EDUCATION AND TREATMENT OF CHILDREN Vol. 37, No. 1, 2014

Functional Behavioral Assessment and Students at Risk for or with Emotional Disabilities: Current Issues and Considerations

Robert A. Gable

Old Dominion University

Kristy Lee Park

George Mason University

Terrance M. Scott

University of Louisville

Abstract

The use of functional behavioral assessment (FBA) is an effective tool to address a wide range of severe behavior problems of students at risk for or with emotional disabilities (ED). However, the transformation of a procedure proven effective under highly-controlled clinical conditions to a practical and effective strategy for use in applied settings has posed a number of challenges. We critically examine several of the most prominent of those challenges and related research. We concede that there is more to learn about FBA in applied settings, including how best to establish a goodness-of-fit between "necessity and sufficiency," as described by Scott and Kamps (2007). Lastly, we assert that all school personnel should, at the very least, "think functionally" about pupil behavior.

Keywords: Challenging Behavior, Functional Assessment, Functional Analysis, Functional Behavioral Assessment, Function-Based Interventions, Students At Risk, Emotional Disabilities.

The use of functional behavioral assessment (FBA) as a means to address the needs of individuals with disabilities is a long standing practice with strong empirical support. Based on a half century of experimental research (e.g., Carr, 1994; Iwata, Dorsey, Slifer, Bauman, & Richman, 1982; Wahler, 1969), FBA is defined as "a process of identifying functional relationships between environmental events and the occurrence or non-occurrence of a target behavior" (Dunlap et al., 1993, p. 275). The purpose of FBA is to identify environmental events that reliably predict and maintain problem or "interfering" behavior (McIntosh, Brown, & Borgmeier, 2008; Steege & Watson, 2009).

Correspondence to Robert A. Gable, Darden College of Education, Old Dominion University, Norfolk VA 23529; e-mail: rgable@odu.edu.

The usefulness of FBA is predicated on the belief that: (a) behavior is purposeful and serves a function for the student, (b) behavior is linked to the context in which it occurs—it is situation specific, and (c) assessment of the function or intent of the behavior facilitates the design of an appropriate intervention to deal with individual student needs (e.g., Dunlap, Kern-Dunlap, Clarke, & Robbins, 1991; Reid & Nelson, 2002; Scott & Nelson, 1999). This is accomplished by identifying those variables that account for the most variance in the behavior (its occurrence versus non-occurrence), variables in the environment that are controllable by persons in applied settings (school, classroom, etc.), and variables that may be ideographic (unique) to the individual student (Gresham, 1991; Reid & Nelson, 2002).

With empirical roots in applied behavior analysis, a substantial body of research, founded primarily on persons with developmental disabilities, has documented the efficacy of FBA in the clinical treatment of severe problem behavior, including aggression, tantrums, self-injurious, and stereotypic behavior (e.g., Stage, Cheney, Walker, & LaRocque, 2002). Today, the usefulness of FBA continues to grow across populations to students with learning disabilities, emotional disabilities, autism, students at-risk, and even typically developing students, demonstrating its role in the development of effective intervention plans. In this paper, we discuss various aspects of FBA in relationship to students at risk for or with emotional disabilities, along with major issues associated with FBA in school settings. We include studies that highlight specific issues addressed, such as function- versus nonfunction-based interventions, indirect versus direct measures, and challenges associated with training school personnel in the use of FBA. Finally, we offer some thoughts on the progress we have made and the role FBA can play in the future.

Research on Functional Behavior Assessment

In the past, the limited body of research on students with mild disabilities caused some to doubt the applicability and practicality of the FBA process in classroom settings. In fact, Sasso, Conroy, Stichter, and Fox (2001) cautioned against the overgeneralization of results of research focused mainly on individuals with severe disabilities. Since then, there has been a substantial increase in research on FBA, with over 400 publications involving students with or at risk for emotional and behavioral problems (Stormont, Reinke, & Herman, 2011). Ervin et al. (2001) found that over 98% of the studies conducted in schools reported positive changes in student behavior. They reasoned that FBA is a valuable tool for identifying both the causes of problem behavior and for plotting a course of successful intervention. More

recently, Goh and Bambara (2010) found essentially the same thing. Following their review of research, Goh and Bambara (2010) stated that FBA-based interventions are effective across disability categories and grade levels and that FBA may be the most important factor in determining the efficacy of an intervention. In sum, there is a growing empirical base to substantiate that FBA is a legitimate approach to addressing a wide range of challenging behaviors (e.g., Goh & Bambara, 2010; Kern, Hilt, & Gresham, 2004; Kern, Hilt-Panahon, & Sokol, 2009; Reid & Nelson, 2002; Scott et al., 2004).

