing encouragement during times when I was discouraged, and his advice and support throughout this project. I would like to thank Dr. Martin Ikeda, Special Projects Coordinator, for his assistance in this project (truly from beginning to end), his advice, encouragement, mentorship, and friendship.

Lastly, I would like to thank my family. To my parents, who have believed in me, and to my brothers who always pushed me to be better, thank you for your support. I would like to thank my husband's family for their continued support and belief in me as I finished this "little paper". To my husband, Patrick, who never let me give up, and gave me love and support as I pursued my dream. And to my children for their patience and love, Danny, who really started this whole journey by introducing me to the world of special needs children and their families; to Megan, who's grown up while I've been completing my doctorate; to
Molly; who wants to get her doctorate like Mom; and to Connor; who always makes me smile. Without the love of these very special people, I would not have been able to complete my graduate education and this dissertation; this dissertation is dedicated to all of you.