Functional Behavioral Assessment in School Settings

McIntosh, Brown, et al. (2008) asserted that the emphasis on skill building and environmental manipulation, which are the cornerstones of FBA, make it appropriate for use in educational settings. However, translating strategies proven effective under tightly controlled, clinical conditions into sound, practical tools for use in schools has posed a myriad of challenges and raised serious questions among some in the field (e.g., Gable, 1999; Gable, Bullock, & Wong-Lo, in press; Gresham, 2003; Nelson, Mathur, & Rutherford, 1999; Sasso et al., 2001). For example, there is evidence that the FBA process, as practiced, is sometimes seriously flawed and does not always result in an effective behavior intervention plan (BIP; e.g., Blood & Neel, 2007; Couvillon, Bullock, & Gable, 2009; Van Acker, Boreson, Gable, & Potterton, 2005). Others question the ability of school-based teams to reliably determine the function of a student's behavior (Nordress, Swain, & Haverkost, 2011) and whether school-based teams can conduct a FBA independent of external support (e.g., university researchers; Lane, Weisenbach, Phillips, & Wehby, 2007). Clearly, questions remain regarding various aspects of FBA in schools.

Indirect and Direct Measurement of Behavior

As more FBAs are being conducted in school settings, researchers developed a number of instruments to facilitate the collection of assessment data. With an eye toward efficiency, school personnel often tend to rely too much on indirect methods (interviews, rating scales, questionnaires, etc.). Floyd, Phaneuf, and Wilczynski (2005) assert that there are advantages to the use of indirect assessment by means of informant accounts, including: (a) defining the problem behavior, (b) determining its severity, (c) identifying the most appropriate conditions under which to observe the student, and (d) engaging major stakeholders in the assessment process (e.g., parents and teachers). Furthermore, the use of indirect measures requires less time and training. However, unlike direct observation (e.g., A-B-C assessment,

event recording, interval recording) indirect assessment is removed in time from and relies on individual judgments about various aspects of the target behavior and its context (Floyd et al., 2005). As Murdock, O'Neil, and Cunningham (2005) cautioned, indirect approaches may be susceptible to poor memory of the respondents, bias, or other distortions. Errors associated with the misinterpretation of the data can cause FBA teams to draw incorrect conclusions regarding the function of a student's behavior. The net result can be an ineffective or even harmful intervention (McIntosh, Brown, et al., 2008). Drasgow and Yell (2001) reported that legal challenges involving FBAs mainly related to the use of indirect measures and inferred that indirect measures may not be adequate without supporting direct observation data. Only direct observation allows a FBA team to actually observe environmental variables and record data on events that precede (antecedents) and events that follow (consequences) a behavior (Chandler & Dahlquist, 2010).

There continues to be debate regarding the right mix of indirect versus direct measurement tools (McIntosh, Brown et al., 2008; Quinn et al., 2001). Some researchers report agreement between indirect and direct assessment. In a study that focused on the behavior of three elementary students who exhibited problem behavior, Newcomer and Lewis (2004) found agreement between indirect measures (interviews and rating scales) and direct observation (A-B-C assessment, partial-interval recording, scatterplots) in the identification of primary functions or maintaining consequences and the experimental manipulation of environmental events. However, Alter, Conroy, Mancil, and Haydon (2008) found little agreement between indirect measures or with the results of a functional analysis. The highest level of agreement between indirect assessments and functional analyses was 50%, using the Motivational Assessment Scale and a functional assessment interview. Direct assessment procedures were consistent with a functional analysis conducted on each of the students. In another study, Murdock et al. (2005) found the highest level of agreement was between teacher interviews and direct classroom observation. They concluded that indirect methods (structured interviews conducted by teachers and their colleagues with the student) can yield potentially valuable information regarding the motivation behind student misbehavior.

According to Scott and Kamps (2007), the use of interviews and descriptive analysis may be the most efficient way to assess behavior problems that occur at high rates but are only mildly disruptive. That is, when behaviors are frequent enough to have been repeatedly observed by the teacher it is more likely that the teacher will

accurately identify the predicting and maintaining environmental events. McIntosh, Brown, et al. (2008) conjectured that when behavior is not too severe or too complex, indirect measures might be sufficient and that involving multiple sources and multiple methods including the student as an informant can increase the accuracy of the assessment process. Finally, McIntosh, Brown, et al. (2008) suggested that such procedures might be one way to save time and resources for problem behavior that warrants a full FBA.

Based on their review of the literature, Goh and Bambara (2010) concluded that the use of descriptive or indirect assessment may be as effective as more rigorous experimental manipulation in applied settings. Stage et al. (2006) proposed using indirect assessment to generate FBA hypotheses and experimental manipulation to verify most prevalent hypotheses. Kern et al. (2004) advocated consistent use of both interviews and direct observations as a useful, "perhaps necessary," part of FBA. Even so, McIntosh, Brown, et al. (2008) asserted that it is important to continue to assess the technical adequacy of indirect measures and that "there may be conditions in which indirect measures are reliably accurate … as well as conditions in which they are consistently inaccurate" (p. 11). More research is needed that compares various forms of indirect assessment and clarifies the conditions under which indirect measures constitute a valid and reliable source of information and when they do not (Floyd et al., 2005; McIntosh, Brown, et al., 2008).

Among the growing number of studies that have successfully combined direct and indirect measures, Dunlap and his colleagues (1993) combined teacher interviews, student interviews, and direct observations to identify the likely function of target behaviors (e.g., negative verbal responses, hitting, off-task behavior, running out of the classroom, etc.) of five students with emotional disabilities. Following data collection and analysis, Dunlap et al. developed and tested a hypothesis regarding the likely function of each student's inappropriate behavior. Combining functional assessment and functional analysis, Dunlap et al. (1993) developed an intervention that led to a decline in undesirable behavior and, at the same time, increased desirable pupil behavior (e.g., on-task behavior and appropriate responses). Broussard and Northup (1995) relied on teacher interviews, a review of student academic records, and direct observations to generate hypotheses to explain the disruptive behavior of three elementary students. Then, the researchers conducted a brief functional analysis to experimentally evaluate the hypothesis developed for each student. Manipulating naturally occurring classroom events (e.g., teacher attention, peer attention, and escape from academic tasks), Broussard

and Northup (1995) identified the function of the problem behavior and developed effective interventions.

Blair, Umbreit, and Bos (1999) conducted a functional assessment using structured interviews administered to a program director and to teachers, combined with direct observations during large group instruction to identify preferred activities of four children with emotional disabilities. They found that student behavior improved substantially when they engaged in preferred activities as part of daily classroom instruction. Similarly, Umbreit, Lane, and Dejud (2004) investigated the differential effects of manipulating academic task demands for a male student who engaged in disruptive classroom behavior. The target of intervention was off-task behavior and, based on structured interviews with the teacher, paraprofessional, and the student and A-B-C assessment, Umbreit et al. (2004) determined that the function of the behavior was to gain access to an activity. Concomitant to the introduction of more challenging tasks, there was a dramatic increase in student task engagement. Kamps, Wendland, and Culpepper (2006) coached a general education classroom teacher in the conduct of a functional assessment. Assessment included functional interviews, direct observation, and functional analyses and led to an increase in on-task behavior and reduction in disruptive behavior of two elementary students at risk for emotional disabilities.

Finally, Turton, Umbreit, Liaupsin, and Bartley (2007) used teacher and student interviews, along with direct observation, to determine the likely motivation for the inappropriate language (i.e., profanity) of a 16-year old female with emotional disabilities. Turton et al. (2007) collected data by means of structured adult interviews, a structured student interview, and an A-B-C assessment. Once it was determined that the inappropriate language was motivated by a desire to gain adult attention and to avoid completing classroom assignments, a function-based intervention was developed. That plan included social skills instruction, verbal prompts to be on time and to use prosocial skills in response to adults' requests, contingent adult attention, and adjustments in the instruction. Together, these interventions led to a reduction in the use of profanity and a concomitant increase in student use of appropriate social skills. Thus, we can conclude that interviews have a role in determining the likely function of challenging behavior in school settings, albeit behavior that is generally frequent, of relatively low intensity, and clearly tied to a simple functional outcome.

In the end, there may be a "middle ground" when a student's challenging behavior is neither too complex nor too severe and it is possible to forgo a traditional experimental approach to FBA (e.g., Scott & Kamps, 2007). For example, a hypothesis statement about the

function of the behavior, based on brief direct observation in combination with indirect measures such as the FACTS (McIntosh, Borgmeier et al., 2008) and structured student interviews may be adequate when the problem behavior is of low intensity. The greater the convergence (level of agreement between different sources of information), the more likely it is that results of the assessment are accurate. However, if the student fails to respond positively, it will be necessary to either make a change in the intervention or to conduct a more in-depth functional assessment (Kern et al., 2004; McIntosh, Brown, et al., 2008). It is important to keep in mind the difference between descriptive and functional analysis of behavior. In the former case, data are collected by various means, including student or teacher interviews, rating scales, questionnaires, and/or direct observation, to describe the interaction between behavior and environmental events. In the latter case, antecedent and/or consequent events are experimentally manipulated to identify contingencies that maintain the target behavior (Bloom, Iwata, Fritz, Roscoe, & Carreau, 2011). A comparison of the two generally results in poor correspondence (little agreement); (Alter et al., 2008; Bloom et al., 2011; Thompson & Iwata, 2007).

Function- Versus Nonfunction-based Interventions

School-based research on FBA indicates that many times education personnel underuse results of a FBA in the development of a BIP and rely on arbitrary contingencies or punishers or standardized methods to teach particular skills or reduce problem behavior (McIntosh, Brown, et al., 2008; Scott et al., 2005; Stage & Quiroz, 1997). Failure to consider the variables that may be functionally related to the student's problem behavior results in intervention strategies selected on the basis of familiarity, convenience, or a finite amount of available time and resources. This is unfortunate because research shows that function-based interventions produce more positive outcomes than nonfunction-based interventions. For example, Newcomer and Lewis (2004) compared the effects of function-based interventions versus nonfunction-based interventions for three elementary students in a regular classroom. Following descriptive assessments to generate hypotheses about the function of the problem behavior, experimental analyses confirmed the antecedent and consequent variables. The impact of function-based interventions was compared to typical classroom management strategies. Greater reductions in problem behavior were observed using function-based interventions than nonfunction-based interventions. Ingram, Lewis-Palmer, and Sugai (2005) demonstrated similar results with two sixth grade boys in general education classrooms, both of whom engaged in behavior that put them at risk

for academic failure. Ingram et al. (2005) counterbalanced function- and nonfunction-based interventions between both students. Their results were the same as Newcomer and Lewis (2004), namely that function-based interventions were more effective in changing pupil behavior.

Payne, Scott, and Conroy (2007) further substantiated the efficacy of function-based interventions with four elementary school students, two male and two female, who exhibited problem behavior. The reinforcers for the target behaviors included peer attention, escape from difficult academic tasks, teacher attention, and access to a specific classmate. Data were collected through direct observation and the hypothesis statements for the students validated by means of a brief functional analysis. The researchers reported that function-based interventions were more effective than nonfunction-based interventions in decreasing problem behavior of all students. Finally, Carter and Horner (2007) incorporated functional assessment and function-based support with "First Step to Success," a standardized, home-school program for children in kindergarten through second grade who are at risk for behavior problems. Introducing aspects of function-based support increased the positive effects of "First Step" for a six-year-old male who engaged in frequent bouts of disruptive and non-compliant classroom behavior. Carter and Horner (2007) reported a decline in problem behavior and an increase in academic engagement, along with a more positive teacher opinion of the students' prosocial skills. In all, the accumulated research confirms the benefits of developing an intervention plan based on knowledge of the function of the target behavior (Ingram et al., 2005; Newcomer & Lewis, 2004; Payne et al., 2007).

Participation of Teachers and School Staff in the FBA Process

Questions have been raised in the literature regarding the ability of school personnel to conduct FBAs with sufficient fidelity to be successful in changing pupil behavior (e.g., Cone, 1997; Crone, Hawken, & Bergtstrom, 2007; Gresham, Quinn, & Restori, 1999). To date, there is no consensus regarding the necessary and sufficient conditions for training school personnel to carry out a successful FBA (Waguespack, Vaccaro, & Continere, 2006). Several recent studies appear to support the proposition that school personnel can master the basic skills required to conduct a FBA. For example, Bessette and Wills (2007) trained paraprofessionals to perform three conditions of a functional analysis (play, attention, and escape) and implement a function-based intervention to address inappropriate verbalizations and physical aggression of a male, elementary student with severe

behavior problems. The resulting positive changes in pupil behavior confirmed the fact that paraprofessionals could be taught how to conduct a functional analysis in a relatively short amount of time and to intervene successfully with a high level of fidelity. Moore et al. (2002) employed multiple training strategies, including written and verbal information, rehearsal, modeling, and feedback to teach three elementary school teachers the FBA process. Each of the teachers implemented the process with a high degree of fidelity. Iwata and colleagues (2000) taught 11 undergraduate students the basic skills required to conduct a FBA and, based on subsequent student performance, concluded that it was possible to prepare persons with little prior knowledge to carry out a FBA. Wallace, Doney, Mintz-Resudek, and Tarbox (2004) conducted a three-hour workshop on FBA that included role play, simulation, and feedback. All three workshop participants demonstrated a high degree of proficiency in conducting functional analyses. Subsequently, two of the three teachers met the accuracy criteria established to define mastery of the skills associated with FBA.

Following six hours of professional development training, Lane, Weisenbach, Little, Phillips, and Wehby (2006) reported positive outcomes of FBA-based interventions conducted by two teachers who had primary responsibility for developing and implementing intervention plans. The teachers relied on the function-based intervention decision model developed by Umbreit, Ferro, Liaupsin, and Lane (2007), consisting of a six-celled grid on which to record data to determine the likely function of inappropriate pupil behavior (Umbreit, Ferro, Liaupsin, & Lane, 2007). Skinner, Veerkamp, Kamps, and Andra (2009) taught a general education teacher to conduct a functional analysis of an elementary student who engaged in inappropriate verbalizations, and disruptive and aggressive behavior. The teacher manipulated peer attention, escape, and control conditions to identify the likely maintaining consequences of the behavior. Subsequent intervention consisted of contingent teacher verbal and nonverbal praise and peer attention which produced a dramatic reduction in problem behavior. Nordress and colleagues (2011) reported positive outcomes associated with a screening matrix that a child study team used to identify the function of a persistent problem behavior of an eighth grade student. Use of the screening matrix to identify variables associated with the student's attention seeking behavior to develop a plan of intervention preempted the need to conduct a formal FBA.

On a much larger scale, over a three-year period, Crone et al. (2007) provided in-service training and follow-up consultation to 40 elementary and middle school team members on how to conduct

FBAs. Intervention plans developed by these teams generally resulted in positive changes in pupil behavior, including three students who engaged in high rates of disruptive and off-task behavior. Based on results of the first year, during the second year of the project, teams received more training on the use of selected skills (e.g., use of the Competing Behavior Pathway to develop intervention plans). Lastly, Loman and Horner (2011) evaluated the usefulness of a training package for school-based personnel to initiate the FBA process with students starting to show early patterns of misbehavior. Following FBA training on targeted topic areas (i.e., identifying and defining problem behavior, investigating behavior, observing and summarizing behavior, function-based support planning), 10 teachers conducted a FBA and developed a behavior support plan based on the summary statements. Researchers confirmed the accuracy of the hypothesized functions in the summary statements and reported that 90% of the teachers were accurate in their summary, with one teacher changing her hypothesis following additional observations.

Less encouraging is the fact that Scott et al. (2005) found that following FBA training school personnel responded to a series of FBA case studies with familiar interventions and focused a disproportionate amount of attention on negative and reactionary interventions. Scott et al. (2005) asserted that in the real world the relation between FBA and intervention is far more complicated than depicted in the professional literature and that teams often struggle with the concept of function-based interventions. Similarly, McIntosh, Brown, et al. (2008) stressed the fact that long-term training coupled with ongoing technical support, may be essential to adequately prepare school personnel to master the skills required to conduct a FBA.

FBA Training within School Context

The reauthorization of the Individuals with Disabilities Education Act (IDEA) in 2004 reaffirmed the importance of conducting a FBA for students with challenging behavior; even so, many students at risk for or with emotional disabilities do not have a BIP (Wagner et al., 2006). One reason may be the kind and amount of training provided to school personnel—one shot or otherwise time-limited, hit and run sessions (e.g., Gable et al., in press; Kern et al., 2004; Van Acker et al., 2005), along with the perception that a FBA demands too much time and effort (Bessette & Wills, 2007; Iwata et al., 2000). Scott, Alter, and McQuillan (2010) contended that the failure to adequately train school-based teams may be attributable to the "overblown complexity and formality" of the FBA process. Furthermore, Scott, Alter, and McQuillan (2010) suggested that the lack of congruence between

the rigorous demands of FBA and the organizational and administrative structure of schools poses a major obstacle to FBA in schools. For these reasons, Scott, Alter, and McQuillan (2010) advocated establishing a more straightforward process to address the procedural complexity of a traditional FBA. There is some evidence that this is possible. Maag and Larson (2004) reported that a streamlined version of training led to successful teacher implementation of FBA and, in turn, a decrease in the target behavior of two students with challenging behavior. However, even when school personnel do receive adequate pre-service or in-service preparation, continued training and support may be necessary to reach skill fluency and to maintain it (McIntosh, Brown, et al., 2008). Indeed, researchers have shown that follow-up consultation can increase the accuracy with which teachers implement an intervention plan (Noell et al., 2000). Conversely, without ongoing technical assistance, school personnel are more likely to revert to reactive strategies such as punishment or exclusion (McIntosh, Brown, et al., 2008).

Consistent with the "spirit" of federal legislation, researchers have shown that team decision-making can produce highly effective intervention plans (Goh & Bambara, 2010). Goh and Bambara (2010) speculated that team decision-making and acceptance of an intervention may reinforce the maintenance of the intervention across time. Based on their work in 10 schools, Crone et al. (2007) reported that school personnel strongly endorsed a team-based model of FBA training. In addition, school personnel were more accepting of an intervention plan developed by a team comprised of the classroom teacher and a behavior expert than a plan developed solely by an expert (Crone et al., 2007).

Team-based FBA Training

Benazzi, Horner, and Good (2006) described the quintessential FBA team as one comprised of school personnel with (a) knowledge of the student and the behavior of concern, (b) knowledge of environmental and contextual variables, including available resources and intervention options, and (c) knowledge of and skill in applying the principles of applied behavior analysis. Training should be case-based, hands-on, and interactive, and embedded and sustained across time as part of a quality program of professional development. Trainers should emphasize core elements of FBA and the idea that all school personnel should "think functionally" about pupil behavior (Hershfeldt, Rosenberg, & Bradshaw, 2010). Finally, technical assistance and support should be available, as needed (e.g., Gable, Hendrickson, & Van Acker, 2001; Scott & Nelson, 1999).

Another option is to develop a pool of key school personnel who are prepared to support teams in implementing various aspects of the FBA process (Scott et al., 2005). Although all teachers should consider the function of behavior, not everyone should necessarily serve on a FBA team. Rather, school personnel may possess varying levels of knowledge and skill (Conroy, Clark, Gable, & Fox, 1999). For example, some teachers might become skilled in the use of indirect assessment strategies, while others might gain expertise conducting a structural analysis or a full FBA. Or, schools might employ two teams comprised of highly trained individuals—one team that addresses school-wide supports and the other more pupil-specific behavior problems (Crone et al., 2007). Clearly, more research is needed to determine the best way to initially train school personnel, when and how to introduce "booster training," and the organizational and administrative structures and supports necessary to implement and maintain the integrity of FBA; in other words, establishing a goodness of "contextual fit" (Hendrickson, Gable, Conroy, Smith, & Fox, 1999; Reid & Nelson, 2002; Scott & Kamps, 2007) that can be sustained across time.

Clinic to Classroom

Experience tells us that not all clinically-supported FBA practices fit well in less controlled settings (Gable, 1999). Analogue assessment is one such practice (Gable et al., in press). Analogue assessment usually consists of a highly-structured 10-15 min. one-to-one session, several times a week, during which time a student is exposed to conditions associated with problem behavior (e.g., attention, escape, a play object, alone, etc.; Kern & Clemens, 2004). The rate of problem behavior is compared across conditions under which the child is reinforced contingent upon engaging in problem behavior. According to Gresham et al. (1999), as few as 12 and as many as 200 sessions may be necessary to identify the function of the behavior. Most school personnel lack both the technical skill and the time required to conduct a thorough analogue assessment, graph resulting data, and subject it to visual analysis. Furthermore, Solnick and Ardoin (2010) argue that the variables identified during analogue assessment might not be the same as those that exist in the natural environment. Not surprisingly, Sasso et al. (2001) conclude that analogue assessment may not be practical for school settings. One form of functional analysis--structural analysis--the manipulation of antecedents and the measurement of the effects on student behavior (Hanley, Iwata, & McCord, 2003), may be a viable alternative to traditional functional analysis (Kern et al., 2004). Indeed, structural analysis is a proven effective way to validate

the accuracy of a hypothesis statement (Stichter & Conroy, 2005; Kern & Clemens, 2004; Kern, Choutka, & Sokol, 2002).

Structural analysis consists of several conditions, a 'control' condition during which time the expectation is that the problem behavior will be low and a 'test' condition that includes an antecedent event and reinforcing consequences (Steege & Watson, 2009). As Umbreit and Blair (1997) point out, a number of antecedent variables may have a significant influence on the occurrence versus non-occurrence of a problem behavior (e.g., a crowded classroom, academic task demands, student choice, etc.). Structural analysis focuses on the teacher, instruction, and the classroom environment. These are among the easiest variables to manipulate and typically play a major role in signaling students to engage in different behaviors (e.g. Kern et al., 2009).

Park and Scott (2009) combined a brief functional assessment in the form of structured interviews of both teachers and parents and direct observation using an A-B-C assessment to identify antecedent conditions associated with the problem behavior of young children at risk for emotional disabilities. Once a hypothesis was established, they used a brief structural analysis to confirm their assumptions regarding events that preceded the target behavior. They reported a marked decline in inappropriate behavior concomitant to the manipulation of antecedent events, including teacher use of prompts, physical proximity, and high interest materials. Most recently, Bloom et al. (2011) incorporated a trial-based approach to FBA into a variety of ongoing classroom activities. The trial-based procedure consisted of a series of brief (2 min.) probes embedded in daily classroom activities that mirrored aspects of a traditional analogue assessment: alone; attention; demand; ignore; and play conditions. Ten students with disabilities (i.e., autism, Down syndrome, and speech and hearing delay) participated in the study. Results of the trial-based procedure matched those obtained by means of more conventional session-based functional analyses 60% of the time. Bloom et al. (2011) asserted that, although there may be little time savings, a trial-based procedure may be more practical than a traditional functional analysis (FA), especially in classroom settings, where resources typically are limited.

Not all behavior problems warrant a FBA or necessitate an extended functional analysis (Steege & Watson, 2009). Unfortunately, as has been discussed, we have yet to determine the most efficacious form of FBA (Gable, 1999). Some studies support the use of brief assessment, both because of its efficacy and its acceptability by classroom teachers (e.g., Derby, et al., 1992; Dufrene, Doggett, Henington, & Watson, 2007; Doggett, Edwards, Moore, Tingstrom, & Wilczynaski, 2001; Hackman, Conroy, Fox, & Chait, 2008; Park & Scott, 2009; Skin-

ner et al., 2009). However, there is the danger that highly ideographic factors may be influencing a student's behavior. Failure to identify these factors may produce "false positives," meaning that it can lead to the identification of a function even if one is not apparent (Kahng & Iwata, 1999). Finally, a brief assessment will yield interpretable results only about half the time (Bloom et al., 2011) and may allow important information regarding the behavior to escape detection.

It may be that FBA teams should attempt to identify the primary function of a behavior; that is, the "function that is identified above all others" (Alter et al., 2008, p. 203). According to Alter et al. (2008), there are several advantages to identification of the primary function. It allows school personnel to document agreements versus disagreements across data collection instruments and it limits the time demands placed on FBA team members. Similarly, Gresham (1991) advocated identification of those variables that account for the greatest amount of variance in a target behavior – the conditions under which a behavior is most versus least likely to occur. Even so, it is important to keep in mind that some experts estimate that approximately 15% of target behaviors have multiple functions (Hanley et al., 2003), an estimate that likely is low because it is based on students with more severe disabilities and with limited behavioral repertoires. In some instances, knowledge of both primary and secondary functions are critical to a successful treatment outcome (Chandler & Dahlquist, 2010).

Functional Behavioral Assessment and Positive Behavior Intervention and Supports

With the growing popularity of Positive Behavior Intervention and Supports (PBIS) and the more recent introduction of response to intervention (RtI), along with FBA, we now have a multi-tiered approach to prevention/intervention and the opportunity to match the intensity of an intervention with the seriousness of the problem—be it academic or behavior (Scott, Alter, Rosenberg, & Borgmeier, 2010; Sugai, Lewis-Palmer, & Hagan-Burke, 1999). Lane, Kalberg, and Shepcaro (2009) make a strong argument for an integrated model of prevention/intervention for students with academic and/or behavior deficits. However, the rigorous and time-consuming nature of a FBA is at odds with the realities of most public schools (Scott et al., 2004). Given the myriad problems associated with integrating FBA into the culture of the school, promoting an even more elaborate model is likely to pose real challenges. Some in the field have begun to address these challenges. For example, Scott, Nelson, and Zabala (2003) examined the complex issue of systems change relative to FBA and ways to build capacity within schools. They underscored the

importance of assessing faculty and staff attitudes and beliefs and using that information to promote faculty "buy-in" and ownership of the FBA process. The literature contains several examples of successful systems change initiatives that included FBA (e.g., Hendrickson & Gable, 1999).

Today, PBIS is touted as one way to bridge the research to practice gap (Upreti, Liaupsin, & Koonce, 2010). Its popularity may facilitate the increased acceptance of FBA as part of a multi-tiered intervention process (i.e., universal, targeted, or intensive supports). Furthermore, viewing behavior within a three-tier model may lead to adult responses that decrease the occurrence of problem behavior among the general student population (McIntosh, Brown, et al., 2008). When behavior problems do arise, the "intensity level" of a FBA can be linked to the seriousness of the problem (i.e., teacher roles in conducting a descriptive analysis, structural analysis, or full FBA).

Although by no means an exhaustive review, it seems safe to draw several conclusions from our literature review. First, at least some of the questions surrounding the use of FBA and BIP in naturalistic settings appear to have been addressed if not completely resolved (i.e., ability of school personnel to conduct a FBA and implement a BIP with integrity; the positive impact of function-based interventions on pupil behavior; Cook et al., 2010). Second, there is compelling evidence that FBA is a legitimate approach to successfully reducing or eliminating a wide range of problem behaviors (e.g., Kern et al., 2004; Scott et al., 2004). Third, when implemented with integrity, interventions aligned with the function of the student's misbehavior have a more positive effect than nonfunction-based interventions (Payne et al., 2007; Scott et al., 2004); whereas, nonfunction-based interventions may have no effect or can actually exacerbate an already difficult situation (McIntosh, Brown, et al., 2008). McIntosh, Brown, et al. (2008) put it very succinctly, concluding that knowledge of the function of the target behavior is a "critical variable that must be taken into account when selecting an effective behavior intervention" (p. 8). Lastly, it may be possible to adjust the rigor and complexity of the FBA process (e.g., duration, type and amount of data collected), according to the nature of the target behavior (e.g., mild versus severe; e.g., Park, 2007; Payne et al., 2007; Scott & Kamps, 2007).

Conclusion and Future Directions

An emergent body of empirical research documents the positive impact of FBA on the behavior of students at risk for or with ED. Increasingly, practitioners rather than researchers are conducting these studies. (e.g., Bessette & Wills, 2007; Goh & Bambara, 2010;

Park 2007). Furthermore, a modest number of studies suggest that school personnel can be taught to conduct a FBA in a relatively short amount of time (Bessette & Wills, 2007; Iwata et al., 2000; Lane et al., 2007; Moore et al. 2002). Even so, additional research is needed in a number of important areas. For example, more needs to be known about the preparation of school-based FBA teams to make sense of the sometime complex FBA process, ways to engage students themselves in the FBA process, the maintenance of long-term treatment effects, and the validity of FBA across age groups and diverse student populations. Lastly, practitioners need more direction regarding the actual conduct of a FBA in schools (Solnick & Ardoin, 2010), along with encouragement to make proactive use of FBA as a preventative tool (Waguespack et al., 2006).

As we have discussed, a traditional FBA can impose a tremendous burden on school personnel. Accordingly, we must find ways to make FBA less onerous and more manageable so that it will be assimilated into the behavioral repertoire of both general and special education teachers (e.g., Cook, Landrum, Tankersley, & Kauffman, 2003; Scott, Alter, & McQuillan, 2010). The reconceptualization of a traditional FBA so that it is less complicated may make it more acceptable to school personnel. Recently, Scott, Alter, and McQuillan (2010) proposed ways to present FBA in a simpler form, which would expedite the "makeover" of FBA into a less burdensome procedure. Others advocate the same thing (Crone et al., 2007; Nordness et al., 2011). Finally, developing strategies that will reduce the disconnect between FBA research and practice should be a major priority. One solution might to establish a continuum of functional assessment procedures, each of which is progressively more formal, comprehensive, and intensive (see Scott, Alter, Rosenberg, & Borgmeier, 2010; Park, 2007).

At present, there are no research-validated rules regarding the use of direct versus indirect measures of behavior (Alter et al., 2008; Scott et al., 2004). Further research is needed to guide practitioners in the selection of the most valid and reliable instruments and the conditions under which each is most useful. Such research could lead to increasing the efficacy of the FBA process (McIntosh, Brown, et al., 2008). We also must find ways to "socially market" (Adelman & Taylor, 2003) benefits that accrue to administrators and teachers who support the use of FBA to address students' challenging behavior (i.e., increased time in class, more instructional time, fewer disciplinary problems).

In the end, the worth of FBA rests on the degree to which school personnel develop a BIP that changes a student's behavior in ways

that are socially significant and lasting (Gable et al., in press; McIntosh, Brown, et al., 2008). As Steege and Watson (2009) stated: "To change the lives of children in a positive and meaningful way, we need to know the functional relationship between variables in the environment and a student's behavior" (p. 1). While we have made progress transforming FBA into a practical tool for school personnel, there is more work to be done before functional thinking is integral to the way school personnel view student behavior (Hershfeldt et al., 2010).

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